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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

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Date Published: September 1979

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Oak Ridge, Tennessee 37830

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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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(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

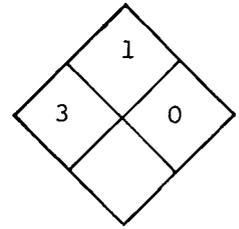
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See Bromobenzene

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 201^oC	^o F.	VAPOR PRESSURE at 105-107	30	mm Hg.
MELTING POINT -65^oC	^o 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 205^oF	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.

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

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VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self contained breathing apparatus

OTHER PROTECTIVE EQUIPMENT

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PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

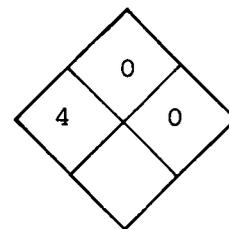
DATE

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 ₃ CH

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

INGOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

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WASTE DISPOSAL METHOD

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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

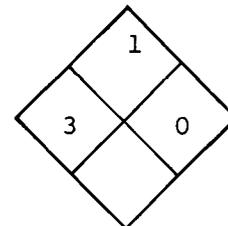
SIGNATURE

DATE

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 _____ ° F. VAPOR PRESSURE _____ mm Hg.
sublimes

MELTING POINT _____ ° F. VAPOR DENSITY (Air = 1) _____
113°C.

SPECIFIC GRAVITY (H₂O = 1) _____ EVAPORATION RATE (_____ = 1) _____
--

SOLUBILITY IN WATER Pts/100 pts H₂O . VOLATILE _____ % Vol. _____ % Wt.
Very soluble

APPEARANCE AND ODOR _____
Leaflets

SECTION IV FIRE AND EXPLOSION HAZARD DATA

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

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

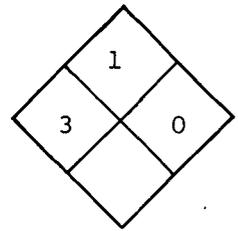
SIGNATURE

DATE

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
Inhalation, ingestion, skin

SKIN AND EYE
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

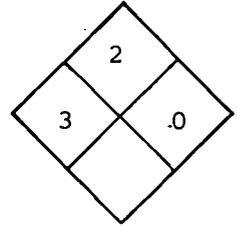
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DATE

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

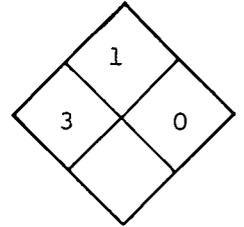
DATE

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 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 281°C.	° F.	VAPOR PRESSURE at 84°	mm Hg.
MELTING POINT 6°C.	° 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
METHOD USED		LOWER
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

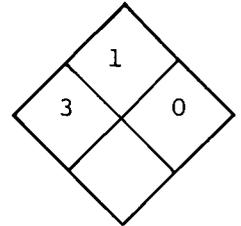
DATE

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

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

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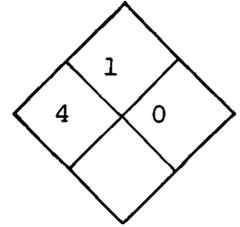
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221-4150B

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 BrC₆H₄COCH₂Br

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

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			
Needle-like crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
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

REVELANT 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

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

RESPIRATOR

With chemical filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

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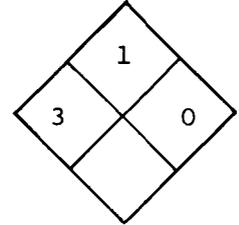
DATE

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 C ₆ H ₄ OH

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
O-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

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.

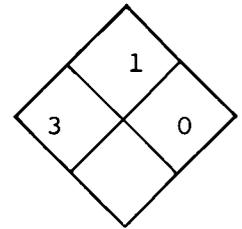
OTHER PRECAUTIONS

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DATE

221-6100B

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 C ₆ H ₄ OH

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 238°C.	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 64°C.	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.59		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O 1.4		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 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

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 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

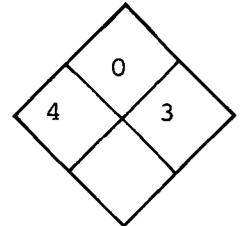
DATE

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 <u>Bromopicrin</u>	FORMULA <u>Br₃CNO₂</u>

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 <u>127⁰C</u>	° F.	VAPOR PRESSURE <u>at 86⁰C</u>	15 mm Hg.
MELTING POINT <u>103⁰C.</u>	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) <u>2.79</u>		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O <u>Insoluble</u>		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR <u>Oily colorless liquid</u>			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

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

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

RELEVANT SYMPTOMS OF EXPOSURE

Skin, eye, lung irritant, vomiting, bronchitis and

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)

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-contained

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Protect against physical damage, outside storage recommended.

OTHER PRECAUTIONS

SIGNATURE

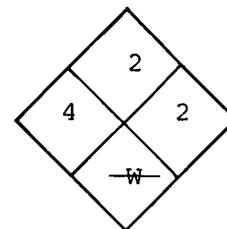
DATE

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 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

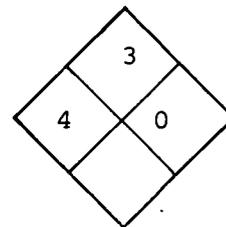
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221-7600B

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 α Bromo-pyridine	FORMULA BrC ₅ H ₄ 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 193°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.657		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Slightly soluble		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR Liquid with fish-like odor			

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 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**

RELEVANT 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 Use in hood	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
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221-9100B

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

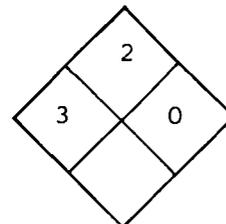
OTHER PRECAUTIONS

SIGNATURE _____ DATE _____

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
CH₃ C₆ H₄ 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 181⁰C ° F. VAPOR PRESSURE _____ mm Hg.

MELTING POINT -28⁰C ° F. VAPOR DENSITY (Air = 1) 5.9

SPECIFIC GRAVITY (H₂O = 1) 1.42 EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O Insoluble VOLATILE % Vol. % Wt.

APPEARANCE AND ODOR Colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 175 ⁰ 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

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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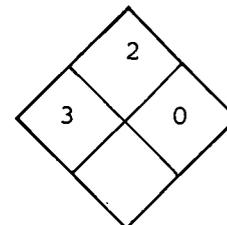
DATE

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 $CH_3C_6H_4Br$

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
METHOD USED		LOWER
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	CARCINOGENIC
None available	No
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion	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
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	
OTHER PRECAUTIONS	
SIGNATURE	DATE

222-1261B

CAS:000123864

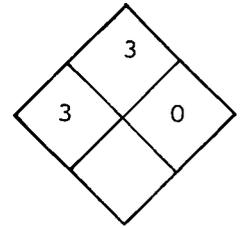
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PRODUCT DESIGNATION

03-222-2721
 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
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
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MECHANICAL (GENERAL)	GLOVES Rubber
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SPECIAL	RESPIRATOR With proper filter
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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

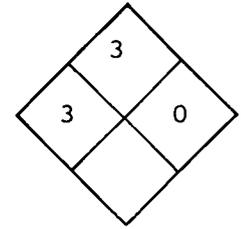
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222-2701B

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

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 117°C	° F.	VAPOR PRESSURE at 25°C	mm Hg.
			20
MELTING POINT -99°C	° F.	VAPOR DENSITY (Air = 1)	
		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 64°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED CC		LOWER
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

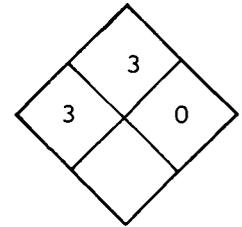
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DATE

222-2741B

PRODUCT DESIGNATION
 03-222-2781
 Sec-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 Sec - Butyl Acetate	FORMULA $CH_3COOCH(CH_2)_2H_5$

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. 24
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1) 4.0	
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

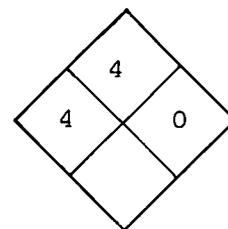
DATE

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) ₂ 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

RELEVANT SYMPTOMS OF EXPOSURE

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

EFFECTS OF CHRONIC EXPOSURE

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

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

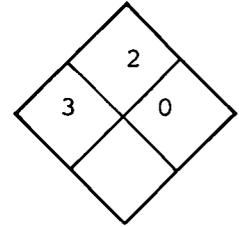
OTHER PRECAUTIONS

SIGNATURE

DATE

222-3701B

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 182°C.	° F.	VAPOR PRESSURE at 23°C.	mm Hg. 1
MELTING POINT -82°C.	° F.	VAPOR DENSITY (Air = 1) 4.6	
SPECIFIC GRAVITY (H ₂ O = 1) 0.86		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 160°F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 5.8%
METHOD USED OC		LOWER 0.8%
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

PRINCIPAL 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

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
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MECHANICAL (GENERAL)	GLOVES Rubber
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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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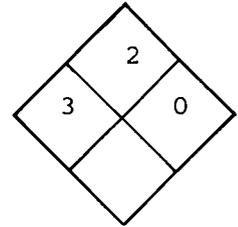
DATE

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 174°C.	° F.	VAPOR PRESSURE at 19°C.	mm Hg.
MELTING POINT -83°C.	° F.	VAPOR DENSITY (Air = 1)	4.62
SPECIFIC GRAVITY (H ₂ O = 1)	0.86	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 126°F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 6.9%
METHOD USED O.C.		LOWER 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

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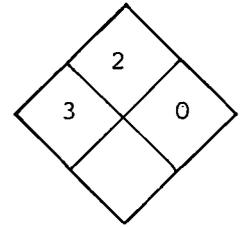
222-4731B

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 169°C	° F.	VAPOR PRESSURE at 13°C	mm Hg.
MELTING POINT -58°C	° F.	VAPOR DENSITY (Air = 1)	1
SPECIFIC GRAVITY (H ₂ O = 1) 0.867		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 160°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 5.8
METHOD USED C.C.		LOWER 0.8

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

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

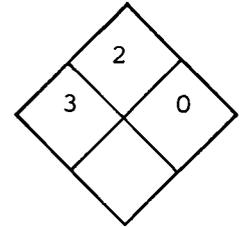
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PRODUCT DESIGNATION

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
METHOD USED		LOWER

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

RELEVANT 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

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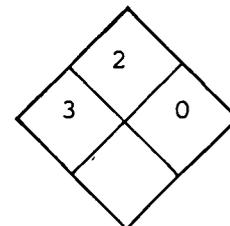
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222-8701B

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	CH ₃ CH ₂ CHBrCH 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

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

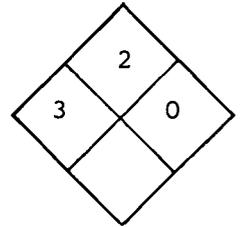
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222-9211B

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 <chem>CH3CHBrCHBrCH3</chem>

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 ⁰ C	⁰ F.	VAPOR PRESSURE mm Hg.
MELTING POINT -34.5 ⁰ C	⁰ 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

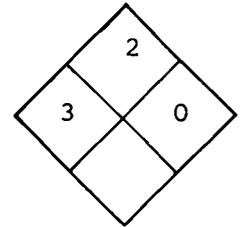
DATE

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 <u>1,2 dibromoisobutane</u>	FORMULA $(CH_3)_2CBrCH_2Br$

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 149°C at 737 ml	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT -70.3°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.76		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

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

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

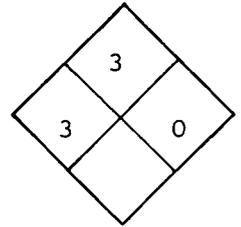
DATE

222-92/1B

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		L.C. 50	
			ORAL	PERCUT.	SPECIES	CONC.
TCLO - inhalation - human	10418 ppm		2660		rabbit	

SECTION III PHYSICAL DATA MW - 101.12

BOILING POINT 106⁰C	° F.	VAPOR PRESSURE at 31.6⁰C	mm Hg. 40
MELTING POINT -90⁰C	° F.	VAPOR DENSITY (Air = 1) 3.52	
SPECIFIC GRAVITY (H ₂ O = 1) 0.911		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O slightly		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 64⁰F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 8.0%
METHOD USED CC		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 formate

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

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

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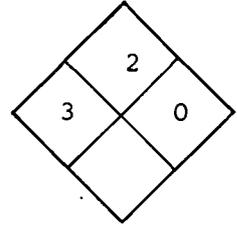
DATE

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 (CH₃)₂CHCH₂I

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

SKIN AND EYE

Inhalation, ingestion, skin

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 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

With proper filter

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

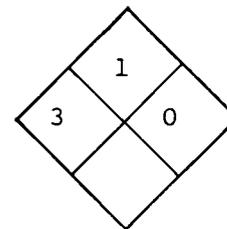
DATE

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
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

