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HEALTH DIVISION

Industrial Hygiene Department

MATERIAL SAFETY DATA SHEETS

THE BASIS FOR CONTROL OF TOXIC CHEMICALS

VOLUME 2

E. E. Ketchen

W. E. Porter

Date Published: September 1979

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Oak Ridge, Tennessee 37830

operated by

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for the

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FOREWORD

The Material Safety Data Sheets contained in this volume are the basis for the Toxic Chemical Control Program developed by the Industrial Hygiene Department, Health Division, ORNL. The three volumes are the update and expansion of ORNL/TM-5721 and ORNL/TM-5722 "Material Safety Data Sheets The Basis for Control of Toxic Chemicals", Volume I and Volume II. As such, they are a valuable adjunct to the data cards issued with specific chemicals. The chemicals are identified by name, stores catalog number where appropriate, and sequence numbers from the NIOSH Registry of Toxic Effects of Chemical Substances, 1977 Edition, if available.

The data sheets were developed and compiled to aid in apprising the employees of hazards peculiar to the handling and/or use of specific toxic chemicals. Space limitation necessitate the use of descriptive medical terms and toxicological abbreviations. A glossary and an abbreviation list were developed to define some of those sometimes unfamiliar terms and abbreviations. Questions concerning these data sheets should be referred to the Industrial Hygiene Department.

The three volumes are being printed in a looseleaf form to accommodate additional data sheets and updated sheets without the re-issue of new volumes. The page numbers are keyed to the catalog number in the chemical stores at ORNL.

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(Rev. Dec. 1979)

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(Continuation of ORNL/TM-6981/V1)

(To be Continued in ORNL/TM-6981/V3)

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Albumin	A water-soluble protein excreted in urine
Anemia	A condition in which the blood is deficient in hemoglobin and/or numbers of red cells compared with normal blood
Anesthesia	Loss of feeling or sensation, especially the loss of tactile sensibility
Anorexia	Lack or loss of the appetite for food
Anosmia	Absence of the sense of smell
Anuria	Total suppression of urinary output by the kidney
Apathy	Lack of feeling or emotion, indifference
Arthralgia	Neuralgia or pain in a joint
Asbestosis	Lung disease caused by prolonged inhaling of asbestos
Asphyxia	Suffocation
Bronchiolitis	Capillary bronchitis
Bronchitis	Inflammation of the bronchial tubes
Bronchopneumonia	Inflammation of the lungs following infection of the upper respiratory tract, infectious fevers, or debilitating diseases
Bronchospasms	Bronchial spasm
Carcinoma	A malignant new growth made up of epithelial cells, which give rise to metastases
Cataract	An opacity of the crystalline eye lens or its capsule
Cirrhosis	A disease of the liver marked by the progressive destruction of liver cells
Conjunctivitis	Inflammation of the conjunctiva, the delicate membrane that lines the eyelids and covers the eyeballs

Convulsion	A violent contraction of the voluntary muscles
Cornea	Transparent structure of the external layer of the eyeball
Cyanosis	Blueness of the skin caused by insufficient oxygenation of the blood
Delirium	A mental disturbance marked by illusion, hallucinations, physical restlessness, and incoherence
Dermatitis	Inflammation of the skin
Dyspnea	Difficult or labored breathing
Emphysema	A swelling or inflation due to presence of air in the interstices of the connective tissues of the lungs
Epigastric	Pertaining to the belly or (epigastrium)
Erosion	An eating or gnawing away
Euphoria	Exaggerated sense of well-being
Gangrene	Anemic necrosis of tissue
Gastroenteritis	Inflammation of the stomach and intestines
Goiters	Enlargement of the thyroid gland
Hallucinations	A sense perception not founded upon objective reality
Hematemesis	Vomiting of blood
Hematuria	Discharge of blood in the urine
Hemoglobinuria	Presence of hemoglobin in the urine
Hemolytic Anemia	Anemia due to active destruction of red cells
Hepatitis	Inflammation of the liver
Hyperactivity	Overactivity

Hyperemia	Excess of blood in any part of the body
Hyperpnea	Abnormal exaggeration of the respiratory movements
Hypotension	Abnormally low blood pressure
Hypothermia	Abnormally low temperature
Inebriation	The condition of being drunk
Ingestion	The act of taking food, medicines, etc. into the body by mouth
Insomnia	Inability to sleep
Intoxication	The condition produced by excessive use of alcohol; also, the state of being poisoned
Lacrimation	The secretion and discharge of tears
Laryngitis	Sore throat, hoarseness, and cough due to inflammation of the larynx
Lassitude	Weakness, exhaustion
Lethargy	A condition of drowsiness of mental origin
Leukopenia	Reduction of white cells in the blood
Malaise	Uneasiness, discomfort, and distress
Malignant tumors	Tumors that tend to become progressively worse and result in death
Mottling	A condition of a tissue spotted with patches of color
Myalgia	Pain in a muscle or muscles
Narcosis	A state of profound unconsciousness produced by a drug
Narcotic	Having the effect of producing sleep or stupor and at the same time relieving pain (adj.)

Nausea	Tending to vomit, feeling of sickness at the stomach
Necrosis	Death of a circumscribed portion of tissue
Nephritis	Inflammation of the kidney (hemorrhagic)
Neuritis	Inflammation of a nerve
Neurotoxic	Poisonous or destructive to nerve tissue
Oliguria	Reduced daily output of urine
Opacity	The condition of being opaque
Opaque	Impervious to light rays
Pallor	Paleness
Palpitation	Unduly rapid beating of the heart
Papilledema	Edema of the optic papilla
Paralysis	Loss or impairment due to lesion of muscular mechanism
Petechia	A small area of discoloration formed by the effusion of blood
Pharyngitis	Inflammation of the pharynx
Pneumonitis	Localized inflammation of the lung
Polyneuritis	Inflammation of many nerves at once
Prostration	Extreme exhaustion or powerlessness
Psychic disturbances	Mental disturbances
Pulmonary edema	Fluid in the lungs
Pulmonary fibrosis	Fibrous tissues in the lungs
Pyorrhea	A discharge of pus, particularly from the gums
Retching	A strong involuntary effort to vomit
Salivation	An excessive discharge of saliva

Somnolence	Sleepiness
Stomatitis	Inflammation of the mouth
Stupor	Partial or nearly complete unconsciousness
Triocyanate Intoxication	Characterized by central nervous system stimulation and depression, and muscular incoordination
Tinnitus	Ringing in the ears
Ulceration	The formation of an ulcer
Vertigo	A sensation as if the external world were revolving around the patient or if he were revolving in space; the term is sometimes erroneously used as a synonym for dizziness

2. Key to Abbreviations

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KEY TO ABBREVIATIONS

cc	cubic centimeter
CNS	central nervous system effects
gm	gram
H	hour
IRR	irritant effects
kg	kilogram (one thousand grams)
LC50	lethal concentration 50 percent kill
LCLo	lowest published lethal concentration
LD50	lethal dose 50 percent kill
LDLo	lowest published lethal dose
C.M.	cubic meter
mg	milligram (one thousandth of a gram; 10^{-3} gm)
ml	milliliter
ppm	parts per million (v/v)
TCLo	lowest published toxic concentration
TDLo	lowest published toxic dose
TLV	threshold limit value
TWA	time weighted average
W	week
Y	year

3. Material Safety Data Sheets

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Organic

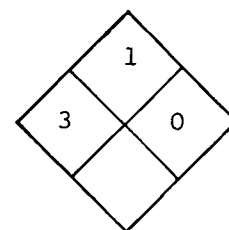
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See Bromobenzene

PRODUCT DESIGNATION

03-221-1100
A-BromoethylbenzeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS α Phenylethylbromide	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS (1 Bromoethyl) benzene	FORMULA $\text{CH}_3\text{CHBrC}_6\text{H}_5$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA

BOILING POINT 201⁰C	⁰ F.	VAPOR PRESSURE at 105-107	30 mm Hg.
MELTING POINT -65⁰C	⁰ F.	VAPOR DENSITY (Air = 1) 6.4	
SPECIFIC GRAVITY (H ₂ O = 1) 1.35		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorless to pale yellow liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 205⁰F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water, foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES Wear goggles and self contained breathing apparatus		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION
α-bromoethylbenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

Not available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

Yes

RELEVANT SYMPTOMS OF EXPOSURE Cyanosis, deep & rapid respiration, irregular pulse, drowsiness, unconsciousness

EFFECTS OF CHRONIC EXPOSURE

Lung, liver & kidney damage

EMERGENCY AND FIRST AID PROCEDURES Inhalation - remove from exposure, rest; if swallowed - wash mouth, give emetic, get medical aid; wash eyes & skin.

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CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May react with oxidizing materials

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PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self contained breathing apparatus

OTHER PROTECTIVE EQUIPMENT

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SIGNATURE

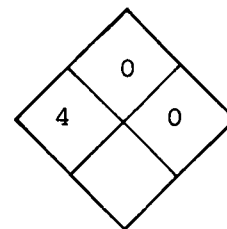
DATE

221-1100B

CAS:000075252

PB56000

PRODUCT DESIGNATION

03-221-2100
BromoformMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Tribromomethane, Bromoform

FORMULA

 Br_3CH

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
#1 lowest published lethal dose subcutaneous - rabbit	410 mg/kg.			1820	mouse	

SECTION III PHYSICAL DATA MW-252.77

BOILING POINT 149-150°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 8.3°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 2.9		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 0.1		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid, chloroform odor			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

Emits toxic fumes when heated

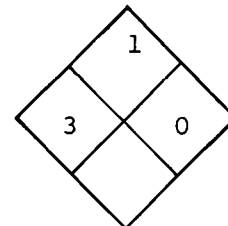
PRODUCT DESIGNATION	
Bromoform	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
TLV - 0.5 PPM, 5 mg/C.M.	CARCINOGENIC No
PRINCIPLE ROUTES OF ABSORPTION	
Inhalation, ingestion, skin	SKIN AND EYE IRRITATION Yes
REVELANT SYMPTOMS OF EXPOSURE Narcosis, irritation of respiratory tract, liver damage, tremors, unconsciousness.	
EFFECTS OF CHRONIC EXPOSURE	
Liver damage	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest, give oxygen as needed; ingestion - gastric lavage, and oxygen; wash eyes and skin.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
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STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Goggles
	GLOVES
SPECIAL	Rubber
	RESPIRATOR
OTHER PROTECTIVE EQUIPMENT	Self contained breathing apparatus
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

221-2100B

PRODUCT DESIGNATION

03-221-2600
Bromohydroquinone

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Bromohydroquinone

FORMULA

BrC6H3(OH)2

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 189.02

BOILING POINT sublimes	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 113°C.	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) --		EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Very soluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Leaflets		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Bromohydroquinone

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION
Inhalation of dust, ingestion, skin

SKIN AND EYE
IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE
Nausea, dizziness, increased respiration, headache, cyanosis,
~~delirium and collapse, depigmentation of eyes and skin.~~

EFFECTS OF CHRONIC EXPOSURE
Eye damage, dermatitis

EMERGENCY AND FIRST AID PROCEDURES
Inhalation - rest; if swallowed - induce vomiting, gastric
lavage, medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Safety goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE.

OTHER PRECAUTIONS

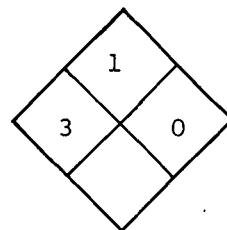
SIGNATURE	DATE
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221-2600B

PRODUCT DESIGNATION

03-221-3100
Bromomesitylene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Bromomesitylene	FORMULA Br (C ₆ H ₂) (CH ₃) ₃

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None Available			

SECTION III PHYSICAL DATA

MW - 199.09

BOILING POINT 230°C.	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT -1°C.	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.32		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O --		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Carbon dioxide, dry chemical, alcohol foam.		
SPECIAL FIRE FIGHTING PROCEDURES		

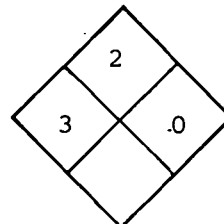
UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION	
Bromomesitylene	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
None available	CARCINOGENIC No
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion, skin	IRRITATION Severe
RELEVANT SYMPTOMS OF EXPOSURE Chemical pneumonia, central nervous system depression, frequent bleeding.	
EFFECTS OF CHRONIC EXPOSURE Central nervous system depression, nervousness, tension, anxiety, asthmatic bronchitis.	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - oxygen as needed; if swallowed - get medical aid, gastric lavage; wash skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

CAS:000096322

AF63000

PRODUCT DESIGNATION

03-221-3600
Bromomethyl AcetateMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Bromomethyl Acetate	FORMULA BrCH ₂ OOCH ₃

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Note: Lowest published lethal dose						
Intravenous - mouse 10 mg/kg						

SECTION III PHYSICAL DATA MW - 153.00

BOILING POINT 133°C.	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.20		EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None Available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Carbon dioxide, dry chemical, alcohol foam.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

Bromomethyl Acetate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Irritation of eyes and upper respiratory system, dizziness and depression, palpitation of heart.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Neoprene

SPECIAL

RESPIRATOR

Self contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

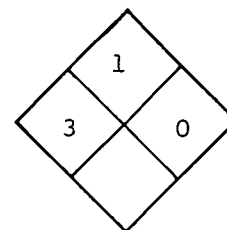
DATE

221-3600B

PRODUCT DESIGNATION

03-221-4100
A-Bromonaphthalene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS α Naphthyl Bromide	FORMULA $C_{10}H_7Br$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	Available		

SECTION III PHYSICAL DATA MW - 207.07

BOILING POINT 281 ⁰ C.	⁰ F.	VAPOR PRESSURE at 84 ⁰	mm Hg.
MELTING POINT 6 ⁰ C.	⁰ F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.48		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Slightly soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorless oil			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA Carbon dioxide, dry chemical, or foam.		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

A-Bromonaphthalene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Yes

RELEVANT SYMPTOMS OF EXPOSURE Gastroenteric distress, tremors, convulsions, fever, respiratory failure, headache, nausea, vomiting.

EFFECTS OF CHRONIC EXPOSURE

Clouding of lens.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - gastric lavage, blood transfusion, oxygen.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

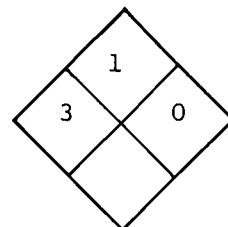
DATE

221-4100B

PRODUCT DESIGNATION

03-221-4150
B-Bromonaphthalene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS B-Naphthyl bromide	FORMULA C ₁₀ H ₇ Br

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 207.07

BOILING POINT 282°C.	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 59°C.	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.61		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Slightly soluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Leaflets		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Carbon dioxide, dry chemical, or foam.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

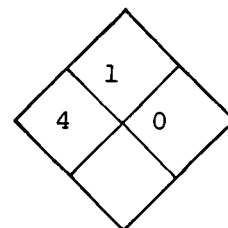
PRODUCT DESIGNATION	
B-Bromonaphthalene	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
None available	No
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion	IRRITATION Yes
RELEVANT SYMPTOMS OF EXPOSURE Gastroenteric distress, tremors, convulsions, fever, respiratory failure, headache, nausea, vomiting.	
EFFECTS OF CHRONIC EXPOSURE Clouding of lens.	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - gastric lavage, blood transfusion, oxygen.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	GLOVES
SPECIAL	RESPIRATOR
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

221-4150B

PRODUCT DESIGNATION

03-221-5100
P-Bromophenacyl Bromide

MATERIAL SAFETY DATA SHEET


SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

P-Bromophenacyl Bromide

FORMULA

 $\text{BrC}_6\text{H}_4\text{COCH}_2\text{Br}$
SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.

SECTION III PHYSICAL DATA

MW - 277.96

BOILING POINT

° F.

VAPOR PRESSURE

mm Hg.

MELTING POINT

° F.

VAPOR DENSITY (Air = 1)

110

 SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

 SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

Insoluble

APPEARANCE AND ODOR

Needle-like crystals

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

N/A

 FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

EXTINGUISHING MEDIA

N/A

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

P-Bromophenacvl Bromide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

Not available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION

Yes

RELEVANT SYMPTOMS OF EXPOSURE

Eye irritation; corneal haziness and pain; burning of throat & eyes; irritation of skin & eyes.

EFFECTS OF CHRONIC EXPOSURE

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - wash mouth, give emetic, get medical aid; wash from eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

With chemical filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

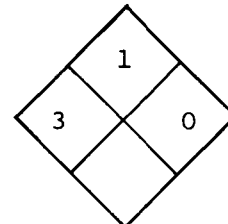
DATE

221-5100B

CAS: 000095567

SJ-78750

PRODUCT DESIGNATION

03-221-6100
O-BromophenolMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

O-Bromophenol

FORMULA

Br C₆H₄OH

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LD ₅₀ -1500 mg/kg subcutaneous - rat						

SECTION III PHYSICAL DATA MW - 178.02

BOILING POINT 195°C.	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 6°C.	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.55		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Soluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
0-bromophenol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE

Eye, skin and mucous membrane irritation, dermatitis, cyanosis.

EFFECTS OF CHRONIC EXPOSURE

Liver damage

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; wash skin & eyes; if swallowed - give emetic, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Put sand and soda ash (9:1) mixture on spill and sweep into box for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Goggles

MECHANICAL (GENERAL)

GLOVES
Butyl Rubber

SPECIAL

RESPIRATOR
Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool, dry place.

OTHER PRECAUTIONS

SIGNATURE

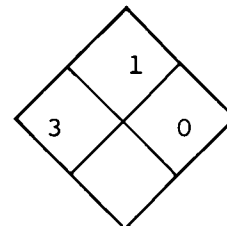
DATE

221-6100B

CAS:000106412

SJ79600

PRODUCT DESIGNATION

03-221-6150
P-BromophenolMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

P-Bromophenol

FORMULA

Br C₆H₄OH

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
TDLO 7200 mg/kg skin mouse						

SECTION III PHYSICAL DATA MW - 173.02

BOILING POINT

° F.

238°C.

VAPOR PRESSURE

mm Hg.

MELTING POINT

° F.

64°C.

VAPOR DENSITY (Air = 1)

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

1.59

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

1.4

APPEARANCE AND ODOR

Crystals

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

None available

FLAMMABLE
(EXPLOSIVE)

UPPER

METHOD USED

LIMITS

LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

P-bromophenol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Eyes, skin and mucous membrane irritation; dermatitis, cyanosis.

EFFECTS OF CHRONIC EXPOSURE

Liver damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; wash from skin, eyes; if swallowed - give emetic, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Pour sand to soda ash (9:1) mixture on spill and sweep into disposal box.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Butyl rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

Protective clothing.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool, dry place.

OTHER PRECAUTIONS

SIGNATURE

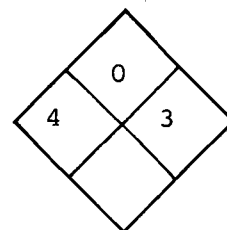
DATE

221-6150B

PRODUCT DESIGNATION

03-221-7100
Bromopicrin

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS	FORMULA
Bromopicrin	Br ₃ CNO ₂

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None available			

SECTION III PHYSICAL DATA MW - 297.77

BOILING POINT 127°C	° F.	VAPOR PRESSURE at 86°C	mm Hg.
MELTING POINT 103°C.	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 2.79		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Oily colorlessl liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA Water, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS May explode on heating.		

PRODUCT DESIGNATION

Bromopicrin

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE

Skin, eye, lung irritatnt, vomiting, bronchitis andpulmonary edema.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

Oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

Self-containedProtective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Protect against physical damage, outside storage recommended.

OTHER PRECAUTIONS

SIGNATURE

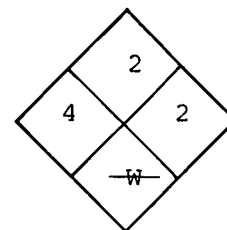
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221-7100B

PRODUCT DESIGNATION

03-221-7600
A-Bromopropionyl Bromide

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS	FORMULA
2 Bromopropionyl Bromide	CH ₃ CHBrCOBr

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 215.89

BOILING POINT 154°C.	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 2.06		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O -		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Do not use water or foam, use carbon dioxide or dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES --		
UNUSUAL FIRE AND EXPLOSION HAZARDS When heated to decomposition point gives off toxic bromide fumes.		

PRODUCT DESIGNATION
Bromopropionyl Bromide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Irritation of eyes and respiratory system; severe internal damage if swallowed; eye and skin burns.

EFFECTS OF CHRONIC EXPOSURE

Bronchial irritation, erosion of teeth.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - drink water, milk of magnesia, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Reacts with water to produce H Br

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

Rubber
RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

Rubber apron

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

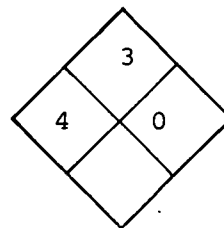
DATE

221-7600B

CAS:000109046

US38500

PRODUCT DESIGNATION

03-221-9100
2-BromopyridineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

 α Bromo-pyridine $\text{BrC}_5\text{H}_4\text{N}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
#1 lowest published lethal dose intraperitoneal - mouse	31.3 mg/kg.					

SECTION III PHYSICAL DATA

MW - 158.01

BOILING POINT

° F.

VAPOR PRESSURE

mm Hg.

193°C

MELTING POINT

° F.

VAPOR DENSITY (Air = 1)

--

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

1.657

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

Slightly soluble

APPEARANCE AND ODOR

Liquid with fish-like odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

N/A

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

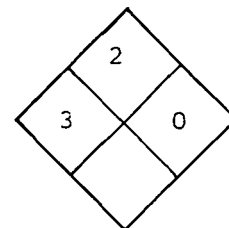
PRODUCT DESIGNATION	
2-Bromopyridine	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
None available	CARCINOGENIC No
PRINCIPLE ROUTES OF ABSORPTION	
Inhalation, ingestion, skin	SKIN AND EYE IRRITATION Severe
REVELANT SYMPTOMS OF EXPOSURE Narcosis, headache, nausea, giddiness, vomiting; oral - liver & kidney damage.	
EFFECTS OF CHRONIC EXPOSURE Occasional vomiting and diarrhea; weight loss and anemia; ocular and facial paralysis.	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - induce vomiting, then gastric lavage; wash skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Use in hood	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	Self-contained breathing apparatus
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

221-9100B

PRODUCT DESIGNATION

03-222-1201
M-Bromotoluene

MATERIAL SAFETY DATA SHEET


SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 3-Bromotoluene	FORMULA $\text{CH}_3\text{C}_6\text{H}_4\text{Br}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 171.04

BOILING POINT 183.7 ° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -39.8 ° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.41	EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble	VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid	

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

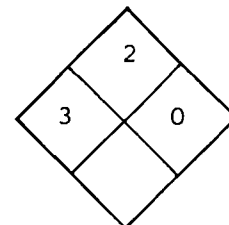
PRODUCT DESIGNATION	
M-Bromotoluene	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
None available	CARCINOGENIC No
PRINCIPLE ROUTES OF ABSORPTION	
Inhalation, ingestion	SKIN AND EYE IRRITATION Severe
RELEVANT SYMPTOMS OF EXPOSURE Eye & respiratory system irritation, severe internal irritation of digestive tract.	
EFFECTS OF CHRONIC EXPOSURE	
--	
EMERGENCY AND FIRST AID PROCEDURES	
Inhalation - rest; if swallowed - give emetic, get medical aid; wash eyes & skin.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	with proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

222-1201B

PRODUCT DESIGNATION

03-222-1231
O-Bromotoluene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2-Bromotoluene

FORMULA

 $\text{CH}_3\text{C}_6\text{H}_4\text{Br}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 171.04

BOILING POINT 181°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -28°C	° F.	VAPOR DENSITY (Air = 1) 5.9
SPECIFIC GRAVITY (H ₂ O = 1) 1.42		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 175°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
O-Bromotoluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION
Inhalation, ingestion

SKIN AND EYE
IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE
Eye & respiratory system irritation, severe internal
irritation of digestive tract.

EFFECTS OF CHRONIC EXPOSURE

EMERGENCY AND FIRST AID PROCEDURES
Inhalation - rest; if swallowed - give emetic, get medical
aid; wash eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

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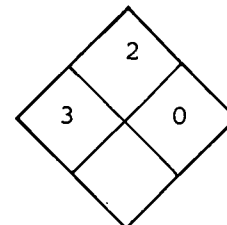
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222-1231B

PRODUCT DESIGNATION

03-222-1261
P-Bromotoluene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	

TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS P-Tolyl Bromide, P-Bromotoluene	FORMULA $\text{CH}_3\text{C}_6\text{H}_4\text{Br}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW-171.04

BOILING POINT 185°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 27°C	° F.	VAPOR DENSITY (Air = 1) 5.9
SPECIFIC GRAVITY (H ₂ O = 1) 1.39		EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Liquid or crystal		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 185°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

P-Bromotoluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION

Severe

RELEVANT SYMPTOMS OF EXPOSURE Eye & respiratory system irritation, severe internal irritation of digestive tract.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - give emetic, get medical aid; wash eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

222-1261B

CAS:000123864

AF73500

03-222-2701

PRODUCT DESIGNATION

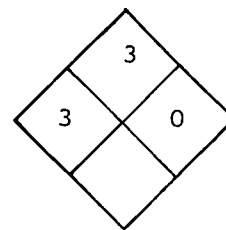
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03-222-2751

03-222-2761

N-Butyl Acetate

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Butyl Acetate

FORMULA

 $\text{CH}_3\text{COOC}_4\text{H}_9$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			7056		mouse	
			See Note			
LDLO oral - human 500 mg/kg			14000		rat	
Lowest published toxic concentration in air						
Inhalation - human 200 PPM						

SECTION III PHYSICAL DATA MW-116.16

BOILING POINT 126°C	° F.	VAPOR PRESSURE at 25°C	mm Hg. 15
MELTING POINT -74°C	° F.	VAPOR DENSITY (Air = 1) 4.0	
SPECIFIC GRAVITY (H ₂ O = 1) 0.88		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER 1 Pts/100 pts H ₂ O		VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR

Colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 72°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 7.6
METHOD USED closed cup		LOWER 1.7
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
N-Butyl Acetate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV-150 PPM, 710 mg/C.M.

CARCINOGENIC NO

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Inhalation, ingestion, skin

IRRITATION Moderate

RELEVANT SYMPTOMS OF EXPOSURE

Eye irritation, salivation, irritation of respiratory passages.

EFFECTS OF CHRONIC EXPOSURE

Fatigue, loss of weight, blood changes.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; inhalation - give oxygen as needed;
wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Can react with oxidizing materials

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper, evaporate in hood, burn paper.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Rubber protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool, well-ventilated place away from source of ignition.

OTHER PRECAUTIONS

SIGNATURE

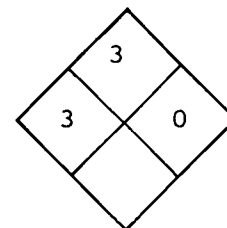
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222-2701B

CAS:000110190

AI40250

PRODUCT DESIGNATION

03-222-2741
Iso-Butyl AcetateMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Isobutyl Acetate

FORMULA

 $\text{CH}_3\text{COOCH}_2\text{CH}(\text{CH}_3)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			15000		rat	
			4763		rabbit	
Note: Lowest published lethal concentration in air						
inhalation - rat 8000 PPM						

SECTION III PHYSICAL DATA MW - 116.16

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
117°C		at 25°C	20
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-99°C		4.0	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.87			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
0.6			

APPEARANCE AND ODOR

Colorless liquid, fruit-like odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
64°F		LOWER
METHOD USED		
CC		
EXTINGUISHING MEDIA		
Alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Iso-Butyl Acetate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV-150 PPM, 700 mg/C.M.

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Moderate

RELEVANT SYMPTOMS OF EXPOSURE Irritation of eyes & respiratory passages, salivation.

EFFECTS OF CHRONIC EXPOSURE

Fatigue, loss of weight, blood changes.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - give oxygen as needed; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Can react with oxidizing materials

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper: evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Overalls, self-contained respirator.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in standard combustible liquids storage cabinet, in tightly closed container.

OTHER PRECAUTIONS

SIGNATURE

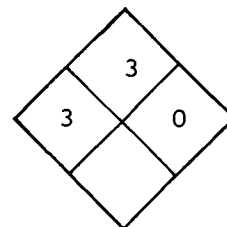
DATE

222-2741B

CAS:000105464

AF73800

PRODUCT DESIGNATION

03-222-2781
Sec-Butyl AcetateMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Sec - Butyl Acetate

FORMULA

 $\text{CH}_3\text{COOCH}(\text{CH}_2)_3\text{C}_2\text{H}_5$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW-116.16

BOILING POINT 113°C	° F.	VAPOR PRESSURE at 25°C	mm Hg.
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1) 4.0	24
SPECIFIC GRAVITY (H ₂ O = 1) 0.87		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER 3 Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Colorless liquid, mild odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 88°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED O.C.		LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Sec Butyl Acetate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV-200 PPM, 950 mg/C.M.

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE

Eye irritation, salivation, irritation of respiratory passages.

EFFECTS OF CHRONIC EXPOSURE

Fatigue, loss of weight, blood changes.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid;
inhalation - oxygen as needed; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Can react with oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

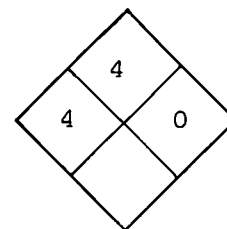
222-2781B

CAS:000513495

EO-32250

See butyl amine

PRODUCT DESIGNATION

03-222-3701
Sec ButylamineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2-aminobutane	FORMULA (C ₂ H ₅)CH ₂ CHNH ₂

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			350		Rat	
			225		dog	
				2500	rabbit	

SECTION III PHYSICAL DATA MW-73.14

BOILING POINT 66°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -104°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 0.72		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER 00 Pts/100 pts H ₂ O		VOLATILE % Vol. % Wt.

APPEARANCE AND ODOR

Colorless liquid ammonia-like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 15°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES Wear goggles & self contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

Sec - Butylamine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

Severe

REVELANT SYMPTOMS OF EXPOSURE

Headache; nose, throat & eye irritations, skin & eye

burns, restlessness, increased pulse & respiratory rates, convulsions.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - drink water, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self contained breathing apparatus

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

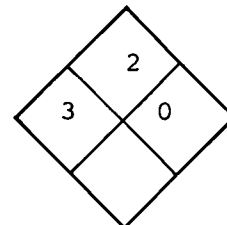
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222-3701B

CAS:000104518

CY90700

PRODUCT DESIGNATION

03-222-4701
N-Butyl BenzeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1-Phenylbutane

FORMULA

 $C_6H_5(CH_2)_3CH_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose						
Oral - rat 5000 mg/kg.						

SECTION III PHYSICAL DATA

MW - 124.31

BOILING POINT

° F.

182°C.

VAPOR PRESSURE

mm Hg.

at 23°C.

1

MELTING POINT

° F.

-82°C.

VAPOR DENSITY (Air = 1)

4.6

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

0.86

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

Insoluble

APPEARANCE AND ODOR

Colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

160°F.

FLAMMABLE
(EXPLOSIVE)UPPER
5.8%

METHOD USED

LIMITS

LOWER
0.8%

OC

EXTINGUISHING MEDIA

Foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

N-Butyl Benzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation (mainly) ingestion

SKIN AND EYE

IRRITATION

Moderate

RELEVANT SYMPTOMS OF EXPOSURE Depression of central nervous system, eye and respiratory system irritation.

EFFECTS OF CHRONIC EXPOSURE

Possible liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - wash mouth, give emetic, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

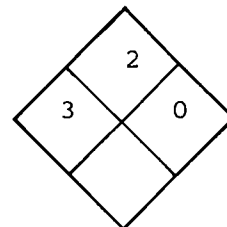
DATE

222-4701B

CAS: 000135988

CY91000

PRODUCT DESIGNATION

03-222-4731
Sec-Butyl BenzeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2 Phenylbutane

FORMULA

 $C_6H_5CH(CH_3)C_2H_5$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			2240		Rat	

SECTION III PHYSICAL DATA

MW-134.25

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
174°C.		at 19°C.	1
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-83°C.		4.62	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.86			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Insoluble			

APPEARANCE AND ODOR

Colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
126°F.		6.9%
METHOD USED		LOWER
O.C.		0.8%

EXTINGUISHING MEDIA

Foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Sec - Butyl Benzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None Available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation (mainly) ingestion

SKIN AND EYE

IRRITATION Moderate

RELEVANT SYMPTOMS OF EXPOSURE Depression of central nervous system, eye and respiratory system irritation.

EFFECTS OF CHRONIC EXPOSURE

Possible liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic, get medical aid; wash from skin and eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Goggles

MECHANICAL (GENERAL)

GLOVES
Rubber

SPECIAL

RESPIRATOR
Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

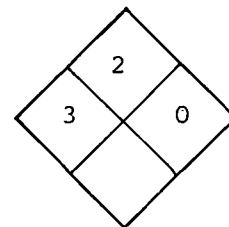
222-4731B

CAS:000098066

CY91200

cf with Tertbutyl Toluene & Ethyl Benz

PRODUCT DESIGNATION

03-222-4761
Tert-Butyl benzeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Tert-butylbenzene

FORMULA

 $C_6H_5C(CH_3)_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO - oral - rat	500 mg/kg					

SECTION III PHYSICAL DATA MW-134.24

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
169°C		at 13°C	1
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-58°C		4.62	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.867			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Insoluble			

APPEARANCE AND ODOR

Colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 5.8 LOWER 0.8
160°F		
METHOD USED		
C.C.		
EXTINGUISHING MEDIA		

Foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

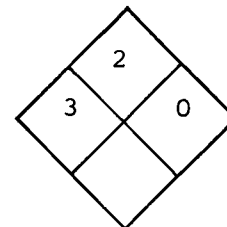
PRODUCT DESIGNATION	
Tert-butylbenzene	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
Not available	CARCINOGENIC No
PRINCIPLE ROUTES OF ABSORPTION	
Inhalation (mainly) ingestion	SKIN AND EYE IRRITATION Moderate
RELEVANT SYMPTOMS OF EXPOSURE	
Depression of central nervous system, eye & respiratory system irritation.	
EFFECTS OF CHRONIC EXPOSURE	
Possible liver & kidney damage.	
EMERGENCY AND FIRST AID PROCEDURES	
Inhalation - rest; if swallowed - wash mouth, give emetic, get medical aid; wash skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Goggles
	GLOVES
SPECIAL	Rubber
	RESPIRATOR
OTHER PROTECTIVE EQUIPMENT	Self contained
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

222-4761B

PRODUCT DESIGNATION

03-222-8701
N-Butyl Chloroacetate

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS N-Butyl Chloroacetate	FORMULA C ₄ H ₉ O ₂ CCH ₂ Cl

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MM - 150.61

BOILING POINT 183°C.	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.08		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES Water may be ineffective.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

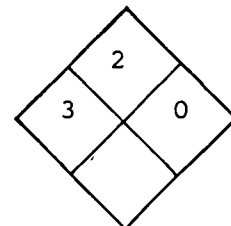
PRODUCT DESIGNATION N-Butyl Chloroacetate	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL None available	CARCINOGENIC No
PRINCIPLE ROUTES OF ABSORPTION Inhalation, ingestion, skin	SKIN AND EYE IRRITATION Moderate to severe
REVELANT SYMPTOMS OF EXPOSURE Eye and respiratory passage irritation, salivation.	
EFFECTS OF CHRONIC EXPOSURE Fatigue, loss of weight, blood changes.	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - give oxygen as needed; if swallowed - give emetic, get medical aid; wash skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID) May react with oxidizing materials.	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

222-8701B

PRODUCT DESIGNATION

033-222-9211
 α-Butylene Bromide

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

1,2 dibromobutane

CH3CH2CHBrCH2Br

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
166°C			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-65°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.82			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Insoluble			
APPEARANCE AND ODOR			
Yellowish liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
N/A		
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water, foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

 α - butylene bromide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION

Moderate

RELEVANT SYMPTOMS OF EXPOSURE

Eye irritation, headache, vomiting, drowsiness, narcosis

EFFECTS OF CHRONIC EXPOSURE

Dermatitis, liver & kidney damage

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - wash mouth, give emetic, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wear self contained breathing apparatus

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With organic vapor resistant canister

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

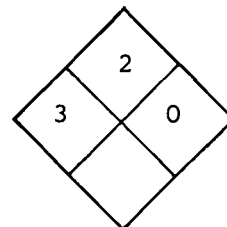
DATE

222-9211B

PRODUCT DESIGNATION

03-222-9241
 β -Butylene Bromide

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2,3 dibromobutane

FORMULA

 $\text{CH}_3\text{CHBrCHBrCH}_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 215.94

BOILING POINT 158°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -34.5°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.78		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water, foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

 β -butylene bromide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION

Moderate

RELEVANT SYMPTOMS OF EXPOSURE

Eye irritation, headache, vomiting, drowsiness,
narcosis, liver & kidney damage.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis, liver & kidney damage

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - wash mouth, give
emetic; get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wear self contained breathing apparatus.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With organic vapor resistant canister

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

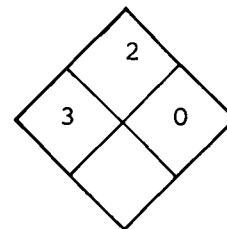
DATE

222-9241B

PRODUCT DESIGNATION

03-222-9271
Iso-butylene Bromide

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS	FORMULA
1,2 dibromoisobutane	(CH ₃) ₂ CHCH ₂ Br

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None available			

SECTION III PHYSICAL DATA

MW - 215.94

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
149°C at 737 ml			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-70.3°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.76			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Insoluble			
APPEARANCE AND ODOR			
Colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
N/A		LOWER
METHOD USED		
EXTINGUISHING MEDIA		
Water, foam, carbon dioxide, dry chemical		
SPECIAL FIRE-FIGHTING PROCEDURES		
Water may be ineffective		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

Iso-butylene bromide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION

Moderate

RELEVANT SYMPTOMS OF EXPOSURE

Eye irritation, headache, vomiting, drowsiness, narcosis, liver & kidney damage.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis, liver & kidney damage

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - wash mouth give emetic, get medical aid; wash from eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wear self contained breathing apparatus.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

With organic vapor resistant canister

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

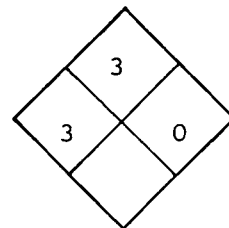
DATE

222-9271B

PRODUCT DESIGNATION

03-223-0302
N-Butyl Formate

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Butyl Methanoate

FORMULA

C₄H₉OOCH₃

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
TCLO - inhalation - human	10418 ppm		2660		rabbit	

SECTION III PHYSICAL DATA MW - 101.12

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
106°C		at 31.6°C	40
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-90°C		3.52	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.911			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
slightly			
APPEARANCE AND ODOR			
colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 8.0%
64°F		
METHOD USED		LOWER 1.7%
CC		
EXTINGUISHING MEDIA		
Alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective

UNUSUAL FIRE AND EXPLOSION HAZARDS

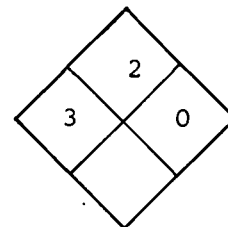
PRODUCT DESIGNATION	
N-Butyl formate	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
CARCINOGENIC No	
None available	
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion	IRRITATION Severe
RELEVANT SYMPTOMS OF EXPOSURE Irritant of mucous membranes & respiratory tract, eye irritation, salivation, vomiting.	
EFFECTS OF CHRONIC EXPOSURE	
--	
EMERGENCY AND FIRST AID PROCEDURES	
Inhalation - rest; if swallowed - give emetic; get medical aid; wash from eyes & skin.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Absorb on paper, evaporate in hood.	
WASTE DISPOSAL METHOD	
Mix with more flammable solvent and burn.	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	Chemical cartridge respirator
OTHER PROTECTIVE EQUIPMENT	
Overalls	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Keep away from sources of ignition.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

223-0302B

PRODUCT DESIGNATION

03-223-2312
Iso-Butyl Iodide

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1 Iodo-2 Methyl Propane	FORMULA (CH ₃) ₂ CHCH ₂ I

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None available			

SECTION III PHYSICAL DATA MW - 184.03

BOILING POINT 121°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -94°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)
1.60		
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE % Vol. % Wt.
Insoluble		
APPEARANCE AND ODOR Colorless liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition point emits toxic fumes of iodates.