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

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

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

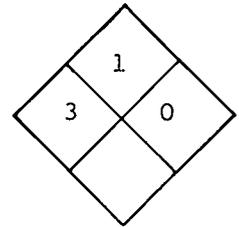
DATE

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
C2H5CHICH3

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 _____ ° F. VAPOR PRESSURE _____ mm Hg.
120°C

MELTING POINT _____ ° F. VAPOR DENSITY (Air = 1) _____
-104

SPECIFIC GRAVITY (H₂O = 1) _____ EVAPORATION RATE (_____ = 1) _____
1.60

SOLUBILITY IN WATER Pts/100 pts H₂O VOLATILE _____ % Vol. _____ % Wt.
Insoluble

APPEARANCE AND ODOR
Colorless to light brown liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT _____ FLAMMABLE (EXPLOSIVE) LIMITS _____ UPPER _____
Not available

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

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

MECHANICAL (GENERAL)

Goggles

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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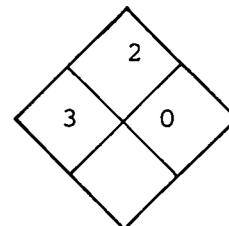
DATE

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 (CH ₃) ₃ 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 ^o C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -34 ^o 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

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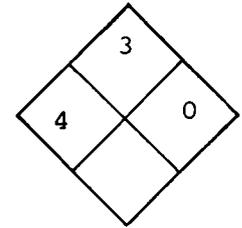
DATE

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 Propyl Cyanide	FORMULA C₃H₇CN

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 118 ⁰ C.	° F.	VAPOR PRESSURE at 15 ⁰ C.	mm Hg. 10
MELTING POINT -113 ⁰ C.	° F.	VAPOR DENSITY (Air = 1) 1.07	
SPECIFIC GRAVITY (H ₂ O = 1) 0.796		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Slightly soluble		VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR

Colorless liquid, sharp suffocating odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 79 ⁰ F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED O.C.		LOWER 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

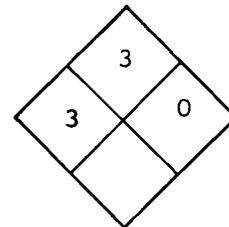
DATE

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 CS 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.
				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

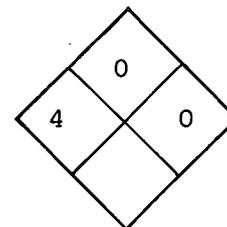
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227-4004B

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 Br ₄

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

RELEVANT 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

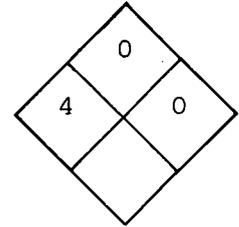
CAS:000056235

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 CCl ₄

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

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not flammable	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
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. Teratogen Experimental Carcinogen
CARCINOGENIC
Mouse (Oral)

PRINCIPLE ROUTES OF ABSORPTION SKIN AND EYE
Inhalation of vapor, ingestion, sometimes skin absorption IRRITATION Skin

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, alkalis, 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

SIGNATURE

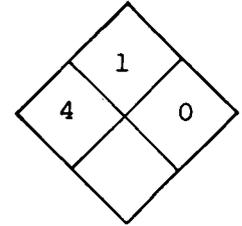
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227-4604B

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

SIGNATURE

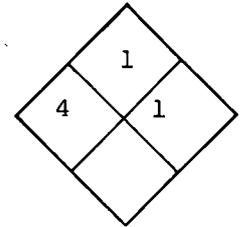
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227-5004B

CAS:000118752

DK68250

PRODUCT DESIGNATION

03-227-7504
ChloranilMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
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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.		EVAPORATION RATE (_____ = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		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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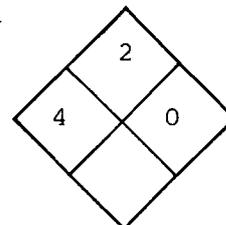
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227-7504B

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 Propanone	FORMULA CH ₃ COCH 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.
Lowest published lethal concentration in air						
Inhalation - human - 605 PPM/10 minutes.						

SECTION III PHYSICAL DATA MW - 95.53

BOILING POINT 121 ⁰ C.	⁰ F.	VAPOR PRESSURE mm Hg.
MELTING POINT -44.5 ⁰	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 None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
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

RELEVANT 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

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

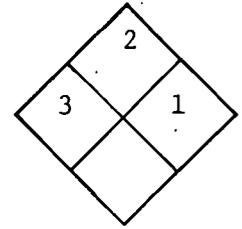
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CA-000107142

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 ClCH ₂ CN

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 inhalation - rat	250 ppm/4 hrs.		220		Rat	
LDLO - skin - rabbit	71 mg/kg					

SECTION III PHYSICAL DATA MW-75.50

BOILING POINT 126°C.	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.19		EVAPORATION RATE (_____ = 1)	
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 None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
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

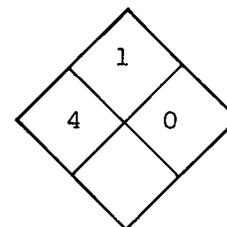
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DATE

228-0605B

PRODUCT DESIGNATION
 03-228-1100
 α-chloro-acetophenone

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 Phenacyl Chloride	FORMULA $C_1CH_2COC_6H_5$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
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
Inhalation, ingestion SKIN AND EYE 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 Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR Self contained

OTHER PROTECTIVE EQUIPMENT
Protecting clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

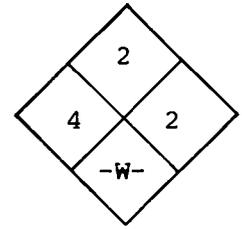
OTHER PRECAUTIONS

SIGNATURE _____ DATE _____

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 inhalation - rat 1000	dose PPM					

SECTION III PHYSICAL DATA MW - 112.95

BOILING POINT 106	$^{\circ}F$	VAPOR PRESSURE mm Hg.
MELTING POINT -23 $^{\circ}C$	$^{\circ}F$	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.50		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O		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
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

Chloroacetyl Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

50 PPB

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 & 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

INCOMPATIBILITY (MATERIALS TO AVOID)

Reacts with water to produce HCl 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

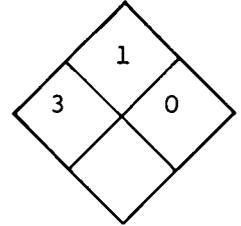
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228-1605B

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 Cl (C₆H₄) NH₂

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 211^oC.	^o F.	VAPOR PRESSURE at 46^oC.	^o F.	mm Hg. 1	
MELTING POINT 0^oC.	^o F.	VAPOR DENSITY (Air = 1)			
SPECIFIC GRAVITY (H ₂ O = 1) 1.21	EVAPORATION RATE (_____ = 1)				
SOLUBILITY IN WATER Pts/100 pts H ₂ O 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
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

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

RELEVANT 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

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 cabinets.

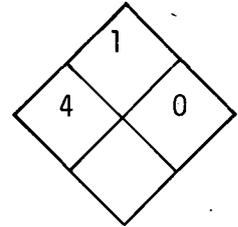
OTHER PRECAUTIONS

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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.	1 mm Hg.
MELTING POINT 77°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

None Available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, skin, ingestion

SKIN AND EYE

IRRITATION Low

REVELANT 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

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 cabinet.

OTHER PRECAUTIONS

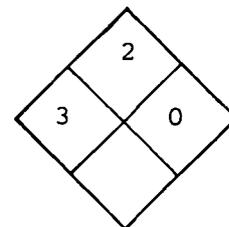
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DATE

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 208	$^{\circ}\text{F}$.	VAPOR PRESSURE mm Hg.
MELTING POINT 11 $^{\circ}\text{C}$	$^{\circ}\text{F}$.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.29		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Very slightly soluble		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
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

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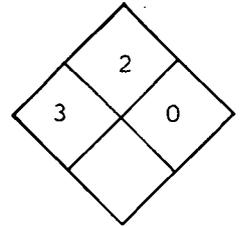
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PRODUCT DESIGNATION

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
Cl C₆H₄CHO

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 (H₂O = 1) 1.12 EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O 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 LOWER

METHOD USED _____

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

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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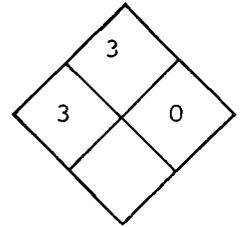
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228-3665B

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 ₆ H ₅ 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.
			2910		Rat	
			2830		Rabbit	

SECTION III PHYSICAL DATA MW - 112.56

BOILING POINT 131.7°C	° F.	VAPOR PRESSURE at 22.2°C	10 ^{mm} Hg.
MELTING POINT -55.6°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.113		EVAPORATION RATE (_____ = 1)	
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 85°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 7.1%
METHOD USED Closed Cup		LOWER 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

RELEVANT 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

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 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

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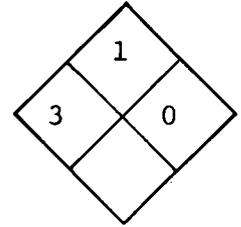
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228-4105B

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 ClC ₆ H ₄ CN

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

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

EFFECTS OF CHRONIC EXPOSURE Dizziness, weakness, eye irritation, lung congestion, weigh 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

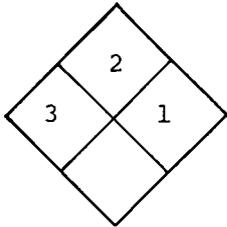
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DATE

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
 C_6H_4COCl

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.
 230
 MELTING POINT _____ ° F. VAPOR DENSITY (Air = 1)
 -4°C
 SPECIFIC GRAVITY (H₂O = 1) _____ EVAPORATION RATE (_____ = 1)
 SOLUBILITY IN WATER Pts/100 pts H₂O VOLATILE _____ % Vol. _____ % Wt.
Decomposes
 APPEARANCE AND ODOR

Colorless liquid - fumes

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT _____ FLAMMABLE (EXPLOSIVE) LIMITS _____
 N/A 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

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 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

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 coll, dry, well-ventilated room.

OTHER PRECAUTIONS

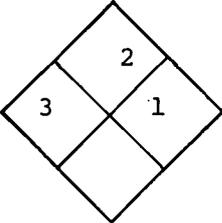
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DATE

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 ClC ₆ H ₄ 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 <u>Decomposes</u>		VOLATILE	% Vol. % Wt.

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
P-Chlorobenzoyl Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Inhalation, ingestion

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

SIGNATURE

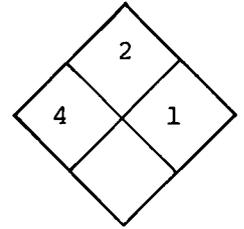
DATE

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 $C_6H_4CH_2Cl$

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

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
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

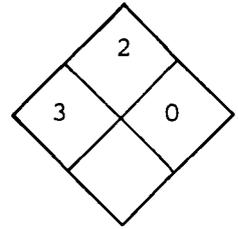
DATE

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 C 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 -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

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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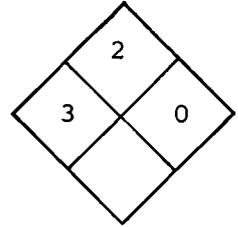
DATE

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
<u>1, 4 Chlorobromobenzene</u>	
CHEMICAL NAME AND SYNONYMS	FORMULA
<u>P Chlorobromobenzene</u>	<u>ClC₆H₄Br</u>

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 <u>196^oC.</u>	^o F.	VAPOR PRESSURE	mm Hg.
MELTING POINT <u>67^oC.</u>	^o F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) <u>1.58</u>		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pt ₅ /100 pts H ₂ O <u>Insoluble</u>		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR <u>White crystal</u>			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

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

SIGNATURE

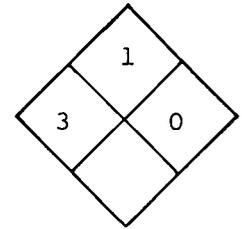
DATE

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

Inhalation, ingestion, skin

SKIN AND EYE

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 Rubber
SPECIAL	RESPIRATOR Self-contained

OTHER PROTECTIVE EQUIPMENT

Protective apron.

SECTION IX SPECIAL PRECAUTIONS

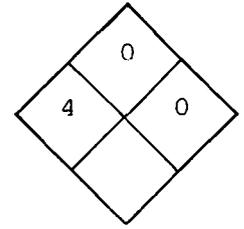
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

MATERIAL SAFETY DATA SHEET


PRODUCT DESIGNATION

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

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 CHCl ₃

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

INCOMPATIBILITY (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

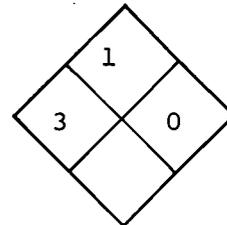
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DATE

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

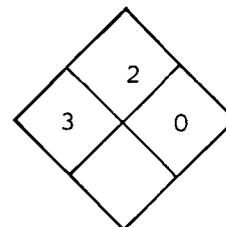
DATE

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 C_6H_4ClI

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

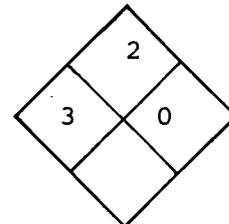
DATE

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 $C_6H_4Cl_2I$

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 234 °F.	VAPOR PRESSURE mm Hg.
MELTING POINT 0.7 °F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.95	EVAPORATION RATE (_____ = 1)
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 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

O-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

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

SIGNATURE

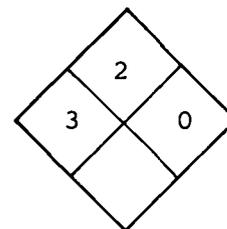
DATE

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 C₆H₄ClI

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	° 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

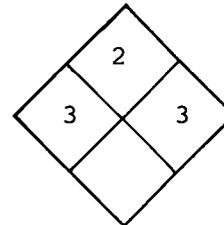
DATE

229-0266B

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 C₃H₆ClNO₂

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

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

SECTION IV FIRE AND EXPLOSION HAZARD DATA

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

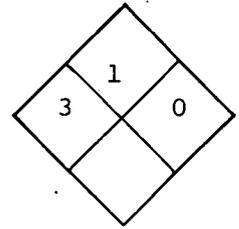
DATE

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. 1
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 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

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

SIGNATURE

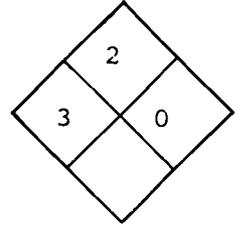
DATE

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 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.
			670		Rat	
			670		Mouse	
			440		Mammal	

SECTION III PHYSICAL DATA MW-128.56

BOILING POINT 176 ^o C.	^o F.	VAPOR PRESSURE at 12 ^o C.	1 mm Hg.
MELTING POINT 7 ^o C	^o F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.24		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 ^o 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

SIGNATURE

DATE

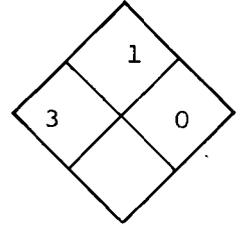
229-4246B

CAS: 000106489

SK28000

PRODUCT DESIGNATION
03-229-4276 P-Chlorophenol

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-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 g/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			500		Rat	

SECTION III PHYSICAL DATA MW - 128.56

BOILING POINT 217 ^o C.	° F.	VAPOR PRESSURE at 50 ^o C. 1 mm Hg.
MELTING POINT 43 ^o C.	° F.	VAPOR DENSITY (Air = 1) 4.43
SPECIFIC GRAVITY (H ₂ O = 1) 1.31		EVAPORATION RATE (_____ = 1)
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 ^o 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

SIGNATURE

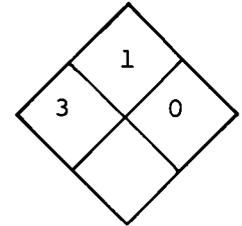
DATE

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 ClC ₆ H ₄ NCO

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 101 ⁰ C. at 30 min.	° F.	VAPOR PRESSURE at 77 ⁰ C.	mm Hg. 10
MELTING POINT -4 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		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Water white liquid.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT one 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

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

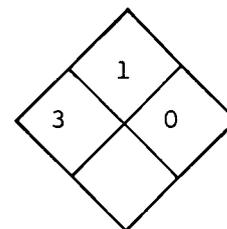
DATE

229-4716B

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 C₆H₄NCO

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 106⁰ C. at 30 min. ° F. VAPOR PRESSURE at 77⁰ C. 10 mm Hg.

MELTING POINT ° F. VAPOR DENSITY (Air = 1)

SPECIFIC GRAVITY (H₂O = 1) EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O 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
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

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

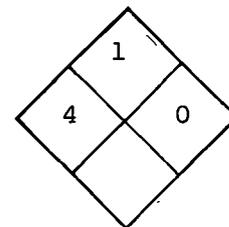
DATE

229-4746B

CAS:000096242

TY40250

PRODUCT DESIGNATION

03-229-6466
3-Chloro, 1,2 PropanediolMATERIAL 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 ⁰ 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

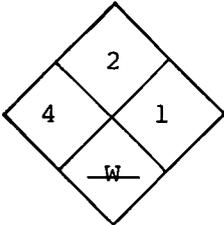
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DATE

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
 CH_2ClCH_2COCl

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 (H₂O = 1) 1.33 EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O 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

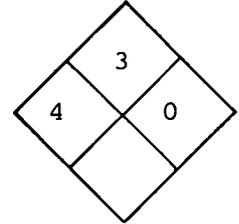
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229-7716B

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.
LCLO - inhalation - rat	250 ppm/7 hrs.		107	64	Mouse Rabbit	

SECTION III PHYSICAL DATA

MW 113.55

BOILING POINT	$^{\circ}F.$	VAPOR PRESSURE	mm Hg.
170 $^{\circ}C$		at 13 $^{\circ}C$	
MELTING POINT	$^{\circ}F.$	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

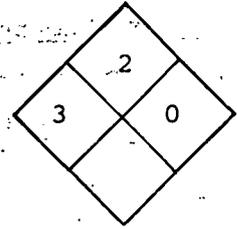
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DATE

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 $CH_3C_6H_4Cl$

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) 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 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

RELEVANT 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

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

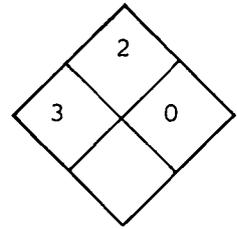
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RECEIVED BY TIC SEP 3 1981

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 CH₃ C₆ H₄ 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 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-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

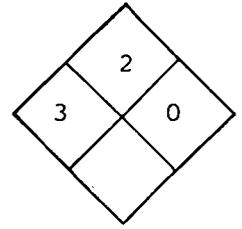
OTHER PRECAUTIONS

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DATE

230-0337B

PRODUCT DESIGNATION

03-230-0367
P-ChlorotolueneMATERIAL 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 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 162°C	° F.	VAPOR PRESSURE at 44°C	mm Hg. 10
MELTING POINT 7°C	° F.	VAPOR DENSITY (Air = 1)	
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 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

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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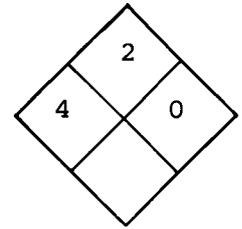
DATE

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

C₉H₆O₂

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 (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)		
SOLUBILITY IN WATER Pts/100 pts H ₂ O 0.25		VOLATILE	% Vol.	% Wt.

APPEARANCE AND ODOR

Orthorhombic crystals with fragrant odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

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

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

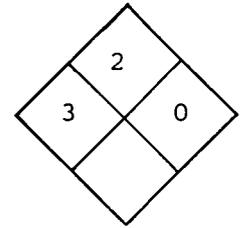
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230-3307B

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) ₂ CHC ₆ 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.
TCLO - inhalation - human lowest published lethal concentration in air inhalation - mouse 2000 PPM	200 PPM irritant		1400		Rat	8000 - 4 hr

SECTION III PHYSICAL DATA

MW - 120.19

BOILING POINT 152°C	° F.	VAPOR PRESSURE at 38.3°C	mm Hg. 10
MELTING POINT -96°C	° F.	VAPOR DENSITY (Air = 1) 4.2	
SPECIFIC GRAVITY (H ₂ O = 1) 0.862		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		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

SIGNATURE

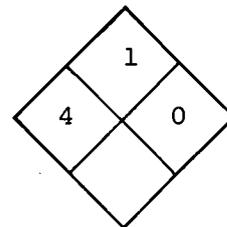
DATE

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 CH ₃ 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.
			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

RELEVANT 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

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 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

SIGNATURE

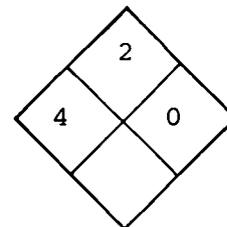
DATE

230-4307B

CAS:000095487

GO63000

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

CHEMICAL FAMILY

O Hydroxy Toluene

CHEMICAL NAME AND SYNONYMS

FORMULA

O Methyl Phenol

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.
			121		Rat	
				1100	Rabbit	
			344		Mouse	

SECTION III PHYSICAL DATA MW 108.13

BOILING POINT 191°C	° F.	VAPOR PRESSURE at 25°C	mm Hg.
MELTING POINT 31°C	° F.	VAPOR DENSITY (Air = 1)	0.25
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 with sweet tarry odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

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

RELEVANT 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

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 cool, dry, well-ventilated area

OTHER PRECAUTIONS

SIGNATURE

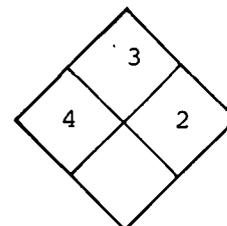
DATE

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

CH₃(CH)₂CHO

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
				380	Rabbit	
				30	Guinea pig	
			240		Mouse	

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

SIGNATURE

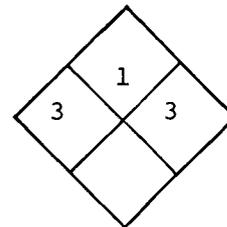
DATE

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

H₂NCN

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°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

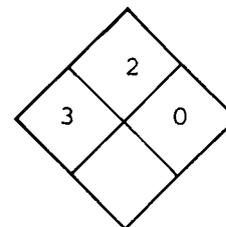
DATE

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)		EVAPORATION RATE (_____ = 1)	
0.96			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
3.6			
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

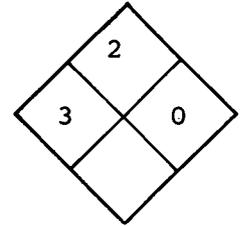
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230-7447B

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

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; 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

DATE

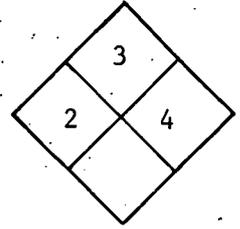
230-7507B

CAS:000110838

GW25000

PRODUCT DESIGNATION
03-230-7607 Cyclohexene

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
<u>Tetrahydrobenzene</u> CHEMICAL NAME AND SYNONYMS	FORMULA
Cyclohexene	C ₆ H ₁₀

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 83 ⁰ C.	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -104 ⁰ C.	° F.	VAPOR DENSITY (Air = 1) 2.8
SPECIFIC GRAVITY (H ₂ O = 1) 0.81		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts./100 pts H ₂ O Very slightly soluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT <20 ⁰ F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
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

REVELANT 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

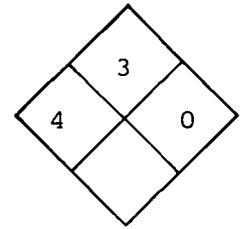
OTHER PRECAUTIONS

SIGNATURE

DATE

230-7607B

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 ₆ H 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	320	Rat Rabbit	

SECTION III PHYSICAL DATA MW-99.20

BOILING POINT 135°C ° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -18°C ° F.	VAPOR DENSITY (Air = 1) 3.42
SPECIFIC GRAVITY (H ₂ O = 1) 0.87	EVAPORATION RATE (_____ = 1)
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

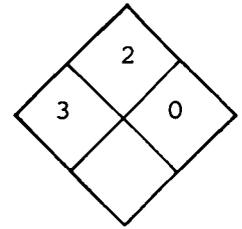
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PRODUCT DESIGNATION

03-234-0108

Decahydronaphthalene

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 lowest published lethal inhalation - rat - 500 PPM - 2 hrs.	100 PPM - irritant concentration in air		4170		Rat	

SECTION III. PHYSICAL DATA MW - 138.25

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

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 136 ^o F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 4.9%
METHOD USED		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

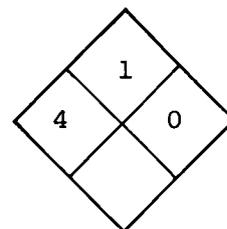
DATE

234-0108B

PRODUCT DESIGNATION

03-234-4108
3,4 - diaminoanisole
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 **2,4 diaminoanisole dihydrochloride** FORMULA **CH₃OC₆H₃(NH₂)₂2H**

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 (H₂O = 1) _____ EVAPORATION RATE (_____ = 1) _____

SOLUBILITY IN WATER Pts/100 pts H₂O VOLATILE _____ % Vol. _____ % Wt.
Very soluble

APPEARANCE AND ODOR
Tan Crystals

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT **None available** FLAMMABLE (EXPLOSIVE) LIMITS UPPER LOWER

METHOD USED _____

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

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

RELEVANT 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

SPECIAL

GLOVES

Butyl

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

Neoprene protective clothing.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

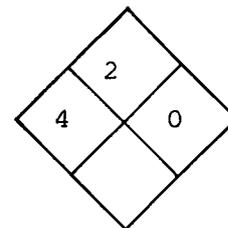
DATE

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			
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

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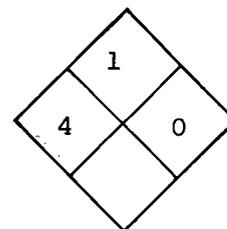
DATE