PRODUCT DESIGNATION

Isobutyl Iodide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

Not available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

slight

REVELANT SYMPTOMS OF EXPOSURE

Nausea, vomiting, diarrhea, dizziness, visual disturbances,irritability, drowsiness, central nervous system depression.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - wash mouth, give
emetic, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

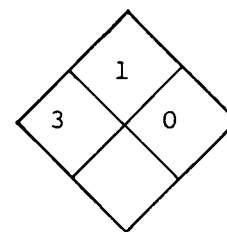
DATE

223-2312B

PRODUCT DESIGNATION

03-223-2332
N-Butyl Iodide

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1-Iodobutane	FORMULA $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{I}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA

MW - 184.03

BOILING POINT 131°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT -103°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.62		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorless to light brown liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA Water, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES --		
UNUSUAL FIRE AND EXPLOSION HAZARDS When heated to decomposition point emits toxic fumes of iodates.		

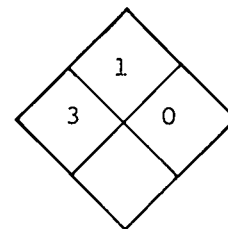
PRODUCT DESIGNATION	
N-butyl iodide	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
Not available	
CARCINOGENIC	
No	
PRINCIPLE ROUTES OF ABSORPTION	
Inhalation, ingestion, skin	
SKIN AND EYE	
IRRITATION Slight	
REVELANT SYMPTOMS OF EXPOSURE	
Nausea, vomiting, diarrhea, dizziness, visual disturbances, irritability, drowsiness, central nervous system depressant.	
EFFECTS OF CHRONIC EXPOSURE	
Dermatitis	
EMERGENCY AND FIRST AID PROCEDURES	
Inhalation - rest; if swallowed - wash mouth, give emetic, get medical aid; wash skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Safety goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

223-2332B

PRODUCT DESIGNATION

03-223-2352
Sec - Butyl Iodide

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2 Iodobutane	FORMULA $C_2H_5CHICH_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW 184.03

BOILING POINT 120°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -104	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.60		EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Colorless to light brown liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA Water, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES --		
UNUSUAL FIRE AND EXPLOSION HAZARDS When heated to decomposition point emits toxic fumes of iodates.		

PRODUCT DESIGNATION

Sec-butyl iodide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

Not available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Slight

RELEVANT SYMPTOMS OF EXPOSURE Nausea, vomiting, diarrhea, dizziness, visual disturbances, irritability, drowsiness, central nervous system depressant

EFFECTS OF CHRONIC EXPOSURE

Dermatitis

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - wash mouth, give emetic; get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

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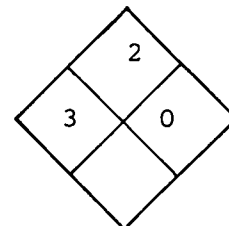
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223-2352A

PRODUCT DESIGNATION

03-223-2372
Tert-Butyl Iodide

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2 iodo-2 methylpropane

FORMULA

 $(\text{CH}_3)_3\text{CI}$

SECTION II HAZARDOUS INGREDIENTS MW - 184.03

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None available			

SECTION III PHYSICAL DATA

BOILING POINT 99°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -34°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.57		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES --		

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition point emits toxic fumes of iodates.

PRODUCT DESIGNATION

Tert-butyl iodide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

Not available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION slight

RELEVANT SYMPTOMS OF EXPOSURE Nausea, vomiting, diarrhea, dizziness, visual disturbances, irritability, drowsiness, central nervous system depression.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - wash mouth, give emetic, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

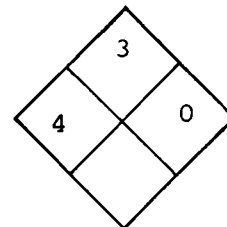
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223-2372B

CAS - 000109740

ET875000

PRODUCT DESIGNATION

03-225-6403
N-ButyronitrileMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

Propyl Cyanide

 C_3H_7CN

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/Kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose				400	Rabbit	
oral - rat 50 mg/kg.			200		Rat	
Lowest published lethal concentration in air						
inhalation - rat 400 PPM.						

SECTION III PHYSICAL DATA

MW - 69.10

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
118°C.		at 15°C.	10
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-113°C.		1.07	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.796			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Slightly soluble			
APPEARANCE AND ODOR			

Colorless liquid, sharp suffocating odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
79°F.		
METHOD USED		LOWER
O.C.		1.65%

EXTINGUISHING MEDIA

Dry chemical, alcohol foam or carbon dioxide.

SPECIAL FIRE FIGHTING PROCEDURES

Protective clothing, self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

N-Butyronitrile

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TWA-TLV-8 PPM, 22 mg/C.M. (NIOSH Value)

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Moderate

RELEVANT SYMPTOMS OF EXPOSURE Dizziness, rapid respiration, headache, drowsiness, drop in blood pressure and pulse, delayed symptoms.

EFFECTS OF CHRONIC EXPOSURE Eye irritation, loss of appetite, weight loss, mental deterioration.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - inhalation of amyl nitrite, induce vomiting, or gastric lavage, wash skin & eyes; inhalation, rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

When heated to decomposition emits highly toxic cyanide fumes.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb with paper towels - evaporate in hood.

WASTE DISPOSAL METHOD

Add excess alcoholic sodium hydroxide, after one hour, evaporate alcohol, then add calcium hypochlorite.

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

Protective apron, full protective clothing.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

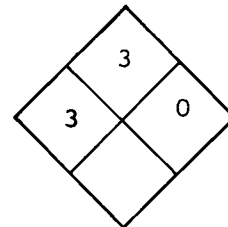
DATE

225-6403B

CAS:000075150

FF66500

PRODUCT DESIGNATION

Carbon Disulfide
03-227-4004MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Carbon Disulfide

FORMULA

CS₂

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
				300	Rabbit	
LDLO - oral - human	14 mg/kg					
LCLO - inhalation - human	4000 ppm/30 min.					
TCLO - inhalation - human	50 mg/C.M. - 7 years					

SECTION III PHYSICAL DATA Mol. Wt. 76.1

BOILING POINT 46°C.	° F.	VAPOR PRESSURE (28°C)	400 mm Hg.
MELTING POINT -110.8°C	° F.	VAPOR DENSITY (Air = 1)	2.6
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.3			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Insoluble			

APPEARANCE AND ODOR

Clear, colorless to faint yellow liquid; strong disagreeable odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA % Vol.

FLASH POINT -22°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 44%
METHOD USED Closed Cup		LOWER 1.3%

EXTINGUISHING MEDIA

Foam ineffective; use dry chemical, carbon dioxide, or other inert gas.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Gives off flammable vapors at low temperatures over a wide range; forms explosive mixtures in air; flash back.

PRODUCT DESIGNATION

Carbon Disulfide (skin)

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 20 ppm, 60 mg/C.M.

CARCINOGENIC No

PRINCIPLE ROUTES OF ADSORPTION

Inhalation and prolonged skin contact

SKIN AND EYE

IRRITATION

RELEVANT SYMPTOMS OF EXPOSURE

Restlessness, blurred vision, nausea, vomiting, headache

EFFECTS OF CHRONIC EXPOSURE

Bizarre sensations in extremities, sensory loss, muscular weakness, memory loss, irritability, blurred vision, insomnia, mental depression, partial blindness,

EMERGENCY AND FIRST AID PROCEDURES

parkinsonian tremor, heart, liver, kidney damage.

Remove from exposure ; apply artificial respiration; give amyl nitrite or sodium nitrite; rest, keep warm; obtain medical attention.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Azides, chlorine, chlorine monoxide, fluorine, nitric oxide, nitrogen dioxide, (permanganates and sulfuric acid), potassium and zinc.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

Provide safe place for burning it. (Do not pour on ground.)

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles, face shield

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

Self-contained breathing apparatus.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Keep away from sources of ignition, good ventilation. Protect against lightening or static electricity.

OTHER PRECAUTIONS

SIGNATURE

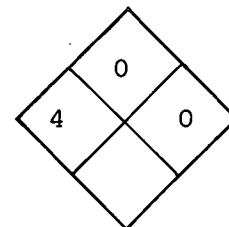
DATE

227-4004B

CAS:000558134

FG47250

PRODUCT DESIGNATION

03-227-4504
Carbon TetrabromideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Tetrabromomethane

FORMULA

C Br₄

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest Published lethaldose						
oral - rat 1000 mg/kg.						
LD50 - subcutaneous - mouse 298 mg/kg						

SECTION III PHYSICAL DATA MW - 331.67

BOILING POINT 190°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT α-48°C, β90°C	° F.	VAPOR DENSITY (Air = 1) 11.4
SPECIFIC GRAVITY (H ₂ O = 1) 3.42		EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O 0.024		VOLATILE % Vol. - % Wt.

APPEARANCE AND ODOR

Colorless solid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Nonflammable	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

--

SPECIAL FIRE FIGHTING PROCEDURES

Self contained respirator if heated in a fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Carbon tetrabromide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 0.1 PPM, 1.4 mg/C.M.

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE Eye and upper respiratory irritation, lung, liver & kidney damage, damage to cornea.

EFFECTS OF CHRONIC EXPOSURE

Liver damage

EMERGENCY AND FIRST AID PROCEDURES Inhalation & rest, get medical aid; if swallowed - give emetic, get medical aid; wash from eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Collect on paper, evaporate on dish in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

227-4504B

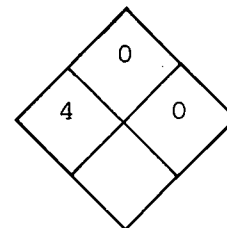
CAS:000056235

FG-49000

PRODUCT DESIGNATION

Carbon Tetrachloride
03-227-4604
03-227-4624
03-227-4664

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Tetrachloromethane

FORMULA

CCl₄

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ ppm	
			ORAL	PERCUT.	SPECIES	CONC.
			2800		Rat	8000
			12800		Mouse	9526/8 hrs.
LDLO - human - oral 43 mg/kg						
TDLO - oral - woman 180 mg/kg			6380		Rabbit	
LCLO - inhalation - human 1000 ppm						
TCLO - inhalation - human 20 ppm.						

SECTION III PHYSICAL DATA Mol. Wt. 153.84

BOILING POINT	° F.	VAPOR PRESSURE	
76.75°C		25°C	113 mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-22.6°C		5.3	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.585			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
0.08			
APPEARANCE AND ODOR			
Colorless liquid, sweetish odor (ethereal).			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
Not flammable		
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Emits toxic fumes.

PRODUCT DESIGNATION
Carbon Tetrachloride (skin)

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
TLV 10 ppm, 25 mg/C.M.

PRINCIPLE ROUTES OF ABSORPTION
Inhalation of vapor, ingestion, sometimes skin absorption

RELEVANT SYMPTOMS OF EXPOSURE
Abdominal pain, nausea, vomiting, dizziness, loss of blood pressure, respiratory slowing, and fall of blood pressure. Delayed symptoms of liver or kidney

EFFECTS OF CHRONIC EXPOSURE
damage.
Liver, kidney damage, anemia, loss of appetite and weight, dermatitis, loss of memory,

EMERGENCY AND FIRST AID PROCEDURES
anorexia.
Remove from exposure, rest, keep warm; if necessary, give artificial respiration. Do not give stimulants. Obtain medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)
Allyl alcohol, aluminum, barium, beryllium, disilane, ethylene, fluorine, alkalies, magnesium, LOX, plutonium, tetrasilane, trisilane, uranium,

HAZARDOUS DECOMPOSITION PRODUCTS
wax, zirconium.
Heated - phosgene (COCl₂)

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Polyvinyl gloves
SPECIAL	RESPIRATOR Organic filter

OTHER PROTECTIVE EQUIPMENT
Self-contained breathing apparatus

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
Protect from physical damage. Store in cool, dry, well-ventilated location away from any area where the fire hazard may be acute.

OTHER PRECAUTIONS

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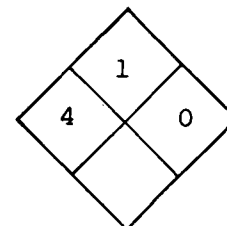
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227-4604B

CAS:000120809

UX10500

PRODUCT DESIGNATION

03-227-5004
CatecholMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Pyrocatechol

FORMULA

 $C_6H_4(OH)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO - oral - human	50 mg/kg		3890 260		Rat Mouse	
			550		Guinea pig	
				800	Rabbit	

SECTION III PHYSICAL DATA MW - 110.11

BOILING POINT 246°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 105°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.34		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER 45 pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Colorless crystal salt

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 261°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED CC		LOWER

EXTINGUISHING MEDIA

Water, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

--

UNUSUAL FIRE AND EXPLOSION HAZARDS

--

PRODUCT DESIGNATION
Catechol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 5 ppm, 20 mg/C.M.

CARCINOGENIC
No

PRINCIPLE ROUTES OF ABSORPTION

Skin, ingestion

SKIN AND EYE

IRRITATION Very severe

RELEVANT SYMPTOMS OF EXPOSURE Central nervous system depression, convulsions

EFFECTS OF CHRONIC EXPOSURE

Blood damage, dermatitis

EMERGENCY AND FIRST AID PROCEDURES Wash eyes and skin; if swallowed - drink water, then
2 tsp. epsom salts in water; get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety glasses

MECHANICAL (GENERAL)

GLOVES
Rubber

SPECIAL

RESPIRATOR
With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

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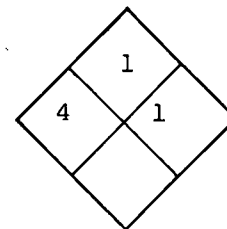
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227-5004B

CAS:000118752

DK68250

PRODUCT DESIGNATION

03-227-7504
ChloranilMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Chloranil

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2,3,5,6 Tetrachloric P-Benzoquinone

FORMULA

OC₆Cl₄O

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO - oral - human	500 mg/kg		4000		Rat	

SECTION III PHYSICAL DATA MW 245.86

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
290°C.			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Yellow crystals

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
None available		LOWER
METHOD USED		

EXTINGUISHING MEDIA

Dry chemical, carbon dioxide, alcohol foam.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Chloranil

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC Yes

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Irritation to skin, eye and mucous membrane,
headache, dizziness.

EFFECTS OF CHRONIC EXPOSURE

May cause cancer of liver or kidneys.

EMERGENCY AND FIRST AID PROCEDURES

Wash skin & eyes; if swallowed - gastric lavage, get
medical aid; inhalation - rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With mechanical filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

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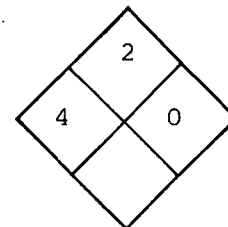
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227-7504B

CAS:000078955

UCO7000

PRODUCT DESIGNATION

03-228-0105
ChloroacetoneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS
1 Chloro 2 PropanoneFORMULA
CH3COCH2Cl

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal concentration in air						
Inhalation - human - 605 PPM/10 minutes.						

SECTION III PHYSICAL DATA MW - 95.53

BOILING POINT 121 ⁰ C.	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT -44.5 ⁰	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.16		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O ∞		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Colorless liquid, pungent odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
None available		
METHOD USED		LOWER
EXTINGUISHING MEDIA		
Alcohol foam		
Water may be ineffective.		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

Emits phosgene on heating to decomposition point.

PRODUCT DESIGNATION

Chloroacetone

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC Neoplastic

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE Irritation of respiratory system and eyes; ingestion - severe internal irritation.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - give emetic, get medical aid; wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

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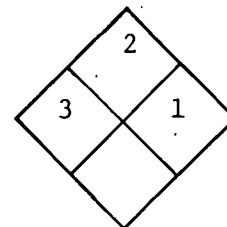
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228-0105B

CA-000107142

AL82250

PRODUCT DESIGNATION

03-228-0605
ChloroacetonitrileMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Chloromethyl Cyanide

FORMULA

ClCH₂CN

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			220		Rat	
LCLO inhalation - rat	250 ppm/4 hrs.					
LDLO - skin - rabbit	71 mg/kg					

SECTION III PHYSICAL DATA

MW-75.50

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
126°C.			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
--			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (____ = 1)	
1.19			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
--			

APPEARANCE AND ODOR

Crystals

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
None available		
METHOD USED		LOWER

EXTINGUISHING MEDIA

Alcohol foam, dry chemical, carbon dioxide, water may be ineffective.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Chloroacetonitrile

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

Mild to moderate

RELEVANT SYMPTOMS OF EXPOSURE

Dizziness, rapid respiration, headache, drowsiness, drop in blood pressure, rapid pulse, unconsciousness.

EFFECTS OF CHRONIC EXPOSURE

Dizziness, weakness, lung congestion, eye irritation, loss of appetite and weight, mental deterioration.

EMERGENCY AND FIRST AID PROCEDURES

Remove from area, give amyl nitrite inhalation every 5 minutes, artificial respiration with oxygen, wash skin & eyes, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

Cyanides

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside or detached storage preferred inside storage in standard liquids storage room.

OTHER PRECAUTIONS

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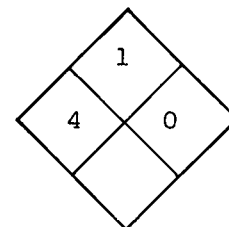
DATE

228-0605B

CAS:000532274

AM63000

PRODUCT DESIGNATION

03-228-1100
 α -chloro-acetophenoneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Phenacyl Chloride

FORMULA

 $\text{Cl CH}_2\text{COC}_6\text{H}_5$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal concentration in air						
inhalation - human 8500 mg/C.M. 10 month exposure						
Lowest published toxic concentration in air						
inhalation - human 93 mg/C.M. - 3 month exposure						
TCLO - inhalation - human - 20 mg/C.M. irritant						

SECTION III PHYSICAL DATA W - 154.6

BOILING POINT 237-247°C	° F.	VAPOR PRESSURE at 0°C	mm Hg.
			0.012
MELTING POINT 56°C	° F.	VAPOR DENSITY (Air = 1)	
		5.2	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

White crystals - fragrant non-persistent odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 244°F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

May react with water or steam to produce toxic and corrosive fumes.

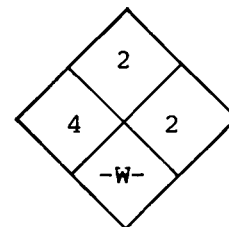
PRODUCT DESIGNATION	
α-chloro-acetophenone	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
TLV-0.05 PPM, 0.3 mg/C.M.	CARCINOGENIC No
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion	IRRITATION Severe
RELEVANT SYMPTOMS OF EXPOSURE Eye irritation, corneal haziness and pain; burning of throat and eyes; irritation of skin and eyes.	
EFFECTS OF CHRONIC EXPOSURE	
--	
EMERGENCY AND FIRST AID PROCEDURES	
Inhalation - remove from exposure, rest, treat for pulmonary edema; if swallowed - wash mouth, give emetic, get medical aid; wash mouth, give emetic, get medical aid; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Absorb on paper towels, evaporate in hood.	
WASTE DISPOSAL METHOD	
Dissolve in a combustible liquid and burn.	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Goggles
	GLOVES
SPECIAL	Rubber
	RESPIRATOR
Self contained	
OTHER PROTECTIVE EQUIPMENT	
Protecting clothing	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

228-1100B

CAS:000079049

A064750

PRODUCT DESIGNATION

02-228-1605
Chloroacetyl chlorideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

 α -chloroacetyl chloride

FORMULA

 ClCH_2COCl

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose inhalation - rat 1000 PPM						

SECTION III PHYSICAL DATA MW - 112.95

BOILING POINT

° F.

106

VAPOR PRESSURE

mm Hg.

MELTING POINT

° F.

-23°C

VAPOR DENSITY (Air = 1)

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

1.50

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

Water white or slightly yellow liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

N/A

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

EXTINGUISHING MEDIA

Do not use water or foam
use carbon dioxide or dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition point gives off
toxic chloride fumes

PRODUCT DESIGNATION

Chloroacetyl Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

50 PPB

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE

Irritation of eyes and respiratory system; severe
internal damage if swallowed; eye & skin burns.

EFFECTS OF CHRONIC EXPOSURE

Bronchial irritation, erosion of teeth.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest, get medical aid; if swallowed -
drink water, milk of magnesia, get medical aid; wash eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

Reacts with water to produce H Cl alcohol & dimethyl sulfoxide

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Cover spill with sodium bicarbonate

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self contained

OTHER PROTECTIVE EQUIPMENT

Rubber apron

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

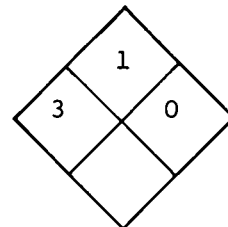
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228-1605B

CAS:000095512

BX05250

PRODUCT DESIGNATION

03-228-2635
O-ChloroanilineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Fast Yellow GC Base

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

O-Chloroaniline

FORMULA

 $\text{Cl}(\text{C}_6\text{H}_4)\text{NH}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			256		Mouse	
				222	Cat	

SECTION III PHYSICAL DATA

MW - 127.58

BOILING POINT

° F.

211°C.

VAPOR PRESSURE

at 46°C.

mm Hg.

1

MELTING POINT

° F.

0°C.

VAPOR DENSITY (Air = 1)

SPECIFIC GRAVITY (H₂O = 1)

1.21

EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O

Insoluble

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

Liquid, sweet odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

None available

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

EXTINGUISHING MEDIA

Water spray, carbon dioxide, alcohol foam.

SPECIAL FIRE FIGHTING PROCEDURES

Self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Vapor may form explosive mixtures in air.

PRODUCT DESIGNATION

O-Chloroaniline

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, skin, ingestion

SKIN AND EYE

IRRITATION Low

REVELANT SYMPTOMS OF EXPOSURE

Headache, nausea, vomiting, jaundic, convulsions

EFFECTS OF CHRONIC EXPOSURE

Severe kidney damage, some liver damage, dermatitis.

EMERGENCY AND FIRST AID PROCEDURES

Remove from exposure; wash skin & eyes; if swallowed -
remove by gastric lavage and cathartics; oxygen as needed.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

Sodium and potassium peroxide, ozone, perchloric acid.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wear protective clothing during cleanup.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in flammable liquids cabinets.

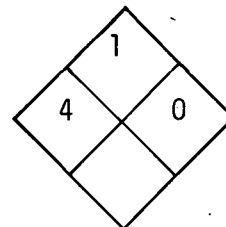
OTHER PRECAUTIONS

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DATE

228-2635B

PRODUCT DESIGNATION

03-228-2665
P-ChloroanilineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS P-Chloroaniline	FORMULA $C_6H_4(Cl)NH_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published toxic concentration in air 44 mg/C.M. inhalation - human			420	3200	Rat	
			100		Mouse	
			100		Bird	
				239	Cat	

SECTION III PHYSICAL DATA MW - 127.58°C.

BOILING POINT 231°C.	° F.	VAPOR PRESSURE at 59°C.	mm Hg.
MELTING POINT 71°C.	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.43		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Soluble in hot water		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Crystalline solid, sweet odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water spray, carbon dioxide, alcohol foam.		
SPECIAL FIRE FIGHTING PROCEDURES Self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS Vapor may form explosive mixtures in air.		

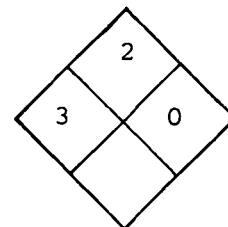
PRODUCT DESIGNATION	
P-Chloroaniline	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
CARCINOGENIC	
None Available No	
PRINCIPLE ROUTES OF ABSORPTION	
SKIN AND EYE	
Inhalation, skin, ingestion IRRITATION Low	
RELEVANT SYMPTOMS OF EXPOSURE	
Cyanosis, headache, blood pressure drop, lethargy, jaundice & anemia, pain in joints, fainting.	
EFFECTS OF CHRONIC EXPOSURE	
Weight loss, anemia, weakness and irritability, possible liver damage, inflammation of kidney, ringing in ears.	
EMERGENCY AND FIRST AID PROCEDURES	
Remove from exposure; wash from skin & eyes; if swallowed - remove by gastric lavage and catharsis; give oxygen as needed.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
Sodium and potassium peroxide, ozone, perchloric acid.	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Wear protective clothing during cleanup.	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	Self-contained
OTHER PROTECTIVE EQUIPMENT	
Protective clothing	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Store in flammable liquids cabinet.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

228-2665B

CAS:000089985

CU50750

PRODUCT DESIGNATION

03-228-3635
O-chlorobenzaldehydeMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2-chlorobenzaldehyde

FORMULA

 $\text{Cl C}_6\text{H}_4\text{CHO}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
#1 lowest published lethal dose intraperitoneal - mouse 10 mg/kg						

SECTION III PHYSICAL DATA MW - 140.57

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
208			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
11°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.29			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Very slightly soluble			
APPEARANCE AND ODOR			
White crystal			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
Not available		LOWER
METHOD USED		
EXTINGUISHING MEDIA		
Foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
O-chlorobenzaldehyde

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION
Ingestion, skin, inhalation

SKIN AND EYE
IRRITATION Moderate

RELEVANT SYMPTOMS OF EXPOSURE Eye irritation, headache, drowsiness, gastroenteric distress,
pulmonary edema

EFFECTS OF CHRONIC EXPOSURE
Anemia, dermatitis

EMERGENCY AND FIRST AID PROCEDURES If swallowed - induce vomiting, get medical aid; wash
eyes & skin; inhalation - rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

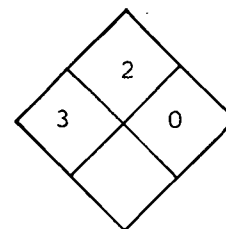
DATE

228-3635B

PRODUCT DESIGNATION

03-228-3665
P-chlorobenzaldehyde

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	

TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS P-chlorobenzaldehyde	FORMULA $\text{Cl C}_6\text{H}_4\text{CHO}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 140.57

BOILING POINT 213°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 48°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Soluble in hot water		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR White needle-like crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
P-chlorobenzaldehyde

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

Not available

CARCINOGENIC
No

PRINCIPLE ROUTES OF ABSORPTION

Ingestion, skin, inhalation of dust

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE

Eye irritation, headache, drowsiness, gastroenteric distress, pulmonary edema

EFFECTS OF CHRONIC EXPOSURE

Anemia, dermatitis

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - induce vomiting, get medical aid; wash eyes & skin; inhalation - rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

Rubber

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

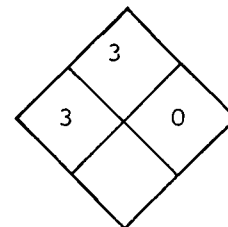
DATE

228-3665B

CAS:000108907

CZ01750

PRODUCT DESIGNATION

03-228-4105
ChlorobenzeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Chlorobenzol

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Phenyl chloride

FORMULA

 C_6H_5Cl

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			2910		Rat	
			2830		Rabbit	

SECTION III PHYSICAL DATA MW - 112.56

BOILING POINT	° F.	VAPOR PRESSURE	10 ^{mm} Hg.
131.7°C		at 22.2°C	
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-55.6°C		3.88	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.113			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Clear colorless liquid with aromatic odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
85°F		7.1%
METHOD USED		LOWER
Closed Cup		1.3%

EXTINGUISHING MEDIA

Carbon dioxide; dry chemical, foam, water spray

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Chlorobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLU - 75 PPM, 350 mg/C.M.

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Yes

REVELANT SYMPTOMS OF EXPOSURE Cyanosis, deep & rapid respiration, irregular pulse,
drowsiness, unconsciousness

EFFECTS OF CHRONIC EXPOSURE

Lung, liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - remove from exposure, rest; if swallowed -
wash mouth, give emetic, get medical aid ; wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb spill with paper towels and evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Polyvinyl alcohol

SPECIAL

RESPIRATOR

Self contained breathing apparatus

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in tightly closed containers and protect against physical damage.

OTHER PRECAUTIONS

SIGNATURE

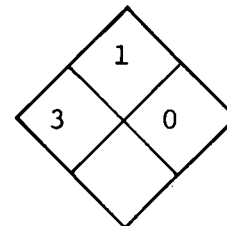
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228-4105B

CAS-000623030

DI28000

PRODUCT DESIGNATION

03-228-4605
P-ChlorobenzonitrileMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

P-Chlorobenzonitrile

FORMULA

ClC6H4CN

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			887		Rat	

SECTION III PHYSICAL DATA MW - 137.57

BOILING POINT 223°C.	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 94°C.	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.

APPEARANCE AND ODOR

White crystals

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

P Chlorobenzonitrile

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Mild to moderate

RELEVANT SYMPTOMS OF EXPOSURE Dizziness, rapid respiration, headache, drowsiness, drop in blood pressure, rapid pulse.

EFFECTS OF CHRONIC EXPOSURE Dizziness, weakness, eye irritation, lung congestion, weight and appetite loss, mental degradation.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - amyl nitrite inhalation, induce vomiting, get medical aid; wash skin & eyes; inhalation - rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

Cyanides

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Protective apron

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside or detached storage preferred, inside storage in standard flammable liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

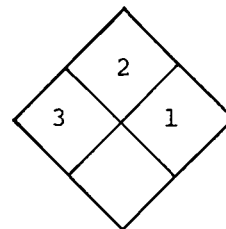
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228-4605B

PRODUCT DESIGNATION

03-228-5635
O-chlorobenzoyl chloride

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	

TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1,2 chlorobenzoyl chloride	FORMULA $\text{Cl C}_6\text{H}_4\text{COCl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None available			

SECTION III PHYSICAL DATA MW - 175.02

BOILING POINT 230	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -4°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE % Vol. % Wt.
Decomposes		
APPEARANCE AND ODOR		

Colorless liquid - fumes

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water spray, foam, carbon dioxide or dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Full protective clothing

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

O-Chlorobenzoyl Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE

Irritates respiratory system, skin & eye burns,
mouth and digestive tract burns.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest, artificial respiration if needed;
if swallowed - drink water, milk of magnesia, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

dimethyl sulfoxide

HAZARDOUS DECOMPOSITION PRODUCTS

When heated, phosgene is produced

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in coll, dry, well-ventilated room.

OTHER PRECAUTIONS

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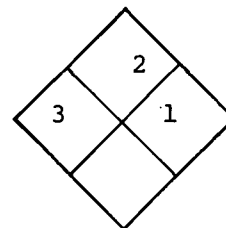
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228-5635B

PRODUCT DESIGNATION

03-228-5665
P-Chlorobenzoyl Chloride

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	

TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1,4 Chlorobenzoyl Chloride	FORMULA $\text{ClC}_6\text{H}_4\text{COCl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None available			

SECTION III PHYSICAL DATA MW-175.02

BOILING POINT 221°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 16°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.38		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE % Vol. % Wt.
<u>Decomposes</u> APPEARANCE AND ODOR Colorless liquid - fumes		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		

EXTINGUISHING MEDIA

Water spray, foam, carbon dioxide or dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

Full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
P-Chlorobenzoyl Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE Irritates respiratory system, skin & eye burns,
mouth and digestive tract burns.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest, artificial respiration as needed;
ingestion-drink water, milk of magnesia, get medical aid; wash eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Dimethyl Sulfoxide

HAZARDOUS DECOMPOSITION PRODUCTS

When heated, phosgene is produced

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool, dry, well-ventilated location.

OTHER PRECAUTIONS

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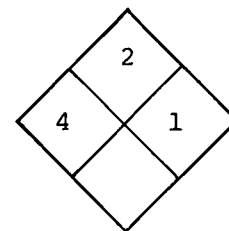
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228-5665B

PRODUCT DESIGNATION

03-228-6105
O-Chlorobenzyl Chloride

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1,2 Chlorobenzyl Chloride

FORMULA

$$\text{ClC}_6\text{H}_4\text{CH}_2\text{Cl}$$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None available			

SECTION III PHYSICAL DATA MW-161.08

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
219°C			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-30°C		5.55	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.27			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Insoluble			
APPEARANCE AND ODOR			
Clear liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
N/A		
METHOD USED		LOWER
EXTINGUISHING MEDIA		
Water spray, dry chemical, carbon dioxide		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

O-Chlorobenzyl Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION High

RELEVANT SYMPTOMS OF EXPOSURE Eye, nose & throat irritation; severe burns to mouth
and digestive tract if swallowed.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES If inhaled - rest; if swallowed - give emetic, get
medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION May undergo exothermic condensation in
presence of copper aluminum, iron, zinc, magnesium, tin and other metals.

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Flush spills with large quantities of water and ventilate area to remove vapors.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

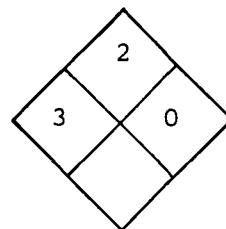
DATE

228-6105B

PRODUCT DESIGNATION

03-228-6605
M-Chlorobromobenzene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1,3 Chlorobromobenzene	FORMULA $\text{ClC}_6\text{H}_4\text{Br}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW 191.47

BOILING POINT 196°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT -21°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.63		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR White crystal			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water spray, carbon dioxide, foam, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES Wear goggles and self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

M Chlorobromobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

Not available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE Cyanosis, deep rapid respiration, irregular pulse,
drowsiness, unconsciousness.

EFFECTS OF CHRONIC EXPOSURE

Lung, liver & kidney damage

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic; get medical aid; wash
eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Polyvinyl alcohol

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

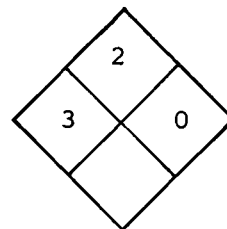
DATE

228-6605B

PRODUCT DESIGNATION

03-228-6665
4 Chlorobromobenzene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	

TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
1, 4 Chlorobromobenzene	
CHEMICAL NAME AND SYNONYMS	FORMULA
P Chlorobromobenzene	ClC ₆ H ₄ Br

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 191.47

BOILING POINT 196°C.	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 67°C.	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.58		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR White crystal		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water spray, carbon dioxide, foam, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES Wear goggles and self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

4 Chlorobromobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

Not available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE

Cyanosis, deep and rapid respiration, irregualr pulse,
drowsiness, unconsciousness.

EFFECTS OF CHRONIC EXPOSURE

Lung, liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic, get
medical aid; wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Polyvinyl Alcohol

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

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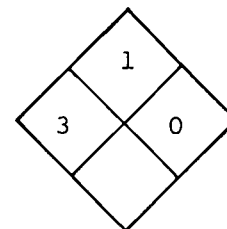
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228-6665B

PRODUCT DESIGNATION

03-228-7105
G-Chlorobutyronitrile

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS G Chlorobutyronitrile	FORMULA Cl CH ₂ CH ₂ CH ₂ CN

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 103.55

BOILING POINT 198° C.	° F.	VAPOR PRESSURE at 96° C.	25 mm Hg.
MELTING POINT -	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.16		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR Liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES Self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

G-Chlorobutyronitrile

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Inhalation, ingestion, skin

IRRITATION

Moderate

RELEVANT SYMPTOMS OF EXPOSURE Dizziness, rapid respiration, headache, drowsiness, drop in blood pressure, pulse, delayed symptoms.

EFFECTS OF CHRONIC EXPOSURE

Eye irritation, loss of appetite and weight, mental deterioration.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - inhalation of amyl nitrite, induce vomiting or gastric lavage; wash skin & eyes; inhalation - rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

When heated to decomposition emits highly toxic cyanide fumes.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb with paper towels - evaporate in hood.

WASTE DISPOSAL METHOD

Add excess alcoholic sodium hydroxide, after one hour, evaporate alcohol, then add calcium hypochloride.

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

Rubber

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

Protective apron.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

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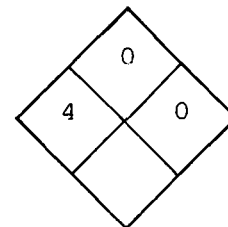
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228-7105B

PRODUCT DESIGNATION

Chloroform (trichloromethane)
03-228-9135
03-228-9215

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Trichloromethane

FORMULA

CHCl₃

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ 2/C.M.	
			ORAL	PERCUT.	SPECIES	CONC.
TCLO - inhalation - human	5000 mg/C.M./7 min.		300		Rat	
TCLO - " "	1000 mg/C.M./1 year				Mouse	28
LDLO oral - human	140 mg/kg				Dog	100
					Rabbit	59

SECTION III PHYSICAL DATA Mol. Wt. 119.39

BOILING POINT 61.26°C	° F.	VAPOR PRESSURE 10.4°C	100 mm Hg.
MELTING POINT 142.2	° F.	VAPOR DENSITY (Air = 1) 4.12	
SPECIFIC GRAVITY (H ₂ O = 1) 1.49845 @ 15°C		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Heavy, water-white, volatile, sweet-tasting liquid with characteristic odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not flammable	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water, foam, CO₂, etc.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Emits toxic and irritating fumes.

PRODUCT DESIGNATION

Chloroform

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 25 ppm, 120 mg/C.M.

Teratogen

CARCINOGENIC

Experimental carcinogen

PRINCIPLE ROUTES OF ABSORPTION

Inhalation of vapor, ingestion

SKIN AND EYE

IRRITATION

Eye damage

RELEVANT SYMPTOMS OF EXPOSURE Vapor has anesthetic properties, causing drowsiness, giddiness, headache, nausea, vomiting, unconsciousness; can cause conjunctivities if vapor contacts eyes.

EFFECTS OF CHRONIC EXPOSURE

Liver damage, followed sometimes by jaundice and cirrhosis of the liver.

EMERGENCY AND FIRST AID PROCEDURES

Remove volatile anesthetic by artificial respiration, make patient rest, keep warm, obtain medical attention.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID) Alkali metals, acetone, aluminum, disilane, magnesium, nitrogen tetroxide, sodium methylate.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Goggles

MECHANICAL (GENERAL)

GLOVES
Rubber

SPECIAL

RESPIRATOR
w/appropriate filter

OTHER PROTECTIVE EQUIPMENT

Self-contained breathing apparatus, protective clothing.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in tightly closed containers away from direct sunlight, protect container against physical damage.

OTHER PRECAUTIONS

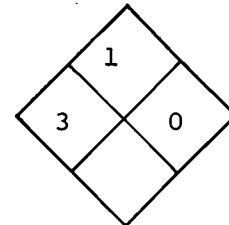
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DATE

228-9135B

PRODUCT DESIGNATION
03-228-9605
2 Chloro-5-Hydroxytoluene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 6 Chloro-M-Cresol	FORMULA Cl (C ₆ H ₃) (OH)CH ₃

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None Available			

SECTION III PHYSICAL DATA

MW - 142.59

BOILING POINT 235°C.	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 66°C.	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O .38		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR White crystals		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

2 Chloro-5-Hydroxytoluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Eye, skin irritation, sensitizes, irritation of digestive tract, C.N.S. depression, convulsions.

EFFECTS OF CHRONIC EXPOSURE

Kidney damage

EMERGENCY AND FIRST AID PROCEDURES

Wash eyes and skin; if swallowed - gastric lavage with olive oil, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

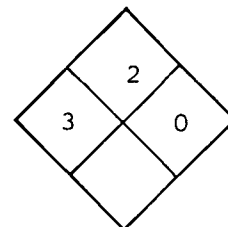
DATE

228-9605B

PRODUCT DESIGNATION

03-229-0206
M-Chloriodobenzene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	

TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 3 Chloriodobenzene	FORMULA $\text{C}_6\text{H}_4\text{Cl}_3\text{I}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 238.47

BOILING POINT 230°C	° F.	VAPOR PRESSURE at 114°C	mm Hg. 14
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Yellow liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water spray, carbon dioxide, foam dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

M-Chloriodobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Cyanosis, deep & rapid respiration; irregular pulse,
drowsiness, unconsciousness.

EFFECTS OF CHRONIC EXPOSURE

Lung, liver & kidney damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic, get
medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Polyvinyl gloves

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

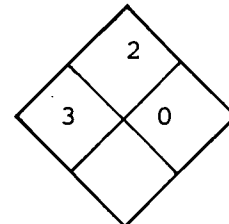
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229-0206B

PRODUCT DESIGNATION

03-229-0236

O-Chloriodobenzene

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2 Chloro Iodobenzene

FORMULA

 $\text{ClC}_6\text{H}_4\text{I}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA

MW - 238.47

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
234			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
0.7			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.95			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Colorless oil

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
N/A		LOWER
METHOD USED		

EXTINGUISHING MEDIA

Water spray, carbon dioxide, foam, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

O-Chloroiodobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE Cyanosis, deep & rapid respiration; irregular pulse, drowsiness, unconsciousness.

EFFECTS OF CHRONIC EXPOSURE

Liver, lung & kidney damage.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - give emetic; get medical aid; wash eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Polyvinyl alcohol

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

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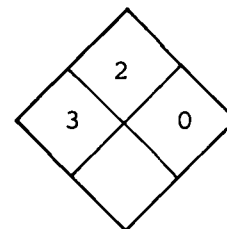
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229-0236B

PRODUCT DESIGNATION

03-229-0266
P-Chloriodobenzene

MATERIAL SAFETY DATA SHEET


SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

4 Chloro Iodobenzene

FORMULA

$\text{ClC}_6\text{H}_4\text{I}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 238.47

BOILING POINT 228	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 56°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.89		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR White solid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water spray, carbon dioxide, foam, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

P-Chloriodobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

Severe

REVELANT SYMPTOMS OF EXPOSURE

Cyanosis, deep and rapid respiration, irregular pulse,

drowsiness, unconsciousness.