234-4608B

PRODUCT DESIGNATION

03-234-5108
2,5-Diaminobenzene
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 diaminobenzene dihydrochloride	FORMULA C ₆ H ₃ Cl(NH ₂) ₂ .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 Diaminobenzene 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

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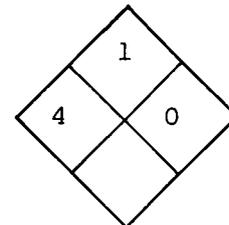
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234-5108B

CAS-000101779

BY54250

PRODUCT DESIGNATION

P,P-Diaminodiphenyl Methane
03-234-6108MATERIAL 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 ⁰ C.	° F.	VAPOR PRESSURE 253	mm Hg. 15
MELTING POINT 93 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 Slightly soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Tan flakes, faint amine-like odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 440 ⁰ 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

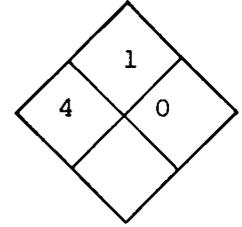
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CAS:000095807

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 CH ₃ C ₆ H ₃ (NH 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					
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

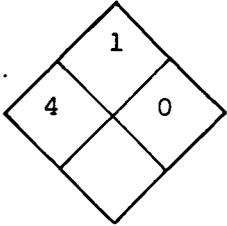
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DATE

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 CH ₃ C ₆ H ₃ (NH ₂) ₂ H Cl

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

None available

CARCINOGENIC Yes

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Moderate

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

OTHER PRECAUTIONS

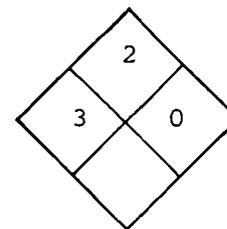
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DATE

234-7308B

PRODUCT DESIGNATION
 03-234-7608
 Di-N-Amylamine

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 Dipentylamine	FORMULA (C ₅ H ₁₁) ₂ NH

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

SPECIAL FIRE FIGHTING PROCEDURES

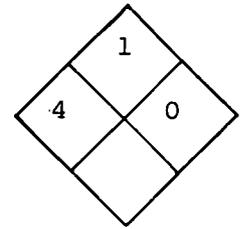
UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION Di-N-Amylamine	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL Not 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 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 Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	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

PRODUCT DESIGNATION
 03-234-8108
 O-Dianisidine

**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 3,3, Dimethoxybenzidine	FORMULA (NH ₂ C ₆ H ₃ (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 inhalation - human 1.9 mg/kg.			1920		Rat	

SECTION III PHYSICAL DATA MW - 244.28

BOILING POINT -	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 138°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 Colorless crystals			

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, 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

RELEVANT 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

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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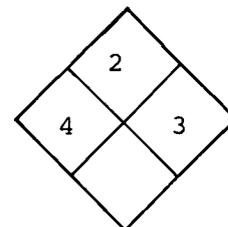
DATE

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

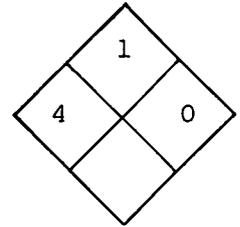
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DATE

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 Dibenz(a,h)anthracene	FORMULA 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

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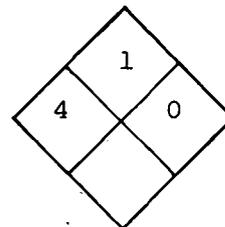
DATE

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 ⁰ C.	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 100 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		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

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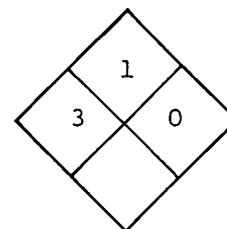
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235-1209B

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 $Br_2C_6H_4$

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 ⁰ C	° F.	VAPOR PRESSURE at 61 ⁰ C	mm Hg.
MELTING POINT 87 ⁰ C	° F.	VAPOR DENSITY (Air = 1) 8.1	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

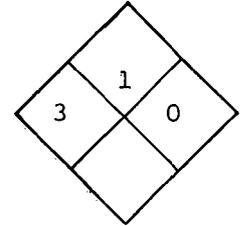
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235-4209B

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 $Br_2CH_3C_6H_4OH$

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 decomposes at 265°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 56°	° 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 crystal with phenolic odor			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
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

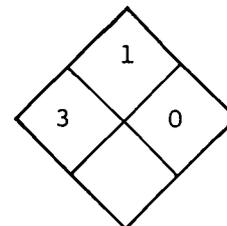
DATE

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

BOILING POINT 357^oC	^o F.	VAPOR PRESSURE	MW - 312.02		mm Hg.
MELTING POINT 166^oC	^o 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

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE 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

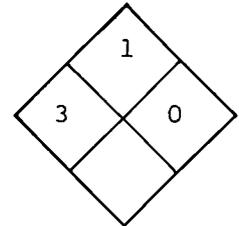
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PRODUCT DESIGNATION

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 Br ₂ C ₆ H ₂ (OH)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

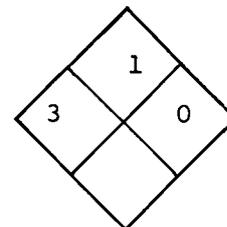
DATE

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 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 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 Ditromphenol

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

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

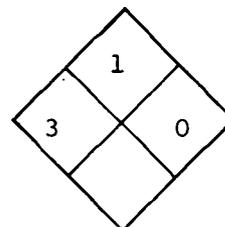
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235-7709B

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

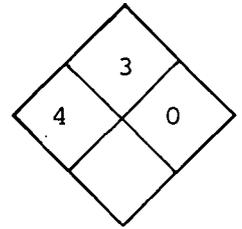
DATE

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

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

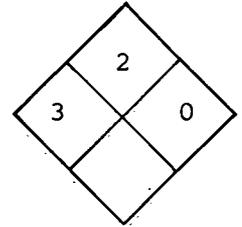
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DATE

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 ⁰ C	° F.	VAPOR PRESSURE	MW - 249.95	mm Hg.
MELTING POINT <-20 ⁰ 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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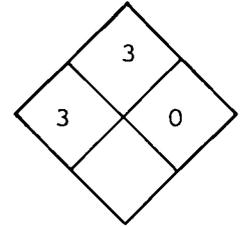
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PRODUCT DESIGNATION

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 ⁰ C.	⁰ F.	VAPOR PRESSURE At 31 ⁰ C.	10 ^{mm} Hg.
MELTING POINT -70 ⁰	⁰ 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 ⁰ 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

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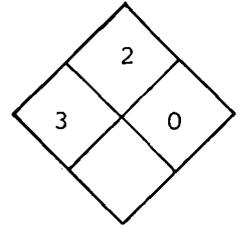
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236-0300B

CAS:000111922

HR77800

PRODUCT DESIGNATION

03-236-0400
N-dibutylamineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

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

TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
-------------------------	-----------------

CHEMICAL NAME AND SYNONYMS	FORMULA
----------------------------	---------

Di-N-butylamine

 $(C_8H_{17})_2NH$ 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 ⁰ C	⁰ F.	VAPOR PRESSURE at 20 ⁰ C	mm Hg. 2
MELTING POINT -62 ⁰ C	⁰ F.	VAPOR DENSITY (Air = 1) 4.46	
SPECIFIC GRAVITY (H ₂ O = 1) 0.76		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O very soluble		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

liquid colorless

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 125 ⁰ 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

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION severe

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

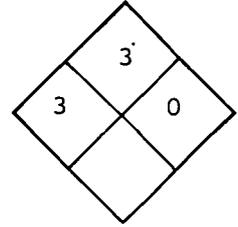
OTHER PRECAUTIONS

SIGNATURE

DATE

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° C.	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT -104° C.	° 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° 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

Diisobutylamine

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

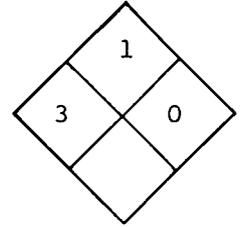
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236-0500B

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 _____ ° F. VAPOR PRESSURE _____ mm Hg.
263°C

MELTING POINT _____ ° F. VAPOR DENSITY (Air = 1)
7.1

SPECIFIC GRAVITY (H₂O = 1) _____ EVAPORATION RATE (_____ = 1)

0.94

SOLUBILITY IN WATER Pts/100 pts H₂O VOLATILE _____ % Vol. _____ % Wt.
Insoluble

APPEARANCE AND ODOR
Light yellow liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT _____ FLAMMABLE (EXPLOSIVE) LIMITS _____ UPPER _____
230°F

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

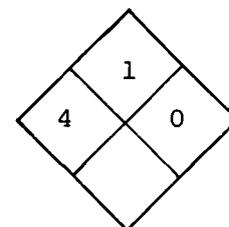
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CAS:000629356

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 <u>di-butyl mercury</u>	FORMULA <u>Hg(C₄H₉)₂</u>

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 <u>123°C at 23 mm</u>	° F.	VAPOR PRESSURE <u>at 105°C</u>	mm Hg. <u>10</u>
MELTING POINT <u>--</u>	° F.	VAPOR DENSITY (Air = 1) <u>10.8</u>	
SPECIFIC GRAVITY (H ₂ O = 1) <u>1.80</u>		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O <u>Insoluble</u>		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR <u>Colorless liquid</u>			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

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

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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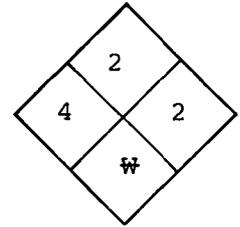
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236-4300B

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

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 & 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

INCOMPATIBILITY (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

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

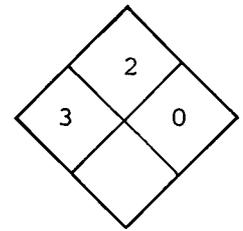
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DATE

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

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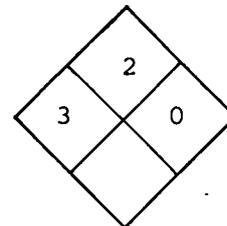
DATE

236-7300B

PRODUCT DESIGNATION

03-236-7800
M-dichlorobenzene

MATERIAL SAFETY DATA SHEET



SECTION I SOURCE AND NOMENCLATURE

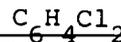
MANUFACTURER'S NAME _____ EMERGENCY TELEPHONE NO. _____

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

TRADE NAME AND SYNONYMS _____ CHEMICAL FAMILY _____

CHEMICAL NAME AND SYNONYMS _____ FORMULA _____

M-dichlorobenzene



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 $173^{\circ}C$ ° F. VAPOR PRESSURE at $12.1^{\circ}C$ 1 mm Hg.

MELTING POINT $24.8^{\circ}C$ ° F. VAPOR DENSITY (Air = 1) 5.08

SPECIFIC GRAVITY (H₂O = 1) 1.288 EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O Insoluble VOLATILE % Vol. % Wt.

APPEARANCE AND ODOR Colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available FLAMMABLE (EXPLOSIVE) LIMITS UPPER 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
Unknown

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION
Inhalation, ingestion

SKIN AND EYE
IRRITATION severe

RELEVANT 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

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 breathing apparatus

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in well-ventilated, dark, cool area.

OTHER PRECAUTIONS

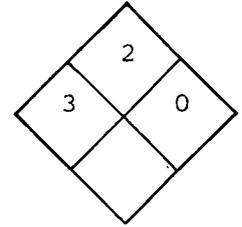
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CAS:000095501

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 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.
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

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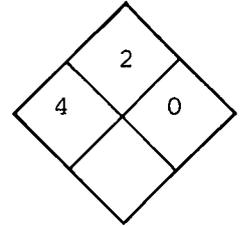
DATE

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 C ₆ H ₄ Cl 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.
			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

RELEVANT 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.

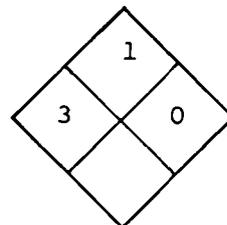
OTHER PRECAUTIONS

SIGNATURE	DATE
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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 $C_{12}H_8Cl_2NO_2$

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

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Ingestion, inhalation of dust

SKIN AND EYE

IRRITATION severe

RELEVANT 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

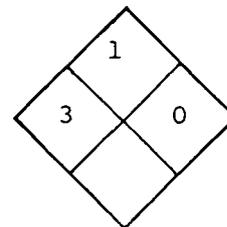
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237-2401B

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
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

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

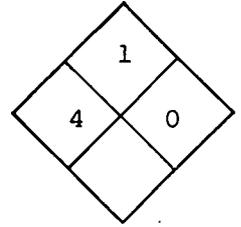
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DATE

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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 2,4 - Dichlorophenol	FORMULA Cl C H 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 skin - mouse, 312 mg/kg. -carcinogen			580		Rat	
			1600		Mouse	

SECTION III PHYSICAL DATA

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**

RELEVANT 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

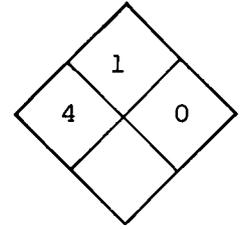
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CAS:000305157

MV21000

PRODUCT DESIGNATION 03-237-3901 2,5 - Dichlorophenylhydrazine
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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 $C_{12}H_{10}Cl_2N_2$

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

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	Yellow needle-like crystal		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
Not available		
METHOD USED		LOWER
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 Inhalation, ingestion, skin SKIN AND EYE 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

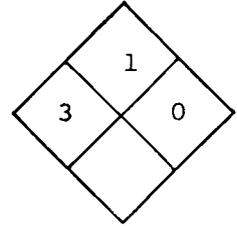
SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE DATE

PRODUCT DESIGNATION

03-237-6401
DicyclohexylamineMATERIAL 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 ₆ H ₁₁) ₂ NH 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 >210°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED O.C.		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

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

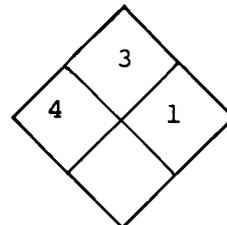
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CAS:000077736

PC10500

MATERIAL SAFETY DATA SHEET


PRODUCT DESIGNATION

 Dicyclopentadiene
03-237-6901

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS 3a,4,7,7a-Tetrahydro-4,7-Methanoindene	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS	FORMULA C ₁₀ H ₁₂

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 166.6°C	° F.	VAPOR PRESSURE 47.5°C	10 mm Hg.
MELTING POINT 32.9	° F.	VAPOR DENSITY (Air = 1) 4.55	
SPECIFIC GRAVITY (H ₂ O = 1) 0.9766 35°C		EVAPORATION RATE (_____ = 1)	
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 90°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED Open Cup		LOWER

 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

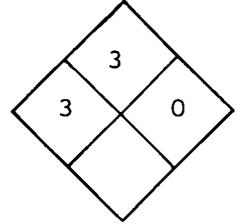
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237-6901B

PRODUCT DESIGNATION

03-237-8401
Diethylamine

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	FORMULA (C₂H₅)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	mm Hg. 400
MELTING POINT -38.9°C	° F.	VAPOR DENSITY (Air = 1) 2.53	
SPECIFIC GRAVITY (H ₂ O = 1) 0.71		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Very soluble		VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR
Colorless liquid with ammonia-like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

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

RELEVANT 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

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 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

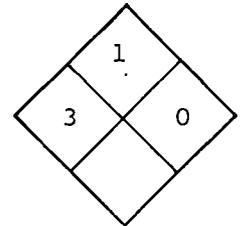
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PRODUCT DESIGNATION

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

RELEVANT 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

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

Self-contained

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

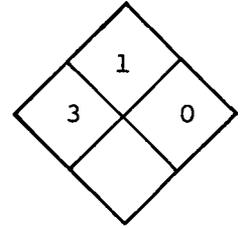
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DATE

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. <u>0.37</u>	
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

RELEVANT 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

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 chemical filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

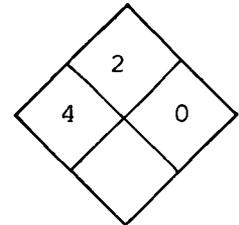
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240-3505B

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 $(CH_3)_2NC_6H_4CH_3$

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 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

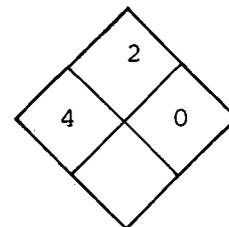
OTHER PRECAUTIONS

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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 Dimethyl-O-Aminotoluene	FORMULA (CH ₃) ₂ NC ₆ H ₄ 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.
LDLO oral - rat	500 mg/kg		none	available		

SECTION III PHYSICAL DATA MW - 135.20

BOILING POINT 215°C	° F.	VAPOR PRESSURE at 70°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 Yellow oil			

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-O-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

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

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

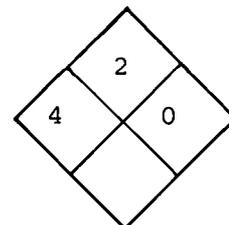
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DATE

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) ₂ NC ₆ H ₄ 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 211 ^o C	^o F.	VAPOR PRESSURE at 72 ^o C	mm Hg. 5
MELTING POINT	^o 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

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

SIGNATURE

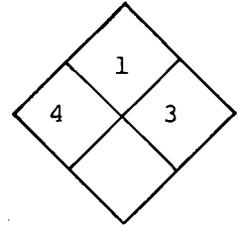
DATE

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 (NO₂)₂ C₇ H₅ OCH₃

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

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

INCOMPATABILITY (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

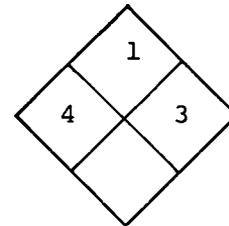
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DATE

240-5304B

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 2,4, Dinitroaniline	FORMULA (NO ₂) ₂ C ₆ H ₃ 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 intraperitoneal - rat	250 mg/kg		418		rat	

SECTION III PHYSICAL DATA MW - 183.12

BOILING POINT ° F.	VAPOR PRESSURE mm Hg.
MELTING POINT ° F. 188 ^o C	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 Yellow crystals	

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 435 ^o 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

RELEVANT 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

INCOMPATIBILITY (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

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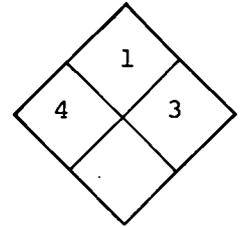
DATE

240-4804B

PRODUCT DESIGNATION

03-240-5804
M-Dinitrobenzene

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 - Dinitrobenzene	FORMULA <chem>C6H4(NO2)2</chem>

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 303 ^o C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 90 ^o 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 0.3		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorless to yellow crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT not 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.		

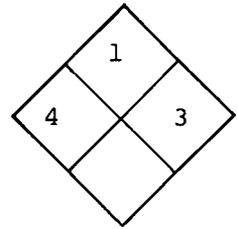
PRODUCT DESIGNATION	
M-Dinitrobenzene	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
TLV - 0.15 PPM, 1 mg/C.M. (Skin)	no
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion, skin	IRRITATION moderate
RELEVANT SYMPTOMS OF EXPOSURE	Blood damage, cyanosis, dizziness, increase pulse 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
MECHANICAL (GENERAL)	Safety goggles
SPECIAL	GLOVES
OTHER PROTECTIVE EQUIPMENT	Rubber
Protective clothing	RESPIRATOR
	Self-contained
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	
SIGNATURE	DATE

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 ₇ 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	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
Not available		
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

inhalation, ingestion, skin

SKIN AND EYE

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

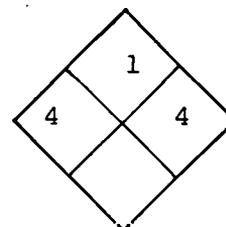
DATE

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. 74°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
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 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 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.

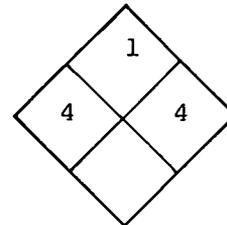
OTHER PRECAUTIONS

SIGNATURE

DATE

PRODUCT DESIGNATION
 03-240-7004
 2,4 - Dinitrochlorobenzene

**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 chloro 2,4, - dinitrobenzene	FORMULA (NO ₂) ₂ C ₆ H ₃ 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 ⁰ C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 52 ⁰ 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 382 ⁰ F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED CC		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

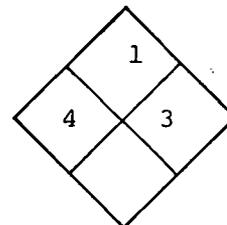
PRODUCT DESIGNATION	
2,4 - Dinitrochlorobenzene	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
None available	no
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion, skin	IRRITATION moderate
RELEVANT SYMPTOMS OF EXPOSURE	
Dermatitis, irritation of respiratory and digestive systems, 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
MECHANICAL (GENERAL)	goggles
SPECIAL	GLOVES
OTHER PROTECTIVE EQUIPMENT	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	
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 (A _i = 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

REVELANT 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

INCOMPATABILITY (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

SIGNATURE

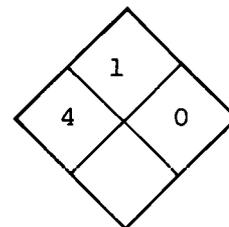
DATE

240-7304B

CAS:001528741

DV4000

PRODUCT DESIGNATION

03-240-7804
4,4 - DinitrodiphenylMATERIAL 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 - Dinitrobiphenyl

FORMULA

$$\text{NO}_2\text{C}_6\text{H}_4\text{C}_6\text{H}_4\text{NO}_2$$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published toxic dose oral - rat 860 mg/kg. - neoplastic						

SECTION III PHYSICAL DATA

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.	
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)		
233°C		EVAPORATION RATE (_____ = 1)		
SPECIFIC GRAVITY (H ₂ O = 1)		VOLATILE	% Vol.	% Wt.
1.45				
SOLUBILITY IN WATER Pts/100 pts H ₂ O				
Insoluble				
APPEARANCE AND ODOR				
Needle-like 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 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 SKIN AND EYE
inhalation (mainly) ingestion IRRITATION moderate

RELEVANT 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

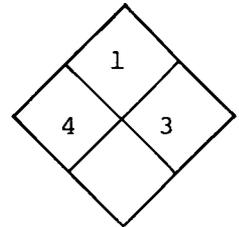
OTHER PRECAUTIONS

SIGNATURE DATE

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 (NO₂C₆H₄)₂CH₂

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	° 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	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

SIGNATURE

DATE

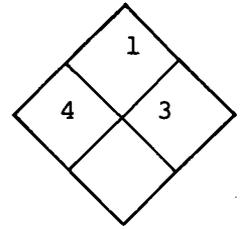
240-8304B

CAS:000610548

SI78750

PRODUCT DESIGNATION
 03-240-9804
 2,4, - Dinitrophenetole

**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 dinitrophenetole	FORMULA $(NO_2)_2C_6H_3OC_2H_5$

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 dose Oral - rat 250 mg/kg.						

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 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

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

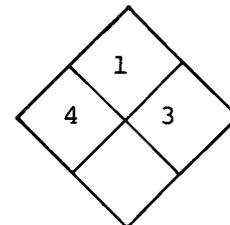
DATE

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

 $(NO_2)_2 C_6 H_3 OH$

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.
			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 115°C ° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.68	EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O 0.56	VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Yellow crystals, bitter taste.	

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 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

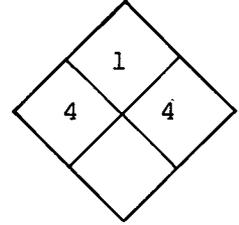
DATE

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 2,4 - Dinitrophenylhydrazine	FORMULA (NO ₂) ₂ C ₆ H ₃ 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 <u>insoluble</u>		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR <u>red crystalline powder</u>			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT <u>none available</u>	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA <u>explosive - do not fight fire except for unmanned equipment - use water</u>		
SPECIAL FIRE FIGHTING PROCEDURES <u>wear full protective clothing for rescue operation</u>		
UNUSUAL FIRE AND EXPLOSION HAZARDS <u>dangerous explosive</u>		

PRODUCT DESIGNATION
2,4 - Dinitrophenylhydrazine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
None available (skin) 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 skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (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

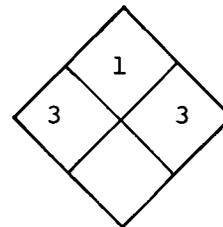
SIGNATURE DATE

241-0605B

PRODUCT DESIGNATION

03-241-1405
2,4 - Dinitrotoluene

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 - 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

BOILING POINT 300	$^{\circ}\text{F.}$	VAPOR PRESSURE mm Hg. MW - 182.13
MELTING POINT 70 $^{\circ}\text{C}$	$^{\circ}\text{F.}$	VAPOR DENSITY (Air = 1) 6.27
SPECIFIC GRAVITY (H ₂ O = 1) 1.32		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O 0.03		VOLATILE % Vol. % Wt.

APPEARANCE AND ODOR

yellow needle-like 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.