EFFECTS OF CHRONIC EXPOSURE

Lung, liver & kidney damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic, get medical aid; wash eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Polyvinyl gloves

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

229-0266B

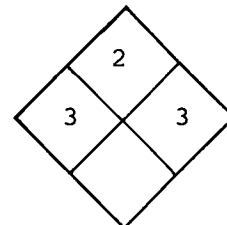
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TX50750

PRODUCT DESIGNATION

03-229-3216

1 Chloro-1-Nitropropane

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1,1 Chloronitropropane

FORMULA

 $C_3H_5ClNO_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO - oral - human - 50 mg/kg			510		Mouse	
			50		Rabbit	

SECTION III PHYSICAL DATA

MW - 123.54

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
140°C		at 20°C	5.8
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
		4.26	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.21			
SOLUBILITY IN WATER	Pts/100 pts H ₂ O	VOLATILE	% Vol. % Wt.
0.8			
APPEARANCE AND ODOR			
Liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
144		LOWER
METHOD USED		
O.C.		

EXTINGUISHING MEDIA

Alcohol foam, water, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

May explode when heated

PRODUCT DESIGNATION

1 Chloro-1-Nitropropane

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 20 PPM, 100 mg/C.M.CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Moderate

RELEVANT SYMPTOMS OF EXPOSURE

Irritation of respiratory system, lung, liver,heart muscle and kidney damage.

EFFECTS OF CHRONIC EXPOSURE

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - induce vomiting, get medical aid; wash skin & eyes; inhalation - give oxygen as needed.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

May explode when heated

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Oxidizing material

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Cover spill with soda ash, spray and mix with water.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Protective clothing made of plastic.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

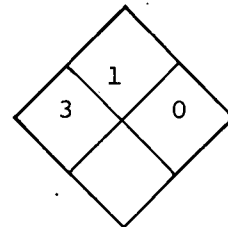
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229-3216B

CAS:000108430

SK24500

PRODUCT DESIGNATION

03-229-4216
M-ChlorophenolMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	

TRADE NAME AND SYNONYMS 3 Chloro-1 hydroxybenzene	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS M chlorophenol	FORMULA Cl C ₆ H ₄ OH

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			570		rat	

SECTION III PHYSICAL DATA MW - 128.56

BOILING POINT 214°C.	° F.	VAPOR PRESSURE at 44°C.	mm Hg.
MELTING POINT 33°C.	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.27		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 2.6		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Needle-like crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
M-Chlorophenol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL None available CARCINOGENIC Neoplasti

PRINCIPLE ROUTES OF ABSORPTION SKIN AND EYE
Inhalation, ingestion, skin IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE Eye skin and mucous membrane irritation,
dermatitis, cyanosis.

EFFECTS OF CHRONIC EXPOSURE
Liver damage.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; wash from skin & eyes; if swallowed -
give emetic, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Put a mixture of sand 9 and 1 soda ash. Put into box for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Butyl Rubber
SPECIAL	RESPIRATOR Self-contained

OTHER PROTECTIVE EQUIPMENT
Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
Store in cool, dry place.

OTHER PRECAUTIONS

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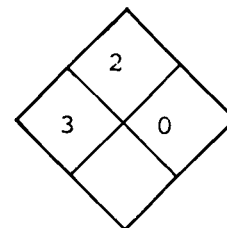
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229-4216B

CAS:000095578

SK26250

PRODUCT DESIGNATION

03-229-4246
O-ChlorophenolMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

2 Chloro-1 Hydroxybenzene

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

O-chlorophenol

FORMULA

Cl C₆H₄OH

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			670		Rat	
			670		Mouse	
			440		Mammal	

SECTION III PHYSICAL DATA

MW-128.56

BOILING POINT 176°C.	° F.	VAPOR PRESSURE at 12°C.	mm Hg.
MELTING POINT 7°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 2.8		VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR

Colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 147°F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide - dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
O-Chlorophenol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
None available

CARCINOGENIC Neoplastic

PRINCIPLE ROUTES OF ABSORPTION
Inhalation, ingestion, skin

SKIN AND EYE
IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE Eye, skin and mucose membrane irritation dermatitis, cyanosis.

EFFECTS OF CHRONIC EXPOSURE
Liver damage.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; wash from skin & eyes; if swallowed -
give emetic, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Put sand-soda ash (9:1) mixture on spill and sweep into box for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Goggles

MECHANICAL (GENERAL)

GLOVES
Butyl rubber

SPECIAL

RESPIRATOR
Self-contained

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool, dry place.

OTHER PRECAUTIONS

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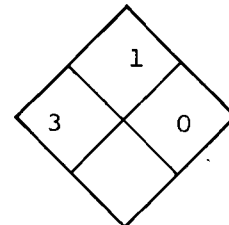
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229-4246B

CAS:000106489

SK28000

PRODUCT DESIGNATION

03-229-4276
P-ChlorophenolMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

P-Chlorophenol

FORMULA

Cl C₆H₄OH

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ g/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			500		Rat	

SECTION III PHYSICAL DATA MW - 128.56

BOILING POINT 217°C.	° F.	VAPOR PRESSURE at 50°C.	1 mm Hg.
MELTING POINT 43°C.	° F.	VAPOR DENSITY (Air = 1)	4.43
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.31			
SOLUBILITY IN WATER Pts/100 pts H ₂ O 2.7		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Needle-like crystals, straw colored, unpleasant odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 250°F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Alcohol foam, dry chemical, carbon dioxide.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

P-Chlorophenol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE

Eye, skin and mucous membrane irritation dermatitis, cyanosis.

EFFECTS OF CHRONIC EXPOSURE

Liver damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; wash from skin & eyes. If swallowed - give emetic, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Pour a mixture of sand to soda ash (9:1) on spill and sweep into box for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Butyl Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool, dry place.

OTHER PRECAUTIONS

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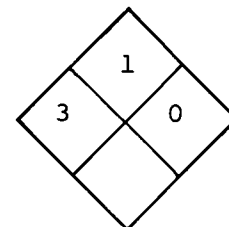
DATE

229-4276B

PRODUCT DESIGNATION

03-229-4716
M-Chlorophenyl Isocyanate

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

M-Chlorophenyl Isocyanate

FORMULA

ClC6H4NCO

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/CM		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
TCLO - ocular-human 1 ppm/1 minute eye			4760		Rat	
			530		Mouse	

SECTION III PHYSICAL DATA MW - 153.6

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
101° C. at 30 min.		at 77° C.	10
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-4° C.			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Water white liquid.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
one available		LOWER
METHOD USED		

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Powerful lachrymater.

PRODUCT DESIGNATION

M-Chlorophenyl Isocyanate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Skin, eyes and mucous membrane irritation.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES Inhalation - oxygen as needed; if swallowed - induce vomiting, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

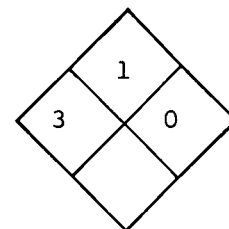
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PRODUCT DESIGNATION

03-229-4746
O-Chlorophenyl Isocyanate

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS O-Chlorophenyl Isocyanate	FORMULA Cl C ₆ H ₄ NCO

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 153.6

BOILING POINT 106° C. at 30 min.	° F.	VAPOR PRESSURE at 77° C.	10 mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES Wear self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS Powerful lachrymater		

PRODUCT DESIGNATION
O-Chlorophenyl Isocyanate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Irritation of skin, eyes and mucous membrane.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES Inhalation - oxygen as needed; if swallowed - induce vomiting, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATION

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

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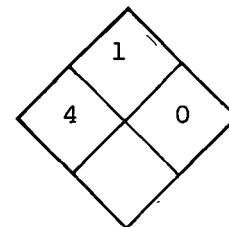
CAS:000096242

TY40250

PRODUCT DESIGNATION

03-229-6466
3-Chloro, 1,2 Propanediol

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

 α Chlorohydrin

FORMULA

 $\text{ClCH}_2\text{CHOHCH}_2\text{OH}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			150		Rat	
				5	Mouse	
			160		Mouse	

SECTION III PHYSICAL DATA MW 110.54

BOILING POINT 213°C decomposes	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.33		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts. H ₂ O		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

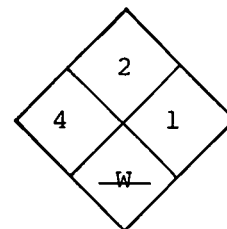
PRODUCT DESIGNATION 3 Chloro - 1,2 Propanediol	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL None available	CARCINOGENIC NO
PRINCIPLE ROUTES OF ABSORPTION Inhalation, ingestion, skin	SKIN AND EYE IRRITATION Moderate
REVELANT SYMPTOMS OF EXPOSURE eye and nasal irritation, nausea, vomiting, giddiness, dizziness, incoordination, coma	
EFFECTS OF CHRONIC EXPOSURE Nausea, vomiting, abdominal pain	
EMERGENCY AND FIRST AID PROCEDURES Wash eyes and skin; if swallowed - give emetic; get medical aid; inhalation - rest, give oxygen as needed .	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

229-6466B

PRODUCT DESIGNATION

03-229-7716
β-Chloropropionyl Chloride

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 3 Chloropropionyl chloride	FORMULA $\text{CH}_2\text{ClCH}_2\text{COCl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None available			

SECTION III PHYSICAL DATA MW - 126.98

BOILING POINT 144°C	° F.	VAPOR PRESSURE at 44°C	mm Hg. 18
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.33		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

 β Chloropropionyl Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE Cyanosis, coughing, headache, pulmonary edema, ulceration of skin, dizziness.

EFFECTS OF CHRONIC EXPOSURE Erosion of teeth, bronchial irritation and chronic cough.

EMERGENCY AND FIRST AID PROCEDURES Ingestion - drink water, milk of magnesia, get medical aid; inhalation - artificial respiration as needed; wash eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID) May react violently with water, alcohol, and dimethyl sulfoxide.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

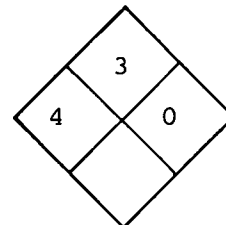
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CAS:000109091

US59500

PRODUCT DESIGNATION

03-229-9216
2 ChloropyridineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

 α chloropyridine

CHEMICAL NAME AND SYNONYMS

FORMULA

2- chloropyridine

 C_5H_4NCl

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			107		Mouse	
LCLO - inhalation - rat	250 ppm/7 hrs.			64	Rabbit	

SECTION III PHYSICAL DATA

MW 113.55

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
170°C		at 13°C	
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
--		3.93	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.21			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Soluble			
APPEARANCE AND ODOR			
Oil with fish-like odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
N/A		LOWER
METHOD USED		
EXTINGUISHING MEDIA		
Alcohol foam, carbon dioxide, dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

2 Chloropyridine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

Severe

RELEVANT SYMPTOMS OF EXPOSURE

Narcosis, headache, nausea, giddiness, vomiting;

oral - liver & kidney damage.

EFFECTS OF CHRONIC EXPOSURE

Occasional vomiting and diarrhea; weight loss & anemia;

ocular and facial paralysis.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - induce vomiting,
then gastric lavage; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May react with oxidizing materials

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

Use in hood

MECHANICAL (GENERAL)

SPECIAL

OTHER PROTECTIVE EQUIPMENT

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

GLOVES

Rubber

RESPIRATOR

Self-contained breathing apparatus

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

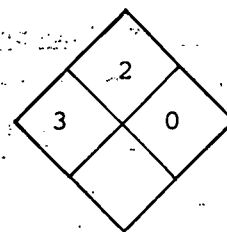
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229-9216B

PRODUCT DESIGNATION

03-230-0307
M-Chlorotoluene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 3 Chlorotoluene	FORMULA $\text{CH}_3\text{C}_6\text{H}_4\text{Cl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA

BOILING POINT 162°C	° F.	VAPOR PRESSURE at 43°C	MW - 126.58	mm Hg.
MELTING POINT -48°C	° F.	VAPOR DENSITY (Air = 1)		10
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)		
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol.	% WT.

APPEARANCE AND ODOR

Colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

M-Chlorotoluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE

Eye & respiratory system irritation, severe internal

damage, narcotic effect

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic,
get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

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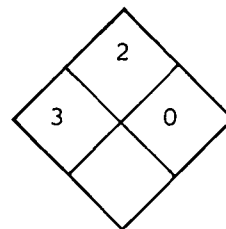
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PRODUCT DESIGNATION

03-230-0337
O-Chlorotoluene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2 Chlorotoluene

FORMULA

$$\text{CH}_3\text{C}_6\text{H}_4\text{Cl}$$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW 126.58

BOILING POINT 159°C	° F.	VAPOR PRESSURE at 43°C	10 mm Hg.
MELTING POINT -37°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.08		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR Colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
None available		LOWER
METHOD USED		
EXTINGUISHING MEDIA		
Alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		
--		
UNUSUAL FIRE AND EXPLOSION HAZARDS		
--		

PRODUCT DESIGNATION
O-Chlorotoluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 50 PPM, 250 mg/C.M.

CARCINOGENIC

Neoplastic

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Eye and respiratory system irritation, severe internal damage.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic, get medical aid;
wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

230-0337B

PRODUCT DESIGNATION

P chlorotoluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Eye & respiratory system irritation, severe
internal damage if swallowed.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic, get
medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

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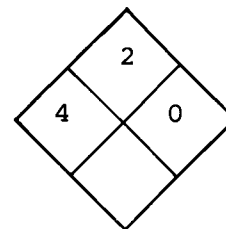
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230-0367B

CAS-000091645

GN42000

PRODUCT DESIGNATION

03-230-3307
CoumarinMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

1,2 Benzopyrene

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Coumarin

FORMULA

 $C_9H_6O_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO - oral - human	50 mg/kg		293		Rat	
			196	242	Mouse	
			202		Guinea Pig	

SECTION III PHYSICAL DATA

MW-146.15

BOILING POINT

299°C.

° F.

VAPOR PRESSURE

at 106°C.

.1 mm Hg.

MELTING POINT

70°C.

° F.

VAPOR DENSITY (Air = 1)

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

0.25

APPEARANCE AND ODOR

Orthorhombic crystals with fragrant odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

None available

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

EXTINGUISHING MEDIA

Dry chemical, carbon dioxide

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Coumarin

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

Yes

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION

Slight

RELEVANT SYMPTOMS OF EXPOSURE

May cause excessive bleeding.

EFFECTS OF CHRONIC EXPOSURE

Disturbs clotting mechanism of the blood.

EMERGENCY AND FIRST AID PROCEDURES

Wash skin & eyes; if swallowed - gastric lavage, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

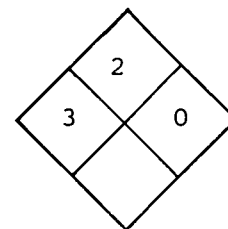
DATE

230-3307B

CAS: 000098828

GR85750

PRODUCT DESIGNATION

03-230-5307
CumeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Iso-propylbenzene

FORMULA

 $(CH_3)_2CHC_6H_5$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ PPM	
			ORAL	PERCUT.	SPECIES	CONC.
TCLO - inhalation - human	200 PPM irritant		1400		Rat	8000 - 4 hr
lowest published lethal concentration in air						
inhalation - mouse 2000 PPM						

SECTION III PHYSICAL DATA

MW - 120.19

BOILING POINT 152°C	° F.	VAPOR PRESSURE at 38.3°C	mm Hg.
MELTING POINT -96°C	° F.	VAPOR DENSITY (Air = 1)	4.2
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Colorless liquid, sharp aromatic odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 96°F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 6.5
METHOD USED Closed Cup		LOWER 0.9

EXTINGUISHING MEDIA

Foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self-contained breathing apparatus

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Cumene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 50 PPM, 245 mg/Kg

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Skin and eye irritant, central nervous system depressant, dizziness

EFFECTS OF CHRONIC EXPOSURE

Possible kidney damage

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - wash mouth, give emetic, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper, evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Protect against physical damage - outside storage preferred, inside storage in flammable liquid storage cabinet.

OTHER PRECAUTIONS

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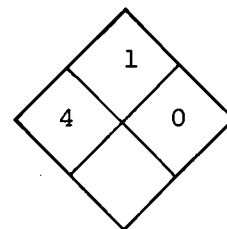
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230-5307B

CAS:000108394

G061250

PRODUCT DESIGNATION

M-Cresol
03-230-4307MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

M-Methyl Phenol

FORMULA

CH3C6H4OH

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			242	620	Rat	
				2050	Rabbit	
				828	Mouse	

SECTION III PHYSICAL DATA Mol. Wt. 108.1

BOILING POINT 202.8°C	° F. ~397	VAPOR PRESSURE 52°C	1 mm Hg.
MELTING POINT 12°C (53.6)	° F.	VAPOR DENSITY (Air = 1) 3.72	
SPECIFIC GRAVITY (H ₂ O = 1) 1.034		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Colorless to yellowish liquid, phenolic odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 202°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER 1.1

EXTINGUISHING MEDIA

Water spray, dry chemical, foam, or carbon dioxide.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

M-Cresol (skin)

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 5 ppm, 22 mg/C.M.

CARCINOGENIC Neoplastic

PRINCIPLE ROUTES OF ABSORPTION

Inhalation or percutaneous absorption of liquid

SKIN AND EYE

IRRITATION Moderate to severe

REVELANT SYMPTOMS OF EXPOSURE Vomiting, collapse, pulmonary edema, nausea, hyperpnea, cyanosis, sweating, intense thirst, convulsions, diarrhea, and hyperactivity.

EFFECTS OF CHRONIC EXPOSURE Relatively same as above - may result in liver or kidney damage; also dermatitis.

EMERGENCY AND FIRST AID PROCEDURES Remove from exposure; body contact - use large amounts of water to wash or irrigate. Skin or mucous membranes - also apply 10% ethyl alcohol or castor oil after washing. Obtain medical attention.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper - evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained breathing apparatus

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool, dry, well-ventilated location, away from any area where the fire hazard may be acute.

OTHER PRECAUTIONS

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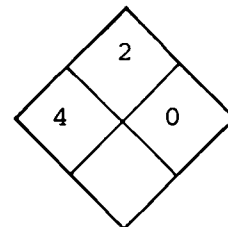
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230-4307B

CAS:000095487

G063000

PRODUCT DESIGNATION

03-230-4347
O-CRESOLMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

O Hydroxy Toluene

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

O Methyl Phenol

FORMULA

 $\text{CH}_3\text{C}_6\text{H}_4\text{OH}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			121	1100	Rat	
					Rabbit	
			344		Mouse	

SECTION III PHYSICAL DATA

MW 108.13

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
191°C		at 25°C	0.25
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
31°C		3.72	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.05			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
2.5			
APPEARANCE AND ODOR			

Colorless liquid with sweet tarry odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
178		
METHOD USED		LOWER
C.C.		1.35

EXTINGUISHING MEDIA

Carbon dioxide, dry chemical foam, water spray

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

O-Cresol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 5 PPM, 22 mg/C.M.

CARCINOGENIC Neoplastic

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Moderate to severe

REVELANT SYMPTOMS OF EXPOSURE Headache, dizziness, nausea, vomiting, stomach pain, exhaustion, irritation to respiratory system, eye burns, coma

EFFECTS OF CHRONIC EXPOSURE

Liver or kidney damage, dermatitis

EMERGENCY AND FIRST AID PROCEDURES If swallowed - induce vomiting, give vegetable oil, get medical aid; if inhaled - rest; wash eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper, evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

Self-contained breathing apparatus

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool, dry, well-ventilated area

OTHER PRECAUTIONS

SIGNATURE

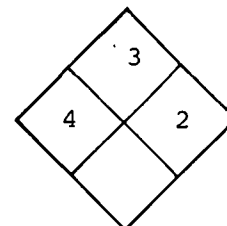
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230-4347B

CAS:000123739

GP96250

PRODUCT DESIGNATION

03-230-4807
CrotonaldehydeMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

B-Methylacrolein

CHEMICAL FAMILY

Aldehyde

CHEMICAL NAME AND SYNONYMS

2 Butenal

FORMULA

 $\text{CH}_3(\text{CH})_2\text{CHO}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/Kg		LC ₅₀ mg/C.M.	
			ORAL	PERCUT.	SPECIES	CONC.
			300		Rat	4000-2H
Note:				380	Rabbit	
Lowest published toxic concentration in				30	Guinea pig	
air			240		Mouse	
inhalation - human 4.1 PPM						

SECTION III PHYSICAL DATA MW - 70.09

BOILING POINT 104°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -76°C	° F.	VAPOR DENSITY (Air = 1) 2.41
SPECIFIC GRAVITY (H ₂ O = 1) 0.85		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O 18		VOLATILE % Vol. % Wt.

APPEARANCE AND ODOR

Colorless liquid, very irritating odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 55	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 15.5 %
METHOD USED Closed Cup		LOWER 2.1 %
EXTINGUISHING MEDIA		

Alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Crotonaldehyde

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 2 PPM, 6 mg/c.m.

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION

Moderate to severe

RELEVANT SYMPTOMS OF EXPOSURE Eye & respiratory system irritation, severe gastroenteric distress, pulmonary edema.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis, weight loss

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - induce vomiting, get medical aid; inhalation - give oxygen as needed; wash eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

At elevated temperatures

INCOMPATIBILITY (MATERIALS TO AVOID)

Avoid - amines, ammonia, hydroxides

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper towels; evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool place away from sources of ignition and heat.

OTHER PRECAUTIONS

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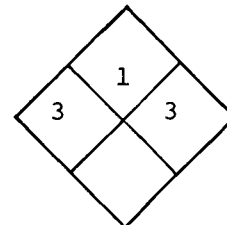
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230-4807B

CAS:000420042

GS59500

PRODUCT DESIGNATION

03-230-6307
CyanamideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

Hydrogen Cyanamide
CHEMICAL NAME AND SYNONYMS

FORMULA

Cyanamide

 H_2NCN

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			125		Rat	

SECTION III PHYSICAL DATA MW - 42.05

BOILING POINT 260°C.	° F.	VAPOR PRESSURE at 140°C.	19 mm Hg.
MELTING POINT 45°C.	° F.	VAPOR DENSITY (Air = 1) 1.45	
SPECIFIC GRAVITY (H ₂ O = 1) 1.07		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Very soluble		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR Deliquescent Crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 285 ⁰ F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water spray, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES Self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

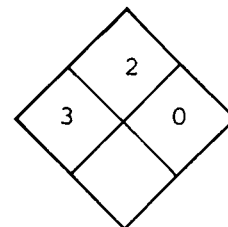
PRODUCT DESIGNATION Cyanamide	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL TLV 2 mg/C.M. CARCINOGENIC No	
PRINCIPLE ROUTES OF ABSORPTION Inhalation, ingestion, skin	SKIN AND EYE IRRITATION Severe
RELEVANT SYMPTOMS OF EXPOSURE Irritation of mucous membranes, dermatitis, flushing of face, headache, dizziness.	
EFFECTS OF CHRONIC EXPOSURE Dermatitis	
EMERGENCY AND FIRST AID PROCEDURES If swallowed - induce vomiting, get medical aid; wash skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION Polymerizes at 122°C.	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Collect by sweeping with a broom onto a sheet of paper.	
WASTE DISPOSAL METHOD Dispose by burning the paper.	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Long rubber gloves
SPECIAL	RESPIRATOR Self-contained
OTHER PROTECTIVE EQUIPMENT Protective clothing	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE Store in cool, dry place.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

230-6307B

CAS:000108930

GV78750

PRODUCT DESIGNATION

03-230-7447
CyclohexanolMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Cyclohexyl alcohol

FORMULA

 $C_6H_{11}OH$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO-oral-human 500 mg/kg			2060		Rat	
1, lowest published toxic concentration in air						
inhalation - human 75 ppm irritant						

SECTION III PHYSICAL DATA

MW - 100.16

BOILING POINT 161°C	° F.	VAPOR PRESSURE at 34°C	3.5 mm Hg.
MELTING POINT 25°C	° F.	VAPOR DENSITY (Air = 1) 3.46	
SPECIFIC GRAVITY (H ₂ O = 1) 0.96		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 3.6		VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR

Oily colorless liquid with odor like camphor and alcohol.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 154°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED CC		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Cyclohexanol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 50 PPM, 200 mg/C.M.

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION mild

RELEVANT SYMPTOMS OF EXPOSURE

Tremors, narcosis, hypothermia

EFFECTS OF CHRONIC EXPOSURE

Possible liver & kidney damage

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; inhalation rest; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper, evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Cannister mask

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

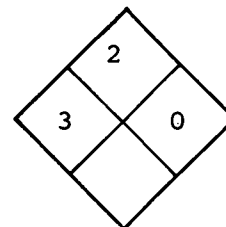
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230-7447B

CAS:000108941

GW10500

PRODUCT DESIGNATION

03-230-7507
CyclohexanoneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Pimelic ketone

FORMULA

 $\text{CO}(\text{CH}_2)_4\text{CH}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/Kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			1620		Rat	
				1000	Rabbit	
1 lowest published toxic concentration in air inhalation - human 75 PPM - irritant						
2 lowest published lethal concentration in air inhalation - rat 2000 PPM						

SECTION III PHYSICAL DATA

MW 98.16

BOILING POINT 156°C	° F.	VAPOR PRESSURE 38.7°C	10 mm Hg.
MELTING POINT -45°C	° F.	VAPOR DENSITY (Air = 1) 3.4	
SPECIFIC GRAVITY (H ₂ O = 1) 0.95		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O slight		VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR

Colorless liquid - acetone-like odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 111°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 8.1%
METHOD USED Closed Cup		LOWER 1.1%

EXTINGUISHING MEDIA

Alcohol foam, dry chemical, carbon dioxide

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Cyclohexanone

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 50 PPM, 200 mg/C.M.

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE

Narcotic symptoms, tearing, lowering of body temperature
and heart rates, opacity of cornea.

EFFECTS OF CHRONIC EXPOSURE

Liver and kidney damage, dermatitis

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - gastric lavage, medical aid; wash skin & eyes;
inhalation - give oxygen as needed.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper; allow to evaporate in hood.

WASTE DISPOSAL METHOD

Mix with a more flammable solvent and burn.

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Work clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool, dry place.

OTHER PRECAUTIONS

SIGNATURE

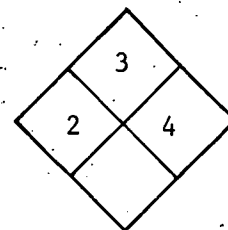
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230-7507B

CAS:000110838

GW25000

PRODUCT DESIGNATION

03-230-7607
CyclohexeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

Tetrahydrobenzene

CHEMICAL NAME AND SYNONYMS

FORMULA

Cyclohexene

C₆H₁₀

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			2300		Mouse	

SECTION III PHYSICAL DATA

MW - 82.14

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
83°C.			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-104°C.		2.8	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.81			
SOLUBILITY IN WATER Pts./100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Very slightly soluble			
APPEARANCE AND ODOR			
Colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
<20°F.		
METHOD USED		LOWER

EXTINGUISHING MEDIA

Dry chemical, carbon dioxide.

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Forms explosive peroxides with oxygen.

PRODUCT DESIGNATION
Cyclohexene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 300 PPM, 1015 mg/C.M.

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Yes

RELEVANT SYMPTOMS OF EXPOSURE

Irritation of eyes and mucous membranes.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - induce vomiting, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

Reacts with oxygen to produce explosive peroxides shelf life - 12 months.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety glasses

MECHANICAL (GENERAL)

GLOVES

Rubber gloves

SPECIAL

RESPIRATOR

Industrial canister type

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

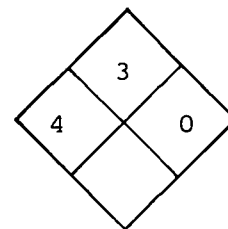
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230-7607B

CAS:000108918

GX07000

PRODUCT DESIGNATION

03-230-7807
CyclohexylamineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Aminocyclohexane

FORMULA

 $C_6H_{13}N$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/Kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO - oral - human	50 mg/kg		710		Rat	
				320	Rabbit	

SECTION III PHYSICAL DATA MW-99.20

BOILING POINT ° F.	VAPOR PRESSURE mm Hg.
135°C	
MELTING POINT ° F.	VAPOR DENSITY (Air = 1)
-18°C	3.42
SPECIFIC GRAVITY (H ₂ O = 1)	EVAPORATION RATE (_____ = 1)
0.87	
SOLUBILITY IN WATER Pts/100 pts H ₂ O	VOLATILE % Vol. % Wt.

APPEARANCE AND ODOR

Colorless to yellow ammonia-like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 90°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED O.C.		LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self-contained breathing
apparatus. Water may be ineffective

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Cyclohexylamine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 10 PPM, 40 mg/C.M.

Mutagen

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

Severe

REVELANT SYMPTOMS OF EXPOSURE

Drowsiness, anxiety, nausea, vomiting, slurred speech,

convulsions and dermatitis

EFFECTS OF CHRONIC EXPOSURE

Weight loss, corneal opacity.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; wash eyes & skin; inhalation - rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Butyl Rubber Gloves

SPECIAL

RESPIRATOR

Self-contained breathing apparatus

OTHER PROTECTIVE EQUIPMENT

All purpose cannister mask, working clothing.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside or detached storage preferred; protect container against physical damage.

OTHER PRECAUTIONS

SIGNATURE

DATE

230-7807B

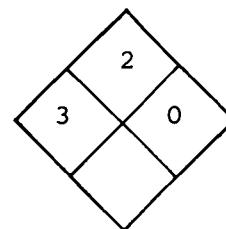
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QJ31500

PRODUCT DESIGNATION

03-234-0108

Decahydronapthalene

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Decalin

FORMULA

 $C_{10}H_{18}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
TCLO - inhalation - human	100 PPM - irritant		4170		Rat	
lowest published lethal	concentration in air					
inhalation - rat - 500 PPM - 2 hrs.						

SECTION III. PHYSICAL DATA MW - 138.25

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
193°C		at 23°C	1
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-43°C		4.8	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.9			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Insoluble			
APPEARANCE AND ODOR			
Water white liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE)	UPPER
136°F		4.9 %
METHOD USED	LIMITS	LOWER
		0.7 %

EXTINGUISHING MEDIA

Foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Decahydronaphthalene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 25 PPM (suggested)

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Lung congestion

EFFECTS OF CHRONIC EXPOSURE

Liver and kidney damage, cataract

EMERGENCY AND FIRST AID PROCEDURES If swallowed - get medical aid; inhalation - give oxygen as needed; wash eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

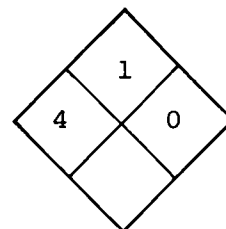
DATE

234-0108B

PRODUCT DESIGNATION

03-234-4108
3,4 - diaminoanisoie
dihydrochloride

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

2,4 diaminoanisoie dihydrochloride

 $\text{CH}_3\text{OC}_6\text{H}_3(\text{NH}_2)_2\cdot 2\text{H}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None available			

SECTION III PHYSICAL DATA

MW-211.10

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Tan Crystals

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water spray, alcohol foam, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

Emits toxic fumes when heated to decomposition point.

PRODUCT DESIGNATION

2,4-diaminoanisole dihydrochloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

Yes

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Inhalation, ingestion, skin

IRRITATION

Severe

REVELANT SYMPTOMS OF EXPOSURE

Headache, drowsiness, cyanosis, skin irritant.

EFFECTS OF CHRONIC EXPOSURE

Increase of sulphemoglobin, methemoglobin

EMERGENCY AND FIRST AID PROCEDURES

Wash skin and eyes; if swallowed - give emetic, get medical aid;
inhalation - rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

MECHANICAL (GENERAL)

Safety goggles

GLOVES

Butyl

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

Neoprene protective clothing.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

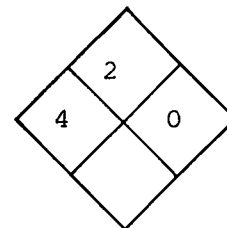
DATE

234-4108B

PRODUCT DESIGNATION

03-234-4608
1,4-Diaminobutane
Dihydrochloride

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Putrescine hydrochloride	FORMULA $H_2N(CH_2)_4NH_2 \cdot 2HCl$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 161.08

BOILING POINT --	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT >290°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Very White crystal		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES Wear goggles and self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

1,4-Diaminobutane Dihydrochloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

Not available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Ingestion, inhalation, skin

SKIN AND EYE

IRRITATION Moderate

RELEVANT SYMPTOMS OF EXPOSURE

Nose, throat & eye irritation, headache, skin & eye burns,
~~depression of blood pressure, convulsions.~~

EFFECTS OF CHRONIC EXPOSURE

Dermatitis

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - drink water, get
medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self contained breathing apparatus

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

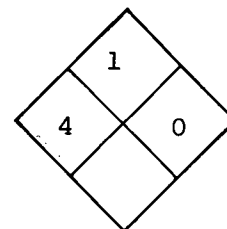
DATE

234-4608B

PRODUCT DESIGNATION

03-234-5108
2,5-Diaminochlorobenzene
Dihydrochloride

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS 3 chloro-4 aminoaniline dihydrochloride	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2,5 diaminochloro-benzene dihydrochloride	FORMULA $C_6H_3Cl(NH_2)_2 \cdot 2 HCl$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 215.51

BOILING POINT ° F.	VAPOR PRESSURE mm Hg.
MELTING POINT ° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1)	EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Soluble	VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Crystals	

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Dry chemical, carbon dioxide, alcohol foam.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

2,5 Diaminochlorobenzene Dihydrochloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Yes

RELEVANT SYMPTOMS OF EXPOSURE

Headache, drowsiness, cyanosis, skin & eye irritant.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis, allergenic bronchial asthma.

EMERGENCY AND FIRST AID PROCEDURES Wash skin with soap & water, flush eyes with water;
if swallowed wash mouth, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

Butyl Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

234-5108B

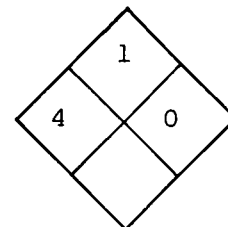
CAS-000101779

BY54250

PRODUCT DESIGNATION

P,P-Diaminodiphenyl Methane
03-234-6108

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS P,P, Methylenedianiline	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS P,P-Diaminodiphenylmethane	FORMULA (H ₂ NC ₆ H ₄) ₂ CH ₂

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		L.C. ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			347		Rat	
Note: Lowest published toxic concentration in air - inhalation - human 169 mg/kg.						
Lowest published toxic dose Oral - man 8.42 mg/kg						

SECTION III PHYSICAL DATA

MW - 198.29

BOILING POINT 399° C.	° F.	VAPOR PRESSURE 253	mm Hg.
MELTING POINT 93° C.	° F.	VAPOR DENSITY (Air = 1)	15
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Slightly soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Tan flakes, faint amine-like odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 440° F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Carbon dioxide, dry chemical, alcohol foam.		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

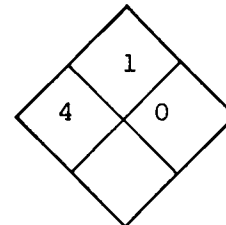
PRODUCT DESIGNATION P,P-Diaminodiphenylmethane	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL None available	CARCINOGENIC Yes
PRINCIPLE ROUTES OF ABSORPTION Inhalation, ingestion	SKIN AND EYE IRRITATION Severe
REVELANT SYMPTOMS OF EXPOSURE Mucous membrane and skin irritation, cyanosis and jaundice, digestive tract irritation.	
EFFECTS OF CHRONIC EXPOSURE Liver damage, malignant tumors.	
EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash skin and eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS When heated to decomposition emits toxic aniline fumes.	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

234-6108B

CAS:000095807

XS-96250

PRODUCT DESIGNATION

03-234-7108
2,4-Diamino TolueneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME		EMERGENCY TELEPHONE NO.	
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)			
TRADE NAME AND SYNONYMS m-Toluenediamine		CHEMICAL FAMILY	
CHEMICAL NAME AND SYNONYMS 2,4-Diaminotoluene		FORMULA <chem>CH3C6H3(NH2)</chem>	

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO - oral - human 50 mg/kg						
Lowest published lethal dose						
Oral - rat 500 mg/kg						

SECTION III PHYSICAL DATA MW - 122.19

BOILING POINT 292°C.	° F.	VAPOR PRESSURE at 107°C.	mm Hg. 1
MELTING POINT 99°C.	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Very soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Leaflets			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

2,4-Diamino-Toluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

Yes

PRINCIPLE ROUTES OF ABSORPTION

Ingestion, inhalation, skin

SKIN AND EYE

IRRITATION Yes

RELEVANT SYMPTOMS OF EXPOSURE Fatty degeneration of liver, diarrhea, vomiting cyanosis, methemoglobinemia.

EFFECTS OF CHRONIC EXPOSURE

Sensitizes, methemoglobinemia, cancer.

EMERGENCY AND FIRST AID PROCEDURES Wash skin & eyes; if swallowed - induce vomiting, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Protect against physical damage to container; store in cool, dry area.

OTHER PRECAUTIONS

SIGNATURE

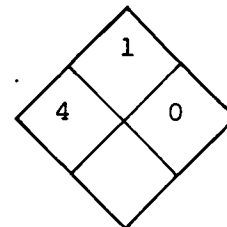
DATE

234-7108B

PRODUCT DESIGNATION

03-234-7308
2,4 - Diamino Toluene
Monohydrochloride

MATERIAL SAFETY DATA SHEET


SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS 2,4-Diaminotoluene
Monohydrochloride

FORMULA
 $\text{CH}_3\text{C}_6\text{H}_3(\text{NH}_2)_2\text{HCl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.

SECTION III PHYSICAL DATA MW - 158.65

BOILING POINT ° F.	VAPOR PRESSURE mm Hg.
MELTING POINT ° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1)	EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O	VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR	

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA
Foam, carbon dioxide, dry chemical

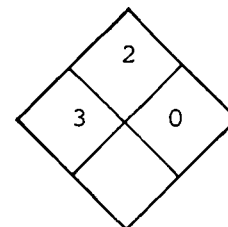
SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION	
2,4 Diaminotoluene Monohydrochloride	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
None available	Yes
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion, skin	IRRITATION Moderate
REVELANT SYMPTOMS OF EXPOSURE Fatty degeneration of liver, diarrhea, vomiting cyanosis, methemoglobinemia.	
EFFECTS OF CHRONIC EXPOSURE	
Sensitizes, methemoglobinemia, cancer.	
EMERGENCY AND FIRST AID PROCEDURES Wash skin & eyes; if swallowed - induce vomiting, get medical aid	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	Self-contained
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

234-7308B

PRODUCT DESIGNATION

03-234-7608
Di-N-AmylamineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Dipentylamine

FORMULA

 $(C_5H_{11})_2NH$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			270		Rat	
Note: Lowest published lethal concentration in air inhalation - rat, 63 PPM / 4 hours						
Lowest published lethal dose 35 mg/kg skin - rabbit						

SECTION III PHYSICAL DATA MW - 157.26

BOILING POINT 202°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1) 5.42
SPECIFIC GRAVITY (H ₂ O = 1) 0.777		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Very slightly soluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Water white liquid, ammonical odor		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 124 ⁰ F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED Closed Cup		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

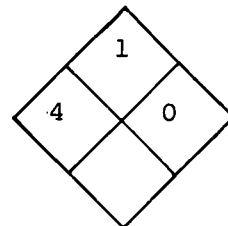
PRODUCT DESIGNATION	
Di-N-Amylamine	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
Not available	No
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion	IRRITATION Severe
RELEVANT SYMPTOMS OF EXPOSURE	Irritation of eyes and respiratory system, severe irritation of digestive tract.
EFFECTS OF CHRONIC EXPOSURE	Dermatitis
EMERGENCY AND FIRST AID PROCEDURES	Inhalation - rest; if swallowed - drink water, get medical aid; wash eyes & skin.
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Put sodium bisulfate on spills, wash with water.	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Goggles
	GLOVES
SPECIAL	Rubber
	RESPIRATOR
With proper filter	
OTHER PROTECTIVE EQUIPMENT	
Wear full protective clothing	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Protect against physical damage, store in cool, well-ventilated place.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

234-7608B

CAS:000119904

DD08750

PRODUCT DESIGNATION

03-234-8108
O-DianisidineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

3,3, Dimethoxybenzidine

FORMULA

 $(\text{NH}_2\text{C}_6\text{H}_3(\text{OCH}_3)_2)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published toxic concentration in air			1920		Rat	
inhalation - human 1.9 mg/kg.						