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

SIGNATURE

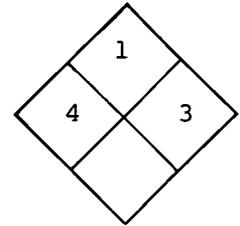
DATE

241-1405B

PRODUCT DESIGNATION

03-241-0905
2,6 Dinitrothymol

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 dinitro-5 isopropyl - 4 hydroxy - 6 methylbenzene	FORMULA $(NO_2)_2 C_6 H (CH_3) (C_3 H_7) OH$

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 oral - rat 100 mg/kg						

SECTION III PHYSICAL DATA MW-240.22

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
55°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			
prismatic 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
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

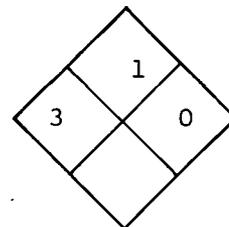
DATE

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 <u>285°C</u>	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT <u>130°C</u>	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O <u>insoluble</u>		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR <u>crystalline</u>			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT <u>none available</u>	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA <u>water, foam, carbon dioxide, dry chemical</u>		
SPECIAL FIRE FIGHTING PROCEDURES <u>wear goggles and self-contained breathing apparatus</u>		
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

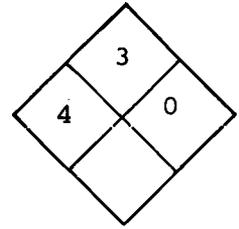
CAS:000123911

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 <u>-OCH₂CH₂OCH₂CH₂-</u>

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.
			3150			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

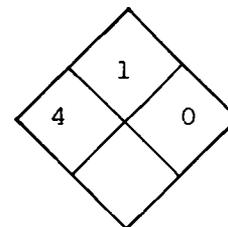
DATE

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 $C_{12}H_{10}$

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 255°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 69-70°C	° F.	VAPOR DENSITY (Air = 1)	5.31
SPECIFIC GRAVITY (H ₂ O = 1)	0.991	EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O	No	VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR	White crystal, pleasant odor		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 235°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 5.1%
METHOD USED C.C.		LOWER 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

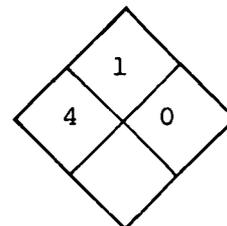
DATE

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 C6H5C6H4C6H5

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 _____ FLAMMABLE (EXPLOSIVE) LIMITS _____ UPPER _____
375°F

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

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

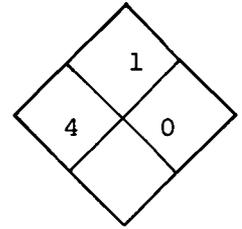
DATE

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 ₆ H ₅ C ₆ H ₄ C ₆ 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 - 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)		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 325°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED O.C.		LOWER
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

REVELANT 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

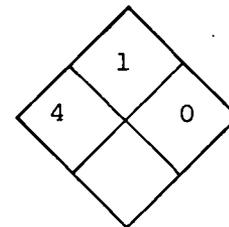
OTHER PRECAUTIONS

SIGNATURE

DATE

241-6505B

PRODUCT DESIGNATION

03-241-6605
P-DiphenylbenzeneMATERIAL 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

 $C_{12}H_{10}$

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 - 230.29

BOILING POINT 376°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 213°C	° F.	VAPOR DENSITY (Air = 1)	7.95
SPECIFIC GRAVITY (H ₂ O = 1) 1.24		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Soluble in hot water		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR crystalline			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 405°C	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED O.C.		LOWER
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
1 PPM, 9 mg/C.M. (Ceiling Value) CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION
Inhalation, ingestion SKIN AND EYE 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
--	--

MECHANICAL (GENERAL)	Goggles
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SPECIAL	GLOVES
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OTHER PROTECTIVE EQUIPMENT	Polyvinyl alcohol
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	RESPIRATOR
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	With proper filter
--	--------------------

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

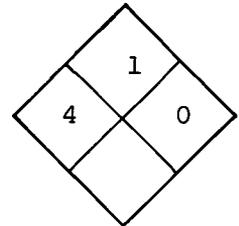
OTHER PRECAUTIONS

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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

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 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

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

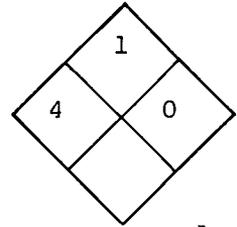
DATE

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
METHOD USED		LOWER
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

inhalation, ingestion, skin

SKIN AND EYE

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

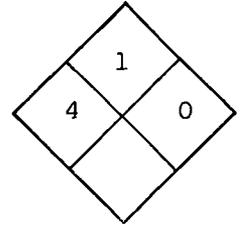
DATE

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 ₃ H ₇ OH) ₂ NH

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 249 ⁰ C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 42 ⁰ C	° F.	VAPOR DENSITY (Air = 1)	4.59
SPECIFIC GRAVITY (H ₂ O = 1)	0.99	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 260 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
Di-Iso-propranolamine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL none available CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION SKIN AND EYE
inhalation, ingestion 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

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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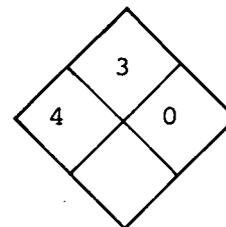
DATE

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 ₃ H ₇) ₂ NH

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)	3.5
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
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

SIGNATURE

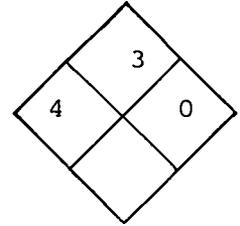
DATE

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 ₃ H ₇) ₂ NH

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 105°C	° F.	VAPOR PRESSURE mm.Hg.
MELTING POINT -40°C	° F.	VAPOR DENSITY (Air = 1) 3.5
SPECIFIC GRAVITY (H ₂ O = 1) 0.74		EVAPORATION RATE (_____ = 1)
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 63°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

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

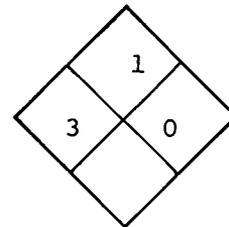
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DATE

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



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 245⁰C °F. VAPOR PRESSURE at 177⁰C 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

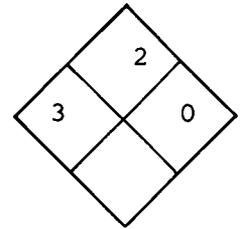
DATE

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 Heptanol 4	FORMULA (C₇H₁₆)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 156°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT -37°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 0.82		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 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

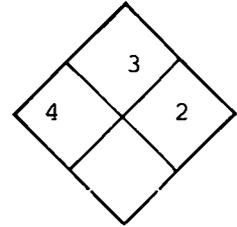
DATE

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 ⁰ C	° F.	VAPOR PRESSURE at 17 ⁰ C	10	mm Hg.
MELTING POINT -58 ⁰ C	° F.	VAPOR DENSITY (Air = 1)	3.29	
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 ⁰ 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

RELEVANT 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

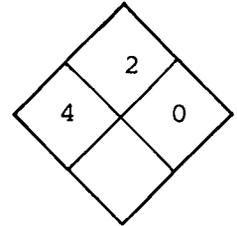
DATE

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 171°C	° F.	VAPOR PRESSURE at 60°C	mm Hg.
MELTING POINT 11°C	° F.	VAPOR DENSITY (Air = 1)	6
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 1.02		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR colorless oil, ammoniacal odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 185°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

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

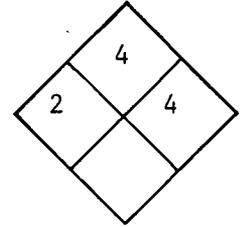
CAS:000060297

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
<u>Ethyl</u> CHEMICAL NAME AND SYNONYMS Ethyl Ether	FORMULA 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 35°C.	° F.	VAPOR PRESSURE at 15°C.	mm Hg.
			360
MELTING POINT -116°C.	° F.	VAPOR DENSITY (Air = 1)	
		2.6	
SPECIFIC GRAVITY (H ₂ O = 1) 0.71		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 7.5		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT -49°F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 36%
METHOD USED Closed cup		LOWER 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

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 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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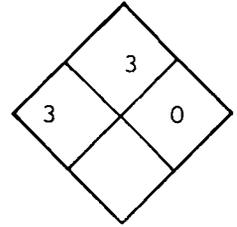
DATE

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

 $C_8H_{18}O$

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.
			11,000		Rat	
Lowest published lethal concentration in air inhalation - rat - 4000 PPM - 4 hours				10,000	Rabbit	

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 ethereal odor			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 7.6%
77°F		LOWER 1.5%
METHOD USED		
Closed cup		
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

RELEVANT 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

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 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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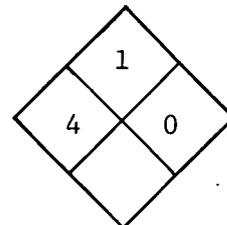
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246-4308B

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 39°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
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

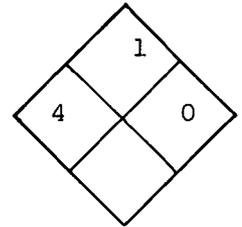
DATE

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
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 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
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MECHANICAL (GENERAL)	GLOVES Polyvinyl Alcohol
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SPECIAL	RESPIRATOR With proper filter
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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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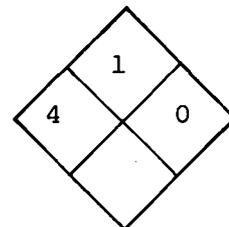
DATE

238-0102B

PRODUCT DESIGNATION

03-238-0602
4-Diethylamino - 1,3-Dimethyl
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 N,N-Diethyl 2,4-Dimethylaniline	FORMULA (C₂H₅)₂NC₆H₃(CH₃)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

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 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

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

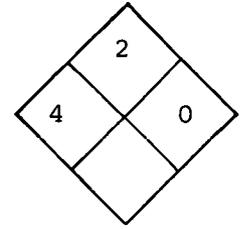
OTHER PRECAUTIONS

SIGNATURE

DATE

238-0602B

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 ⁰ C	° F.	VAPOR PRESSURE at 49.7 ⁰ C	1 mm Hg.
MELTING POINT -38 ⁰ C	° F.	VAPOR DENSITY (Air = 1)	5.15
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 1.44		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorless to yellow liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 185 ⁰ F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
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
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SPECIAL	RESPIRATOR With proper filter
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OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

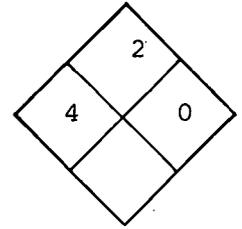
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE	DATE
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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
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-M-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 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
MECHANICAL (GENERAL)	Goggles
SPECIAL	GLOVES
OTHER PROTECTIVE EQUIPMENT	Rubber RESPIRATOR
	With proper filter

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

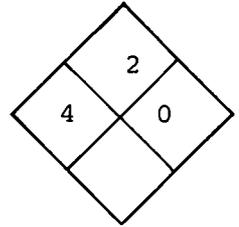
OTHER PRECAUTIONS

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

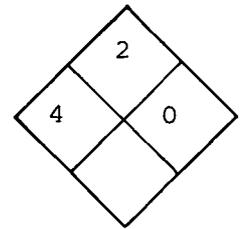
PRODUCT DESIGNATION	
Diethyl-O-Toluidine	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
None available	No
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion, skin	IRRITATION yes
RELEVANT SYMPTOMS OF EXPOSURE	Cyanosis, air hunger, nausea, vomiting, low blood pressure, convulsions
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 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
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	
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 ₂ H ₅) ₂ NC ₆ H ₄ 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 - 163.26

BOILING POINT 229°C	° F.	VAPOR PRESSURE at 103°C	mm Hg. 10
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 0.92		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 Not 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-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

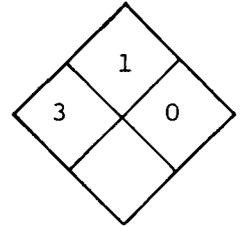
DATE

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 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 - 190.18

BOILING POINT _____ ° F. VAPOR PRESSURE _____ mm Hg.
 255 ° C

MELTING POINT _____ ° F. VAPOR DENSITY (Air = 1) _____
 95 ° C

SPECIFIC GRAVITY (H₂O = 1) _____ EVAPORATION RATE (_____ = 1) _____
 1.04

SOLUBILITY IN WATER Pts/100 pts H₂O VOLATILE _____ % Vol. _____ % Wt.
 Insoluble

APPEARANCE AND ODOR

Crystal power, aromatic odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT _____ FLAMMABLE (EXPLOSIVE) LIMITS _____ UPPER _____
 None available 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

RELEVANT 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

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

RESPIRATOR
With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

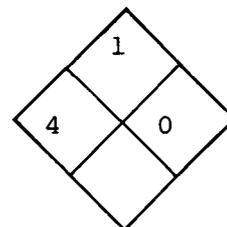
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DATE

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(C ₆ H ₃)(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 ^o C.	^o F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 107 ^o C.	^o 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

Inhalation (dust) skin, ingestion

SKIN AND EYE

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

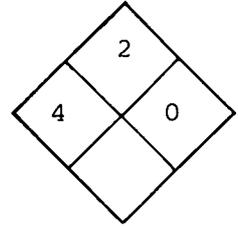
DATE

238-7302B

CAS:000068122

LQ21000

PRODUCT DESIGNATION

03-239-2453
N,N - Dimethyl 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 Dimethylformamide	FORMULA (CH ₃) ₂ 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 153 ⁰ C	° F.	VAPOR PRESSURE at 25 ⁰ C	mm Hg. 3.7
MELTING POINT -61 ⁰ C	° F.	VAPOR DENSITY (Air = 1)	2.51
SPECIFIC GRAVITY (H ₂ O = 1)	0.94	EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O	yes	VOLATILE	% Vol. % Wt

APPEARANCE AND ODOR

Colorless, mobile liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 136 ⁰ F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 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

Inhalation, ingestion, skin

SKIN AND EYE

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

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

239-2453B

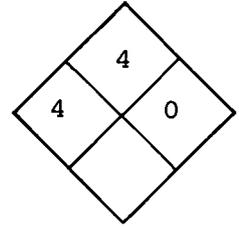
CAS:000124403

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) ₂ NH

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 ^o C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -92 ^o 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 ^o 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
10 PPM, 18 mg/C.M. CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION
Inhalation, ingestion SKIN AND EYE IRRITATION severe

RELEVANT 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

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 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 Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR With proper filter
OTHER PROTECTIVE EQUIPMENT 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.