SECTION III PHYSICAL DATA MW - 244.28

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
-			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
138°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Insoluble			
APPEARANCE AND ODOR			
Colorless crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
not available		LOWER
METHOD USED		
EXTINGUISHING MEDIA		
Alcohol foam, carbon dioxide, dry chemical, water spray		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

Emits toxic fumes when heated to decomposition point.

PRODUCT DESIGNATION

O-Dianisidine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

Not available

CARCINOGENIC

Neoplast.

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, skin, ingestion

SKIN AND EYE

IRRITATION

yes

REVELANT SYMPTOMS OF EXPOSURE

Headache, drowsiness, cyanosis

EFFECTS OF CHRONIC EXPOSURE

-

EMERGENCY AND FIRST AID PROCEDURES Wash skin with soap and water; if swallowed - give emetic, get medical aid, inhalation - rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

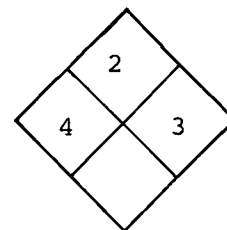
DATE

234-8108B

CAS-000136356

XY26250

PRODUCT DESIGNATION

03-234-9108
DiazoaminobenzeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1,3 Diphenyl Triazine

FORMULA

C6H5NHNNC6H5

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ Mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			224		Rat	

SECTION III PHYSICAL DATA MW - 197.26

BOILING POINT explodes	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 98°C.	° F.	VAPOR DENSITY (Air = 1) 6.8
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Small, golden-yellow crystals.		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Explosive do not fight fire except by remote control.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

Explodes when heated to 150°C.

PRODUCT DESIGNATION

Diazoaminobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

Yes

PRINCIPLE ROUTES OF ABSORPTION

Ingestion, inhalation of dust, skin

SKIN AND EYE

IRRITATION

Moderate

RELEVANT SYMPTOMS OF EXPOSURE

Irritation of eyes and skin.

EFFECTS OF CHRONIC EXPOSURE

Liver and kidney damage, tumors.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic,
get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Goggles

MECHANICAL (GENERAL)

GLOVES
Rubber

SPECIAL

RESPIRATOR

Dust mask

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

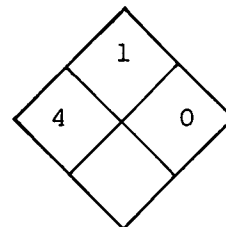
DATE

234-9108B

PRODUCT DESIGNATION

1,2,5,6 Dibenzanthracene
03-235-0709

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

Dibenz(a,h)anthracene

 $C_{22}H_{14}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published toxic dose subcutaneous - rat 0.5 mg/kg.						
Lowest published toxic dose oral - mouse - 0.36 mg/kg						
Lowest published lethal dose skin - mouse - 0.6 micrograms per kg.						

SECTION III PHYSICAL DATA MW - 278.33

BOILING POINT sublimes	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 262°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Slightly soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Crystal			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

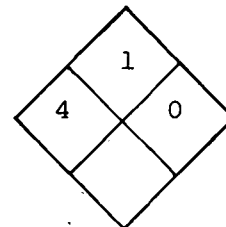
PRODUCT DESIGNATION 1,2,5,6 - Dibenzanthracene	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL None available	CARCINOGENIC yes
PRINCIPLE ROUTES OF ABSORPTION Ingestion, skin	SKIN AND EYE IRRITATION moderate
REVELANT SYMPTOMS OF EXPOSURE Gastroenteric distress, tremors, convulsions, fever, dermatitis	
EFFECTS OF CHRONIC EXPOSURE Tumors, cancer, dermatitis	
EMERGENCY AND FIRST AID PROCEDURES If swallowed - induce vomiting, get medical aid; wash skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES
SPECIAL	RESPIRATOR
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

235-0709B

PRODUCT DESIGNATION

03-235-1209
Dibenzothiophene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Dibenzothiophene	FORMULA C ₆ H ₄ SC ₆ H ₄

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 184.26

BOILING POINT 333° C.	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 100° C.	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

Dibenzothiophene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC Yes

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Corrosive action on mouth and digestive system, bloody saliva flow, dizziness, rapid heart action, shortness of breath.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES Inhalation - oxygen as needed; if swallowed - induce vomiting, get medical aid; wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

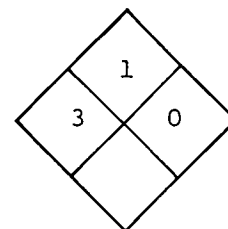
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235-1209B

PRODUCT DESIGNATION

03-235-4209
P-Dibromobenzene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 4 dibromobenzene	FORMULA $\text{Br}_2\text{C}_6\text{H}_4$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA

MW - 235.92

BOILING POINT 219°C	° F.	VAPOR PRESSURE at 61°C	mm Hg.
MELTING POINT 87°C	° F.	VAPOR DENSITY (Air = 1) 8.1	
SPECIFIC GRAVITY (H ₂ O = 1) 2.26		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Clear crystal, odor of xylene			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Use water spray, foam, carbon dioxide or dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES Wear self contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

P-dibromobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Cyanosis, deep & rapid respiration, irregular pulse,

drowsiness, unconsciousness

EFFECTS OF CHRONIC EXPOSURE

Lung, liver & kidney damage

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

MECHANICAL (GENERAL)

Goggles

GLOVES

Polyvinyl alcohol

SPECIAL

RESPIRATOR

Self contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

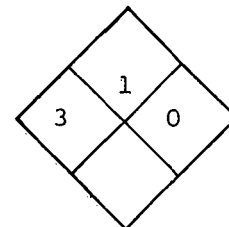
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235-4209B

PRODUCT DESIGNATION

03-235-4709
4,6 - Dibromo-O-Cresol

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

3,5 dibromo-2 hydroxytoluene

FORMULA

Br₂CH₃C₆H₃OH

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None available			

SECTION III PHYSICAL DATA MW - 265.95

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
decomposes at 265°C			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
56°			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
very slightly soluble			
APPEARANCE AND ODOR			
crystal with phenolic odor			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water spray, dry chemical, foam or carbon dioxide

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

4,6 Dibromo-O-Cresol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE Cyanosis, vomiting, nausea, sweating, intense thirst, diarrhea, convulsions, collapse.

EFFECTS OF CHRONIC EXPOSURE

Liver or kidney damage, dermatitis

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest, if swallowed - give emetic, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

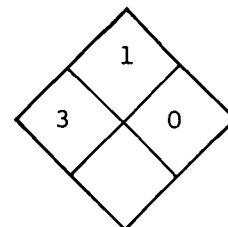
DATE

235-4709B

PRODUCT DESIGNATION

03-235-5209
4,4 - Dibromobiphenyl

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS P,P-Dibromobiphenyl	FORMULA (Br C₆H₄)₂

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 312.02

BOILING POINT 357°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 166°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.90		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Crystal		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water, foam, carbon dioxide or dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

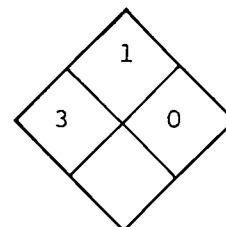
PRODUCT DESIGNATION	
4,4-Dibromobiphenyl	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
None available	No
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion, skin	IRRITATION moderate
RELEVANT SYMPTOMS OF EXPOSURE	
Acne, irritation of respiratory passages	
EFFECTS OF CHRONIC EXPOSURE	
Liver damage	
EMERGENCY AND FIRST AID PROCEDURES	Inhalation - rest, get medical aid; if swallowed - wash mouth, give emetic, get medical aid, wash skin & eyes.
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
SPECIAL	RESPIRATOR
	With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

235-5209B

PRODUCT DESIGNATION

03-235-7209
2,6-Dibromo-4 Nitrophenol

MATERIAL SAFETY DATA SHEET


SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS O,O' Dibromo-P Nitrophenol	FORMULA $\text{Br}_2\text{C}_6\text{H}_2(\text{OH})\text{NO}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 296.92

BOILING POINT d > 145°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 143°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O very soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR colorless crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water, dry chemical, carbon dioxide, alcohol foam		
SPECIAL FIRE FIGHTING PROCEDURES Wear self-contained gas mask		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

2,6-Dibromo-4-Nitrophenol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE Cyanosis, deep & rapid respiration, irregular pulse, severe damage to digestive tract, drowsiness.

EFFECTS OF CHRONIC EXPOSURE

Lung, liver & kidney damage.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - drink water, epsom salts, get medical aid; wash from eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

Decomposes on heating to give toxic bromides.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

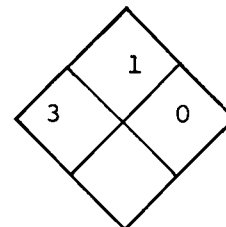
DATE

235-7209B

PRODUCT DESIGNATION

03-235-7709
2,4-Dibromophenol

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2,4-Dibromophenol

FORMULA

Br2C6H3OH

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None available			

SECTION III PHYSICAL DATA MW - 251.92

BOILING POINT 239°C.	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 40°C.	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 0.2		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Crystalline			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Dry chemical, alcohol foam, carbon dioxide.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

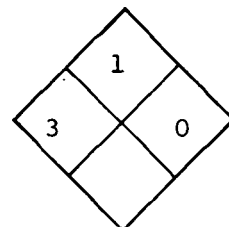
PRODUCT DESIGNATION 2,4 Ditromophenol	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL None available	CARCINOGENIC NO
PRINCIPLE ROUTES OF ABSORPTION Inhalation, ingestion, skin	SKIN AND EYE IRRITATION Severe
REVELANT SYMPTOMS OF EXPOSURE Eye, skin & mucous membrane irritation dermatitis; cyanosis.	
EFFECTS OF CHRONIC EXPOSURE Liver damage	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; wash from skin & eyes; if swallowed - give emetic, get medical aid.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Pour sand to soda ash (9:1) mixture on spill and sweep into box for disposal.	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Butyl Rubber
SPECIAL	RESPIRATOR Self-contained
OTHER PROTECTIVE EQUIPMENT Protective clothing	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE Store in cool, dry place.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

235-7709B

PRODUCT DESIGNATION

03-235-7749
2,6 - Dibromophenol

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2,6 Dibromophenol	FORMULA Br ₂ C ₆ H ₃ OH

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
		None available				

SECTION III PHYSICAL DATA MW - 251.92

BOILING POINT ° F.	VAPOR PRESSURE at 162°C.	mm-Hg. 21
MELTING POINT 56°C. ° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)	EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O	VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR

Needle-like crystals

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Dry chemical, alcohol foam, carbon dioxide.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

2,6 - Dibromophenol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Inhalation, ingestion, skin

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Eye, skin and mucous membrane irritation, dermatitis,

cyanosis.

EFFECTS OF CHRONIC EXPOSURE

Liver damage

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; wash skin & eyes; if swallowed -
give emetic, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Pour sand to soda ash (9:1) mixture on spill and sweep into box for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Butyl Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool, dry place.

OTHER PRECAUTIONS

SIGNATURE

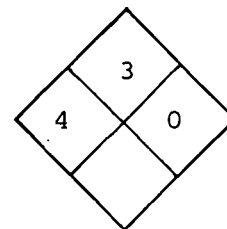
DATE

235-7749B

PRODUCT DESIGNATION

03-235-8709
3,5 Dibromopyridine

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 3,5 Dibromopyridine	FORMULA $C_5H_3NBr_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA

MW - 236.91

BOILING POINT 222°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 111°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Slightly soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Solid - fish-like odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self-contained breathing apparatus

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

3,5 dibromopyridine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

Not available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

severe

RELEVANT SYMPTOMS OF EXPOSURE

Narcosis, headache, nausea, giddiness, vomiting

EFFECTS OF CHRONIC EXPOSURE

Occasional vomiting and diarrhea; weight loss and anemia,
ocular and facial paralysis.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - induce vomiting, get
medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May react with oxidizing materials

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

Use in hood

MECHANICAL (GENERAL)

SPECIAL

OTHER PROTECTIVE EQUIPMENT

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

GLOVES

Rubber

RESPIRATOR

Self-contained

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

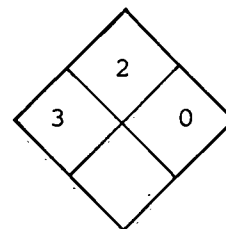
DATE

235-8709B

PRODUCT DESIGNATION

03-235-9209
2,5 - Dibromotoluene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2,5 - Dibromotoluene	FORMULA $\text{Br}_2\text{C}_6\text{H}_3\text{CH}_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA

BOILING POINT 236°C	° F.	VAPOR PRESSURE mm Hg.	MW - 249.95
MELTING POINT <-20°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.81		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR Colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

2,5 dibromotoluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE

Eye & respiratory system irritation, severe

internal irritation of digestive tract.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic,
get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

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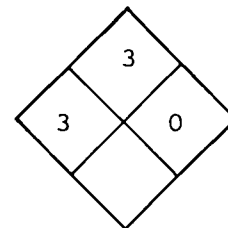
CAS-000110963

TX17500

PRODUCT DESIGNATION

03-236-0300

Diisobutyl Amine

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1-amino-2-methylpropane

FORMULA

 $(\text{CH}_3)_2\text{CHCH}_2\text{NH}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ (mg/kg)		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			258		Rat	
			629		Mouse	
			620		Guinea Pig	

SECTION III PHYSICAL DATA MW-129.24

BOILING POINT 140° C.	° F.	VAPOR PRESSURE At 31° C.	10 mm Hg.
MELTING POINT -70°	° F.	VAPOR DENSITY (Air = 1) 4.46	
SPECIFIC GRAVITY (H ₂ O = 1) 0.75		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR

Water-white amine-like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 85° F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Diisobutyl Amine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE Stimulation of sympathetic nervous system, cardiac depressant,
may cause convulsions.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - drink water, get medical
aid; wash skin and eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May react vigorously with oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

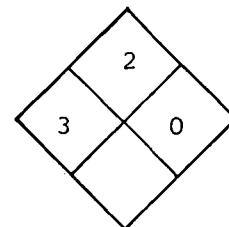
DATE

236-0300B

CAS:000111922

HR77800

PRODUCT DESIGNATION

03-236-0400
N-dibutylamineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

Di-N-butylamine

 $(C_4H_9)_2NH$

SECTION II HAZARDOUS INGREDIENTS 4 9 2

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LCLO - inhalation - rat	500 ppm/4 Hr.		360		Rat	
				1010	Rabbit	

SECTION III PHYSICAL DATA MW-129.28

BOILING POINT 159°C	° F.	VAPOR PRESSURE at 20°C	mm Hg.
MELTING POINT -62°C	° F.	VAPOR DENSITY (Air = 1)	2
SPECIFIC GRAVITY (H ₂ O = 1)		4.46	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		EVAPORATION RATE (_____ = 1)	
0.76			
very soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR			
liquid colorless			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 125°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED OC		LOWER

EXTINGUISHING MEDIA

Alcohol foam, dry chemical or carbon dioxide

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self-contained breathing apparatus

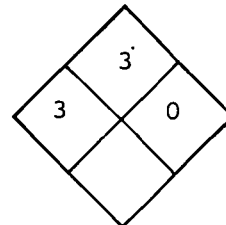
UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION	
N Dibutylamine	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
None available	No
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion	IRRITATION <u>severe</u>
RELEVANT SYMPTOMS OF EXPOSURE Restlessness, excitability, increased pulse and respiratory rates; irritates eye, skin and digestive system	
EFFECTS OF CHRONIC EXPOSURE	
-	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - drink water, get medical aid; wash skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	Self-contained
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

236-0400B

PRODUCT DESIGNATION
03-236-0500
Di-Sec Butylamine

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Di-Sec Butylamine	FORMULA (C ₄ H ₉) ₂ NH

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 12.92

BOILING POINT 132 ⁰ C.	⁰ F.	VAPOR PRESSURE	mm Hg.
MELTING POINT -104 ⁰ C.	⁰ F.	VAPOR DENSITY (Air = 1) 4.5	
SPECIFIC GRAVITY (H ₂ O = 1) 0.78		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Very soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 75 ⁰ F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED O.C.		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Disecbutylamine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Restlessness, excitability, increased pulse and respiration rates, irritates eyes, skin and digestive systems.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - drink water, get medical aid; wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

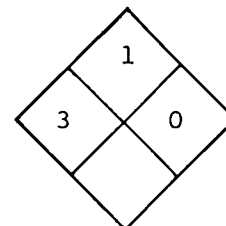
DATE

236-0500B

PRODUCT DESIGNATION

03-236-0800
Di-N-Butylaniline

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS
N N'-Dibutylaniline

FORMULA
 $C_6H_5N(C_4H_9)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 205.34

BOILING POINT 263°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1) 7.1
SPECIFIC GRAVITY (H ₂ O = 1) 0.94		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Light yellow liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 230°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water, alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

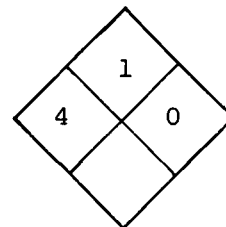
PRODUCT DESIGNATION	
Di-N Butylaniline	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
None available	CARCINOGENIC no
PRINCIPLE ROUTES OF ABSORPTION	
Inhalation, ingestion, skin	SKIN AND EYE IRRITATION moderate
RELEVANT SYMPTOMS OF EXPOSURE	
Headache, drowsiness, cyanosis, mental confusion, convulsions	
EFFECTS OF CHRONIC EXPOSURE	
Fatigue, loss of appetite, headache, dizziness	
EMERGENCY AND FIRST AID PROCEDURES	
If swallowed - induce vomiting, get medical aid; inhalation - rest, get medical aid; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Polyvinyl alcohol gloves
SPECIAL	RESPIRATOR
	Self-contained
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

236-0800B

CAS:000629356

OW21000

PRODUCT DESIGNATION

03-236-4300
Di-N-Butyl MercuryMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

di-butyl mercury

FORMULA

 $\text{Hg}(\text{C}_4\text{H}_9)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			See Note			
Lowest published lethal dose						
intraperitoneal - rat	8 mg/kg					

SECTION III PHYSICAL DATA MW = 314.83

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
123°C at 23 mm		at 105°C	10
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
--		10.8	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (____ = 1)	
1.80			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Insoluble			

APPEARANCE AND ODOR

Colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
not available		LOWER
METHOD USED		
EXTINGUISHING MEDIA		
Water, carbon dioxide, alcohol foam		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition point, emits toxic fumes of mercury.

PRODUCT DESIGNATION

Di-N-Butyl Mercury

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

0.001 PPM, 0.01 mg/C.M.

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

ingestion, skin, inhalation

SKIN AND EYE

IRRITATION slight

RELEVANT SYMPTOMS OF EXPOSURE Severe gastroenteric distress; dermatitis, decolonization of nails, ulcerization of mucous membranes and eyes.

EFFECTS OF CHRONIC EXPOSURE Liver and kidney damage; nerve disorders, psychic disturbances, loosening of teeth.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - antidote, dimercaprol, get medical aid; inhalation - rest; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

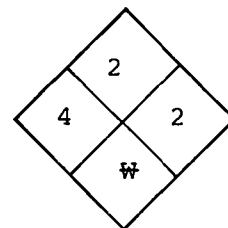
DATE

236-4300B

PRODUCT DESIGNATION

03-236-5800
Dichloroacetyl Chloride

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Dichloroethanoyl Chloride	FORMULA Cl ₂ CHCOCl

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LCLO inh-rat 2000 ppm/4H			2460		Rat	
				650	Rabbit	

SECTION III PHYSICAL DATA MW 147.4

BOILING POINT 108°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1) 5.1
SPECIFIC GRAVITY (H ₂ O = 1) 1.53		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O reacts with water		VOLATILE % Vol. % Wt.

APPEARANCE AND ODOR
Clear liquid, acrid odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 151°	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Do not use water or foam, use carbon dioxide or dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition point, gives off toxic chloride fumes

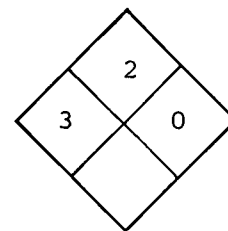
PRODUCT DESIGNATION	
Dichloroacetyl chloride	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
None available	no
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion	IRRITATION severe
REVELANT SYMPTOMS OF EXPOSURE	Irritation of eyes and respiratory system; severe internal damage if swallowed; eye & skin burns.
EFFECTS OF CHRONIC EXPOSURE	Bronchial irritation, erosion of teeth.
EMERGENCY AND FIRST AID PROCEDURES	Inhalation - rest, get medical aid; if swallowed - drink water, milk of magnesia, get medical aid; wash eyes & skin.
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
Reacts with water to produce H Cl, alcohol and dimethyl sulfoxide.	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Goggles
SPECIAL	GLOVES
	Rubber
OTHER PROTECTIVE EQUIPMENT	RESPIRATOR
Rubber apron	Self-contained
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

236-5800B

PRODUCT DESIGNATION

03-236-7300
2,4-Dichlorobenzaldehyde

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2,4, Dichlorobenzaldehyde	FORMULA $C_7H_4Cl_2O$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA

MW = 175.02

BOILING POINT --	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 71°C	° F.	VAPOR DENSITY (Air = 1) --
SPECIFIC GRAVITY (H ₂ O = 1) --		EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR White crystal		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

2,4 Dichlorobenzaldehyde

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Ingestion, skin, inhalation

SKIN AND EYE

IRRITATION

moderate

RELEVANT SYMPTOMS OF EXPOSURE

Eye irritation, headache, drowsiness, gastroenteric

distress, pulmonary edema

EFFECTS OF CHRONIC EXPOSURE

Anemia, dermatitis

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - induce vomiting, get medical aid;

wash skin & eyes; inhalation - rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

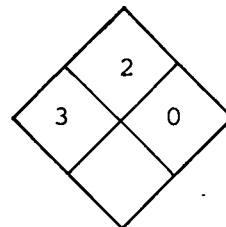
SIGNATURE

DATE

236-7300B

03-236-7800
M-dichlorobenzene

MATERIAL SAFETY DATA SHEET



MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS	FORMULA
M-dichlorobenzene	$C_6H_4Cl_2$

[illegible]

BOILING POINT 173 ⁰ C	° F.	VAPOR PRESSURE at 12.1 ⁰ C	1 mm Hg
MELTING POINT 24.8 ⁰ C	° F.	VAPOR DENSITY (Air = 1) 5.08	
SPECIFIC GRAVITY (H ₂ O = 1) 1.288		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid			

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
Not available		LOWER
METHOD USED		

EXTINGUISHING MEDIA
Water spray, foam, CO₂ or dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus

UNUSUAL FIRE AND EXPLOSION HAZARDS

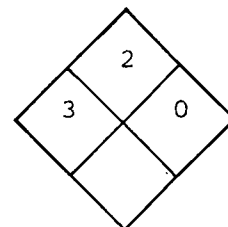
PRODUCT DESIGNATION	
M-dichlorobenzene	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
Unknown	no
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion	IRRITATION severe
REVELANT SYMPTOMS OF EXPOSURE Eye, skin and mucous membrane irritation, headache; drowsiness, unsteadiness	
EFFECTS OF CHRONIC EXPOSURE	
Liver damage	
EMERGENCY AND FIRST AID PROCEDURES	
Inhalation - rest, keep warm; if swallowed - wash mouth, give emetic, get medical attention; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Goggles
	GLOVES
SPECIAL	Rubber
	RESPIRATOR
Self-contained breathing apparatus	
OTHER PROTECTIVE EQUIPMENT	
Protective clothing	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Store in well-ventilated, dark, cool area.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

236-7800B

CAS:000095501

CZ45000

PRODUCT DESIGNATION

o-Dichlorobenzene
03-236-7850MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME:

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

O-Dichlorobenzene

FORMULA

 $C_6H_4Cl_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO - 500 mg/kg oral - human			500		Rat	
LCLO - 821 PPM/7H. inh-rat			500		Rabbit	

SECTION III PHYSICAL DATA MW - 147.01

BOILING POINT 180°C.	° F.	VAPOR PRESSURE 25°C	1.28 mm Hg.
MELTING POINT -2°C.	° F.	VAPOR DENSITY (Air = 1) 5.1	
SPECIFIC GRAVITY (H ₂ O = 1) 1.30		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Colorless liquid pleasant aromatic odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 151°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 2.2
METHOD USED Open Cup		LOWER 9.2

EXTINGUISHING MEDIA

Water may be used to blanket fire, water spray, foam, CO₂ or dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
o-Dichlorobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 50 ppm or 300 mg/m³ (ceiling value)

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation (mainly)

SKIN AND EYE

IRRITATION Liquid - severe!

RELEVANT SYMPTOMS OF EXPOSURE Drowsiness, unsteadiness, eye irritation, difficulty in breathing, eye and skin damage, kidney and liver damage.

EFFECTS OF CHRONIC EXPOSURE

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest, keep warm, if swallowed - wash mouth, give emetic, get medical attention; wash from eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Aluminum, sodium and potassium.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

Consult Industrial Hygiene Department

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Side shield safety goggles

MECHANICAL (GENERAL)

Consult Industrial Hygiene Department

GLOVES

Impervious neoprene

SPECIAL

Consult Industrial Hygiene Department

RESPIRATOR

Self-contained breathing apparatus

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in well-ventilated, dark and cool area in a closed container.

OTHER PRECAUTIONS

SIGNATURE

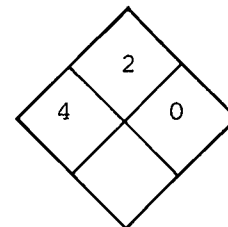
DATE

236-7850B

CAS:000106467

CZ45500

PRODUCT DESIGNATION

P-Dichlorobenzene
03-236-7900MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA
C6H4Cl2

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			500		Rat	
			2950		Mouse	
LDLO 500 mg/kg oral - human						
Note: Lowest published toxic dose, oral - human 300 mg/kg						

SECTION III PHYSICAL DATA MW-147.01

BOILING POINT 345°F	° F.	VAPOR PRESSURE 25°C	1 mm Hg.
MELTING POINT 127°F	° F.	VAPOR DENSITY (Air = 1) 5.1	
SPECIFIC GRAVITY (H ₂ O = 1) 1.5		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 150°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED Closed Cup		LOWER
EXTINGUISHING MEDIA		

Water may be used to blanket fire; water spray, foam, CO₂, or dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

N/A

PRODUCT DESIGNATION

p-Dichlorobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 75 ppm, 450 mg/kg

CARCINOGENIC

Yes

PRINCIPLE ROUTES OF ABSORPTION

Inhalation (mainly)

SKIN AND EYE

IRRITATION

Severe

REVELANT SYMPTOMS OF EXPOSURE Eye, skin and mucous membrane irritation, headache, stimulation central nervous system; lung, kidney and liver damage.

EFFECTS OF CHRONIC EXPOSURE

Vertigo, cataract, loss of weight.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest, keep warm; if swallowed - wash mouth, give emetic, get medical attention; wash from skin and eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Aluminum, sodium and potassium.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

Consult Industrial Hygiene Department

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Face shield

MECHANICAL (GENERAL)

Consult Industrial Hygiene Department

GLOVES

Impervious neoprene

SPECIAL

Consult Industrial Hygiene Department

RESPIRATOR

Self-contained breathing apparatus

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in well ventilated, dark and cool area.

OTHER PRECAUTIONS

SIGNATURE

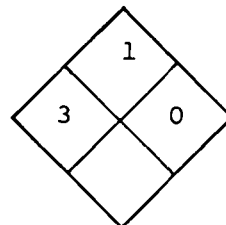
DATE

236-7900B

PRODUCT DESIGNATION

2,5 - Dichloronitrobenzene
03-237-2401

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1,4 dichloro-2-nitrobenzene

FORMULA

$$\text{Cl}_2\text{C}_6\text{H}_3\text{NO}_2$$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			1210		Rat	

SECTION III PHYSICAL DATA MW-192.00

BOILING POINT 266°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 55°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.67		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorless crystal			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water spray, foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

Self-contained breathing apparatus

UNUSUAL FIRE AND EXPLOSION HAZARDS

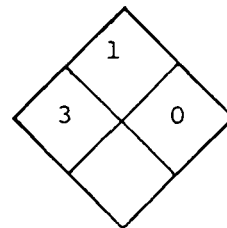
PRODUCT DESIGNATION	
2,5 - Dichloronitrobenzene	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
None available	No
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Ingestion, inhalation of dust	IRRITATION severe
REVELANT SYMPTOMS OF EXPOSURE Eye, skin & mucous membrane irritation, headache; drowsiness, unsteadiness.	
EFFECTS OF CHRONIC EXPOSURE Liver damage	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; keep warm; if swallowed - wash mouth, give emetic; get medical aid; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	Self-contained
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

237-2401B

PRODUCT DESIGNATION

03-237-2501
1,2 - dichloro - 4- nitrobenzene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 3,4 dichloronitrobenzene	FORMULA $\text{Cl}_2\text{C}_6\text{H}_3\text{NO}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			643		Rat	

SECTION III PHYSICAL DATA

MW - 192.00

BOILING POINT 256°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 43°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.43		EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Colorless crystal		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA Water spray, foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES Self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

1,2 - dichlor - 4 - nitrobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Ingestion, inhalation of dust

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE Eye, skin & mucous membrane irritation, headache;
drowsiness, unsteadiness.

EFFECTS OF CHRONIC EXPOSURE

Liver damage

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest, keep warm; if swallowed - wash mouth,
give emetic, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

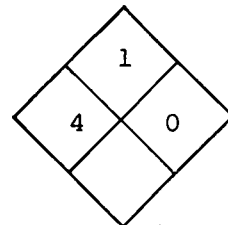
DATE

237-2501B

PRODUCT DESIGNATION

03-237-3401
2,4 Dichlorophenol

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

2,4 - Dichlorophenol

 $\text{Cl}_2\text{C}_6\text{H}_4\text{OH}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published toxic dose			580		Rat	
skin - mouse, 312 mg/kg. -carcinogen			1600		Mouse	

SECTION III PHYSICAL DATA

MW - 163.01

BOILING POINT 210°C	° F.	VAPOR PRESSURE at 53°C	mm Hg.
MELTING POINT 45°C	° F.	VAPOR DENSITY (Air = 1)	5.62
SPECIFIC GRAVITY (H ₂ O = 1) 1.38		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 0.45		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

White crystals

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 237°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical, water

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition point,
emits toxic fumes of chlorides.

PRODUCT DESIGNATION	
2,4 Dichlorophenol	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
None available	CARCINOGENIC yes
PRINCIPLE ROUTES OF ABSORPTION	
Inhalation, ingestion	SKIN AND EYE IRRITATION severe
REVELANT SYMPTOMS OF EXPOSURE Tremors, convulsions, shortness of breath, irritation of respiratory system.	
EFFECTS OF CHRONIC EXPOSURE	
Carcinoma	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - drink water, epsom salt solution, get medical aid; wash eyes & skin.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
May react vigorously with oxidizing materials.	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Put sodium bicarbonate on spill, sweep up the sodium bicarbonate.	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber (butyl)
SPECIAL	RESPIRATOR
	Self-contained
OTHER PROTECTIVE EQUIPMENT	
Protective clothing	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

237-3401B

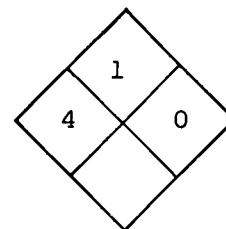
CAS:000305157

MV21000

PRODUCT DESIGNATION

03-237-3901

2,5 - Dichlorophenylhydrazine

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2,5 - Dichlorophenylhydrazine

FORMULA

 $\text{Cl}_2\text{C}_6\text{H}_3\text{NHNH}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose						
Oral - rat 500 mg/kg.						

SECTION III PHYSICAL DATA

MW - 177.04

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
105°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Slightly soluble			
APPEARANCE AND ODOR			
Yellow needle-like crystal			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
Not available		LOWER
METHOD USED		
EXTINGUISHING MEDIA		
Alcohol foam		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

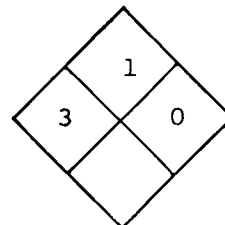
PRODUCT DESIGNATION	
2,5 - dichlorophenylhydrazine	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	None available
	CARCINOGENIC No
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion, skin	IRRITATION Severe
REVELANT SYMPTOMS OF EXPOSURE	Irritation of skin, eyes & mucous membrane, gastroenteric disturbances, anemia
EFFECTS OF CHRONIC EXPOSURE	Blood & liver damage, loss of appetite
EMERGENCY AND FIRST AID PROCEDURES	Inhalation - rest; if swallowed - induce vomiting, get medical aid; wash from skin & eyes.
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
Avoid lead dioxide	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
Mechanical (General)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	Self-contained
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

237-3901B

PRODUCT DESIGNATION

03-237-6401
Dicyclohexylamine

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Dicyclohexylamine

FORMULA

 $(C_6H_{11})_2NH_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			373	-	rat	
Note: Lowest published lethal dose oral - mouse 500 mg/kg.						

SECTION III PHYSICAL DATA MW - 181.31

BOILING POINT 255°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 20°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 0.93		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 0.16		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid, fishy odor			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
>210 ⁰ F		
METHOD USED		LOWER
O.C.		
EXTINGUISHING MEDIA		
Alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles & self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Dicyclohexylamine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

20 PPM (suggested)

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE Irritation of eyes and respiratory system, if swallowed;
irritation of digestive tract, drowsiness, nausea.

EFFECTS OF CHRONIC EXPOSURE

Weight loss

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - induce vomiting, get medical aid;
inhalation - give oxygen as needed; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May react with oxidizing materials

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

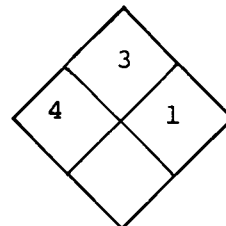
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237-6401B

CAS:000077736

PC10500

PRODUCT DESIGNATION

Dicyclopentadiene
03-237-6901MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

3a,4,7,7a-Tetrahydro-4,7-Methanoindene

CHEMICAL NAME AND SYNONYMS

FORMULA

C₁₀H₁₂

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ PPM/4 hr.	
			ORAL	PERCUT.	SPECIES	CONC.
			353		Rat	
				5080	Rabbit	
Lowest published lethal concentration in air, inhalation - rat 500 ppm/4 hr.						

SECTION III PHYSICAL DATA Mol. Wt. 132.2

BOILING POINT	° F.	VAPOR PRESSURE	
166.6°C		47.5°C	10 mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
32.9		4.55	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.9766 35°C			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Colorless crystals.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
90°F		LOWER
METHOD USED		
Open Cup		

EXTINGUISHING MEDIA

Alcohol foam, dry chemical, or CO₂

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective.

UNUSUAL FIRE AND EXPLOSION HAZARDS

N/A

PRODUCT DESIGNATION
Dicyclopentadiene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 5 PPM, 30 mg/C.M.

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

RELEVANT SYMPTOMS OF EXPOSURE Generalized congestion, hyperemia, local hemorrhage in many tissues such as kidneys, intestines, stomach, lungs.

EFFECTS OF CHRONIC EXPOSURE

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest, keep warm, and get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Can react with oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Face shield

MECHANICAL (GENERAL)

GLOVES

Rubber gloves

SPECIAL

RESPIRATOR

All purpose cannister mask

OTHER PROTECTIVE EQUIPMENT

Work clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

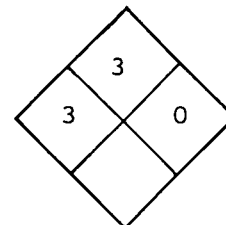
DATE

237-6901B

CAS:000109897

H287500

PRODUCT DESIGNATION

03-237-8401
DiethylamineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Diethylamine

FORMULA

 $(C_2H_5)_2NH$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ PPM	
			ORAL	PERCUT.	SPECIES	CONC.
			649		mouse	
			540		rat	
					rat	4000
				820	rabbit	

SECTION III PHYSICAL DATA

MW - 73.14

BOILING POINT 555°C	° F.	VAPOR PRESSURE at 38°C	400	mm Hg.
MELTING POINT -38.9°C	° F.	VAPOR DENSITY (Air = 1)	2.53	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)		
0.71				
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol.	% Wt.
Very soluble				
APPEARANCE AND ODOR				
Colorless liquid with ammonia-like odor.				

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT <0°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		10.1%
		LOWER
		1.8%

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Diethylamine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 25 PPM, 75 mg/C.M.

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE Eye and mucous membrane irritation; irritation of gastroenteric tract

EFFECTS OF CHRONIC EXPOSURE

Irritation of cornea and lungs

EMERGENCY AND FIRST AID PROCEDURES If swallowed - drink water, get medical aid; inhalation - oxygen as needed; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Put sodium bisulfate on spill, then water and drain into sewer.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

~~Rubber~~ (butyl)

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

Overalls

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store inside standard flammable liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

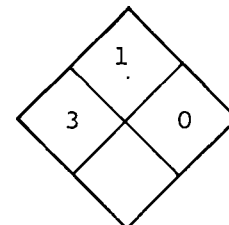
DATE

237-8401B

PRODUCT DESIGNATION

03-237-8501
Diethylamine Hydrochloride

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Diethylamine Hydrochloride	FORMULA (C ₂ H ₅) ₂ NH ₂ Cl

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 109.60

BOILING POINT 330°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 229°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.05		EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O 232		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR White crystal		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES Wear self-contained breathing apparatus		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

Diethylamine Hydrochloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

Not available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Ingestion, inhalation of dust

SKIN AND EYE

IRRITATION

moderate

REVELANT SYMPTOMS OF EXPOSURE Eye and mucous membrane irritation, irritation of gastroenteric tract.

EFFECTS OF CHRONIC EXPOSURE

Irritation of cornea and lungs.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - drink water, get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

Rubber

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

Self-contained

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

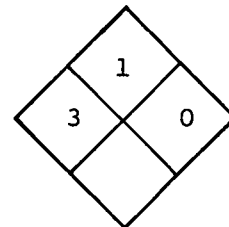
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237-8501B

PRODUCT DESIGNATION

03-240-3505
Dimethylsulfoxide

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS <u>Methylsulfoxide</u>	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS <u>Dimethylsulfoxide</u>	FORMULA <u>(CH₃)₂SO</u>

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ g/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			20,000		Rat	
			21,000		Mouse	
			12,000		Chicken	

SECTION III PHYSICAL DATA MW - 78.14

BOILING POINT <u>decomposes at 100°C.</u>	° F.	VAPOR PRESSURE <u>at 20°C.</u>	mm Hg.
MELTING POINT <u>6°C.</u>	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) <u>1.10</u>		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O <u>very soluble</u>		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR <u>clear, water white, hygroscopic liquid.</u>			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT <u>203°F.</u>	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER <u>28.5%</u>
METHOD USED <u>open cup</u>		LOWER <u>2.6%</u>
EXTINGUISHING MEDIA <u>Alcohol foam, carbon dioxide, dry chemical.</u>		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition point, emits toxic fumes.

PRODUCT DESIGNATION
Dimethylsulfoxide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL none available Teratogen CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION Inhalation, ingestion, skin SKIN AND EYE IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE Burning, stinging and reddening of skin, nausea, vomiting, chills, cramps, corneal opacity.

EFFECTS OF CHRONIC EXPOSURE Dermatitis, transient erythema, musculoskeletal disorder, corneal opacity, garlic-like breath odor.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - give emetic, get medical aid; wash from eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Goggles
SPECIAL	GLOVES Rubber
OTHER PROTECTIVE EQUIPMENT	RESPIRATOR With chemical filter

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

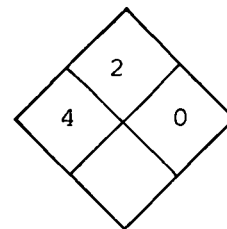
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240-3505B

PRODUCT DESIGNATION

03-240-4304
Dimethyl-M-Toluidine

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

N, N Dimethyl-M-aminotoluene

FORMULA

 $(\text{CH}_3)_2\text{NC}_6\text{H}_4\text{CH}_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 135.20

BOILING POINT 186°C	° F.	VAPOR PRESSURE at 98°C	mm Hg. 20
MELTING POINT -61°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 0.93		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR Liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Dry chemical, carbon dioxide, foam or water spray

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing

UNUSUAL FIRE AND EXPLOSION HAZARDS

Emits toxic fumes when heated

PRODUCT DESIGNATION
Dimethyl-M-Toluidine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL	None available	CARCINOGENIC	No
PRINCIPLE ROUTES OF ABSORPTION	Inhalation, ingestion, skin	SKIN AND EYE IRRITATION	moderate
RELEVANT SYMPTOMS OF EXPOSURE	Cyanosis, air hunger, nausea, vomiting, low blood pressure, convulsions.		
EFFECTS OF CHRONIC EXPOSURE	Weight loss, anemia, weakness		
EMERGENCY AND FIRST AID PROCEDURES	Inhalation - rest; if swallowed - give emetic, get medical aid; wash skin & eyes, skin may be washed with 5% acetic acid to aid removal.		

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	With proper filter
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

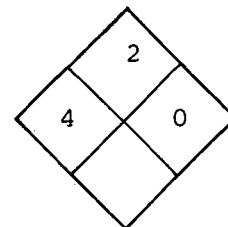
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240-4304B

CAS:000609723

XU58000

PRODUCT DESIGNATION

03-240-4404
Dimethyl-O-ToluidineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

N,N Dimethy-O-Aminotoluene

FORMULA

 $(CH_3)_2NC_6H_4CH_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO oral - rat	500 mg/kg		none available			

SECTION III PHYSICAL DATA

MW - 135.20

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
215°C		at 70°C	10
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.94			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Insoluble			
APPEARANCE AND ODOR			
Yellow oil			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
Not available		LOWER
METHOD USED		

EXTINGUISHING MEDIA

Dry chemical, carbon dioxide, foam or water spray

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing

UNUSUAL FIRE AND EXPLOSION HAZARDS

Emits toxic fumes when heated

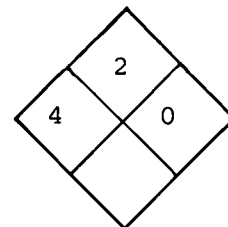
PRODUCT DESIGNATION	
Dimethyl-O-Toluidine	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
None available	no
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion, skin	IRRITATION moderate
REVELANT SYMPTOMS OF EXPOSURE Cyanosis, air hunger, nausea, vomiting, low blood pressure, convulsions.	
EFFECTS OF CHRONIC EXPOSURE	
Weight loss, anemia, weakness	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - give emetic, get medical aid; wash skin and eyes, skin may be washed with 5% acetic acid to aid removal.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Goggles
	GLOVES
SPECIAL	Rubber
	RESPIRATOR
OTHER PROTECTIVE EQUIPMENT	
With proper filter	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

240-4404B

PRODUCT DESIGNATION

03-240-4504
Dimethy-P-Toluidine

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS N,N-Dimethyl-P-Aminotoluene	FORMULA $(CH_3)_2NC_6H_4CH_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None available			

SECTION III PHYSICAL DATA

BOILING POINT 211°C	° F.	VAPOR PRESSURE at 72°C	mm Hg. 5
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 0.94		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA dry chemical, carbon dioxide, foam or water spray		
SPECIAL FIRE FIGHTING PROCEDURES wear full protective clothing		
UNUSUAL FIRE AND EXPLOSION HAZARDS emits toxic fumes when heated.		

PRODUCT DESIGNATION

Dimethyl-P-Toluidine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE

convulsions

Cyanosis, air hunger, nausea, vomiting, low blood pressure,

EFFECTS OF CHRONIC EXPOSURE

weight loss, anemia, weakness

EMERGENCY AND FIRST AID PROCEDURES

inhalation - rest; if swallowed - give emetic, get medical aid; wash skin & eyes, skin may be washed with 5% acetic acid to aid removal.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

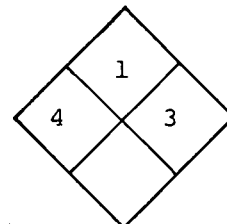
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240-4504B

PRODUCT DESIGNATION

03-240-5304
2,4 - Dinitroanisole

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS 1 Methoxy-2,4 Dinitrobenzene	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2,4 - Dinitroanisole	FORMULA (NO ₂) ₂ C ₆ H ₃ OCH ₃

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Note:						
Lowest published lethal dose						
oral - rat 100 mg/kg						

SECTION III PHYSICAL DATA MW - 198.13

BOILING POINT Sublimes	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 95°C	° F.	VAPOR DENSITY (Air = 1) 6.83
SPECIFIC GRAVITY (H ₂ O = 1) 1.34		EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Slightly soluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Colorless crystal		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA explosive - do not fight fire except for unmanned equipment - use water.		
SPECIAL FIRE FIGHTING PROCEDURES Wear full protective clothing for rescue operations.		
UNUSUAL FIRE AND EXPLOSION HAZARDS Severe explosion hazard.		

PRODUCT DESIGNATION

2,4 - Dinitroanisole

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

moderate

REVELANT SYMPTOMS OF EXPOSURE

Blood damage, cyanosis, dizziness, headache, increased

pulse rate, unconsciousness.

EFFECTS OF CHRONIC EXPOSURE

Weight loss, anemia, possible liver damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest, give oxygen as needed. If swallowed -
give emetic, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Keep away oxidizing materials (explosive) inorganic

nitrates, chlorides or ammonium nitrate.

HAZARDOUS DECOMPOSITION PRODUCTS

Oxides of nitrogen.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Keep from oxidizing materials, combustibles and source of heat.

OTHER PRECAUTIONS

SIGNATURE

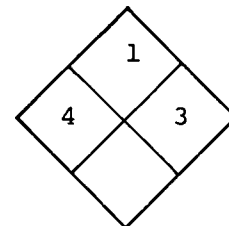
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PRODUCT DESIGNATION

03-240-4804
2,4, Dinitroaniline

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

2,4, Dinitroaniline

 $(\text{NO}_2)_2\text{C}_6\text{H}_3\text{NH}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose			418		rat	
intraperitoneal - rat 250 mg/kg						

SECTION III PHYSICAL DATA MW - 183.12

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
188°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.62			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Insoluble			
APPEARANCE AND ODOR			
Yellow crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 435°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Explosive - do not fight fire except for unmanned equipment - use water.		
SPECIAL FIRE FIGHTING PROCEDURES Wear full protective clothing for rescue operations.		
UNUSUAL FIRE AND EXPLOSION HAZARDS Severe explosion hazard.		

PRODUCT DESIGNATION

2,4 Dinitroaniline

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation of dust, ingestion, skin

SKIN AND EYE

IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE Headache, drowsiness, weakness, cyanosis, respiratory distress.

EFFECTS OF CHRONIC EXPOSURE

Weight loss, anemia, possible liver damage.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - give emetic, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

Reacts with oxidizing materials

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store away from oxidizing materials and heat.

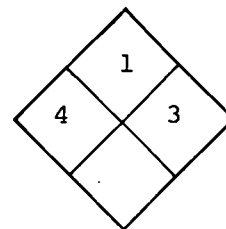
OTHER PRECAUTIONS

SIGNATURE

DATE

240-4804B

PRODUCT DESIGNATION

03-240-5804
M-DinitrobenzeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

M - Dinitrobenzene

FORMULA

 $C_6H_4(NO_2)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Skin - man TDLO 4 mg/kg	2 days		42		bird	
Oral - cat - LDLO 27 mg/kg						

SECTION III PHYSICAL DATA MW = 168.11

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
303°C			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
90°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.58			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
0.3			

APPEARANCE AND ODOR

Colorless to yellow crystals

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
not available		LOWER
METHOD USED		

EXTINGUISHING MEDIA Explosive - do not fight fire except for
unmanned equipment - use water.

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing for rescue operations

UNUSUAL FIRE AND EXPLOSION HAZARDS

Severe explosion hazard.

PRODUCT DESIGNATION

M-Dinitrobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 0.15 PPM, 1 mg/C.M. (Skin)

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Inhalation, ingestion, skin

IRRITATION

moderate

RELEVANT SYMPTOMS OF EXPOSURE

Blood damage, cyanosis, dizziness, increase pulse rate,

headache, unconsciousness

EFFECTS OF CHRONIC EXPOSURE

Weight loss, anemia, possible liver damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest, give oxygen as needed; if swallowed -
give emetic, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Keep from oxidizing materials (explosive)

inorganic nitrates, chlorates or ammonium nitrate.

HAZARDOUS DECOMPOSITION PRODUCTS

Oxides of nitrogen

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store only in a permanent magazine. Keep from oxidizing materials,
combustibles and source of heat.

OTHER PRECAUTIONS

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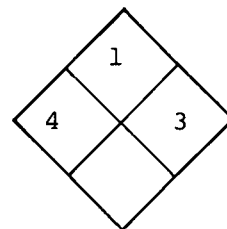
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241-5804B

PRODUCT DESIGNATION

3,5, Dinitrobenzoyl chloride
03-240-6304

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 3,5 - Dinitrobenzoyl chloride	FORMULA (NO ₂) ₂ C ₆ H ₃ COCl

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 230.57

BOILING POINT ° F.	VAPOR PRESSURE at 196°C	12 mm Hg.
MELTING POINT ° F.	VAPOR DENSITY (Air = 1)	
69°C	EVAPORATION RATE (_____ = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)	VOLATILE	% Vol. % Wt.
SOLUBILITY IN WATER Pts/100 pts H ₂ O decomposes		
APPEARANCE AND ODOR yellow green crystals		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA Explosive - do not fight fire except for unmanned equipment - use water.		
SPECIAL FIRE FIGHTING PROCEDURES Wear full protective clothing for rescue operations		
UNUSUAL FIRE AND EXPLOSION HAZARDS Severe explosion hazard.		

PRODUCT DESIGNATION

3,5 - Dinitrobenzoyl chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

inhalation, ingestion, skin

IRRITATION

severe

RELEVANT SYMPTOMS OF EXPOSURE Headache, cyanosis, dizziness, irritation of respiratory system, skin, eye, mouth and digestive tract burns.

EFFECTS OF CHRONIC EXPOSURE

Weight loss, anemia, possible liver damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; give oxygen as needed; if swallowed - drink water, milk of magnesia, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Keep from oxidizing materials (explosive) inorganic nitrates, chlorides or

HAZARDOUS DECOMPOSITION PRODUCTS

ammonium nitrate.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Keep from oxidizing materials, combustibles and source of heat.

OTHER PRECAUTIONS

SIGNATURE

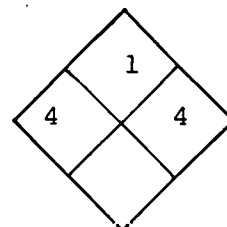
DATE

240-6304B

PRODUCT DESIGNATION

03-240-6804
2,4 - Dinitrobromobenzene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS	FORMULA
1 bromo-2,4, Dinitrobenzene	(NO ₂) ₂ C ₆ H ₃ Br

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA MW - 247.02

BOILING POINT ° F.	VAPOR PRESSURE mm Hg.
MELTING POINT ° F.	VAPOR DENSITY (Air = 1)
74 °C	
SPECIFIC GRAVITY (H ₂ O = 1)	EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O	VOLATILE % Vol. % Wt.

APPEARANCE AND ODOR

Yellow crystals

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
None available		
METHOD USED		LOWER

EXTINGUISHING MEDIA Explosive - do not fight fire except for unmanned
equipment - use water.

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing for rescue operations

UNUSUAL FIRE AND EXPLOSION HAZARDS

Severe explosion hazard.

PRODUCT DESIGNATION

2,4 - Dinitrobromobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE

Dermatitis, irritation of respiratory and digestive systems.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Keep from oxidizing materials (explosive) inorganic nitrates, chlorates or

HAZARDOUS DECOMPOSITION PRODUCTS

ammonium nitrate.

Oxides of nitrogen

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Keep from oxidizing materials, combustibles and source of heat.

OTHER PRECAUTIONS

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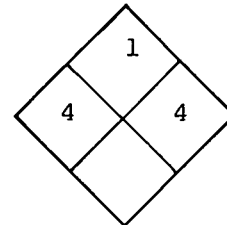
DATE

240-6804B

CAS:000097007

CZ05250

PRODUCT DESIGNATION

03-240-7004
2,4 - DinitrochlorobenzeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1 chloro 2,4, - dinitrobenzene

FORMULA

 $(\text{NO}_2)_2\text{C}_6\text{H}_3\text{Cl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			1070		Rat	
				130	Rabbit	

SECTION III PHYSICAL DATA MW - 202.56

BOILING POINT 315°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 52°C	° F.	VAPOR DENSITY (Air = 1) 6.98
SPECIFIC GRAVITY (H ₂ O = 1) 1.68		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Crystalline (yellow) almond-like odor		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
382°F		
METHOD USED		LOWER
CC		
EXTINGUISHING MEDIA Explosive - do not fight fire except for unmanned equipment - use water.		

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing for rescue operations.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Severe explosion hazard

PRODUCT DESIGNATION

2,4 - Dinitrochlorobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE

Dermatitis, irritation of respiratory and digestive systems, skin sensitized.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic,
get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID) Keep from oxidizing materials (explosive)
inorganic nitrates, chlorates and ammonium nitrate

HAZARDOUS DECOMPOSITION PRODUCTS

oxides of nitrogen

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Keep from oxidizing materials, combustibles, and source of heat.

OTHER PRECAUTIONS

SIGNATURE

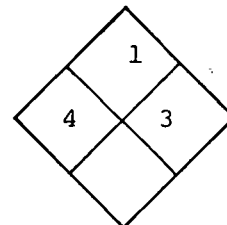
DATE

240-7004B

CAS:000534521

G096250

PRODUCT DESIGNATION

03-240-7304
4,6 - Dinitro-O-CresolMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

3,5, dinitro-2-hydroxytoluene

 $(\text{NO}_2)_2\text{C}_6\text{H}_2\text{C}_6\text{H}_2(\text{CH}_3)\text{OH}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			3010		rat	
				1750	hamster	
				200	rat	
			2147		mouse	
Lowest published toxic concentration in air						
inhalation - human 1 mg/C.M.						
LDLO - 5 mg/kg oral - human						

SECTION III PHYSICAL DATA MW-198.13

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
86°C		6.82	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Very slightly soluble			
APPEARANCE AND ODOR			
Yellow crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
None available		LOWER
METHOD USED		
EXTINGUISHING MEDIA	Explosive - do not fight fire except for unmanned equipment - use water.	
SPECIAL FIRE FIGHTING PROCEDURES	Wear full protective clothing for rescue operations.	
UNUSUAL FIRE AND EXPLOSION HAZARDS	Severe explosion hazard.	

PRODUCT DESIGNATION

4,6 - Dinitro - O - Cresol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 0.2 mg/C.M. (Skin)

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

moderate

RELEVANT SYMPTOMS OF EXPOSURE

Temperature elevation, dermatitis, headache, lassitude, malaise.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis, headache

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - drink water, epsom salts solution, get medical aid; inhalation - rest; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Explosive - keep from oxidizing materials
inorganic nitrates & chlorates, ammonium nitrate.

HAZARDOUS DECOMPOSITION PRODUCTS

Oxides of nitrogen

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

MECHANICAL (GENERAL)

SPECIAL

OTHER PROTECTIVE EQUIPMENT

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

GLOVES

rubber

RESPIRATOR

self-contained

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Keep from oxidizing materials, combustibles, and source of heat.

OTHER PRECAUTIONS

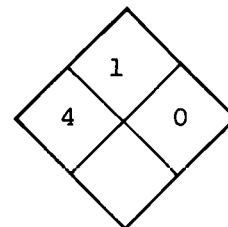
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240-7304B

DV4000

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE	
MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS	FORMULA
4,4 - Dinitrobiphenyl	NO ₂ C ₆ H ₄ C ₆ H ₄ NO ₂

[illegible]

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
233°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.45			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Insoluble			
APPEARANCE AND ODOR			
Needle-like crystals			

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
None available		LOWER
METHOD USED		
EXTINGUISHING MEDIA		
Alcohol foam, carbon dioxide or dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		
Water may cause frothing.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

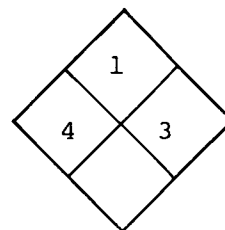
PRODUCT DESIGNATION 4, - dinitrodiphenyl	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL none available	CARCINOGENIC neoplasti
PRINCIPLE ROUTES OF ABSORPTION inhalation (mainly) ingestion	SKIN AND EYE IRRITATION moderate
REVELANT SYMPTOMS OF EXPOSURE Nausea, vomiting, central nervous system depression, headache, anemia	
EFFECTS OF CHRONIC EXPOSURE Irritation and lesions of respiratory passages.	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; oxygen as needed; if swallowed - get medical aid, gastric lavage; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

240-7804B

PRODUCT DESIGNATION

03-240-8304
4,4-Dinitrodiphenylmethane

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Bis (P-Nitrophenyl) Methane	FORMULA (NO ₂ C ₆ H ₄) ₂ CH ₂

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None available			

SECTION III PHYSICAL DATA MW - 258.23

BOILING POINT ° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 184° C.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1)	EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Soluble	VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Needle-like crystals.	

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water, carbon dioxide, dry chemicals.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

4,4-Dinitrodiphenylmethane

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Slight

RELEVANT SYMPTOMS OF EXPOSURE

Difficulty in breathing, cyanosis, vomiting, headache.

EFFECTS OF CHRONIC EXPOSURE

Methemoglobin - former.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin and eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May explode when heated with sulfuric acid.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Goggles

MECHANICAL (GENERAL)

GLOVES
Rubber

SPECIAL

RESPIRATOR
Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside or detached storage preferred, inside storage in standard flammable liquids cabinet.

OTHER PRECAUTIONS

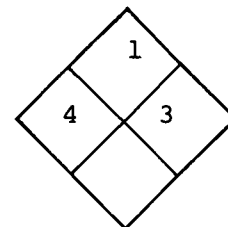
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SI78750

MATERIAL SAFETY DATA SHEET



03-240-9804
2,4, - Dinitrophenetole

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

α dinitrophenetole

$$\text{(NO}_2\text{)}_2\text{C}_6\text{H}_3\text{OC}_2\text{H}_5$$

SECTION II HAZARDOUS INGREDIENTS

[illegible]

SECTION III PHYSICAL DATA MW - 212.16

BOILING POINT decomposes	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 86°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O very slightly soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available METHOD USED		LOWER

EXTINGUISHING MEDIA Explosive - do not fight fire except for unmanned equipment - use water.

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing for rescue operations.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Severe explosion hazard

PRODUCT DESIGNATION

Dinitrophenetole

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available (skin)

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Inhalation of dust, ingestion, skin

IRRITATION

moderate

RELEVANT SYMPTOMS OF EXPOSURE

Cyanosis, dizziness, increased pulse rate, headache, unconsciousness.

EFFECTS OF CHRONIC EXPOSURE

Weight loss, anemia, possible liver damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest, give oxygen as needed; if swallowed -
give emetic, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Explosive - keep from oxidizing materials, inorganic
nitrates chlorates or ammonium nitrate.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Keep from oxidizing materials, combustibles and source of heat.

OTHER PRECAUTIONS

SIGNATURE

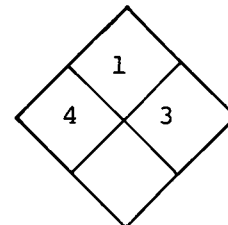
DATE

240-9804B

CAS:000051285

SL28000

PRODUCT DESIGNATION

03-241-0405
2,4 - dinitrophenolMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

2,4 dinitrophenol

(NO₂)₂ C₆H₃OH

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			30		rat	
Lowest published lethal dose				25	rat	
Oral - human - 43 mg/kg			13		bird	
			45		Mouse	
			30		Rabbit	
			81		Guinea Pig	

SECTION III PHYSICAL DATA MW - 184.11

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
115°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.68			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
0.56			
APPEARANCE AND ODOR			
Yellow crystals, bitter taste.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
None available		
METHOD USED		LOWER

EXTINGUISHING MEDIA Explosive - do not fight fire except for unmanned
equipment - use water.

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing for rescue operations.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Severe explosion hazard.

PRODUCT DESIGNATION
2,4 dinitrophenol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

moderate

RELEVANT SYMPTOMS OF EXPOSURE

temperature elevation, dermatitis.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis, headache.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - drink water, epsom salts solution,
get medical aid; inhalation - rest; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID) Explosive (keep from oxidizing materials) inorganic nitrates
and chlorates, ammonium nitrate

HAZARDOUS DECOMPOSITION PRODUCTS

Oxides of nitrogen.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber (butyl)

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Keep from oxidizing materials, combustibles and source of heat.

OTHER PRECAUTIONS

SIGNATURE

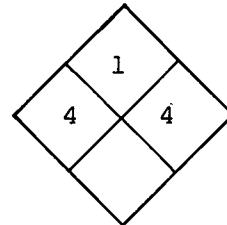
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241-0405B

PRODUCT DESIGNATION

03-241-0605
2,4 - Dinitrophenyl hydrazine

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

2,4 - Dinitrophenylhydrazine

 $(\text{NO}_2)_2\text{C}_6\text{H}_3\text{NHNH}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		
			654		Rat	

SECTION III PHYSICAL DATA MW - 198.14

BOILING POINT --	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 194°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR			
red crystalline powder			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

explosive - do not fight fire except for unmanned equipment - use water

SPECIAL FIRE FIGHTING PROCEDURES

wear full protective clothing for rescue operation

UNUSUAL FIRE AND EXPLOSION HAZARDS

dangerous explosive

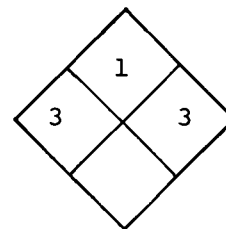
PRODUCT DESIGNATION	
2,4 - Dinitrophenylhydrazine	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
None available (skin)	CARCINOGENIC no
PRINCIPLE ROUTES OF ABSORPTION	
Inhalation, ingestion, skin	SKIN AND EYE IRRITATION severe
REVELANT SYMPTOMS OF EXPOSURE Irritation of skin, eyes and mucous membranes, gastroenteric disturbances, anemia	
EFFECTS OF CHRONIC EXPOSURE	
Blood and liver damage, loss of appetite	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - induce vomiting, get medical aid; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
Avoid strong oxidizing agents.	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Keep away from heat and sources of ignition or acute fire hazard.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

241-0605B

CAS:000121142

XT15750

PRODUCT DESIGNATION

03-241-1405
2,4 - DinitrotolueneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2,4 - Dinitro - 1 methyl benzene

FORMULA

 $\text{CH}_3\text{C}_6\text{H}_3(\text{NO}_2)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			268		rat	
			1625		mouse	

SECTION III PHYSICAL DATA

MW - 182.13

BOILING POINT

° F.

VAPOR PRESSURE

mm Hg.

300

MELTING POINT

° F.

VAPOR DENSITY (Air = 1)

70°C

6.27

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

1.32

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

0.03

APPEARANCE AND ODOR

yellow needle-like crystal

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

none available

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

EXTINGUISHING MEDIA

explosive - do not fight fire except for unmanned equipment.

SPECIAL FIRE FIGHTING PROCEDURES

use complete protective clothing for rescue operations.

UNUSUAL FIRE AND EXPLOSION HAZARDS

May explode when exposed to heat.

PRODUCT DESIGNATION

2,4 - Dinitrotoluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

1.5 mg/C.M.

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation of dust, ingestion

SKIN AND EYE

IRRITATION

moderate

RELEVANT SYMPTOMS OF EXPOSURE

Headache, fatigue, nausea, vomiting, eye irritation, dermatitis

EFFECTS OF CHRONIC EXPOSURE

Loss of weight, jaundice, dermatitis

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May react with strong oxidizer

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Keep separate from strong oxidizing and reducing agents.

OTHER PRECAUTIONS

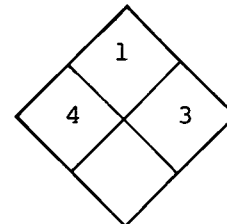
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DATE

241-1405B

XP26250

MATERIAL SAFETY DATA SHEET



MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1,3 dinitro-5 isopropyl - 4 hydroxy - 6 methylbenzene	FORMULA (NO ₂) ₂ C ₆ H(CH ₃)(C ₃ H ₇)OH

[illegible]

BOILING POINT ° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 55°C ° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1)	EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble	VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR prismatic crystals	

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		
METHOD USED		LOWER
EXTINGUISHING MEDIA explosive - do not fight fire except for unmanned equipment - use water.		

Wear full protective clothing for rescue operations.

Explosion hazard

PRODUCT DESIGNATION
2,6 dinitrothymol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
none available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION
Inhalation of dust, ingestion, skin

SKIN AND EYE
IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE
temperature elevation, dermatitis, headache

EFFECTS OF CHRONIC EXPOSURE
dermatitis, headache

EMERGENCY AND FIRST AID PROCEDURES
If swallowed - drink water, epsom salts solution, get medical aid;
inhalation - rest; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Explosive - keep from oxidizing materials

HAZARDOUS DECOMPOSITION PRODUCTS

Oxides of nitrogen

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
SPECIAL	RESPIRATOR
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Keep from oxidizing materials, combustibles and source of heat.

OTHER PRECAUTIONS

SIGNATURE

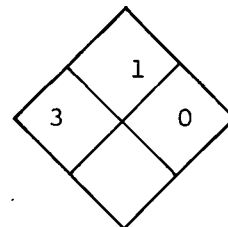
DATE

241-0905B

PRODUCT DESIGNATION

03-241-2405
P-Diiodobenzene

MATERIAL SAFETY DATA SHEET


SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 4-Diiodobenzene	FORMULA $C_6H_4I_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA

MW - 329.93

BOILING POINT 285°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 130°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR crystalline			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA water, foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES wear goggles and self-contained breathing apparatus		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

P-diiodobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

severe

RELEVANT SYMPTOMS OF EXPOSURE

cyanosis, nausea, deep and rapid respiration, irregular pulse, drowsiness, unconsciousness

EFFECTS OF CHRONIC EXPOSURE

Lung, liver and kidney damage

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Polyvinyl alcohol

SPECIAL

RESPIRATOR

Self-contained breathing apparatus

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

241-2405B

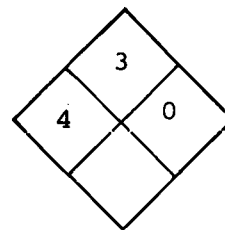
CAS:000123911

JG82250

PRODUCT DESIGNATION

P-Dioxane
03-241-2906
03-241-2936

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Diethylene Dioxide, Dioxane -1.4

FORMULA

—OCH₂CH₂OCH₂CH₂—

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ ppm	
			ORAL	PERCUT.	SPECIES	CONC.
			8150		Guinea Pig	
Inhalation - human TCLO	470 PPM					
Oral - human - LDLO	500 mg/kg		2000		Cat	
			2000	7600	Rabbit	
			4200		Rat	
			5700		Mouse	

SECTION III PHYSICAL DATA

BOILING POINT 101°C.	° F.	VAPOR PRESSURE at 25.2°C.	40	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1) 1.2 at 100°F		
SPECIFIC GRAVITY (H ₂ O = 1) ~1.0		EVAPORATION RATE (_____ = 1)		
SOLUBILITY IN WATER Pts/100 pts H ₂ O Very Soluble		VOLATILE	% Vol.	% Wt.
APPEARANCE AND ODOR Colorless liquid, faint pleasant odor				

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 54°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 22%
METHOD USED		LOWER 2%
EXTINGUISHING MEDIA Alcohol foam, dry chemical, or CO ₂		
SPECIAL FIRE FIGHTING PROCEDURES Wear goggles and self-contained breathing apparatus		
UNUSUAL FIRE AND EXPLOSION HAZARDS N/A		

PRODUCT DESIGNATION

P-Dioxane

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 50 ppm, 180 mg/C.M.

Experimental carcinog
CARCINOGENIC
Oral - rat

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, and skin absorption

SKIN AND EYE

IRRITATION Moderate

RELEVANT SYMPTOMS OF EXPOSURE Nausea, vomiting, irritation of eyes and respiratory passages.

EFFECTS OF CHRONIC EXPOSURE

Liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest, keep warm; if swallowed - wash mouth, give emetic, get medical aid;
wash from skin and eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper towel, evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

Use in hood.

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Face shield

MECHANICAL (GENERAL)

GLOVES

Impervious neoprene

SPECIAL

RESPIRATOR

Self-contained breathing apparatus

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store away from flammable and oxidizing materials, outside storage is preferred.

OTHER PRECAUTIONS

SIGNATURE

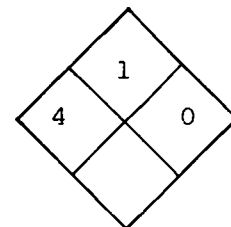
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241-2906B

CAS:000092524

DU80500

PRODUCT DESIGNATION

03-241-4905
DiphenylMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Phenylbenzene

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Biphenyl

FORMULA

 $C_6H_5-C_6H_5$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
TDLO - inhalation - human	4.4 mg/C.M.		3280		rat	
			2400		rabbit	
				2500	rabbit	

SECTION III PHYSICAL DATA MW - 154.22

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
255°C			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
69-70°C		5.31	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.991			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
No			
APPEARANCE AND ODOR			

White crystal, pleasant odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE)	UPPER
235°F	LIMITS	5.1%
METHOD USED		LOWER
C.C.		0.6%

EXTINGUISHING MEDIA

carbon dioxide or dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

water may cause frothing. Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

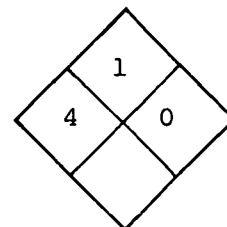
PRODUCT DESIGNATION Diphenyl	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL TLV - 0.2 PPM, 1 mg/C.M. CARCINOGENIC no	
PRINCIPLE ROUTES OF ABSORPTION Inhalation (mainly) ingestion	SKIN AND EYE IRRITATION yes
RELEVANT SYMPTOMS OF EXPOSURE Nausea, vomiting, central nervous system depression	
EFFECTS OF CHRONIC EXPOSURE Irritation and lesions of respiratory passages	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - get medical aid, gastric lavage- wash from eyes and skin.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Absorb on paper towel; evaporate on glass or iron dish in hood.	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Polyvinyl alcohol
SPECIAL	RESPIRATOR With proper filter
OTHER PROTECTIVE EQUIPMENT Protective clothing	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

241-4905B

PRODUCT DESIGNATION

03-241-6405
M-Diphenylbenzene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

M Terphenyl

$$\begin{array}{ccccccc} C & H & C & H & C & H \\ 6 & 5 & 6 & 4 & 6 & 5 \end{array}$$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA

MW - 230.29

BOILING POINT

° F.

VAPOR PRESSURE

mm Hg.

363°C

MELTING POINT

° F.

VAPOR DENSITY (Air = 1)

87°C

7.95

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

1.16

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

insoluble

APPEARANCE AND ODOR

Crystals

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

375°F

METHOD USED

O.C.

EXTINGUISHING MEDIA

Water, carbon dioxide, dry chemical

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

SPECIAL FIRE FIGHTING PROCEDURES

Water or foam may cause frothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

M Diphenylbenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

1 PPM, 9 mg/C.M. (ceiling values)

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Inhalation, ingestion

IRRITATION

moderate

RELEVANT SYMPTOMS OF EXPOSURE

Eye, skin & respiratory irritation, nausea, vomiting

EFFECTS OF CHRONIC EXPOSURE

Liver and kidney damage, pulmonary edema, bronchopneumonia

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - get medical aid, gastric lavage; wash from skin and eyes

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Polyvinyl alcohol

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

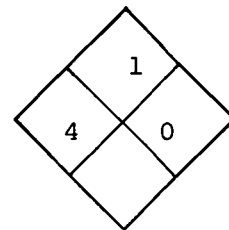
DATE

241-6405B

PRODUCT DESIGNATION

03-241-6505
O-Diphenyl benzene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS O-Terphenyl	FORMULA $C_6H_5-C_6H_4-C_6H_5$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA MW - 230.29

BOILING POINT 332°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 57°C	° F.	VAPOR DENSITY (Air = 1) 7.95
SPECIFIC GRAVITY (H ₂ O = 1) 1.14		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Crystalline		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 325°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED O.C.		
EXTINGUISHING MEDIA water, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES water or foam may cause frothing		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

O-Diphenyl benzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

1 PPM, 9 mg/C.M. (Ceiling values)

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE

Eye, skin and respiratory irritation; nausea, vomiting

EFFECTS OF CHRONIC EXPOSURE

Liver and kidney damage, pulmonary edema, bronchopneumonia

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - get medical aid, gastric lavage; wash from skin and eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Polyvinyl alcohol

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

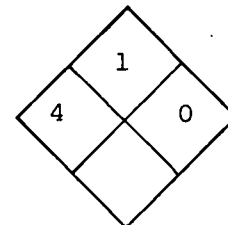
SIGNATURE

DATE

241-6505B

WZ64750

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE	
MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS	FORMULA
P Terphenyl	<chem>c1ccc(cc1)-c2ccc(cc2)-c3ccc(cc3)</chem>

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD50		LC50	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose						
Oral - rat 500 mg/kg.						

SECTION III PHYSICAL DATA MW - 230.29

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg
376°C			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
213°C		7.95	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.24			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Soluble in hot water			
APPEARANCE AND ODOR			
crystalline			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
405 ⁰ C		
METHOD USED		LOWER
O.C.		
EXTINGUISHING MEDIA		
Water, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

Water or foam may cause frothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

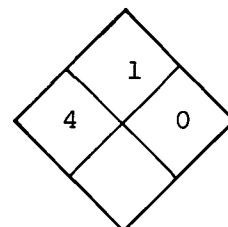
PRODUCT DESIGNATION	
P-Diphenylbenzene	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
1 PPM, 9 mg/C.M. (Ceiling Value)	no
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion	IRRITATION Moderate
RELEVANT SYMPTOMS OF EXPOSURE	
Eye, skin & respiratory irritation; nausea, vomiting	
EFFECTS OF CHRONIC EXPOSURE	
Liver and kidney damage, pulmonary edema, bronchopneumonia	
EMERGENCY AND FIRST AID PROCEDURES	
Inhalation - rest; if swallowed - get medical aid, gastric lavage; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Polyvinyl alcohol
SPECIAL	RESPIRATOR
	With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

241-6605B

PRODUCT DESIGNATION

03-242-0606
As-Diphenylhydrazine Hydrochloride

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1,1-Diphenylhydrazine hydrochloride	FORMULA (C ₆ H ₅) ₂ NNH ₂ ·HCl

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 220.70

BOILING POINT not available	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT not available	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O slightly soluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR white to grey white crystals		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA alcohol foam, water, carbon dioxide		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

As Diphenylhydrazine hydrochloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation of dust, ingestion, skin

SKIN AND EYE

IRRITATION

severe

REVELANT SYMPTOMS OF EXPOSURE

Irritation of skin, eyes and mucous membranes, gastroenteric disturbances, anemia

EFFECTS OF CHRONIC EXPOSURE

Blood and liver damage, loss of appetite.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - induce vomiting, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

Avoid lead dioxide

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

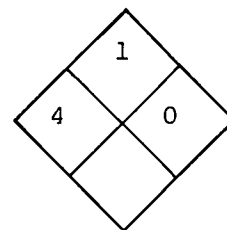
DATE

242-0606B

PRODUCT DESIGNATION

03-242-2606
1,4 - Diphenylsemicarbazide

MATERIAL SAFETY DATA SHEET


SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1,4 - Diphenylsemicarbazide	FORMULA $C_{12}H_{10}N_4O_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 227.26

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
180°C		7.8	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
very slightly soluble			
APPEARANCE AND ODOR			
crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		LOWER
METHOD USED		
EXTINGUISHING MEDIA		
alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

when heated to decomposition emits toxic fumes

PRODUCT DESIGNATION
1,4, Diphenylsemicarbazide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

inhalation, ingestion, skin

IRRITATION

severe

RELEVANT SYMPTOMS OF EXPOSURE irritation of skin, eyes and mucous membranes,

gastroenteric disturbances, anemia

EFFECTS OF CHRONIC EXPOSURE

Blood and liver damage, loss of appetite

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - induce vomiting,
get medical aid; wash from eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

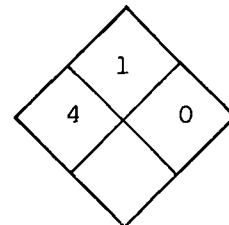
DATE

242-2606B

CAS:000110974

UB66000

PRODUCT DESIGNATION

03-242-5606
Di-Iso-PropanolamineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Di-2-Propanolamine

FORMULA

 $(C_3H_7OH)_2NH$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/C.M.		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			6720		Rat	

SECTION III PHYSICAL DATA

MW - 133.19

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
249°C			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
42°C		4.59	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.99			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
-			
APPEARANCE AND ODOR			
-			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
260°F		LOWER
METHOD USED		
O.C.		
EXTINGUISHING MEDIA		
alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Di-Iso-propanolamine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
none available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION
inhalation, ingestion

SKIN AND EYE
IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE
Eye and skin burns, nausea, headache, respiratory tract irritation, lung edema

EFFECTS OF CHRONIC EXPOSURE
Weight loss, clouding of cornea

EMERGENCY AND FIRST AID PROCEDURES
Inhalation - rest; if swallowed - drink water, get medical aid; wash from hands and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE goggles
MECHANICAL (GENERAL)	GLOVES rubber
SPECIAL	RESPIRATOR with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

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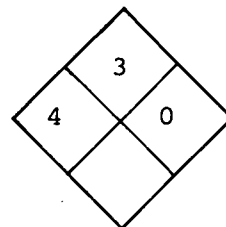
DATE

242-5606B

CAS:000108189

IM40250

PRODUCT DESIGNATION

03-242-6106
Di-Iso-PropylamineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Di Isopropylamine

FORMULA

 $(C_3H_7)_2NH$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			703		rat	
Lowest published lethal concentration in air						
inhalation - rat - 1000 PPM - 4 hours						

SECTION III PHYSICAL DATA

MW - 101.22

BOILING POINT 84°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT -61°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.722			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
soluble			
APPEARANCE AND ODOR			
Colorless liquid, with fishy odor			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 30°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED O.C.		LOWER
EXTINGUISHING MEDIA		
alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

water may be ineffective, wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Di-Iso-Propylamine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

5 PPM, 20 mg/C.M. Skin

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION

severe

RELEVANT SYMPTOMS OF EXPOSURE

respiratory tract irritation, lung edema, skin & eye burns,

EFFECTS OF CHRONIC EXPOSURE

nausea, headache.

clouding of cornea

EMERGENCY AND FIRST AID PROCEDURES

inhalation - rest; if swallowed - drink water, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

outside or detached storage is preferable-inside storage should be in a standard flammable liquid storage room or cabinet.

OTHER PRECAUTIONS

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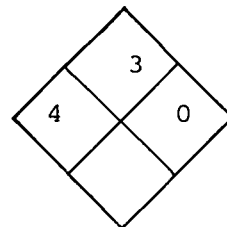
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242-6106B

CAS:000142847

JL92000

PRODUCT DESIGNATION

03-242-6206
Di-N-propyl amineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Di-Propylamine

FORMULA

 $(C_3H_7)_2NH$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			930		rat	
			1250		rabbit	
Lowest published lethal concentrations in air						
inhalation - rat 1000 PPM - 4 hours						

SECTION III PHYSICAL DATA

MW - 101.22

BOILING POINT	° F.	VAPOR PRESSURE	mm.Hg.
105°C			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-40°C		3.5	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.74			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

water white, fishy odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
63°F		
METHOD USED		LOWER
O.C.		
EXTINGUISHING MEDIA		
foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Di-N-propylamine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion (mainly)

SKIN AND EYE

IRRITATION

severe

RELEVANT SYMPTOMS OF EXPOSURE

respiratory tract irritation, lung edema, eye & skin
burns, nausea, headache.

EFFECTS OF CHRONIC EXPOSURE

Weight loss, clouding of cornea.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - drink water, get
medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

outside or detached storage is preferable-inside storage should be in a
standard flammable liquid storage room or cabinet.

OTHER PRECAUTIONS

SIGNATURE

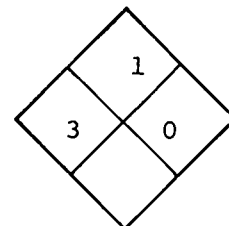
DATE

242-6206B

PRODUCT DESIGNATION

03-242-6606
N,N-Di-N-Propylaniline

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

N,N-Dipropylaniline

 $C_6H_5N(CH_2CH_2CH_3)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA

MW - 177.28

BOILING POINT

245°C

°F.

VAPOR PRESSURE

at 177°C

mm Hg.

12

MELTING POINT

°F.

VAPOR DENSITY (Air = 1)

SPECIFIC GRAVITY (H₂O = 1)

0.91

EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O

insoluble

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

yellow oil

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

none available

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

EXTINGUISHING MEDIA

alcohol foam, carbon dioxide, water spray, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

N,N-Di-N-Propylaniline

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE headache, drowsiness, cyanosis, mental confusion, convulsions.