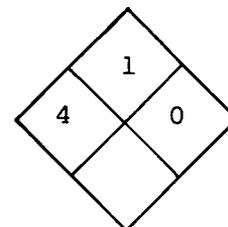
OTHER PRECAUTIONS

SIGNATURE DATE

PRODUCT DESIGNATION

03-239-2803
Dimethylamine 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
Dimethylamine Hydrochloride
FORMULA
(CH₃)₂NH 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 --	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 171°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 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	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		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**

RELEVANT 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

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

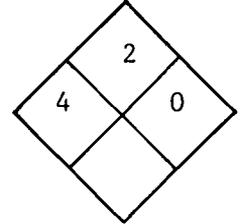
OTHER PRECAUTIONS

SIGNATURE _____ DATE _____

CA000060117

BX73500

PRODUCT DESIGNATION

03-239-3203
P-DimethylaminoazobenzeneMATERIAL 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 (CH ₃) ₂ NC ₆ H ₄ NNC ₆ 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.
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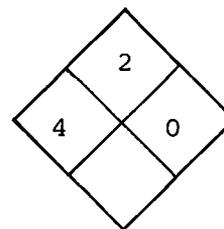
SPECIAL FIRE FIGHTING PROCEDURES Self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

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
<u>dimethylphenylamine</u>	
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. 1
MELTING POINT 2.5°C	° F.	VAPOR DENSITY (Air = 1) 4.17	
SPECIFIC GRAVITY (H ₂ O = 1) 0.9557		EVAPORATION RATE (_____ = 1)	
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

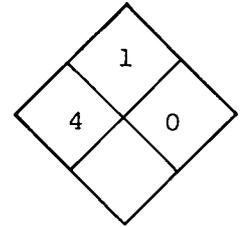
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DATE

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.
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) ₂ C ₁₈ H ₁₀

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 ear						
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 <u>none available</u>	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

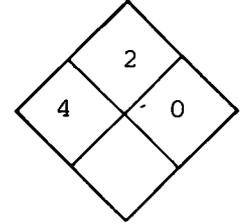
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239-5703B

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
<u>N, N Dimethylbenzylamine</u>	$(CH_3)_2NCH_2C_6H_5$

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

None available

CARCINOGENIC
No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION severe

RELEVANT 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

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

With proper filter

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

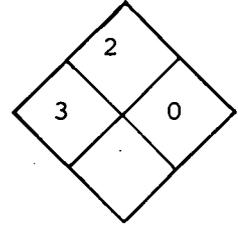
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239-6203B

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 Di-isobutyl, Ketone	FORMULA (C ₄ H ₉) ₂ CO

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			
inh-rat LCLO 2000 ppm/4 hr.				20,000	Mouse Rabbit	

SECTION III PHYSICAL DATA MW - 142.09

BOILING POINT 168°C	° F.	VAPOR PRESSURE at 15°C	mm.Hg. 2.4
MELTING POINT -46°C	° F.	VAPOR DENSITY (Air = 1) 4.9	
SPECIFIC GRAVITY (H ₂ O = 1) 0.81		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Low		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorless oil, methol-like odor			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 140°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 6.2%
METHOD USED Open Cup		LOWER 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
MECHANICAL (GENERAL)	Goggles
SPECIAL	GLOVES
OTHER PROTECTIVE EQUIPMENT	Rubber
	RESPIRATOR
	With proper filter
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

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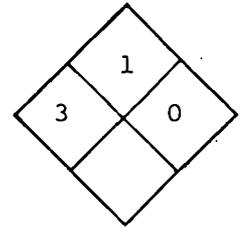
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236-6403B

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 149°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 0.42		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR 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		
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

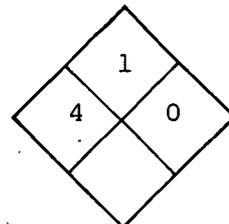
DATE

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
CHEMICAL NAME AND SYNONYMS α chloro-2,4 dimethyl acetophenone	FORMULA $ClCH_2COC_2H_5(CH_3)$

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 - 182.65

BOILING POINT -- ° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 62 ° 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 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

RELEVANT 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

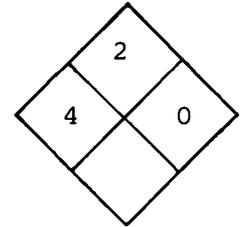
DATE

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) 0.845		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
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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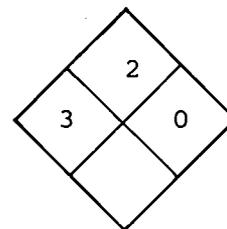
DATE

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 $(CH_3)_2COH(CH_2)_2CH_3$

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

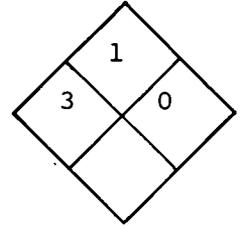
DATE

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 (BrC ₆ H ₄) ₂ O

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

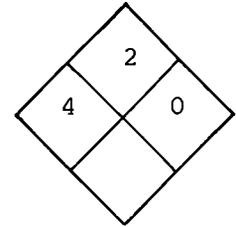
DATE

246-6708B

CAS:000111444

KNO8750

PRODUCT DESIGNATION

 β, β' Dichlorodiethyl Ether
03-246 -6908MATERIAL 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.
			75		Rat	
LDLO - oral - human	50 mg/kg			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

RELEVANT 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

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 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

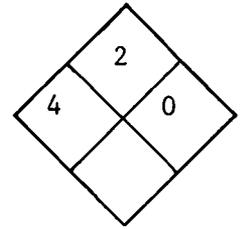
DATE

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 (ClCH ₂) ₂ O

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.
				280	Mouse	25/6 hr.
					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

RELEVANT 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

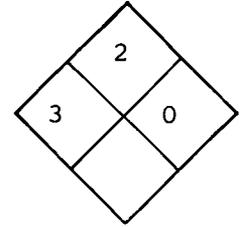
CAS:000111762

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

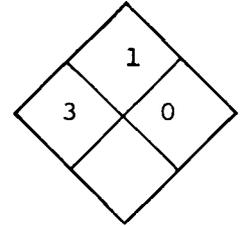
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DATE

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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 ₂ H ₅ OCH ₂ CH ₂ 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.
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	mm Hg. 3.8
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 202°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 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

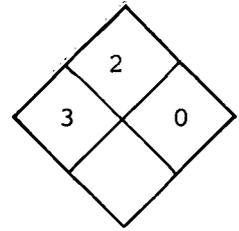
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DATE

CAS:000109864

KL57750

PRODUCT DESIGNATION

03-247-1509
Ethylene glycol
monomethyl 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 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 system			950		guinea pig	
lowest published lethal dose					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 125°C	° F.	VAPOR PRESSURE at 20°C	mm Hg. 6.2
MELTING POINT -87°C	° F.	VAPOR DENSITY (Air = 1)	2.62
SPECIFIC GRAVITY (H ₂ O = 1) 0.97		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O very soluble		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR colorless liquid, mild agreeable odor			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 115°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED O.C.		LOWER
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

RELEVANT 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

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

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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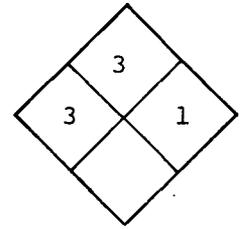
CAS:000108203

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 ₃ H ₇) 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.
Lowest published toxic concentration in air						
TCLO -	inhalation - human 800 PPM	irritant	8470	20,000	Rat	Rabbit

SECTION III PHYSICAL DATA

MW - 102.17

BOILING POINT 68.5 C	° F.	VAPOR PRESSURE at 25°C	mm.Hg. 150
MELTING POINT -60°C	° F.	VAPOR DENSITY (Air = 1)	3.52
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 colorless liquid, ethereal odor			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT -18°F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 7.9%
METHOD USED C.C.		LOWER 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

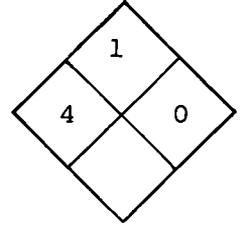
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PRODUCT DESIGNATION

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 ⁰ C	⁰ F.	VAPOR PRESSURE at 115 ⁰ C	5 mm Hg.
MELTING POINT -17 ⁰ C	⁰ 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

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

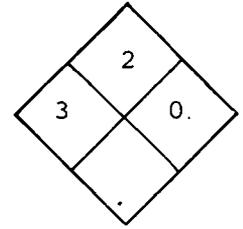
247-6709B

CAS:000111159

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 $C_{2,5}H_{2,4}O_{2,4}CH_4$

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 156°C	° F.	VAPOR PRESSURE at 20°C	mm Hg. 1.2
MELTING POINT -62°C	° F.	VAPOR DENSITY (Air = 1)	4.72
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, pleasant odor, bitter taste.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 120°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED COC		LOWER 1.7%
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

SKIN AND EYE

inhalation, ingestion, skin

IRRITATION

slightly

RELEVANT 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

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

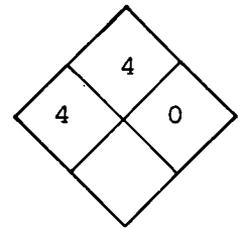
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249-1601B

PRODUCT DESIGNATION
 03-249-6601
 Ethylamine, 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: **monoethylamine**
 CHEMICAL FAMILY: _____
 CHEMICAL NAME AND SYNONYMS: **aminoethane**
 FORMULA: **C₂H₅NH₂**

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: **16.6°C** °F. VAPOR PRESSURE: **at 2°C** mm Hg. **400**
 MELTING POINT: **-80.6°C** °F. VAPOR DENSITY (Air = 1): **1.56**
 SPECIFIC GRAVITY (H₂O = 1): **0.8** EVAPORATION RATE (_____ = 1)
 SOLUBILITY IN WATER Pts/100 pts H₂O: **Infinitely soluble** VOLATILE % Vol. % Wt.

APPEARANCE AND ODOR: **colorless liquid, strong ammonical odor**

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: < 0	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

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**

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 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
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.