EFFECTS OF CHRONIC EXPOSURE

Fatigue, loss of appetite, headache, dizziness

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - induce vomiting, get medical aid;
inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

polyvinyl

SPECIAL

RESPIRATOR

self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

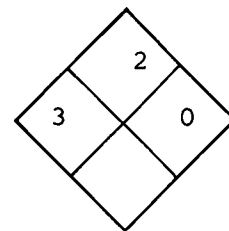
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242-6606B

PRODUCT DESIGNATION

03-242-7106
Di-N-propyl carbinol

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

Heptanol 4

 $(C_7H_{16})_2CHOH$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA

MW - 116.2

BOILING POINT

° F.

VAPOR PRESSURE

mm Hg.

156°C

MELTING POINT

° F.

VAPOR DENSITY (Air = 1)

-37°C

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

0.82

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

insoluble

APPEARANCE AND ODOR

liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

none available

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

EXTINGUISHING MEDIA

alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

water may be ineffective

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Di-N-propylcarbinol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
not available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION
inhalation, ingestion, skin

SKIN AND EYE
IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE Twitching, narcosis, weakness, tremors, convulsions,
eye irritation.

EFFECTS OF CHRONIC EXPOSURE
liver damage

EMERGENCY AND FIRST AID PROCEDURES inhalation - rest; if swallowed - induce vomiting, get
medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

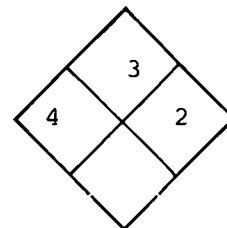
DATE

242-7106B

CAS:000106898

TX49000

PRODUCT DESIGNATION

03-244-0407
EpichlorohydrinMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1-chloro-2,3-Epoxypropane	FORMULA C_3H_5OCl

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO - oral - human	50 mg/kg		90		rat	
TCLO - inhalation - human	- 20 ppm eye irritation		238		mouse	
				515	rabbit	
Inhalation - mouse	LC100 - 7414 PPM - 30 months					

SECTION III PHYSICAL DATA MW - 92.52

BOILING POINT 118°C	° F.	VAPOR PRESSURE at 17°C	mm Hg.
MELTING POINT -58°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Soluble		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

colorless, mobile liquid, irritating chloroform-like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 105°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 21%
METHOD USED Open cup		LOWER 3.8%

EXTINGUISHING MEDIA

Alcohol foam, water, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing -

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition, emits highly toxic fumes of phosgene.

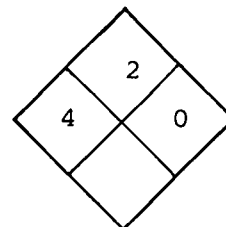
PRODUCT DESIGNATION	
Epichlorohydrin	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
TLV - 2 PPM, 8 mg/C.M. (skin)	CARCINOGENIC Yes
PRINCIPLE ROUTES OF ABSORPTION	
Ingestion, inhalation, skin	SKIN AND EYE IRRITATION severe
REVELANT SYMPTOMS OF EXPOSURE cyanosis, eye irritation, severe skin & eye burns, central nervous system depression and irritation of respiratory tract.	
EFFECTS OF CHRONIC EXPOSURE	
Eye irritation, chronic weariness and stomach upset.	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest, oxygen as needed; if swallowed - give emetic, get medical aid; wash skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
Polymerizes exothermically in the presence of water, acids, bases -	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Absorb with paper towels, evaporate in hood.	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Safety glasses
MECHANICAL (GENERAL)	GLOVES
	rubber
SPECIAL	RESPIRATOR
	with proper filter
OTHER PROTECTIVE EQUIPMENT	
Full protective clothing	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Separate from acids, bases and anhydrous metal halides - store in well ventilated area.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

246-0407B

CAS:000141435

KJ57750

PRODUCT DESIGNATION

03-244-1707
EthanolamineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2 amino ethanol

FORMULA

 $\text{NH}_2\text{CH}_2\text{CH}_2\text{OH}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg.		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			2100		rat	
				1000	rabbit	

SECTION III PHYSICAL DATA MW - 61.08

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
171°C		at 60°C	6
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
11°C		2.1	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.02			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
very soluble			

APPEARANCE AND ODOR

colorless oil, ammoniacal odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
185°F		LOWER
METHOD USED		

EXTINGUISHING MEDIA

alcohol foam, water, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Ethanolamine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

3 PPM, 6 mg/C.M.

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

ingestion, inhalation

IRRITATION

severe

RELEVANT SYMPTOMS OF EXPOSURE Affects central nervous system, eye and respiratory tract irritation.

EFFECTS OF CHRONIC EXPOSURE Weight loss, decrease in alertness, skin irritation, liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - drink water, fruit juice, get medical aid; inhalation - rest; wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Take up liquid in sodium bisulfite, then add water.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber (butyl)

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in well-ventilated area, away from flammable material.

OTHER PRECAUTIONS

SIGNATURE

DATE

244-1707B

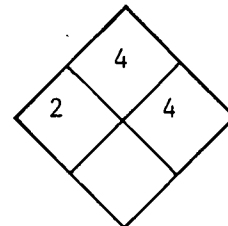
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K157750

PRODUCT DESIGNATION

03-246-1908
03-246-1958
Ethyl Ether

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
Ethyl	
CHEMICAL NAME AND SYNONYMS	FORMULA
Ethyl Ether	C ₂ H ₅ OC ₂ H ₅

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ PPM	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO - oral - human	420 mg/kg		1700		Rat	
					Mouse	11/10 min.
TCLO - inhalation - human	200 PPM					

SECTION III PHYSICAL DATA MW - 74.12

BOILING POINT	° F.	VAPOR PRESSURE	m.m Hg.
35°C.		at 15°C.	360
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-116°C.		2.6	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.71			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
7.5			
APPEARANCE AND ODOR			
Colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE)	UPPER
-49°F.	LIMITS	36%
METHOD USED		LOWER
Closed cup		1.9%
EXTINGUISHING MEDIA		
Dry chemical or carbon dioxide.		
SPECIAL FIRE FIGHTING PROCEDURES		
Water may be ineffective.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		
Forms explosive peroxides with oxygen.		

PRODUCT DESIGNATION
Ethyl Ether

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 400 PPM, 1200 mgC.M.

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Yes

RELEVANT SYMPTOMS OF EXPOSURE

Nasal irritation, drowsiness, dizziness, mental confusion, faintness, unconsciousness.

EFFECTS OF CHRONIC EXPOSURE

Loss of appetite, exhaustion, headache, sleepiness, dizziness.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic, get medical aid; wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

Reacts with oxygen to produce explosive peroxides shelf life 12 months.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety glasses

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

Self-contained breathing apparatus

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Detached outside storage preferred. Inside storage in flammable liquids storage cabinet.

OTHER PRECAUTIONS

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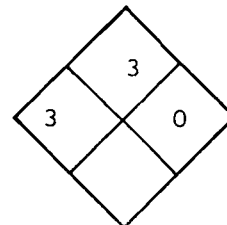
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246-1908B

CAS:000142961

EK54250

PRODUCT DESIGNATION

03-246-4308
N-Butyl EtherMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

1,1'-Oxybisbutane

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Dibutyl Ether

FORMULA

 $C_4H_9OC_4H_9$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			11,000		Rat	
Lowest published lethal concentration in air				10,000	Rabbit	
inhalation - rat - 4000 PPM - 4 hours						

SECTION III PHYSICAL DATA

MW 130.22

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
142°C		at 20°C	4.8
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-95°C		4.48	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.77			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
insoluble			
APPEARANCE AND ODOR			
clear liquid with etherial odor			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
77°F		7.6%
METHOD USED		LOWER
Closed cup		1.5%
EXTINGUISHING MEDIA		
alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

water may be ineffective. Wear goggles and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
N Butyl Ether

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL 100 PPM suggested CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION SKIN AND EYE
inhalation, ingestion IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE Irritating to eyes and nose, central nervous system depression, drowsiness, dizziness, unconsciousness.

EFFECTS OF CHRONIC EXPOSURE dermatitis

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid, gastric lavage; inhalation - give oxygen as needed; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY
May form explosive peroxides.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Absorb with paper, evaporate from paper in hood.

WASTE DISPOSAL METHOD
Dissolve in benzene or petroleum ether and burn.

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE goggles
MECHANICAL (GENERAL)	GLOVES rubber
SPECIAL	RESPIRATOR self-contained breathing apparatus

OTHER PROTECTIVE EQUIPMENT
body shield

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
Outside storage is preferable. Inside storage in flammable liquids room or cabinet.

OTHER PRECAUTIONS

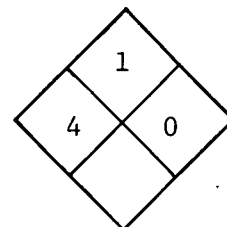
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246-4308B

PRODUCT DESIGNATION

03-237-9401
Diethylaminochlorobenzene

MATERIAL SAFETY DATA SHEET


SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS N,N Diethyl chloroaniline	FORMULA (C ₂ H ₅) ₂ NC ₆ H ₄ Cl

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 183.69

BOILING POINT ° F.	VAPOR PRESSURE at 96°C mm Hg. 1.5
MELTING POINT ° F. 39°C.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1)	EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O	VOLATILE % Vol. % Wt.

APPEARANCE AND ODOR

Needle-like crystals.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide and dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES
UNUSUAL FIRE AND EXPLOSION HAZARDS

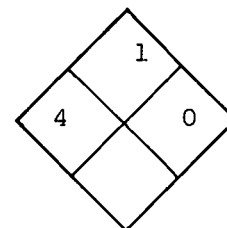
PRODUCT DESIGNATION Diethylaminochlorobenzene	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL None available	CARCINOGENIC No
PRINCIPLE ROUTES OF ABSORPTION Inhalation, ingestion skin	SKIN AND EYE IRRITATION Moderate
RELEVANT SYMPTOMS OF EXPOSURE Weakness, tremors, cyanosis, drowsiness, central nervous system depressed.	
EFFECTS OF CHRONIC EXPOSURE Fatigue, loss of appetite, headache, dizziness.	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest, get medical aid; if swallowed - give emetic; get medical aid, wash skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Polyvinyl alcohol
SPECIAL	RESPIRATOR With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

237-9401B

PRODUCT DESIGNATION

03-238-0102
2-Diethylamino -
1,4-Dimethylbenzene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS N,N Diethyl 3,6 Dimethylaniline	FORMULA (C ₂ H ₅) ₂ NC ₆ H ₃ (CH ₃) ₂

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA

BOILING POINT --	° F.	VAPOR PRESSURE at 96° C.	11 mm Hg.
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorless to yellow liquid.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

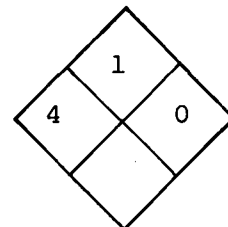
FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, dry chemical, carbon dioxide.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION	
2 Diethylamino - 1,4 - Dimethylbenzene	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
None available	No
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion, skin	IRRITATION Moderate
RELEVANT SYMPTOMS OF EXPOSURE Weakness, tremors, cyanosis, drowsiness, central nervous system depressant.	
EFFECTS OF CHRONIC EXPOSURE	
Fatigue, loss of appetite, headache, dizziness.	
EMERGENCY AND FIRST AID PROCEDURES	
Inhalation - rest; if swallowed - give emetic, get medical aid; wash skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Polyvinyl Alcohol
SPECIAL	RESPIRATOR
	With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

238-0102B

PRODUCT DESIGNATION

03-238-0602

4-Diethylamino - 1,3-Dimethyl
benzeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS N,N-Diethyl 2,4-Dimethylaniline	FORMULA (C ₂ H ₅) ₂ NC ₆ H ₃ (CH ₃) ₂

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None available			

SECTION III PHYSICAL DATA

BOILING POINT --	° F.	VAPOR PRESSURE at 102° C.	14 mm Hg.
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorelss to yellow liquid.			

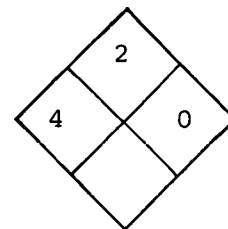
SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, dry chemical, carbon dioxide.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION	
4-Diethylamino - 1,3 - Dimethylbenzene	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
None available No	
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion, skin	IRRITATION Moderate
REVELANT SYMPTOMS OF EXPOSURE Weakness, tremors, cyanosis, drowsiness, central nervous system depressant.	
EFFECTS OF CHRONIC EXPOSURE	
Fatigue, loss of appetite, headache, dizziness.	
EMERGENCY AND FIRST AID PROCEDURES	
Inhalation - rest; if swallowed - give emetic, get medical aid; wash skin and eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Polyvinyl alcohol
SPECIAL	RESPIRATOR
	With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

238-0602B

PRODUCT DESIGNATION

03-238-3102
DiethylanilineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

diethylphenylamine

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

NN diethylaniline

FORMULA

 $C_6H_5N(C_2H_5)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			782		Rat	

SECTION III PHYSICAL DATA

MW - 149.23

BOILING POINT

215.5°C

° F.

VAPOR PRESSURE

at 49.7°C

1 mm Hg.

MELTING POINT

-38°C

° F.

VAPOR DENSITY (Air = 1)

5.15

SPECIFIC GRAVITY (H₂O = 1)

0.9351

EVAPORATION RATE (____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O

1.44

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

Colorless to yellow liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

185°F

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

EXTINGUISHING MEDIA

Alcohol foam, water spray, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
diethylaniline

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL not available CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION Inhalation, ingestion, skin SKIN AND EYE IRRITATION yes

REVELANT SYMPTOMS OF EXPOSURE Weakness, tremors, cyanosis, drowsiness, central nervous system depressant

EFFECTS OF CHRONIC EXPOSURE Fatigue, loss of appetite, headache, dizziness

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest, get medical aid; if swallowed - wash mouth, give emetic, get medical aid; wash from eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Polyvinyl alcohol
SPECIAL	RESPIRATOR With proper filter
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

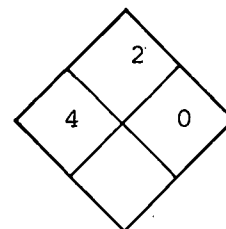
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238-3102B

PRODUCT DESIGNATION

03-238-4602
Diethyl-M-Toluidine

MATERIAL SAFETY DATA SHEET


SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME		EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)		
TRADE NAME AND SYNONYMS		CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS N,N,-Diethyl-M-Toluidine		FORMULA $(C_2H_5)_2NC_6H_4CH_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA

BOILING POINT --	° F.	VAPOR PRESSURE 97°C at 7	mm Hg.
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Dark colored liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

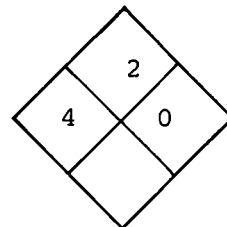
FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA Carbon dioxide, dry chemical, foam or water spray		
SPECIAL FIRE FIGHTING PROCEDURES Wear full protective clothing		
UNUSUAL FIRE AND EXPLOSION HAZARDS Emits toxic fumes when heated		

PRODUCT DESIGNATION	
Diethyl-M-Toluidine	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
Not available	no
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion, skin	IRRITATION
RELEVANT SYMPTOMS OF EXPOSURE	yes
Cyanosis, air hunger, nausea, vomiting, low blood pressure, convulsions	
EFFECTS OF CHRONIC EXPOSURE	
Weight loss, anemia, weakness	
EMERGENCY AND FIRST AID PROCEDURES	
Inhalation - rest; if swallowed - give emetic, get medical aid; wash skin & eyes, skin may be washed with a 5% solution of acetic acid to aid removal.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

PRODUCT DESIGNATION

03-238-4702
Diethyl-O-Toluidine

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	

TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS N,N-Diethyl-O-Toluidine	FORMULA $(C_2H_5)_2NC_6H_4CH_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW135.23

BOILING POINT 209°C	° F.	VAPOR PRESSURE at 86°C	10 mm Hg.
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) --		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Dark colored liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Carbon dioxide, dry chemical, foam or water spray

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing

UNUSUAL FIRE AND EXPLOSION HAZARDS

Emits toxic fumes when heated

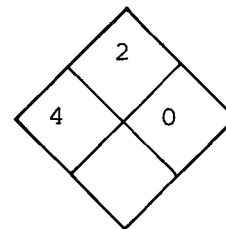
PRODUCT DESIGNATION	
Diethyl-O-Toluidine	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
None available	No
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion, skin	IRRITATION
	yes
REVELANT SYMPTOMS OF EXPOSURE Cyanosis, air hunger, nausea, vomiting, low blood pressure, convulsions	
EFFECTS OF CHRONIC EXPOSURE	
Weight loss, anemia, weakness	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - give emetic; get medical aid; wash skin & eyes, skin may be washed with a 5% acetic acid to aid removal.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
Can react with oxidizing materials	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

238-4702B

PRODUCT DESIGNATION

03-238-4802
Diethyl-P-Toluidine

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

N,N-Diethyl-P-Toluidine

FORMULA

 $(C_2H_5)_2NC_6H_4CH_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA

MW - 163.26

BOILING POINT

° F.

229°C

VAPOR PRESSURE

mm Hg.

at 103°C

10

MELTING POINT

° F.

VAPOR DENSITY (Air = 1)

SPECIFIC GRAVITY (H₂O = 1)

0.92

EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

Dark colored liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

Not available

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

EXTINGUISHING MEDIA

Carbon dioxide, dry chemical, foam or water spray

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing

UNUSUAL FIRE AND EXPLOSION HAZARDS

Emits toxic fumes when heated

PRODUCT DESIGNATION

Diethyl-P-Toluidine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

Not available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

yes

RELEVANT SYMPTOMS OF EXPOSURE Cyanosis, air hunger, nausea, vomiting, low blood pressure, convulsions

EFFECTS OF CHRONIC EXPOSURE

Weight loss, anemia, weakness

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - give emetic, get medical aid; wash from skin & eyes, skin may be washed with a 5% acetic acid solution to aid removal.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May react vigorously with oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

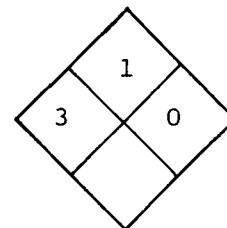
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238-4802B

PRODUCT DESIGNATION

03-238-5302
P,P - Difluorodiphenyl

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 4,4 Difluorobiphenyl	FORMULA (F C ₆ H ₄) ₂

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 190.18

BOILING POINT 255°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 95°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.04		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Crystal power, aromatic odor		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA Water, foam, carbon dioxide or dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

P, P-Difluorodiphenyl

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

moderate

REVELANT SYMPTOMS OF EXPOSURE

Serious liver damage, acne, irritation of respiratory passages

EFFECTS OF CHRONIC EXPOSURE

Liver damage

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest, get medical aid; if swallowed -
give emetic, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

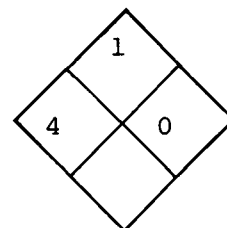
238-5302B

PRODUCT DESIGNATION

03-238-7302

1,3-Dihydroxy-4-Chlorobenzene

MATERIAL SAFETY DATA SHEET


SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

4 Chloro Resorcinol

FORMULA

Cl (C₆H₃) (OH)₂
SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.

SECTION III PHYSICAL DATA MW - 144.56

BOILING POINT 256 ⁰ C.	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 107 ⁰ C.	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR White amorphous			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water, carbon dioxide, dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

1,3-Dihydroxy-4-Chlorobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Inhalation (dust) skin, ingestion

IRRITATION Moderate

RELEVANT SYMPTOMS OF EXPOSURE Hyperemia, itching, dermatitis, restlessness, cyanosis, dizziness, tremors, convulsions and death.

EFFECTS OF CHRONIC EXPOSURE

Possible liver, kidney and lung damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - induce vomiting, get medical aid; wash skin and eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

238-7302B

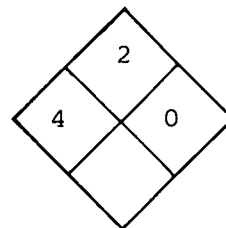
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LQ21000

PRODUCT DESIGNATION

03-239-2453

N,N - Dimethyl Formamide

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Dimethylformamide

FORMULA

 $(\text{CH}_3)_2\text{NCHO}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ mg/C.M.	
			ORAL	PERCUT.	SPECIES	CONC.
Oral-human LDLO 500 mg/kg			2800	5000	Rat	
Lowest published toxic concentration in air			3750		Mouse	9400
Inhalation human 20 PPM				5000	Rabbit	

SECTION III PHYSICAL DATA MW-73.1

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
153°C		at 25°C	3.7
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-61°C		2.51	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.94			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt
yes			

APPEARANCE AND ODOR

Colorless, mobile liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
136°F		15.2%
METHOD USED		LOWER
		2.5%

EXTINGUISHING MEDIA

Foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

May react with oxidizing materials

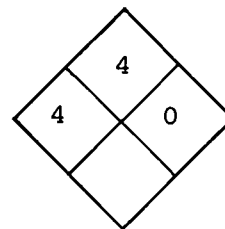
PRODUCT DESIGNATION	
N,N - Dimethyl Formamide	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
TLV - 10 PPM, 30 mg/C.M.	CARCINOGENIC NO
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion, skin	IRRITATION moderate
RELEVANT SYMPTOMS OF EXPOSURE Cyanosis, headache, dizziness, confusion, blood pressure fall, convulsions & coma.	
EFFECTS OF CHRONIC EXPOSURE	
Weight loss, anemia, weakness and irritability	
EMERGENCY AND FIRST AID PROCEDURES If swallowed - induce vomiting, get medical aid; inhalation - give oxygen as needed; wash skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
Avoid contact with halogenated hydrocarbons and inorganic nitrates.	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Goggles
	GLOVES
SPECIAL	Rubber
	RESPIRATOR
OTHER PROTECTIVE EQUIPMENT	With proper filter
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

239-2453B

CAS:000124403

1P87500

PRODUCT DESIGNATION

03-239-2703
Dimethylamine (anhydrous)MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Dimethylamine

FORMULA

 $(CH_3)_2NH$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			698		Rat	
			316		Mouse	
			240		Rabbit	
			240		Guinea Pig	

SECTION III PHYSICAL DATA MW - 45.08

BOILING POINT 7°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -92°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 0.68		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O very soluble		VOLATILE % Vol. % Wt.

APPEARANCE AND ODOR

Colorless liquid, fish-like odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 21°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 14.4%
METHOD USED C.C.		LOWER 2.8%

EXTINGUISHING MEDIA

Dry chemical carbon dioxide or foam

SPECIAL FIRE FIGHTING PROCEDURES

Stop flow of gas, wear full protective clothing

UNUSUAL FIRE AND EXPLOSION HAZARDS

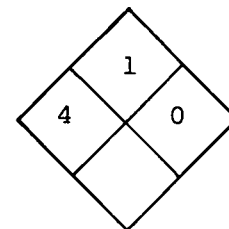
Vapor forms explosive mixture with air.

PRODUCT DESIGNATION	
Dimethylamine anhydrous	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
10 PPM, 18 mg/C.M.	no
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion	IRRITATION severe
REVELANT SYMPTOMS OF EXPOSURE	
Bronchitis, pulmonary edema, irritation of eyes, mucous membrane & respiratory tract.	
EFFECTS OF CHRONIC EXPOSURE	
Liver damage	
EMERGENCY AND FIRST AID PROCEDURES	
Inhalation - rest; if swallowed - drink water, get medical aid; wash skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Put powdered sodium bisulfate on spill, then wash with water.	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Goggles
	GLOVES
SPECIAL	Rubber
	RESPIRATOR
OTHER PROTECTIVE EQUIPMENT	With proper filter
Coveralls	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Outside or detached storage preferred, store inside in cool, well-ventilated location away from source of ignition.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

239-2703B

03-239-2803
Dimethylamine Hydrochloride

MATERIAL SAFETY DATA SHEET



MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

Dimethylamine Hydrochloride

$$\underline{(\text{CH}_3)_2\text{NH HCl}}$$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Note: Lowest published toxic dose oral - mouse 140 mg/kg.						

SECTION III PHYSICAL DATA MW - 81.58

BOILING POINT

 0_F

VAPOR PRESSURE

mm Hg.

MELTING POINT

0 3

VAPOR DENSITY (Air = 1)

171⁰C

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (= 1)
--------------------	------

SOLUBILITY IN WATER	Pts/100 pts H ₂ O
369	

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR
Colorless crystal

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

None available

METHOD USED

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

EXTINGUISHING MEDIA

Foam, dry chemical, carbon dioxide

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION	
Dimethylamine Hydrochloride	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
None available	CARCINOGENIC no
PRINCIPLE ROUTES OF ABSORPTION	
Ingestion, inhalation of dust	SKIN AND EYE IRRITATION moderate
REVELANT SYMPTOMS OF EXPOSURE Headache, faintness, anxiety, cardiac stimulation, pulmonary edema, skin & eye irritation.	
EFFECTS OF CHRONIC EXPOSURE	
Cardiac depression	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - drink water, get medical aid; wash skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Goggles
	GLOVES
	Rubber
SPECIAL	RESPIRATOR
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

239-2803B

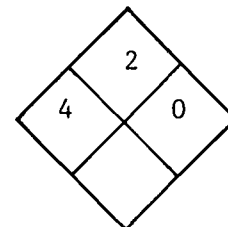
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BX73500

PRODUCT DESIGNATION

03-239-3203
P-Dimethylaminoazobenzene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

N,N-Dimethyl-4-aminoazobenzene

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

4 dimethylaminoazobenzene

FORMULA

 $(\text{CH}_3)_2\text{NC}_6\text{H}_4\text{NNC}_6\text{H}_5$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Notes:			200		Rat	
1. Intraperitoneal - mouse LD ₅₀ 500 mg/kg			300		Mouse	
2. Lowest published toxic dose						
Oral - rat 800 mg/kg - 4 days carcinogen						

SECTION III PHYSICAL DATA MW - 225.18

BOILING POINT d	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 116	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Yellow crystal			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

Self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

P-Dimethylaminoazobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

Teratogen

CARCINOGENIC

Yes

PRINCIPLE ROUTES OF ABSORPTION

Inhalation of dust, ingestion, skin

SKIN AND EYE

IRRITATION

Moderate

RELEVANT SYMPTOMS OF EXPOSURE

Eye, skin and respiratory system irritant.

EFFECTS OF CHRONIC EXPOSURE

May produce liver cancer, bladder cancer.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - get medical aid;
wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Half mask filter type for dust,
mist and fumes.

OTHER PROTECTIVE EQUIPMENT

Full body protective clothing.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

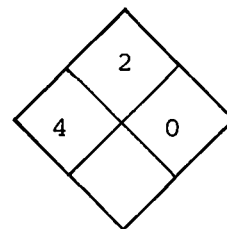
DATE

239-3203B

CAS:000121697

BX47250

PRODUCT DESIGNATION

03-239-5203
DimethylanilineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

dimethylphenylamine
CHEMICAL NAME AND SYNONYMS

FORMULA

NN dimethylaniline

 $C_6H_5N(CH_3)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO, oral human 50 mg/kg.			1410	1770	Rat Rabbit	

SECTION III PHYSICAL DATA MW - 121.18

BOILING POINT 193.1°C	° F.	VAPOR PRESSURE at 29.5°C	mm Hg.
MELTING POINT 2.5°C	° F.	VAPOR DENSITY (Air = 1)	1
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.9557			
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Colorless to brown liquid, irritation odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 145°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED CC		LOWER

EXTINGUISHING MEDIA

"Alcohol" foam, water spray, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

dimethylaniline

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 5PPM; 25 mg/C.M.

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Yes

REVELANT SYMPTOMS OF EXPOSURE Weakness, tremors, central nervous system depressant, cyanosis, drowsiness

EFFECTS OF CHRONIC EXPOSURE

Fatigue, loss of appetite, headache, dizziness

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - wash mouth, give emetic, get medical aid; wash eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Spread a mixture of sand and soda ash (9/1); Transfer to cardboard carton for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With filter

OTHER PROTECTIVE EQUIPMENT
Coveralls

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

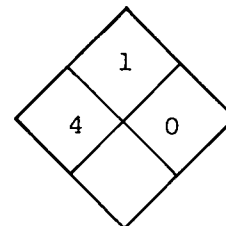
DATE

239-5203B

PRODUCT DESIGNATION

03-239-5703
9,10 Dimethyl - 1,2 Benzanthracene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
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ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
-------------------------	-----------------

CHEMICAL NAME AND SYNONYMS 7,12 - Dimethyl, benz(a) anthracene	FORMULA (CH) ₃ C ₂ H ₁₀
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SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			340		Mouse	
Notes:						
1. Lowest published toxic dose oral - rat 15 mg/kg. car						
2. " " " " skin mouse 0.014 mg/kg/17W car						
3. " " " " skin rabbit 12 mg/kg/10W1 car						
4. LD50 intravenous - rat 54 mg/kg						

SECTION III PHYSICAL DATA MW -256.33

BOILING POINT ° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 123°C ° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1)	EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble	VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Greenish yellow crystals	

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

self-contained breathing apparatus

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

9,10 Dimethyl - 1,2, Benzanthracene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

Teratogen

CARCINOGENIC

yes

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Inhalation of dust, ingestion, skin

IRRITATION

yes

RELEVANT SYMPTOMS OF EXPOSURE

Irritation of gastroenteric tract, eyes & skin

EFFECTS OF CHRONIC EXPOSURE

Cancer formation in many parts of the body

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - get medical aid
(gastric lavage); wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

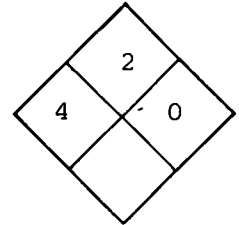
DATE

239-5703B

CAS:000103833

DP45000

PRODUCT DESIGNATION

03-239-6203
DimethylbenzylamineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

N,N Dimethylbenzylamine $(CH_3)_2NCH_2C_6H_5$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			265		Rat	

SECTION III PHYSICAL DATA MW - 135.20

BOILING POINT 184°C	° F.	VAPOR PRESSURE at 55°C	mm Hg. 8
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 0.920		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Slightly soluble		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR Liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

self-contained breathing apparatus

UNUSUAL FIRE AND EXPLOSION HAZARDS

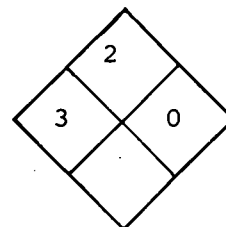
PRODUCT DESIGNATION	
Dimethylbenzylamine	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
None available	No
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion, skin	IRRITATION severe
REVELANT SYMPTOMS OF EXPOSURE	
Headache, cyanosis, drowsiness, mental confusion, convulsions	
EFFECTS OF CHRONIC EXPOSURE	
Loss of appetite, headache, dizziness, may effect the nervous system.	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - give emetic; get medical aid; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Goggles
	GLOVES
SPECIAL	Rubber
	RESPIRATOR
OTHER PROTECTIVE EQUIPMENT	With proper filter
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

239-6203B

CAS:000108838

MJ57750

PRODUCT DESIGNATION

03-239-6403
2,6 Dimethyl-4-HeptanoneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

Di-isobutyl, Ketone

 $(C_4H_9)_2CO$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ PPM	
			ORAL	PERCUT.	SPECIES	CONC.
Inhalation human TCLO 50 ppm irritant			1416		Mouse	
inh-rat LCLO 2000 ppm/4 hr.				20,000	Rabbit	

SECTION III PHYSICAL DATA MW - 142.09

BOILING POINT	° F.	VAPOR PRESSURE	mm.Hg.
168°C		at 15°C	2.4
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-46°C		4.9	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.81			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Low			

APPEARANCE AND ODOR

Colorless oil, methol-like odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
140°F		6.2%
METHOD USED		LOWER
Open Cup		0.8%
EXTINGUISHING MEDIA		
Carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

2,6 - Dimethyl - 4 - Heptanone

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 25 PPM, 150 mg/C.M.

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION

mild

RELEVANT SYMPTOMS OF EXPOSURE

Nausea, dizziness, narcotic effect

EFFECTS OF CHRONIC EXPOSURE

Liver damage, dermatitis

EMERGENCY AND FIRST AID PROCEDURES If swallowed - get medical aid; inhalation - give oxygen if needed; wash eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper towels, evaporate on glass in hood.

WASTE DISPOSAL METHOD

Burn in furnace.

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Overalls

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Do not store in direct sunlight, keep away from sources of ignition and oxidizing materials.

OTHER PRECAUTIONS

SIGNATURE

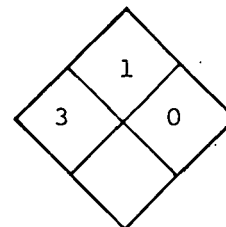
DATE

236-6403B

PRODUCT DESIGNATION

03-239-6703
Dimethyldihydroresorcinol

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 5,5 Dimethyl - 1, 3 Cyclohexanedione	FORMULA (CH ₃) ₂ C ₆ H ₆ O ₂

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 140.18

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR			

0.42
Yellow crystals

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA		
Alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

dimethyldihydroresorcinol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation of dust, ingestion, skin

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE Headache, eye & upper respiratory irritation;

EFFECTS OF CHRONIC EXPOSURE

Liver and kidney damage

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - induce vomiting,
get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

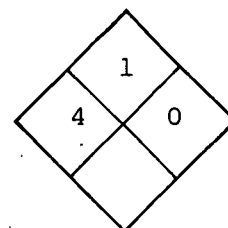
DATE

239-6703B

PRODUCT DESIGNATION

03-240-0304
2,4 - Dimethylphenacyl chloride

MATERIAL SAFETY DATA SHEET


SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	

TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
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CHEMICAL NAME AND SYNONYMS α chloro-2,4 dimethyl acetophenone	FORMULA $\text{ClCH}_2\text{COC}_2\text{H}_5(\text{CH}_3)$
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SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 182.65

BOILING POINT --	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 62°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR
Needle-like crystals

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA
Not available

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS May react with water or steam to produce toxic and corrosive fumes.

PRODUCT DESIGNATION

2,4, Dimethylphenacyl chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation of dust, ingestion

SKIN AND EYE

IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE

Eye irritation, corneal haziness & pain; burning
of throat and eyes; skin irritation.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; treat for pulmonary edema; if swallowed -
give emetic, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

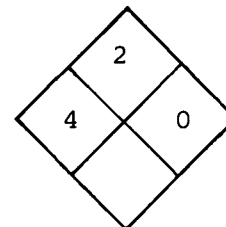
DATE

240-0304B

PRODUCT DESIGNATION

03-240-1404
2,4 - Dimethylpiperidine

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS α, γ - Lupetidine	FORMULA $\text{HNC}_5\text{H}_8(\text{CH}_3)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA MW - 113.20

BOILING POINT 139°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.845			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR			
Liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES Wear goggles and self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION
2,4 Dimethylpiperidine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Increased blood pressure, weakness, nausea, vomiting,
salivation, asphyxia, corneal damage.

EFFECTS OF CHRONIC EXPOSURE

Weight loss, anemia, ocular and facial paralysis -

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - induce vomiting then
gastric lavage; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

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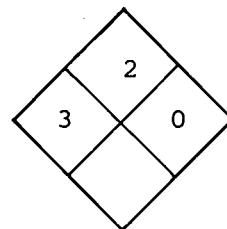
DATE

240-1404B

PRODUCT DESIGNATION

03-240-1804
Dimethyl-N-Propylcarbinol

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	

TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2 Methyl-2-Pentanol	FORMULA $(CH_3)_3COH(CH_2)_2CH_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 102.18

BOILING POINT 123°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -108°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 0.81		EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Slightly soluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Clear liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

Dimethyl-N-Propylcarbinol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION

moderate

RELEVANT SYMPTOMS OF EXPOSURE Eye, nose & throat irritation; narcosis, ingestion, headache, dizziness, nausea, vomiting, diarrhea, delirium, coma

EFFECTS OF CHRONIC EXPOSURE

Possible liver damage

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - give oxygen as needed; ingestion - induce vomiting, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

Rubber
RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

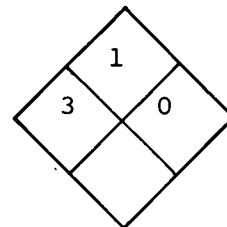
DATE

240-1804B

PRODUCT DESIGNATION

03-246-6708
4,4-Dibromodiphenyl Ether

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

P,P-Dibromodiphenyl ether

FORMULA

(BrC₆H₄)₂O

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose						
intraperitoneal - mouse 125 mg/kg.						

SECTION III PHYSICAL DATA

MW-328.02

BOILING POINT 340°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 60°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O very soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR crystal			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

water alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

4,4-Dibromodiphenyl Ether

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION

yes

RELEVANT SYMPTOMS OF EXPOSURE

loss of appetite, nausea

EFFECTS OF CHRONIC EXPOSURE

liver, spleen, kidney and thyroid damage

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid;
wash skin & eyes; inhalation - give oxygen as needed.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May react with oxidizing materials

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

246-6708B

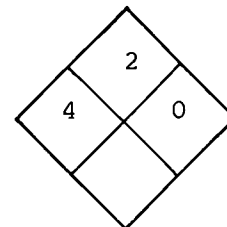
CAS:000111444

KNO8750

PRODUCT DESIGNATION

β,β' Dichlorodiethyl Ether
03-246 -6908

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Bis(2-Chloroethyl) Ether

FORMULA

ClCH2CH2OCH2CH2Cl

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO - oral - human	50 mg/kg		75		Rat	
				300	Guinea Pig	
				720	Rabbit	

SECTION III PHYSICAL DATA Mol. Wt. 143.0

BOILING POINT 178.5°C	° F.	VAPOR PRESSURE 20°C	0.7 mm Hg.
MELTING POINT -51.7°C	° F.	VAPOR DENSITY (Air = 1) 4.93	
SPECIFIC GRAVITY (H ₂ O = 1) 1.222 20°/20°C		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR

Colorless, stable liquid, pungent odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 131°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED Closed Cup		LOWER

EXTINGUISHING MEDIA

Dry chemical, foam, or carbon dioxide

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

May flash back.

PRODUCT DESIGNATION

 β,β' Dichlorodiethyl Ether (Skin)

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 5 ppm, 30 mg/C.M.

Experimental carcinog
CARCINOGENIC
Oral Mouse

PRINCIPLE ROUTES OF ABSORPTION

Inhalation of vapor, absorption through skin

SKIN AND EYE

IRRITATION Mild

REVELANT SYMPTOMS OF EXPOSURE Nausea, coughing, retching and irritation of conjunctiva and mucous membranes.

EFFECTS OF CHRONIC EXPOSURE

Central nervous system depression

EMERGENCY AND FIRST AID PROCEDURES Give artificial respiration, remove contaminated clothing (do not give stimulants). Obtain medical attention.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb with paper towels, evaporate from towel in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety glasses and goggles

MECHANICAL (GENERAL)

GLOVES
Rubber

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

Self-contained breathing apparatus

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in well-ventilated area.

OTHER PRECAUTIONS

SIGNATURE

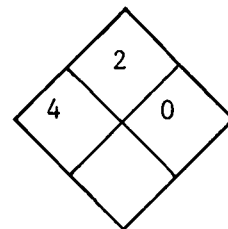
DATE

246-6908B

CAS - 000542881

KN15750

PRODUCT DESIGNATION

03-246-7608
S-Dichloromethyl EtherMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Bis(chloromethyl)ether

FORMULA

(ClCH₂)₂O

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ mg/C.M.	
			ORAL	PERCUT.	SPECIES	CONC.
			210		Rat	7 PPM/7 hr.
					Mouse	25/6 hr.
				280	Rabbit	
					Hamster	7 PPM/7 hr.

SECTION III PHYSICAL DATA MW = 114.96

BOILING POINT 104°C.	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1) 4.0
SPECIFIC GRAVITY (H ₂ O = 1) 1.33		EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Decomposes		VOLATILE % Vol. % Wt

APPEARANCE AND ODOR

Colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water may be used to blanket fire.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

S-Dichloromethyl Ether

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

1 PPB

CARCINOGENIC Yes

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Inhalation, ingestion, skin

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE

Respiratory and eye irritation, skin cancer.

EFFECTS OF CHRONIC EXPOSURE

Lung cancer.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; inhalation - rest; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

CLOVES

Rubber

SPECIAL

RESPIRATOR

Full face self-contained

OTHER PROTECTIVE EQUIPMENT

Full protective clothing.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

246-7806B

CAS:000111762

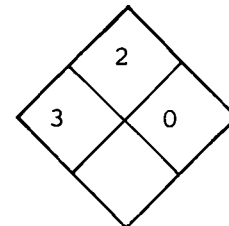
KJ85750

PRODUCT DESIGNATION

03-247-0909

03-247-0939

Ethylene Glycol, Monobutyl Ether

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Butyl Cellosolve

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2 Butoxy ethanol

FORMULA

 $C_4H_9OCH_2CH_2OH$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ PPM	
			ORAL	PERCUT.	SPECIES	CONC.
			1480		rat	
			320	500	rabbit	
Lowest published toxic concentration			1200	230	guinea pig	
TCLO in air - inhalation - human 195 PPM			1230		mouse	700

SECTION III PHYSICAL DATA MW - 118.17

BOILING POINT 171 ⁰ C	⁰ F.	VAPOR PRESSURE at 20 ⁰ C	0.6 mm Hg.
MELTING POINT -40 ⁰ C	⁰ F.	VAPOR DENSITY (Air = 1) 4.07	
SPECIFIC GRAVITY (H ₂ O = 1) 0.90		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O very soluble		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 141 ⁰ F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
MFTHQD USED CC		LOWER
EXTINGUISHING MEDIA carbon dioxide, dry chemical, water		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Ethylene Glycol Monobutyl Ether

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 50 PPM, 240 mg/C.M. skin

CARCINOGENIC

no.

PRINCIPLE ROUTES OF ABSORPTION

Inhalation of mist, ingestion, skin

SKIN AND EYE

IRRITATION

severe

RELEVANT SYMPTOMS OF EXPOSURE

Respiratory & eye irritation, narcosis, lung congestion

EFFECTS OF CHRONIC EXPOSURE

Lung, liver and kidney damage, anemia

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; wash eyes and skin; inhalation - give oxygen as necessary.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May react with oxidizing materials

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper towel; evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

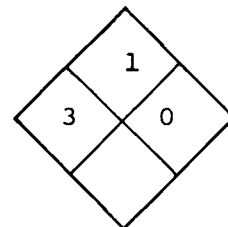
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247-0909B

PRODUCT DESIGNATION

03-247-1209
Ethylene Glycolmonoethyl Ether

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

2 Ethoxyethanol

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Cellosolve

FORMULA

 $C_2H_5OCH_2CH_2OH$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ PPM	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO - oral - human	500 mg/kg		3000		rat	
Note: Lowest published lethan concentration in air			4310		mouse	1820
inhalation - rat 4000 PPM - 4 hours			3100	3500	rabbit	
			1400		guinea pig	

SECTION III PHYSICAL DATA MW - 90.12

BOILING POINT 135°C	° F.	VAPOR PRESSURE 20°C	3.8 ^{mm} Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1) 3.10	
SPECIFIC GRAVITY (H ₂ O = 1) 0.94		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O very soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR colorless liquid, practically odorless			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
202 ⁰ F		15.7%
METHOD USED		LOWER
		2.6%
EXTINGUISHING MEDIA		
alcohol foam, carbon dioxide, dry chemical, water		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

moderate explosion hazard in vapor foam.

PRODUCT DESIGNATION

Ethylene glycol monoethyl ether

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 100 PPM, 370 mg/C.M., skin

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE

congestion and edema of the lungs.

EFFECTS OF CHRONIC EXPOSURE

Kidney damage, albumin in urine, loss of appetite.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic; get medical aid; wash eyes and skin; inhalation - give oxygen as needed.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper towels; evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
goggles

MECHANICAL (GENERAL)

GLOVES
rubber

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

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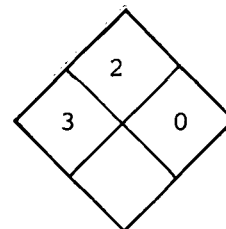
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KL57750

PRODUCT DESIGNATION

03-247-1509
Ethylene glycol
monomethyl ether

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

2 methoxyethanol

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Methyl cellosolve

FORMULA

 $\text{CH}_3\text{OCH}_2\text{CH}_2\text{OH}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ PPM	
			ORAL	PERCUT.	SPECIES	CONC.
			2460		rat	
Note: Lowest published toxic concentration in air			(890)		rabbit	1340
inhalation - human 25 PPM central nervous			950		guinea pig	
lowest published lethal dose		system			mouse	1480
oral - human - 3380 mg/Kg.						
lowest published lethal concentration in air						
inhalation - rat 2000 PPM - 4 hours						

SECTION III PHYSICAL DATA MW = 76.09

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
125°C		at 20°C	6.2
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-87°C		2.62	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.97			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
very soluble			
APPEARANCE AND ODOR			

colorless liquid, mild agreeable odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
115°F		
METHOD USED		LOWER
O.C.		
EXTINGUISHING MEDIA		
Alcohol foam, dry chemical, carbon dioxide		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Ethylene Glycol Monomethyl Ether

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV-25 PPM, 80 mg/C.M. skin

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE

lung edema, narcotic action

EFFECTS OF CHRONIC EXPOSURE

Blood, liver, kidney damage, headache, drowsiness, burning
of eyes, anemia

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; wash
eyes & skin; inhalation - give oxygen as needed.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

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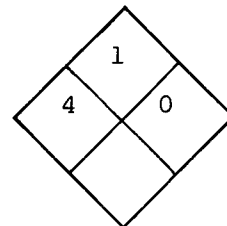
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247-1509B

CAS:000101848

KN89700

PRODUCT DESIGNATION

03-247-5809
Phenyl EtherMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Diphenyl Ether	FORMULA (C ₆ H ₅) ₂ O

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			3370		Rat	

SECTION III PHYSICAL DATA

BOILING POINT 257°C.	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 28°C.	° F.	VAPOR DENSITY (Air = 1) 5.86
SPECIFIC GRAVITY (H ₂ O = 1) 1.07		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE % Vol. % Wt.

APPEARANCE AND ODOR

Colorless crystals, geranium odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 239°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 1.5%
METHOD USED		LOWER 0.8%

EXTINGUISHING MEDIA

water, alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Phenyl Ether

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 1 PPM, 7 mg/C.M.

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION mild

RELEVANT SYMPTOMS OF EXPOSURE

nausea, loss of appetite

EFFECTS OF CHRONIC EXPOSURE

liver spleen; kidney and thyroid damage

EMERGENCY AND FIRST AID PROCEDURES if swallowed - give emetic, get medical aid; wash skin and eyes; inhalation - give oxygen as needed.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

may react with oxidizing materials

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

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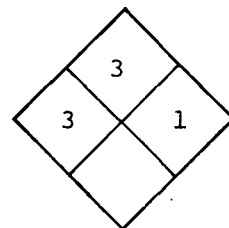
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TZ54250

PRODUCT DESIGNATION

03-247-6209
03-247-6269
Iso-propyl Ether

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Diisopropyl ether

FORMULA

 $(C_3H_7)_2O$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.

SECTION III PHYSICAL DATA

MW - 102.17

BOILING POINT	° F.	VAPOR PRESSURE	mm.Hg.
68.5 °C		at 25 °C	150
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-60 °C		3.52	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.72			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
slightly soluble			
APPEARANCE AND ODOR			
colorless liquid, ethereal odor			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE)	UPPER
-18 °F.	LIMITS	7.9%
METHOD USED		LOWER
C.C.		1.4%
EXTINGUISHING MEDIA		
alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

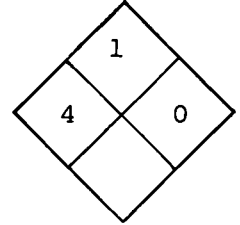
PRODUCT DESIGNATION	
Iso-propyl ether	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
TLV - 250 PPM, 1050 mg/C.M.	CARCINOGENIC no
PRINCIPLE ROUTES OF ABSORPTION	
inhalation, ingestion	SKIN AND EYE IRRITATION moderate
RELEVANT SYMPTOMS OF EXPOSURE	
anesthesia action, irritating to mucous membranes, headache, nausea, vomiting.	
EFFECTS OF CHRONIC EXPOSURE	
dermatitis, headache, nausea, depressed appetite.	
EMERGENCY AND FIRST AID PROCEDURES	
If swallowed - give emetic, get medical aid; wash skin & eyes; inhalation - give oxygen as needed.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
reacts with oxygen to produce explosive peroxides.	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Absorb on paper towels, evaporate in hood.	
WASTE DISPOSAL METHOD	
Dissolve in benzene and burn.	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	goggles
MECHANICAL (GENERAL)	GLOVES
	rubber
SPECIAL	RESPIRATOR
	chemical cartridge type
OTHER PROTECTIVE EQUIPMENT	
Coveralls	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
detached outside storage preferred. For inside storage - standard flammable liquids room or storage cabinet.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

247-6209B

PRODUCT DESIGNATION

03-247-6709
Resorcinol monomethyl ether

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS M-Methoxyphenol	FORMULA $\text{CH}_3\text{OC}_6\text{H}_4\text{OH}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 124.13

BOILING POINT 244°C	° F.	VAPOR PRESSURE at 115°C	mm Hg.
MELTING POINT -17°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) > 1		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O slightly soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA carbon dioxide, alcohol foam, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Resorcinol monomethyl ether

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION

moderate

RELEVANT SYMPTOMS OF EXPOSURE hyperemia, itching, dermatitis, restlessness, cyanosis, dizziness, tremors, convulsions, death.

EFFECTS OF CHRONIC EXPOSURE

Possible liver, kidney and lung damage

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - induce vomiting, get medical aid; wash eyes & skin; inhalation - rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

MECHANICAL (GENERAL)

SPECIAL

OTHER PROTECTIVE EQUIPMENT

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

GLOVES

rubber

RESPIRATOR

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

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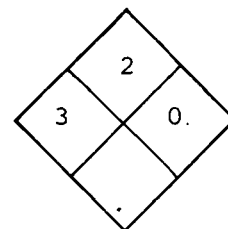
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KK82250

PRODUCT DESIGNATION

03-249-1601
 β - Ethoxyethyl acetate

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Cellosolve acetate

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2 Ethoxyethyl Acetate

FORMULA

$$C_2H_5OC_2H_4OOCH_3$$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO - oral - human	500 mg/kg		1910		guinea pig	
lowest published lethal concentration in air			5100		rat	
inhalation - rat	1500 PPM			15,500	rabbit	
			1910		guinea pig	

SECTION III PHYSICAL DATA

MW - 132.17

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
156°C		at 20°C	1.2
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-62°C		4.72	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.97			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt
soluble			
APPEARANCE AND ODOR			

colorless liquid, pleasant odor, bitter taste.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE)	UPPER
120°F	LIMITS	LOWER
METHOD USED		1.7%
COC		

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

β Ethoxyethyl acetate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 100 PPM, 540 mg/C.M. (skin)

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

slightly

REVELANT SYMPTOMS OF EXPOSURE

restlessness, drowsiness, coma, irritation of eyes & nose.

EFFECTS OF CHRONIC EXPOSURE

kidney injury

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; inhalation - rest; wash from eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

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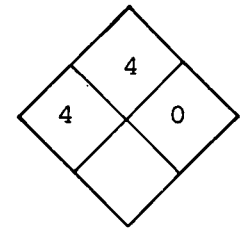
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249-1601B

CAS:000075047

KH21000

PRODUCT DESIGNATION

03-249-6601
Ethylamine, anhydrousMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

monoethylamine

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

aminoethane

FORMULA

 $C_2H_5NH_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
				390	rabbit	
Lowest published lethal dose						
oral - rat - 400 mg/kg						
lowest published lethal concentration in air						
inhalation - rat 3000 PPM - 4 hours.						

SECTION III PHYSICAL DATA MW - 45.10

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
16.6°C		at 2°C	400
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-80.6°C		1.56	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.8			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Infinitely soluble			

APPEARANCE AND ODOR

colorless liquid, strong ammonical odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
< 0		14.0 %
METHOD USED		LOWER
		3.5 %

EXTINGUISHING MEDIA

alcohol foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

water may be ineffective

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Ethylamine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

10 PPM, 18 mg/C.M.

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE

eye irritation, mucous membrane and respiratory system irritation.

EFFECTS OF CHRONIC EXPOSURE

lung, liver and kidney damage

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest, get medical aid; if swallowed - drink water, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Cover with sodium bisulfate, add water.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

safety goggles

MECHANICAL (GENERAL)

GLOVES

rubber (butyl)

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

Coveralls

SECTION IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Attached or outside storage preferred; inside storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

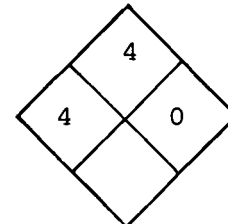
DATE

249-6601B

PRODUCT DESIGNATION

03-249-6701
Ethylamine, hydrochloride

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Ethyl ammonium chloride

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

aminoethane hydrochloride

FORMULA

 $C_2H_5NH_2 \cdot HCl$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Unclassified - Rat LD ₅₀	2500 mg/kg					

SECTION III PHYSICAL DATA MW - 81.56

BOILING POINT 16.6°C	° F.	VAPOR PRESSURE at 20°C	400 mm Hg.
MELTING POINT -80.6°C	° F.	VAPOR DENSITY (Air = 1)	1.56
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.8			
SOLUBILITY IN WATER ∞ Pts/100 pts H ₂ O Infinitely soluble		VOI ATILE	% Vol. % Wt.

APPEARANCE AND ODOR

colorless liquid, strong ammonical odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT <0°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 14.0%
METHOD USED		LOWER 3.5%

EXTINGUISHING MEDIA

alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

water may be ineffective

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Ethylamine hydrochloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE

eye irritation, mucous membrane and respiratory system irritation

EFFECTS OF CHRONIC EXPOSURE

Lung, liver and kidney damage

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest, get medical aid; if swallowed -
drink water, get medical aid; wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

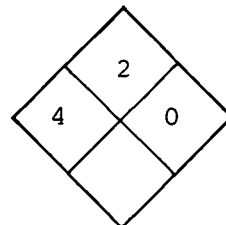
OTHER PRECAUTIONS

SIGNATURE

DATE

249-6701B

PRODUCT DESIGNATION

03-249-7101
N-EthylanilineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Ethylphenylamine	FORMULA $C_{10}H_{11}N$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			334		rat	
				4700	rabbit	

SECTION III PHYSICAL DATA MW - 121.20

BOILING POINT 204°C	° F.	VAPOR PRESSURE at 39°C	1 mm Hg.
MELTING POINT -64°C	° F.	VAPOR DENSITY (Air = 1) 4.18	
SPECIFIC GRAVITY (H ₂ O = 1) 0.96		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR clear, yellow brown oil			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 185°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED O.C.		LOWER
EXTINGUISHING MEDIA Foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated may decompose to give toxic aniline fumes.

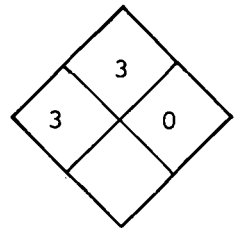
PRODUCT DESIGNATION	
N Ethylaniline	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
none available	CARCINOGENIC
no	
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
inhalation, ingestion, skin	IRRITATION
moderate	
RELEVANT SYMPTOMS OF EXPOSURE weakness, tremors, cyanosis, drowsiness, central nervous system depression.	
EFFECTS OF CHRONIC EXPOSURE	
Fatigue, loss of appetite, headache, dizziness	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - give emetic, get medical aid; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	goggles
	GLOVES
SPECIAL	polyvinyl alcohol
	RESPIRATOR with proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

249-7101B

CAS:000100414

DAO7000

PRODUCT DESIGNATION

03-249-8601
EthylbenzeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
---------------------	-------------------------

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Phenyl Ethane

FORMULA

 $C_6H_5CH_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			3500		rat	
				5000	rabbit	
#1 lowest published toxic dose						
ocular - human 200 PPM						
TCLO - inhalation - human 100 PPM/8 hr						

SECTION III PHYSICAL DATA

BOILING POINT	° F.	VAPOR PRESSURE	MW - 106.16
136.2°C		at 26°C	10 mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-95°C		3.66	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.86			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
no			
APPEARANCE AND ODOR			
colorless liquid with aromatic odor			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE)	UPPER
59°F	LIMITS	6.7%
METHOD USED		LOWER
		1.0%
EXTINGUISHING MEDIA		
Water spray, carbon dioxide, dry chemical or foam.		

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective. Wear goggles and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Ethyl benzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 100 PPM, 435 mg/C.M.

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE

Eye, skin & respiratory irritation, dizziness

EFFECTS OF CHRONIC EXPOSURE

May have some effect on liver, kidneys and blood

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - wash mouth, give emetic, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper towels; evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety glasses

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside or detached storage preferred, indoor storage in flammable liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

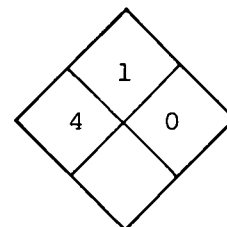
DATE

249-8601B

PRODUCT DESIGNATION

03-250-0202

Ethylbenzylaniline

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Ethylbenzylphenylamine

FORMULA

$$\text{C}_6\text{H}_5\text{N}(\text{C}_2\text{H}_5)\text{CH}_2\text{C}_6\text{H}_5$$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA

MW-211.3

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
286°C			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
		7.28	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.03			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

clear colorless oil

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		LOWER
METHOD USED		

EXTINGUISHING MEDIA

foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

when heated may decompose to give off toxic aniline fumes.

PRODUCT DESIGNATION

Ethylbenzylaniline

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

moderate

RELEVANT SYMPTOMS OF EXPOSURE

weakness, tremors, cyanosis, drowsiness, central nervous system depression

EFFECTS OF CHRONIC EXPOSURE

Fatigue, loss of appetite, headache, dizziness

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

polyvinyl alcohol

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

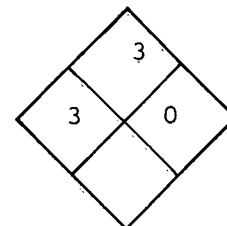
DATE

250-0202B

CAS:000074964

KH64750

PRODUCT DESIGNATION

03-250-0702
Ethyl BromideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Bromoethane	FORMULA C_2H_5Br

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀ PPM	
			ORAL	PERCUT.	SPECIES	CONC.
LCLO inhalation - rat	149,000 PPM - 15 Min.					
LCLO - inhalation - guinea pig	3,200 PPM/9 hrs.					

SECTION III PHYSICAL DATA MW - 108.98

BOILING POINT 38.4°C	° F.	VAPOR PRESSURE at 21°C	400 mm Hg.
MELTING POINT -119°C	° F.	VAPOR DENSITY (Air = 1) 3.76	
SPECIFIC GRAVITY (H ₂ O = 1) 1.45		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 0.91		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR
colorless, volatile liquid, ether-like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 11.3 LOWER 6.7
METHOD USED		
EXTINGUISHING MEDIA water, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES <-4°F.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION
Ethyl Bromide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 200 PPM, 890 mg/C.M.

CARCINOGENIC
no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE

Central nervous system depression, irritation of respiratory system.

EFFECTS OF CHRONIC EXPOSURE

Possible liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - induce vomiting, get medical aid; wash from eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper towels, evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained breathing apparatus

OTHER PROTECTIVE EQUIPMENT

Overalls

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside or detached storage preferred, inside storage in flammable liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

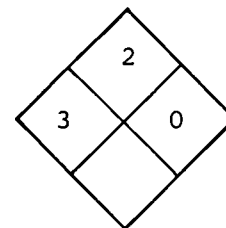
DATE

250-0702B

CAS:000105362

AF60000

PRODUCT DESIGNATION

03-250-0902
Ethyl bromoacetateMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Ethyl bromoethanoate

FORMULA

 $\text{BrCH}_2\text{COOC}_2\text{H}_5$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
TDLO subcutaneous - mouse	332 mg/kg	83W neoplastic				

SECTION III PHYSICAL DATA MW - 167.01

BOILING POINT 160°C	° F.	VAPOR PRESSURE at 58°C		15 mm Hg.
MELTING POINT -20°C	° F.	VAPOR DENSITY (Air = 1) 5.8		
SPECIFIC GRAVITY (H ₂ O = 1) 1.51		EVAPORATION RATE (_____ = 1)		
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol.	% Wt.
APPEARANCE AND ODOR colorless to straw colored liquid				

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA water, alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Ethyl bromoacetate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC neoplastic

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE

skin and eye irritation, pulmonary edema, dermatitis

EFFECTS OF CHRONIC EXPOSURE

-

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid;
wash skin and eyes; inhalation - rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

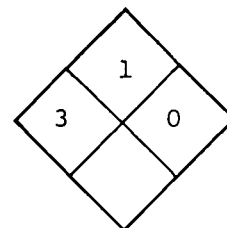
DATE

250-0902B

PRODUCT DESIGNATION

03-250-2002
Ethyl - A Bromopropionate

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Ethyl-2 Bromopropionate	FORMULA $\text{CH}_3\text{CHBrCOOC}_2\text{H}_5$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 181.04

BOILING POINT 160-5°C	° F.	VAPOR PRESSURE at 55°C	mm Hg. 10
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.35		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA water, alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

Ethyl - A Bromopropionate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE

skin and eye irritation, pulmonary edema, dermatitis

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; wash skin & eyes; inhalation - rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

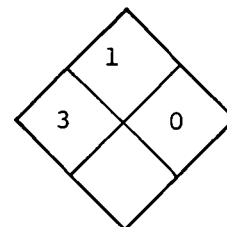
DATE

250-2002B

PRODUCT DESIGNATION

03-250-2102
Ethyl - B Bromopropionate

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME _____ EMERGENCY TELEPHONE NO. _____
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE) _____

TRADE NAME AND SYNONYMS _____ CHEMICAL FAMILY _____

CHEMICAL NAME AND SYNONYMS _____ FORMULA _____
Ethyl - 3 Bromopropionate $\text{BrCH}_2\text{CH}_2\text{COOC}_2\text{H}_5$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA MW - 181.04

BOILING POINT _____ °F. VAPOR PRESSURE _____ mm Hg.
112°C at 44 mm at 73°C 15
MELTING POINT _____ °F. VAPOR DENSITY (Air = 1) _____
SPECIFIC GRAVITY (H₂O = 1) _____ EVAPORATION RATE (_____ = 1) _____
1.41
SOLUBILITY IN WATER Pts/100 pts H₂O _____ VOLATILE _____ % Vol. _____ % Wt. _____
APPEARANCE AND ODOR _____
yellow liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT _____ FLAMMABLE (EXPLOSIVE) _____ UPPER _____
none available LIMITS LOWER _____
METHOD USED _____
EXTINGUISHING MEDIA _____
water, alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES _____

UNUSUAL FIRE AND EXPLOSION HAZARDS _____

PRODUCT DESIGNATION

Ethyl - B - Bromopropionate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE

skin & eye irritation, pulmonary edema, dermatitis

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES. If swallowed - give emetic, get medical aid; wash skin & eyes; inhalation - rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

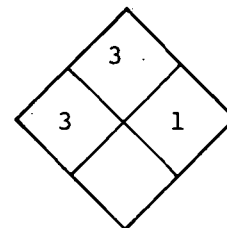
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250-2102B

CAS:000105588

FF98000

PRODUCT DESIGNATION

03-250-2702
Ethyl CarbonateMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Diethyl Carbonate

FORMULA

 $(C_2H_5)_2CO_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Subcutaneous - rat LD ₅₀	8200 mg/kg					

SECTION III PHYSICAL DATA MW - 118.13

BOILING POINT 127°C	° F.	VAPOR PRESSURE at 20°C	30 mm Hg.
MELTING POINT -43°C	° F.	VAPOR DENSITY (Air = 1) 4.1	
SPECIFIC GRAVITY (H ₂ O = 1) 0.98		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

colorless liquid, mild odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 77°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED open cup		LOWER
EXTINGUISHING MEDIA		

carbon dioxide, dry chemical, water may be ineffective.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Ethyl Carbonate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

MAC 200 PPM

CARCINOGENIC

neoplasti

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE

Gasping, loss of coordination, pulmonary edema, nose & throat irritation.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - give emetic, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper towels, evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

Working clothes

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

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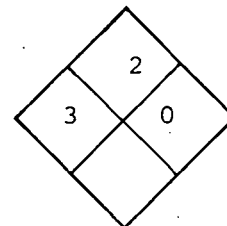
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250-2702B

PRODUCT DESIGNATION

03-250-3502
Ethyl Chloroacetate

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Ethyl Chloroethanoate

FORMULA

 $\text{ClCH}_2\text{COOC}_2\text{H}_5$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA MW - 122.53

BOILING POINT 144°C	° F.	VAPOR PRESSURE at 38°C	mm Hg. 10
MELTING POINT -27°C	° F.	VAPOR DENSITY (Air = 1) 4.3	
SPECIFIC GRAVITY (H ₂ O = 1) 1.16		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR colorless liquid, fruity odor			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 179°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

water may be used to blanket fire, alcohol foam, carbon dioxide or dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

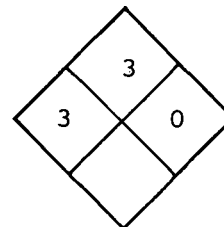
PRODUCT DESIGNATION	
Ethyl chloroacetate	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
none available	CARCINOGENIC no
PRINCIPLE ROUTES OF ABSORPTION	
inhalation, ingestion	SKIN AND EYE IRRITATION severe
RELEVANT SYMPTOMS OF EXPOSURE	
skin and eye irritation, pulmonary edema.	
EFFECTS OF CHRONIC EXPOSURE	
--	
EMERGENCY AND FIRST AID PROCEDURES	
If swallowed - give emetic, get medical aid; wash skin & eyes; inhalation - rest.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Absorb on paper towels, evaporate in hood.	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	goggles
	GLOVES
SPECIAL	rubber
	RESPIRATOR
self-contained	
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Outside or detached storage preferred, inside storage in flammable liquids storage cabinet.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

250-3502B

CAS:000541413

LQ61250

PRODUCT DESIGNATION

03-250-3702
Ethyl ChlorocarbonateMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Ethyl chloroformate

FORMULA

 $\text{ClCOOC}_2\text{H}_5$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LCLO - inhalation - mouse	2260 mg/CM					
Lowest published lethal dose						
intraperitoneal - mouse	15 mg/kg.					

SECTION III PHYSICAL DATA MW - 108.53

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
93°C			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
61°C		3.7	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.14			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
decomposes			

APPEARANCE AND ODOR

colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
61°F		LOWER
METHOD USED		
C.C.		

EXTINGUISHING MEDIA

carbon dioxide or dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Ethyl chlorocarbonate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE eye irritation, irritation of upper respiratory tract, pulmonary edema.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper towels, evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

gloves

SPECIAL

RESPIRATOR

self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside or detached storage preferred, inside storage in flammable liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

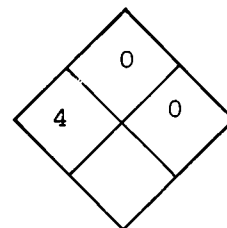
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250-3702B

CAS:000106934

KH-92750

PRODUCT DESIGNATION

Ethylene Bromide
03-250-6202MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Acetylene Dibromide

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1,2 Dibromoethane

FORMULA

 $\text{BrCH}_2\text{CH}_2\text{Br}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ ppm	
			ORAL	PERCUT.	SPECIES	CONC.
			140		Rat	689
LDLO oral - human 50 mg/kg						
LDLO oral - woman 90 mg/kg			55		Rabbit	
				300	Rabbit	
			110		Guinea pig	390/3H
					Guinea pig	
			See Note			
Note: Lowest published toxic dose, oral human - 4500 mg/kg.						

SECTION III PHYSICAL DATA MW-187.88

BOILING POINT 131.4°C	° F.	VAPOR PRESSURE 17.4 mm at 30°C	mm Hg.
MELTING POINT 9.3°C	° F.	VAPOR DENSITY (Air = 1) 6.48	
SPECIFIC GRAVITY (H ₂ O = 1) 2.17 at 25°C		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 0.43 g		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Heavy colorless liquid with sweet odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Alcohol foam, dry chemical or CO₂

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

N/A

PRODUCT DESIGNATION
Ethylene Bromide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 20 ppm, 145 mg/C.M.

CARCINOGENIC Yes

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion & skin

SKIN AND EYE

IRRITATION Very irritating

RELEVANT SYMPTOMS OF EXPOSURE Inhalation - pulmonary edema; irritation of eyes and blistering and burning of skin; central nervous system depression.

EFFECTS OF CHRONIC EXPOSURE

Liver & kidney damage

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - remove from exposure, rest, keep warm; if swallowed - wash mouth, give emetic, get medical aid; wash from eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS Dangerous - when heated to decomposition, it emits highly toxic fumes of bromides.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb spills on paper towels, evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

Get advice from Industrial Hygiene Department

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles or Safety Glasses

MECHANICAL (GENERAL)

Get advice from Industrial Hygiene Department

GLOVES

Neoprene Gloves

SPECIAL

Get advice from Industrial Hygiene Department

RESPIRATOR

w/organic filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Protect containers against physical damage.

OTHER PRECAUTIONS

SIGNATURE

DATE

250-6202B

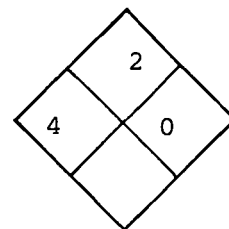
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KJ82250

PRODUCT DESIGNATION

03-250-6402

Ethylene Bromohydrin

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

2 Bromoethanol

 $\text{BrC}_2\text{H}_4\text{OH}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose						
intraperitoneal - mouse	80 mg/kg					

SECTION III PHYSICAL DATA MW - 124.98

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
149-150°C (Dec)		50°C	12
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.79			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
soluble			
APPEARANCE AND ODOR			
colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		LOWER
METHOD USED		
EXTINGUISHING MEDIA		
alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES Wear protective clothing and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Ethylene bromohydrin

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

NO

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE Eye and mucous membrane irritation, nausea, headache, vomiting, unconsciousness.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES If swallowed - induce vomiting, get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

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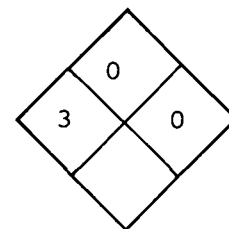
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250-6402B

CAS:000107040

KH65000

PRODUCT DESIGNATION

03-250-6702
Ethylene ChlorobromideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1 Bromo 2 chloroethane

FORMULA

 $\text{BrC}_2\text{H}_4\text{Cl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Oral - human LDLO	50 mg/kg		64		rat	

SECTION III PHYSICAL DATA

MW - 143.4

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
106°C		at 30°C	40
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-18°C		4.94	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.72			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

colorless, volatile liquid, sweet chloroform-like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
not flammable		LOWER
METHOD USED		
EXTINGUISHING MEDIA		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Ethylene chlorobromide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE

Pneumonia, skin & eye irritation, central nervous system depression.

EFFECTS OF CHRONIC EXPOSURE

Liver and kidney damage

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid;
inhalation - rest; wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

rubber
RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

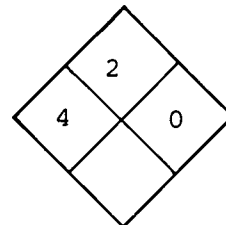
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250-6702B

CAS:000107073

KK08750

PRODUCT DESIGNATION

03-250-6902
Ethylene chlorohydrinMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

 β chloroethyl alcohol

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2 chloro-ethanol

FORMULA

 $\text{CH}_2\text{ClCH}_2\text{OH}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			58	84	rat	
			81		mouse	385
LD ₅₀ oral - human 50 mg/kg				56	rabbit	
LC ₅₀ - oral - human 300 ppm/2 hr.			110		guinea pig	
skin - human 5000 mg/kg						

SECTION III PHYSICAL DATA MW - 80.52

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
129° C		at 30.3° C	10
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-69° C		2.78	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.21			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
very			

APPEARANCE AND ODOR

colorless liquid, faint ethereal odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
140° F		15.9
METHOD USED		LOWER
O.C.		4.9

EXTINGUISHING MEDIA

alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

breathing apparatus.

wear protective clothing & self-contained

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition it emits toxic fumes (Phosgene)

PRODUCT DESIGNATION

Ethylene Chlorohydrin

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 1 PPM, 3 mg/C.M. (ceiling value)

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE

Eye and nasal irritation, nausea, vomiting, giddiness,
dizziness, uncoordination, visual disturbances, coma.

EFFECTS OF CHRONIC EXPOSURE

Nausea, vomiting, abdominal pain.

EMERGENCY AND FIRST AID PROCEDURES

Wash eyes & skin; if swallowed - give emetic, get
medical aid; inhalation - rest, give oxygen as needed.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber (neoprene)

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

Plastic coveralls

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside or detached storage preferred, inside in flammable liquids cabinet.

OTHER PRECAUTIONS

SIGNATURE

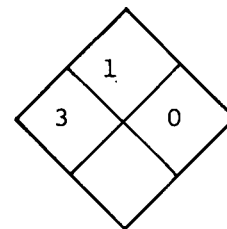
DATE

250-6902B

CAS:000111557

KW40250

PRODUCT DESIGNATION

03-250-7202
Ethylene DiacetateMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Ethylene Glycol Diacetate

FORMULA

 $(CH_2OOCCH_3)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg.		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Oral - human LDLO 500	mg/kg.		4940		guinea pig	
			6850		rat	
				8480	rabbit	

SECTION III PHYSICAL DATA MW - 146.14

BOILING POINT 191°C	° F.	VAPOR PRESSURE at 38°C	mm Hg. 1
MELTING POINT -31°C	° F.	VAPOR DENSITY (Air = 1) 5.04	
SPECIFIC GRAVITY (H ₂ O = 1) 1.13		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR

colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 205°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED O.C.		LOWER

EXTINGUISHING MEDIA

water, alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

may react with oxidizing materials.

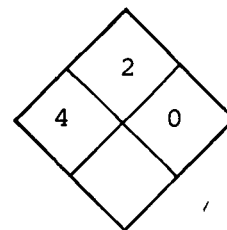
PRODUCT DESIGNATION	
Ethylene Diacetate	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
none available	no
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
inhalation, ingestion (mainly)	IRRITATION moderate
REVELANT SYMPTOMS OF EXPOSURE Coldness, spastic contraction of muscles, loss of reflexes, coma, death; pulmonary edema, eye irritation.	
EFFECTS OF CHRONIC EXPOSURE	
Kidney damage, rapid weight loss, weakened reflexes.	
EMERGENCY AND FIRST AID PROCEDURES	
If swallowed - give emetic, get medical aid; wash from eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	GLOVES
SPECIAL	RESPIRATOR
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

250-7202B

PRODUCT DESIGNATION

03-250-7402
Ethylene Diamine

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

1,2 Ethanediamine
CHEMICAL NAME AND SYNONYMS

FORMULA

Diaminoethane

 $H_2N(CH_2)_2NH_2$

SECTION II HAZARDOUS INGREDIENTS 2 2 4 2

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ PPM	
			ORAL	PERCUT.	SPECIES	CONC.
			1160		rat	4000
					mouse	
				730	rabbit	
			470		guinea pig	
Lowest published toxic concentration in air						
LO- inhalation - human 200 PPM						

SECTION III PHYSICAL DATA MW - 60.10

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
117°C		at 20°C	11
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
9°C		2.07	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.899			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
soluble			

APPEARANCE AND ODOR

colorless, hygroscopic liquid, ammonia-like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
110°F		LOWER
METHOD USED		
O.C.		

EXTINGUISHING MEDIA

Carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

Can react with oxidizing materials.

PRODUCT DESIGNATION

Ethylene Diamine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 10 PPM, 25 mg/C.M.

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation (mainly) ingestion

SKIN AND EYE

IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE

Irritation respiratory system, allergenic effects, eye

irritation with tearing, corneal edema, headache, nausea.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis, lung, kidney and liver damage.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Put sodium bisulfite powder on spill; add water.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber (butyl)

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside or detached storage preferred; inside storage in flammable liquids cabinet.

OTHER PRECAUTIONS

SIGNATURE

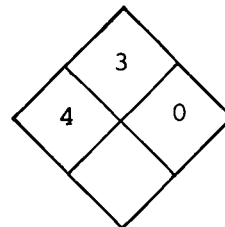
DATE

250-7402B

PRODUCT DESIGNATION

Ethylene Chloride
(Ethylene dichloride)
03-250-7702
03-250-7732

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1,2-Dichloroethane	FORMULA CH ₂ ClCH ₂ Cl

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			680		Rat	
Oral - human LDLO 500 mg/kg			860	3890	Rabbit	
Oral - man LDLO 810 mg/kg						
Notes: Lowest published toxic concentration in air; inhalation - human 4000 ppm. Lowest published toxic dose; oral - human 845 mg/kg.						

SECTION III PHYSICAL DATA Mol. Wt. 98.96

BOILING POINT 83.5°C	° F.	VAPOR PRESSURE at 29.4°C	100 mm Hg.
MELTING POINT -35.4°C.	° F.	VAPOR DENSITY (Air = 1) 3.35	
SPECIFIC GRAVITY (H ₂ O = 1) 1.257 at 20°/4°C		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 0.81 g at 20°C.		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Colorless liquid with chloroform-like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA % Vol.

FLASH POINT 55.4°F 65°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 15.9 % LOWER 6.2 %
METHOD USED Closed Cup Open Cup		

EXTINGUISHING MEDIA

Dry chemical, foam, or carbon dioxide - water may be ineffective.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus in pressure demand mode.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Vapor forms explosive mixtures in air. May flash back.

PRODUCT DESIGNATION Ethylene Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 50 ppm, 200 mg/C.M.

CARCINOGENIC

Yes

PRINCIPLE ROUTES OF ABSORPTION Inhalation of vapor; percutaneous absorption of liquid.

SKIN AND EYE
IRRITATION

Yes - can be severe.

REVELANT SYMPTOMS OF EXPOSURE Cyanosis, falling blood pressure, irritation of mucous membranes, followed by dizziness, nausea, vomiting, rapid pulse, diarrhea, and pulmonary edema.

EFFECTS OF CHRONIC EXPOSURE Weight loss, loss of appetite, nausea and vomiting, possible liver and kidney damage, epigastric distress, low blood pressure, oliguria or anemia.

EMERGENCY AND FIRST AID PROCEDURES

If necessary give artificial respiration. (Remove contaminated clothing if necessary.)
Do not give stimulants. Rest and keep warm. Obtain medical attention.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

Aluminum, N2O4, ammonia, dimethyl amine, propyl amine.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb with paper towels, evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

Exhaust ventilation needed.

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

w/appropriate filter

OTHER PROTECTIVE EQUIPMENT

Self-contained breathing apparatus

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Standard flammable liquids storage room or cabinet.

OTHER PRECAUTIONS

Protect against physical damage.

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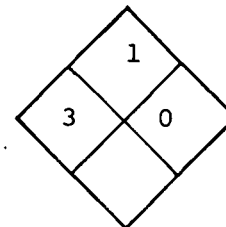
DATE

250-7702B

CAS:000107211

KW29750

PRODUCT DESIGNATION

03-250-8202
Ethylene GlycolMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

1,2 Ethanediol

CH₂OHCH₂OH

SECTION II HAZARDOUS INGREDIENTS 2 2

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			6610		guinea pig	
			5480		rat	
			7500		mouse	
LDLO Oral - human - 1500 mg/kg.			2000		cat	
TCLO inhalation - human 1000 mg/cm irritant						

SECTION III PHYSICAL DATA MW - 62.1

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
198°C		at 20°C	0.05
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-13°C		2.14	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.11			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
very soluble			
APPEARANCE AND ODOR			
colorless, sweet tasting liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
232°F		LOWER
METHOD USED		3.2
CC		
EXTINGUISHING MEDIA		
alcohol foam, water, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Ethylene Glycol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 100 PPM, 260 mg/C.M. (vapor)

CARCINOGENIC

neoplasti

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion (mainly)

SKIN AND EYE

IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE Coldness, spastic contraction of muscles, loss of reflexes, coma, death; pulmonary edema, eye irritation.

EFFECTS OF CHRONIC EXPOSURE

Kidney damage, rapid weight loss, weakened reflexes.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic; get medical aid; wash from eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber gloves

SPECIAL

RESPIRATOR

With chemical filter

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

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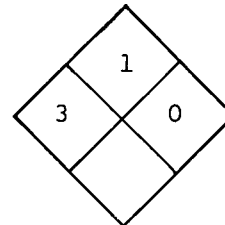
DATE

250-8202B

CAS:000111597 ✓

KW40250

PRODUCT DESIGNATION

03-250-8402
Ethylene Glycol Diacetate
/MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Ethylene Diacetate

FORMULA

 $(CH_3OOCCH_2)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/CM		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO - oral - human	500 mg/kg		4940		guinea pig	
			6850		rat	
				8480	rabbit	

SECTION III PHYSICAL DATA MW - 146.14

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
191°C		at 38°C	1
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-31°C		5.04	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.13			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
205°F		LOWER
METHOD USED		
O.C.		

EXTINGUISHING MEDIA

Water, alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

May react with oxidizing materials.

PRODUCT DESIGNATION

Ethylene Glycol Diacetate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion (mainly)

SKIN AND EYE

IRRITATION

moderate

RELEVANT SYMPTOMS OF EXPOSURE

Coldness, spastic contraction of muscles, loss of reflexes, coma, death; pulmonary edema, eye irritation.

EFFECTS OF CHRONIC EXPOSURE

Kidney damage, rapid weight loss, weakened reflexes.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; wash from eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

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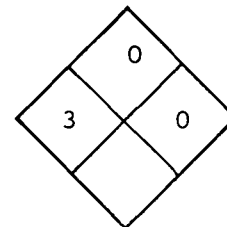
DATE

250-8402B

PRODUCT DESIGNATION

03-251 3303
Ethylidene Bromide

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
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ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
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CHEMICAL NAME AND SYNONYMS	FORMULA
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1,1 dibromoethane

Br₂HCCH₃

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO rectal - rabbit	1250 mg/kg		none	available		

SECTION III PHYSICAL DATA MW -187.89

BOILING POINT 109°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 2.06		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA not available		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Ethylidine Bromide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Inhalation, ingestion, skin

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE

Central nervous system depression, eye irritation, dermatitis

EFFECTS OF CHRONIC EXPOSURE

Liver damage, dermatitis

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid;
inhalation - rest; wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

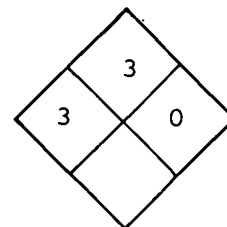
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251-3303B

CAS:000075343

K101750

PRODUCT DESIGNATION

03-251-3503
Ethylidene ChlorideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

1,1, Dichloroethane

 Cl_2HCCH_3

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO oral human 500 mg/kg			725		rat	

SECTION III PHYSICAL DATA MW - 98.97

BOILING POINT 58°C	° F.	VAPOR PRESSURE at 25°C	mm-Hg.
MELTING POINT -97°C	° F.	VAPOR DENSITY (Air = 1)	230
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.17			
SOLUBILITY IN WATER Pts/100 pts H ₂ O 0.5		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR
Colorless liquid, ethereal odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 22°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED C.C.		11.4%
		LOWER
		5.6%

EXTINGUISHING MEDIA

Alcohol foam, water, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective

UNUSUAL FIRE AND EXPLOSION HAZARDS

Wear full protective clothing

PRODUCT DESIGNATION

Ethylidene Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 200 PPM, 320 mg/C.M.

Teratogen

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE

Central nervous system depression, eye irritation, dermatitis.

EFFECTS OF CHRONIC EXPOSURE

Liver damage, dermatitis.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - get medical aid; inhalation-rest; wash eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb spill with paper towels, place in hood for evaporation.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

Working clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

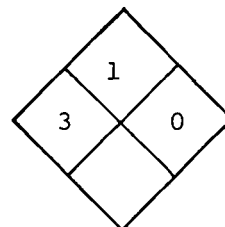
DATE

251-3503B

PRODUCT DESIGNATION

03-251-4303
Ethyl Iodide

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS moniodoethane	FORMULA C_2H_5I

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 155.98

BOILING POINT 72.2°C	° F.	VAPOR PRESSURE at 25°C	mm Hg. 137
MELTING POINT -108.5°C	° F.	VAPOR DENSITY (Air = 1) 5.4	
SPECIFIC GRAVITY (H ₂ O = 1) 1.92		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 0.4		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid, ethereal odor			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES --		

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition points, emits toxic fumes of iodates.

PRODUCT DESIGNATION
Ethyl iodide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL Not available CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION Inhalation, ingestion, skin SKIN AND EYE IRRITATION slight

REVELANT SYMPTOMS OF EXPOSURE Nausea, vomiting, diarrhea, dizziness, visual disturbances, irritability, drowsiness, central nervous system depressant.

EFFECTS OF CHRONIC EXPOSURE dermatitis

EMERGENCY AND FIRST AID PROCEDURES Inhalation -rest; if swallowed - wash mouth, give emetic, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE safety goggles
MECHANICAL (GENERAL)	GLOVES rubber
SPECIAL	RESPIRATOR with proper filter
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

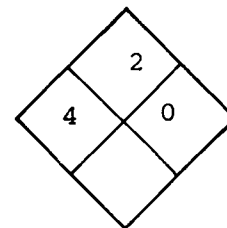
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251-4303B

VV94500

03-251-6903
Ethyl Orthosilicate

MATERIAL SAFETY DATA SHEET



MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

Tetraethyl-0-silicate

$$\frac{(C_2H_5)_4SiO_4}{Ts}$$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LCLO inhalation - rat 1000 PPM/4 hrs.						
LDLO oral - rat - 1000 mg/kg						

SECTION III PHYSICAL DATA MW - 208.30

BOILING POINT 166 ⁰ C	⁰ F.	VAPOR PRESSURE at 20 ⁰ C	mm Hg.
MELTING POINT -83 ⁰ C	⁰ F.	VAPOR DENSITY (Air = 1) 7.22	1
SPECIFIC GRAVITY (H ₂ O = 1) 0.93		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O decomposes		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR colorless liquid, faint odor			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
125 ⁰ F		
METHOD USED		LOWER
O.C.		
EXTINGUISHING MEDIA		
Carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Ethyl Orthosilicate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 10 PPM, 85 mg/C.M.

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Irritation of eyes and upper respiratory tract, tremors, weakness, narcosis and death.

EFFECTS OF CHRONIC EXPOSURE

Liver, kidney and lung damage

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; wash from skin & eyes; inhalation - rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper towels, evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Protect container against physical damage - outside or detached storage is preferred.

OTHER PRECAUTIONS

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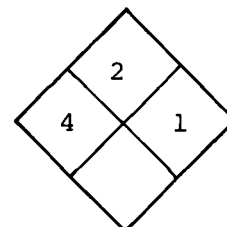
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PRODUCT DESIGNATION

03-251-9303
Ethyl Isothiocyanate

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

Ethyl Thiocarbimide

 C_2H_5NCS

SECTION II HAZARDOUS INGREDIENTS 2.5

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
		none available				

SECTION III PHYSICAL DATA MW - 87.2

BOILING POINT 131°C	° F.	VAPOR PRESSURE at 23°C	mm Hg.
MELTING POINT -6°C	° F.	VAPOR DENSITY (Air = 1)	10
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.00			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

colorless liquid, pungent odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

wear full protective clothing, self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Ethyl Iso-Thiocyanate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

ingestion, inhalation

SKIN AND EYE

IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE

Irritation of eyes, respiratory system, irritation of digestive tract.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - induce vomiting, get medical aid;
wash skin & eyes; inhalation - rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May react with oxidizing materials and acids.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

rubber

RESPIRATOR

self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

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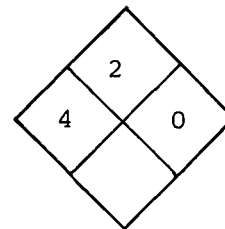
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251-9303B

PRODUCT DESIGNATION

03-251-9523
Ethyl M-Toluidine

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

Ethyl-M-Toluidine

CC(C)C1=CC=C(C=C1)N

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 135.20

BOILING POINT 221°C	° F.	VAPOR PRESSURE at 102°C	mm Hg. 10
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) -		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Ethyl-M-Toluidine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL none available CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION inhalation, ingestion, skin SKIN AND EYE IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE Cyanosis, air hunger, nausea, vomiting, low blood pressure, convulsions.

EFFECTS OF CHRONIC EXPOSURE Weight loss, anemia, weakness

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic; get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE goggles
MECHANICAL (GENERAL)	GLOVES rubber
SPECIAL	RESPIRATOR with proper filter
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE Outside storage preferred. Inside storage in a standard flammable liquids storage cabinet.

OTHER PRECAUTIONS

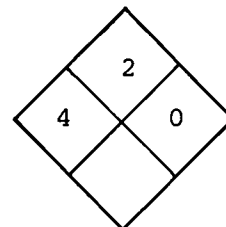
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251-9523B

PRODUCT DESIGNATION

03-251-9553
Ethyl-O-Toluidine

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Ethyl-O-Toluidine

FORMULA

$$\text{CH}_3\text{C}_6\text{H}_4\text{NHC}_2\text{H}_5$$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 135.20

BOILING POINT 216°C	° F.	VAPOR PRESSURE at 85°C	mm Hg. 6
MELTING POINT <-15°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 0.95		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

wear full protective clothing

UNUSUAL FIRE AND EXPLOSION HAZARDS

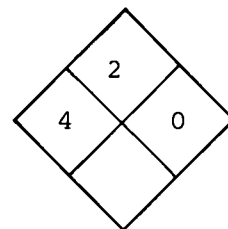
PRODUCT DESIGNATION	
Ethyl-O-Toluidine	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
none available	no
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion, skin	IRRITATION moderate
RELEVANT SYMPTOMS OF EXPOSURE cyanosis, air hunger, nausea, vomiting, low blood pressure, convulsions.	
EFFECTS OF CHRONIC EXPOSURE	
Weight loss, anemia, weakness.	
EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	goggles
SPECIAL	GLOVES
	rubber
	RESPIRATOR
	with proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Outside storage preferred. Inside storage in a standard flammable liquid storage cabinet.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

251-9553B

PRODUCT DESIGNATION

03-251-9573
Ethyl-P-Toluidine

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
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ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

Ethyl-P-Toluidine

$\text{CH}_3\text{C}_6\text{H}_4\text{NHC}_2\text{H}_5$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 135.20

BOILING POINT 217°C	° F.	VAPOR PRESSURE at 101°C	mm Hg. 10
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 0.94		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Ethyl-P-Toluidine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC
no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE cyanosis, air hunger, nausea, vomiting, low blood

pressure, convulsions.

EFFECTS OF CHRONIC EXPOSURE

weight loss, anemia, weakness

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid;
inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

rubber
RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

with proper filter

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside storage preferred. Inside storage in a standard flammable
liquid storage cabinet.

OTHER PRECAUTIONS

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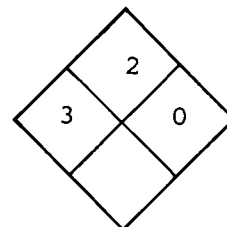
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251-9573B

PRODUCT DESIGNATION

03-257-2405
P-Fluorobromobenzene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS	FORMULA
P-Fluorobromobenzene	FC H Br

SECTION II HAZARDOUS INGREDIENTS 6 4

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 175.01

BOILING POINT 155°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -8°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.60		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR colorless liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA use water spray, foam, carbon dioxide or dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES wear self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION
P-Fluorobromobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL none available CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION inhalation, ingestion, skin SKIN AND EYE IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE cyanosis, deep and rapid respiration, irregular pulse, drowsiness, unconsciousness.

EFFECTS OF CHRONIC EXPOSURE Lung, liver and kidney damage

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE goggles
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MECHANICAL (GENERAL)	GLOVES polyvinyl alcohol gloves
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SPECIAL	RESPIRATOR self-contained
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OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

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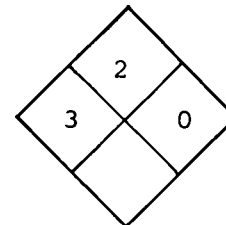
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257-2405B

PRODUCT DESIGNATION

03-257-2505
M-Fluorochlorobenzene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS M-Fluorochlorobenzene	FORMULA $\text{C}_6\text{H}_4\text{Cl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 130.55

BOILING POINT 125°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA use water spray, foam, carbon dioxide or dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES wear self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

M-Fluorochlorobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Cyanosis, deep and rapid respiration, irregular pulse, drowsiness, unconsciousness.

EFFECTS OF CHRONIC EXPOSURE

Lung, liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

polyvinyl alcohol gloves

SPECIAL

RESPIRATOR

self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

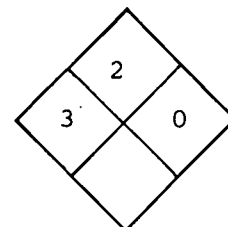
DATE

257-2505B

PRODUCT DESIGNATION

O-Fluorochlorobenzene
03-257-2545

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS	FORMULA
O-Fluorochlorobenzene	FC ₆ H ₄ Cl

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW -130.55

BOILING POINT 136°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT -43°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Use water spray, foam, carbon dioxide or dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES Wear self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

O-Fluorochlorobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Cyanosis, deep and rapid respiration, irregular pulse, drowsiness, unconsciousness.

EFFECTS OF CHRONIC EXPOSURE

Lung, liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

MECHANICAL (GENERAL)

SPECIAL

OTHER PROTECTIVE EQUIPMENT

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

GLOVES

polyvinyl alcohol gloves

RESPIRATOR

self-contained

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

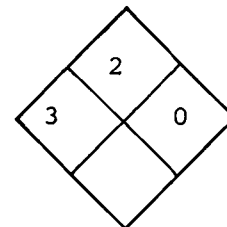
DATE

257-2545B

PRODUCT DESIGNATION

03-257-3425
M-Fluorotoluene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS M-Fluoromethyl benzene	FORMULA $\text{CH}_3\text{C}_6\text{H}_4\text{F}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 110.13

BOILING POINT 116°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -111°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 0.997		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR colorless liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

M-Fluorotoluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE Eye and respiratory system irritation, severe digestive system attack, narcotic effect.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

rubber

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

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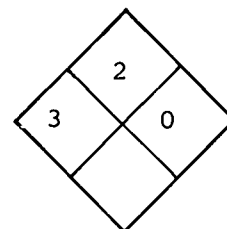
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257-3425B

PRODUCT DESIGNATION

03-257-3455
O-Fluorotoluene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS O-Fluoromethylbenzene	FORMULA $\text{CH}_3\text{C}_6\text{H}_4\text{F}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 110.13

BOILING POINT 114°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -80°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.004		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR colorless liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA alcohol foam, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION
O-Fluorotoluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
none available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION
inhalation, ingestion

SKIN AND EYE
IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE Eye and respiratory system irritation, severe digestive
system irritation, narcotic effect.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation -
rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

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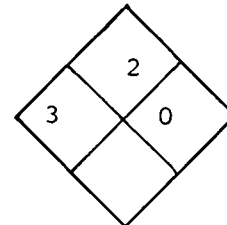
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CAS:000352329

XT25800

PRODUCT DESIGNATION

03-257-3485
P-FluorotolueneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

P-Fluoromethyl benzene

FORMULA

CH3CH2F

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD50		LC50	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO parenteral - mouse	500 mg/kg		none	available		

SECTION III PHYSICAL DATA

MW - 110.13

BOILING POINT 117°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.001		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR colorless liquid, odor of oil of bitter almonds.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Dry chemical, carbon dioxide, alcohol foam.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
P-Fluorotoluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC
no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Eye and respiratory system irritation, severe digestive system irritation, narcotic effect.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

gloved

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

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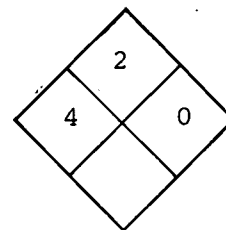
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LP89250

PRODUCT DESIGNATION

Formaldehyde
03-257-3965 (Liquid)

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

Methanal

HCHO

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ ppm	
			ORAL	PERCUT.	SPECIES	CONC.
			260		Guinea Pig	
			800		Rat	
				220	Rabbit	
				300	Mouse	
Notes: Lowest published toxic concentration in air; inhalation - human 13.8 ppm. irritant						
Lowest published lethal dose, oral - woman 36 mg/kg.						
LDLO - oral - human 500 mg/kg						

SECTION III PHYSICAL DATA Mol. Wt. 30.03

BOILING POINT 98°C	° F.	VAPOR PRESSURE at -88°C	10 mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.08		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR

Colorless gas with highly irritating odor or clear water white liquid.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 122°F (15%-MeOH free) 185°F (37% - Methanol free)	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 73%
METHOD USED		LOWER 7%

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemicals, water spray.

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Formaldehyde

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 2 ppm, 3 mg/C.M. (ceiling value)

CARCINOGENIC Neoplastic
Effects

PRINCIPLE ROUTES OF ABSORPTION

Inhalation of vapor or

SKIN AND EYE

ingestion of liquid

IRRITATION Yes - moderate to severe

REVELANT SYMPTOMS OF EXPOSURE

Eye and respiratory tract irritation, headache; ingestion -
abdominal pain, vomiting, diarrhea; skin irritation.

EFFECTS OF CHRONIC EXPOSURE

Laryngitis, bronchitis, bronchial pneumonia; cracking and ulceration of skin.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest, get medical aid; wash skin & eyes; if
swallowed - drink water or milk, then gastric lavage, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Perchloric acid & aniline

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

bsorb on paper towels; evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

w/appropriate filter

OTHER PROTECTIVE EQUIPMENT

Self-contained breathing apparatus; rubber apron

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Separate from oxidizing & alkaline materials outside storage preferred. Inside
storage in flammable liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

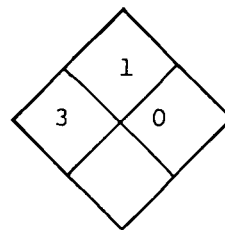
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CAS:000075127

LQ05250

PRODUCT DESIGNATION

03-257-4025
FormamideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Methanamide

FORMULA

HCONH₂

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			7500		Rat	
Intramuscular - guinea pig						
LD50 2539 mg/kg.						

SECTION III PHYSICAL DATA

BOILING POINT	° F.	VAPOR PRESSURE	MW - 45.04
211°C		at 130°C	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	30
2.6°C		EVAPORATION RATE (_____ = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)			
1.13			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
very soluble			
APPEARANCE AND ODOR			
Colorless, hygroscopic, oily, liquid, odorless			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE)	UPPER
310°F	LIMITS	LOWER
METHOD USED (COC)		
EXTINGUISHING MEDIA		
Water, alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Formamide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 20 PPM, 30 mg/kg.

Teratogen CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

Ingestion, inhalation

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE

Drowsiness, fatigue, nausea, acidosis, skin eruptions.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES If swallowed - induce vomiting, get medical aid;
inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Stored in closed container away from moisture.

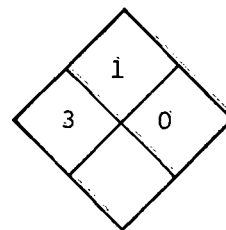
OTHER PRECAUTIONS

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DATE

257-4025B

PRODUCT DESIGNATION

03-257-4405
FormanilideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Phenylformamide

FORMULA

 C_6H_5NCHO

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO - oral - dog	400 mg/kg					

SECTION III PHYSICAL DATA

MW - 121.13

BOILING POINT 271°C	° F.	VAPOR PRESSURE 216	mm Hg.
MELTING POINT 50°C	° F.	VAPOR DENSITY (Air = 1)	120
SPECIFIC GRAVITY (H ₂ O = 1) 1.15		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O slightly soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Formanilide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
None available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION
Inhalation of dust, ingestion

SKIN AND EYE
IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE Cyanosis, headache, dizziness, confusion, blood pressure
fall, convulsions and coma.

EFFECTS OF CHRONIC EXPOSURE Weight loss, anemia, weakness and irritability

EMERGENCY AND FIRST AID PROCEDURES If swallowed - induce vomiting, get medical aid;
inhalation - give oxygen as needed; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

rubber

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

with proper filter

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

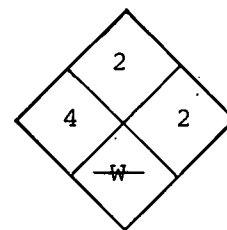
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LT28000

PRODUCT DESIGNATION

03-257-5405
Fumaryl chlorideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

Trans-Butenedioyl chloride

(CLOCCH)₂

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal concentration in air inhalation - rat 3000 mg/C.M.						
LCLO - inhalation mouse 1000 mg/C.M./10 minutes						

SECTION III PHYSICAL DATA MW - 153

BOILING POINT 160°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O decomposes in water		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR			
Clear, straw-colored liquid, pungent odor, fumes in moist air.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
Unknown		
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical. Keep away from water.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

Reacts with water or steam to produce HCl.

PRODUCT DESIGNATION

Fumaryl Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Cyanosis, coughing, headache, pulmonary edema,
ulceration of skin, dizziness.EFFECTS OF CHRONIC EXPOSURE Erosion of teeth, jaw necrosis, lung irritation
and cough.EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - drink water, milk
of magnesia, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Reacts violently with water, ethal alcohol,
dimethyl sulfoxide.

HAZARDOUS DECOMPOSITION PRODUCTS

Evolves phosgene when heated.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

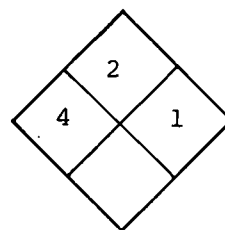
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257-5405B

CAS:000098011

LT70000

PRODUCT DESIGNATION

03-257-5905
FurfuralMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

2 Furanaldehyde

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2 Furaldehyde

FORMULA

 C_4H_3OCHO

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			127		rat	
			400		mouse	
LCLO - inhalation - human	.6 mg/CM	eye	2300		dog	
LDLO - oral - human	500 mg/CM		928		rabbit	
Lowest published lethal concentration in air			541		guinea pig	
inhalation - rat - 153 PPM - 4 h.						

SECTION III PHYSICAL DATA

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.	
162°C				
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)		
-36.5°C		3.31		
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)		
1.16				
SOLUBILITY IN WATER Pts/100 pts. H ₂ O		VOLATILE	% Vol.	% Wt.
slightly soluble				

APPEARANCE AND ODOR

colorless to yellow liquid, almond-like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
140°F		16.3%
METHOD USED		LOWER
C.C.		2.1%
EXTINGUISHING MEDIA		
Alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

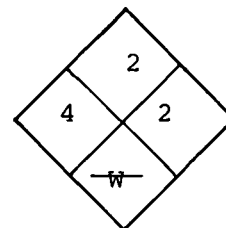
PRODUCT DESIGNATION	
Furfural	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
TLV - 5 PPM, 20 mg/C.M. (Skin)	no
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion	IRRITATION Slight to moderate
RELEVANT SYMPTOMS OF EXPOSURE Weakness, pulmonary edema, headache, numbness of tongue and mucous membrane, dermatitis.	
EFFECTS OF CHRONIC EXPOSURE	
Liver damage	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - induce vomiting, get medical aid; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
Avoid contact with strong mineral acids or alkalies.	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPE) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	Self-contained
OTHER PROTECTIVE EQUIPMENT	
Full protective clothing	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Outside storage preferred, protect against physical damage by shock.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

257-5905B

PRODUCT DESIGNATION

03-257-7905
Furoyl chloride

MATERIAL SAFETY DATA SHEET


SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS	FORMULA
Furoyl chloride	C ₄ H ₃ OCOC1

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 130.53

BOILING POINT 176°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT -2°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O decomposes		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS
reacts with water or steam.

PRODUCT DESIGNATION

Furfoyl chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE Irritation of eyes and respiratory system; if swallowed - severe digestive tract attack; eye and skin burns.

EFFECTS OF CHRONIC EXPOSURE

Bronchial irritation, erosion of teeth

EMERGENCY AND FIRST AID PROCEDURES If swallowed - drink water, milk of magnesia, get medical aid; inhalation - rest; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

May react violently with water or alcohol

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

rubber apron

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

257-7905B

CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER

<u>Organic</u>	<u>CAS No.</u>	<u>Page No.</u>
A-Bromoethylbenzene	000585717	221-1100
Bromoform	000075252	221-2100
Bromohydroquinone	000583697	221-2600
Bromomesitylene	000576830	221-3100
Bromomethyl Acetate	000590976	221-3600
A-Bromonaphthalene	000090119	221-4100
B-Bromonaphthalene	0000580132	221-4150
P-Bromophenacyl Bromide	000099730	221-5100
O-Bromophenol	000095567	221-6100
P-Bromophenol	000106412	221-6150
Bromopicrin	000464108	221-7100
A-Bromopropionyl Bromide	000563768	221-7600
2-Bromopyridine	000109046	221-9100
M-Bromotoluene	000591173	222-1201
O-Bromotoluene	000095465	222-1231
P-Bromotoluene	000106387	222-1261
N-Butyl Acetate	000123864	222-2701
Iso-Butyl Acetate	000110190	222-2741
Sec-Butyl Acetate	000105464	222-2781
Sec Butylamine	000513495	222-3701
N-Butyl Benzene	000104518	222-4701
Sec-Butyl Benzene	000135988	222-4731
Tert-Butyl Benzene	000098066	222-4761
N-Butyl Chloroacetate	000590023	222-8701
α -Butylene Bromide	000533982	222-9211
β -Butylene Bromide	005408866	222-9241
Iso-butylene Bromide	000594343	222-9271
N-Butyl Formate	000592847	223-0302

A-1-2

Iso-Butyl Iodide	000513382	223-2312
N-Butyl Iodide	000542698	223-2332
Sec-Butyl Iodide	000513484	223-2352
Tert-Butyl Iodide	000558178	223-2372
N-Butyronitrile	000109740	225-6403
Carbon Disulfide	000075150	227-4004
Carbon Tetrabromide	000558134	227-4504
Carbon Tetrachloride	000056235	227-4604
Catechol	000120809	227-5004
Chloranil	000118752	227-7504
Chloroacetone	000078955	228-0105
Chloroacetonitrile	000107142	228-0605
α -chloro-acetophenone	000532274	228-1100
Chloroacetyl chloride	000079049	228-1605
O-Chloroaniline	000095512	228-2635
P-Chloroaniline	000106478	228-2665
O-Chlorobenzaldehyde	000089985	228-3635
P-Chlorobenzaldehyde	000104881	228-3665
Chlorobenzene	000108907	228-4105
P-Chlorobenzonitrile	000623030	228-4605
O-Chlorobenzoyl Chloride	000609654	228-5635
P-Chlorobenzoyl Chloride	000122010	228-5665
O-Chlorobenzyl Chloride	000611198	228-6105
M-Chlorobromobenzene	000108372	228-6605
4 Chlorobromobenzene	000106398	228-6665
G-Chlorobutyronitrile	000628206	228-7105
Chloroform (trichloromethane)	000067663	228-9135
2 Chloro-5-Hydroxytoluene	000059507	228-9605
M-Chloriodobenzene	000625990	229-0206
O-Chloriodobenzene	000615418	229-0236
P-Chloriodobenzene	000637876	229-0266
1 Chloro-1-Nitropropane	000600259	229-3216
M-Chlorophenol	000108430	229-4216

O-Chlorophenol	000095578	229-4246
P-Chlorophenol	000106489	229-4276
M-Chlorophenyl Isocyanate	002909388	229-4716
O-Chlorophenyl Isocyanate	003320830	229-4746
3-Chloro, 1, 2 Propanediol	000096242	229-6466
β -Chloropropionyl Chloride	000625365	229-7716
2 Chloropyridine	000109091	229-9216
M-Chlorotoluene	000108418	230-0307
O-Chlorotoluene	000095498	230-0337
P-Chlorotoluene	000106434	230-0367
Coumarin	000091645	230-3307
M-Cresol	000108394	230-4307
O-Cresol	000095487	230-4347
Crotonaldehyde	000123739	230-4807
Cumene	000098828	230-5307
Cyanamide	000420042	230-6307
Cyclohexanol	000108930	230-7447
Cyclohexanone	000108941	230-7507
Cyclohexene	000110838	230-7607
Cyclohexylamine	000108918	230-7807
Decahydronaphthelene	000091178	234-0108
3,4-diaminoanisole dihydrochloride	059548399	234-4108
1,4-Diaminobutane dihydrochloride	000333937	234-4608
2,5-Diaminochlorobenzene dihydrochloride	000615463	234-5108
P,P-Diaminodiphenyl Methane	000101779	234-6108
2,4-Diamino Toluene	000095807	234-7108
2,4-Diamino Toluene Monohydrochloride		234-7308
Di-N-Amylamine	002050922	234-7608
O-Dianisidine	000119904	234-8108
Diazoaminobenzene	000136356	234-9108

1,2,5,6 Dibenzanthracene	000053703	235-0709
Dibenzothiophene	000132650	235-1209
P-Dibromobenzene	000106376	235-4209
4,6-Dibromo-O-Cresol	000609223	235-4709
4,4-Dibromobiphenyl	000092864	235-5209
2,6-Dibromo-4 Nitrophenol	000099285	235-7209
2,4-Dibromophenol	000615587	235-7709
2,6-Dibromophenol	000608333	235-7749
3,5 Dibromopyridine	000625923	235-8709
2,5-Dibromotoluene	000615598	235-9209
Diisobutyl Amine	000110963	236-0300
N-dibutylamine	000111922	236-0400
Di-Sec Butylamine	000626233	236-0500
Di-N-Butylaniline	000613296	236-0800
Di-N-Butyl Mercury	000629356	236-4300
Dichloroacetyl Chloride	000079367	236-5800
2,4-Dichlorobenzaldehyde	000874420	236-7300
M-dichlorobenzene	000541731	236-7800
O-Dichlorobenzene	000095501	236-7850
P-Dichlorobenzene	000106467	236-7900
2,5-Dichloronitrobenzene	000089612	237-2401
1,2-dichloro-4-nitrobenzene	000099547	237-2501
2,4 Dichlorophenol	000120832	237-3401
2,5-Dichlorophenylhydrazine	000205157	237-3901
Dicyclo-hexylamine	000101837	237-6401
Dicyclopentadiene	000077736	237-6901
Diethylamine	000109897	237-8401
Diethylamine Hydrochloride	000660684	237-8501
Diethylaminochlorobenzene	002873894	237-9401
2 Diethylamino-1,4-Dimethylbenzene	003995377	238-0102
4-Diethylamino-1,3-Dimethyl Benzene	006287430	238-0602
Diethylaniline	000091667	238-3102

Diethyl-M-Toluidine	000091678	238-4602
Diethyl-O-Toluidine	000606462	238-4702
Diethyl-P-Toluidine	000613489	238-4802
P,P-Difluorodiphenyl	000398232	238-5302
1,3-Dihydroxy-4-Chlorobenzene	000095885	238-7302
N,N-Dimethyl Formamide	000068122	239-2453
Dimethylamine (anhydrous)	000124403	239-2703
Dimethylamine Hydrochloride	000506592	239-2803
P-Dimethylaminoazobenzene	000060117	239-3203
Dimethylaniline	000121697	239-5203
9,10 Dimethyl-1,2Benzanthracene	000057976	239-5703
Dimethylbenzylamine	000103833	239-6203
2,6 Dimethyl-4-Heptanone	000108838	236-6403
Dimethyldihydroresorcinol	000126818	239-6703
2,4-Dimethylphenacyl Chloride	002623452	240-0304
2,4-Dimethylpiperidine	006287190	240-1404
Dimethyl-N-Propylcarbinol	000590363	240-1804
Dimethylsulfoxide	000067685	240-3505
Dimethyl-M-Toluidine	000121722	240-4304
Dimethyl-O-Toluidine	000609723	240-4404
Dimethyl-P-Toluidine	000099978	240-4504
2,4 Dinitroaniline	000097029	240-4804
2,4-Dinitroanisole	000119277	240-5304
M-Dinitrobenzene	000099650	240-5804
3,5 Dinitrobenzoyl Chloride	000099332	240-6304
2,4-Dinitrobromobenzene	000584485	240-6804
2,4-Dinitrochlorobenzene	000097007	240-7004
4,6-Dinitro-O-Cresol	000534521	240-7304
4,4-Dinitrodiphenyl	001528741	240-7804
4,4-Dinitrodiphenylmethane	001817749	240-8304
2,4-Dinitrophenetole	000610548	240-9804
2,4-Dinitrophenol	000051285	241-0405

2,4 Dinitrophenyl Hydrazine	000119266	241-0605
2,6 Dinitrothymol	000303219	241-0905
2,4-Dinitrotoluene	000121142	241-1405
P-Diiodobenzene	000624384	241-2405
P-Dioxane	000123911	241-2906
Diphenyl	000092524	241-4905
M-Diphenylbenzene	000092068	241-6405
O-Diphenylbenzene	000084151	241-6505
P-Diphenylbenzene	000092944	241-6605
As-Diphenylhydrazine Hydrochloride	000530472	242-0606
1,4-Diphenylsemicarbazide	029031978	242-3606
Di-Iso-Propanolamine	000110974	242-5606
Di-Iso-Propylamine	000108189	242-6106
Di-N-propyl amine	000142847	242-6206
N,N-Di-N-Propylaniline	002217074	242-6606
Di-N-propylcarbinol	000589559	242-7106
Epichlorohydrin	000106898	242-0407
Ethanolamine	000141435	244-1707

Ether

Ethyl Ether	000060297	246-1908
N-Butyl Ether	000142961	246-4308
4,4-Dibromodiphenyl Ether	002050477	246-6708
β,β' Dichlorodiethyl Ether	000111444	246-6908
S-Dichloromethyl Ether	000542881	246-7608
Ethylene Glycol, Monobutyl Ether	000111762	247-0909
Ethylene Glycolmonoethyl Ether	000110805	247-1209
Ethylene glycol Monomethyl Ether	000109864	247-1509
Phenyl Ether	000101848	247-5809
Iso-Propyl Ether	000108203	247-6209
Resorcinol Monomethyl Ether	000150196	247-6709

Organic

β -Ethoxyethyl Acetate	000111159	249-1601
Ethylamine, Anhydrous	000075047	249-6601
Ethylamine, hydrochloride	000557664	249-6701
N-Ethylaniline	000103695	249-7101
Ethylbenzene	000100414	249-8601
Ethylbenzylamine	000092591	250-0202
Ethyl Bromide	000074964	250-0702
Ethyl Bromoacetate	000105362	250-0902
Ethyl-A Bromopropionate	000535115	250-2002
Ethyl-B Bromopropionate	000539742	250-2102
Ethyl Carbonate	000105588	250-2702
Ethyl Chloroacetate	000105395	250-3502
Ethyl Chlorocarbonate	000541413	250-3702
Ethylene Bromide	000106934	250-6202
Ethylene Bromohydrin	000540512	250-6402
Ethylene Chlorobromide	000107040	250-6702
Ethylene Chlorohydrin	000107073	250-6902
Ethylene Diacetate	000111557	250-7202
Ethylene Diamine	000107153	250-7402
Ethylene Chloride (Ethylene Dichloride)	000107062	250-7702
Ethylene Glycol	000107211	250-8202
Ethylene Glycol Diacetate	000111557	250-8402
Ethylidene Bromide	000557915	251-3303
Ethylidene Chloride	000075343	251-3503
Ethyl Iodide	000075036	251-4303
Ethyl Orthosilicate	000078104	251-6903
Ethyl Isothiocyanate	000542858	251-9303
Ethyl M-Toluidine	000102272	251-9523
Ethyl-O-Toluidine	000094688	251-9553
Ethyl-P-Toluidine	000622571	251-9573

P-Fluorobromobenzene	000460004	257-2405
M-Fluorochlorobenzene	000625989	257-2505
O-Fluorochlorobenzene	000348516	257-2545
M-Fluorotoluene	000352705	257-3425
O-Fluorotoluene	000095523	257-3455
P-Fluorotoluene	000352329	257-3485
Formaldehyde	000050000	257-3965
Formamide	000075127	257-4025
Formanilide	000103708	257-4405
Fumaryl Chloride	000627634	257-5405
Furfural	000098011	257-5905
Furoyl Chloride	001300329	257-7905

INTERNAL DISTRIBUTION

- | | |
|-----------------------|----------------------|
| 1. Arakawa, E. T. | 43. Creswick, F. A. |
| 2. Atchley, R. L. | 44. Crowell, R. A. |
| 3. Auble, R. L. | 45. Crump, B. F. |
| 4. Baes, C. F. | 46. Datz, S. |
| 5. Baker, M. A. | 47. DeBakker, R. J. |
| 6. Bandy, C. W. | 48. Demonbrun, J. R. |
| 7. Barclay, D. D. | 49. Dismuke, S. E. |
| 8. Bell, J. T. | 50. Dixon, G. J. |
| 9. Betz, N. | 51. Dobbs, N. A. |
| 10. Beweley, W. D. | 52. Doherty, D. G. |
| 11. Binford, F. T. | 53. Dunning, D. E. |
| 12. Blevins, W. A. | 54. Ealy, J. A. |
| 13. Boarner, L. A. | 55. Edwards, R. S. |
| 14. Bolinsky, J. | 56. Ehrlich, R. D. |
| 15. Baunstein, J. | 57. Elrod, J. C. |
| 16. Breeding, S. W. | 58. Emerson, E. E. |
| 17. Brogan, D. | 59. Everett, W. S. |
| 18. Brooksbank, R. E. | 60. Fair, W. C. |
| 19. Brown, J. M. | 61. Farnham, R. M. |
| 20. Bryant, E. H. | 62. Fields, J. A. |
| 21. Burch, W. D. | 63. Fields, J. W. |
| 22. Busby, W. | 64. Fontana, M. H. |
| 23. Busing, W. R. | 65. Fortney, T. G. |
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| 25. Cain, G. C. | 67. Garrett, A. S. |
| 26. Case, F. N. | 68. Garrett, W. R. |
| 27. Chandler, J. M. | 69. Gary, D. C. |
| 28. Chapman, G. T. | 70. Gilley, L. W. |
| 29. Clark, B. R. | 71. Gilmore, R. D. |
| 30. Clark, R. L. | 72. Glass, J. |
| 31. Cleland, J. W. | 73. Glass, R. W. |
| 32. Clinton, S. D. | 74. Graves, W. D. |
| 33. Coleman, C. F. | 75. Griest, W. H. |
| 34. Collins, W. M. | 76. Groenier, W. S. |
| 35. Coltharp, H. G. | 77. Guerin, M. R. |
| 36. Colwell, B. | 78. Hamrick, T. P. |
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| 38. Corbett, B. L. | 80. Haymond, H. H. |
| 39. Corbin, L. T. | 81. Haynes, C. E. |
| 40. Cottrell, W. B. | 82. Hicks, G. R. |
| 41. Cox, J. A. | 83. Hightower, J. R. |
| 42. Cox, T. T. | 84. Hoffman, H. W. |

85. Holbrook, J. L.
86. Holland, L. B.
87. Hood, W. B.
88. Hull, G. T.
89. Hurt, S. S.
90. Hutchins, J. D.
91. Ind. Hyg. Library (K-25)
- 92-102. Ind. Hyg. Dept. (ORNL)
103. Jackson, J. W.
104. Jamison, K. E.
105. Jenkins, L. H.
106. Jenkins, R. A.
107. Jenness, R. G.
108. Jennings, R. M.
109. Johnson, C. E.
110. Johnston, R. L.
111. Jones, J. E., Jr.
112. Jones, J. R.
113. Jones, R. S.
114. Judish, T. P.
115. Kappelmann, F. A.
116. Keesee, H. F.
- 117-118. Ketchen, E. E.
119. King, E. M.
120. King, L. J.
121. Klaus, H. V.
122. Kobisk, E. H.
123. Kowhler, W. C.
124. Lake, M. M.
125. Lampton, R. E.
126. Lunco, E. D.
127. Langford, L.
128. Lasher, L. C.
129. LEes, E. M.
130. Leinart, R. L.
131. Leuze, R. E.
132. Library (Paducah)
133. Lieberman, B.
134. Lines, R. L.
135. Livingston, R.
136. Lloyd, M. H.
137. Love, G.
138. Lovelace, H. G.
139. Lyon, W. S.
140. MacPherson, R. E.
141. Macres, J.
142. Mailen, J. C.
143. Malinauskas, A. P.
144. Martin, J. R.
145. Massengill, J.
146. McCord, R. V.
147. McDougal, B. E.
148. McDowell, J. W.
149. McNabb, J. G.
150. Mesmer, R. E.
151. Michel, J. W.
152. Milan, D.
153. Millican, R.
154. Miller, J. M.
155. Miller, P. D.
156. Millèr, W. H.
157. Mitchell, M. E.
158. Murray, J. A.
159. Nicol, R. G.
160. Noggle, T. S.
161. Oakes, T. W.
162. Odell, T. T.
163. Oliphant, G. W.
164. Ottinger, C. L.
165. Parrott, J. R.
166. Parzyck, O. C.
167. Perry, T.P.A.
168. Peterson, C. H.
169. Pickel, T. W.
170. Pierce, E. E.
171. Pope, R. G.
172. Porter, W. E.
173. Posey, F. A.
174. Poteet, K. H.
175. Poutsma, M. L.
176. Pugh, L. P.
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