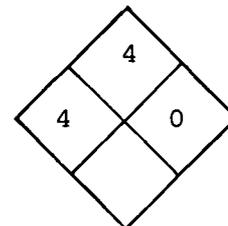
OTHER PRECAUTIONS

SIGNATURE	DATE
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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 2°C	400 mm Hg.
MELTING POINT -80.6°C	° F.	VAPOR DENSITY (Air = 1)	1.56
SPECIFIC GRAVITY (H ₂ O = 1) 0.8		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER ∞ Pts/100 pts H ₂ O Infinitely soluble		VOLATILE	% 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

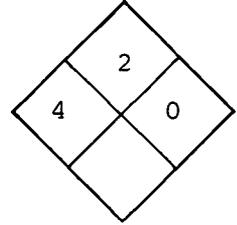
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249-6701B

PRODUCT DESIGNATION
 03-249-7101
 N-Ethylaniline

**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 Ethylphenylamine	FORMULA $C_{12}H_{15}NHC_6H_5$

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.
			334	4700	rat rabbit	

SECTION III PHYSICAL DATA

BOILING POINT 204°C	° F.	VAPOR PRESSURE at 39°C	MW - 121.20	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 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	

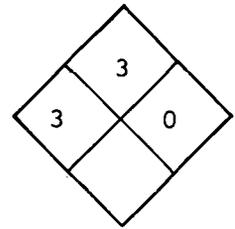
SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE DATE

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 $C_6H_5C_2H_5$

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.
			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 136.2°C	° F.	VAPOR PRESSURE at 26°C	MW - 106.16	10 mm Hg.
MELTING POINT -95°C	° F.	VAPOR DENSITY (Air = 1)	3.66	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)		
SOLUBILITY IN WATER Pts/100 pts H ₂ O no		VOLATILE	% Vol.	% Wt.
APPEARANCE AND ODOR colorless liquid with aromatic odor				

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 59°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 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

RELEVANT 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

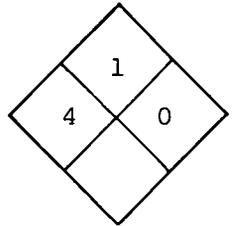
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249-8601B

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 $C_{6-5}H_5N(C_{2-5}H_5)CH_2C_6H_5$

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

BOILING POINT 286°C	° F.	VAPOR PRESSURE MW-211.3	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1) 7.28	
SPECIFIC GRAVITY (H ₂ O = 1) 1.03		EVAPORATION RATE (_____ = 1)	
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 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 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

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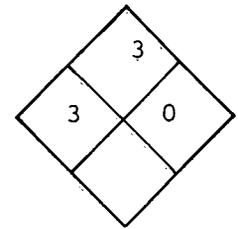
DATE

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 Ppt./100 ppt 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
METHOD USED		LOWER 6.7
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

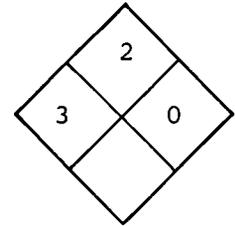
DATE

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

MECHANICAL (GENERAL)

goggles

SPECIAL

GLOVES

rubber

OTHER PROTECTIVE EQUIPMENT

RESPIRATOR

self-contained

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

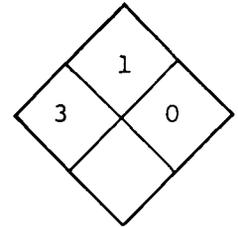
DATE

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 <chem>CH3CHBrCOOC2H5</chem>

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

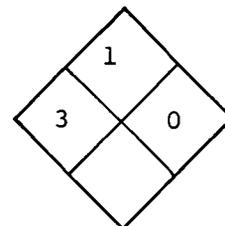
DATE

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 Ethyl - 3 Bromopropionate	FORMULA BrCH₂CH₂COOC₂H₅

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 112°C at 44 mm	°F.	VAPOR PRESSURE at 73°C	mm Hg. 15
MELTING POINT	°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		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR
yellow 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 - 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

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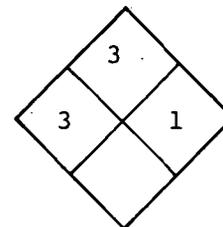
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250-2102B

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 LD50	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)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER lbs/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
insoluble			
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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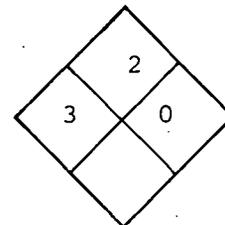
DATE

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 C1CH₂COOC₂H₅

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 144⁰C	° F.	VAPOR PRESSURE at 38⁰C	mm Hg. 10
MELTING POINT -27⁰C	° 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 179⁰F	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
SPECIAL	GLOVES rubber
OTHER PROTECTIVE EQUIPMENT	RESPIRATOR self-contained

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
Outside or detached storage preferred, inside storage in flammable liquids storage cabinet.

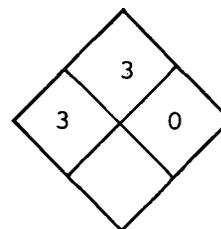
OTHER PRECAUTIONS

SIGNATURE _____ DATE _____

CAS:000541413

LQ61250

PRODUCT DESIGNATION

03-250-3702
Ethyl ChloroformateMATERIAL 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 Ethyl chloroformate	FORMULA $\text{ClCOOC}_2\text{H}_5$
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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.
LCLO - inhalation - mouse	2260 mg/CM					
Lowest published lethal dose						
intraperitoneal - mouse	15 mg/kg					

SECTION III PHYSICAL DATA MW - 108.53

BOILING POINT 93°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 61°C	° F.	VAPOR DENSITY (Air = 1) 3.7
SPECIFIC GRAVITY (H ₂ O = 1) 1.14		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 61°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED C.C.		LOWER

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

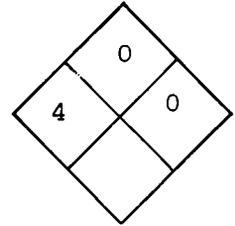
SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
Outside or detached storage preferred, inside storage in flammable liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE DATE

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 BrCH ₂ CH ₂ 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

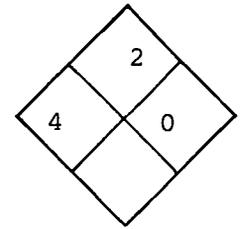
DATE

250-6202B

CAS:000540512

KJ82250

PRODUCT DESIGNATION

03-250-6402
Ethylene BromohydrinMATERIAL 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 Bromoethanol	FORMULA $\text{BrC}_2\text{H}_4\text{OH}$

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 149-150°C (Dec)	° F.	VAPOR PRESSURE 50°C	mm Hg. 12
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O - 1) 1.79		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 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

RELEVANT 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

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

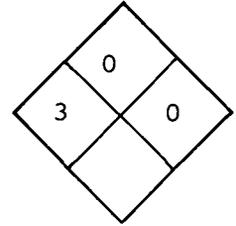
DATE

250-6402B

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 BrC ₂ H ₄ 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 106°C	° F.	VAPOR PRESSURE at 30°C	mm Hg. 40
MELTING POINT -18°C	° F.	VAPOR DENSITY (Air = 1)	4.94
SPECIFIC GRAVITY (H ₂ O = 1)	1.72	EVAPORATION RATE (_____ = 1)	
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 not flammable	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
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

RELEVANT 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

rubber

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

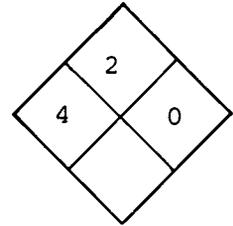
DATE

250-6702B

CAS:000107073

KK08750

PRODUCT DESIGNATION

03-250-6902
Ethylene chlorohydrinMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

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

TRADE NAME AND SYNONYMS β chloroethyl alcohol	CHEMICAL FAMILY
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CHEMICAL NAME AND SYNONYMS 2 chloro-ethanol	FORMULA $\text{CH}_2\text{ClCH}_2\text{OH}$
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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.
			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 129°C	° F.	VAPOR PRESSURE at 30.3°C	mm Hg. 10
MELTING POINT -69°C	° F.	VAPOR DENSITY (Air = 1) 2.78	
SPECIFIC GRAVITY (H ₂ O = 1) 1.21		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O very		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

colorless liquid, faint ethereal odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 140°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 15.9
METHOD USED O.C.		LOWER 4.9

EXTINGUISHING MEDIA

alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

wear protective clothing & self-contained
breathing apparatus.

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

RELEVANT 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

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
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

PRODUCT DESIGNATION
Ethylene 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
MECHANICAL (GENERAL)	GLOVES
SPECIAL	RESPIRATOR
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

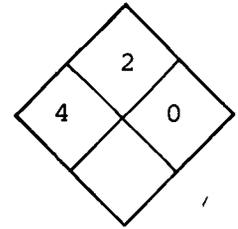
OTHER PRECAUTIONS

SIGNATURE	DATE
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CAS:000107153

KH85750

PRODUCT DESIGNATION

03-250-7402
Ethylene DiamineMATERIAL 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
				730	mouse	
			470		rabbit	
					guinea pig	
Lowest published toxic concentration in air						
LO- inhalation - human 200 PPM						

SECTION III PHYSICAL DATA MW - 60.10

BOILING POINT 117°C	° F.	VAPOR PRESSURE at 20°C	mm Hg. 11
MELTING POINT 9°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, hygroscopic liquid, ammonia-like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 110°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED O.C.		LOWER

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

SKIN AND EYE

Inhalation (mainly) ingestion

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

MECHANICAL (GENERAL)

Goggles

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

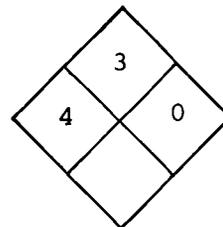
DATE

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

CH₂ClCH₂Cl

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 %
METHOD USED Closed Cup	Open Cup		LOWER 6.2 %

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.

RELEVANT 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

INCOMPATIBILITY (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.

SIGNATURE

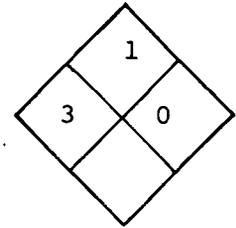
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250-7702B

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 1,2 Ethanediol	FORMULA CH ₂ OHCH ₂ OH

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	
LDLO Oral - human - 1500 mg/kg.			7500		mouse	
TCLO inhalation - human 1000 mg/cm irritant			2000		cat	

SECTION III PHYSICAL DATA MW - 62.1

BOILING POINT 198 ⁰ C	° F.	VAPOR PRESSURE at 20 ⁰ C	mm Hg. 0.05
MELTING POINT -13 ⁰ C	° F.	VAPOR DENSITY (Air = 1)	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 232 ⁰ F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED CC		LOWER 3.2
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

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

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

SIGNATURE

DATE

250-8202B

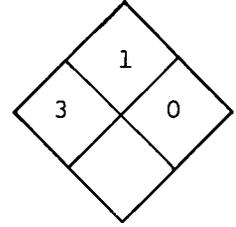
CAS: 000111597 ✓

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 ₂ OOCCH ₃) 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 191 ⁰ C	° F.	VAPOR PRESSURE at 38 ⁰ C	mm Hg.
MELTING POINT -31 ⁰ 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 ⁰ 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 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

MECHANICAL (GENERAL)

Goggles
GLOVES

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

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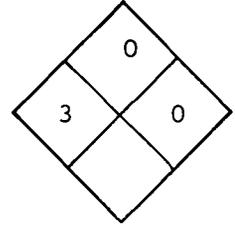
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250-8402B

PRODUCT DESIGNATION

03-251 3303
Ethylidene 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 <u>1,1 dibromoethane</u>	FORMULA <u>Br₂HCCH₃</u>

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 -187.8°

BOILING POINT 109 ⁰ 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

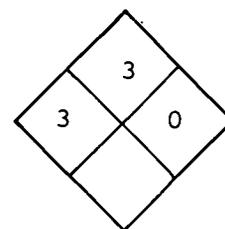
DATE

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)	
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 11.4%
METHOD USED C.C.		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

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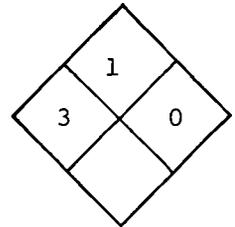
DATE

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
monoiodoethane _____ 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 $72.2^{\circ}C$ °F. VAPOR PRESSURE at $25^{\circ}C$ 137 mm Hg.

MELTING POINT $-108.5^{\circ}C$ °F. VAPOR DENSITY (Air = 1) 5.4

SPECIFIC GRAVITY (H₂O = 1) 1.92 EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O 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 LOWER

METHOD USED _____

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

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 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

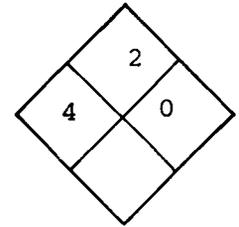
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DATE

251-4303B

PRODUCT DESIGNATION
 03-251-6903
 Ethyl Orthosilicate

**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 Tetraethyl-0-silicate	FORMULA (C ₂ H ₅) ₄ SiO ₄

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°C	° F.	VAPOR PRESSURE at 20°C	mm Hg. 1
MELTING POINT -83°C	° F.	VAPOR DENSITY (Air = 1)	7.22
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 125°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED O.C.		LOWER
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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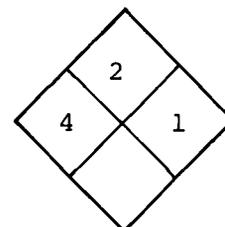
DATE

251-6903B

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
Ethyl Thiocarbimide _____ FORMULA
C₂H₅NCS

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. 10

MELTING POINT -6°C °F. VAPOR DENSITY (Air = 1) 3.01

SPECIFIC GRAVITY (H₂O = 1) 1.00 EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O 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 LOWER

METHOD USED

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

SIGNATURE

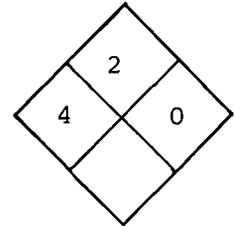
DATE

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) _____

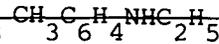
TRADE NAME AND SYNONYMS _____

CHEMICAL FAMILY _____

CHEMICAL NAME AND SYNONYMS _____

FORMULA _____

Ethyl-M-Toluidine



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

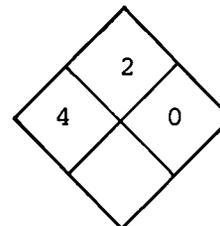
SIGNATURE DATE

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
CH₃C₆H₄NHC₂H₅

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^oC** ° F. VAPOR PRESSURE **at 85^oC** mm Hg. **6**

MELTING POINT **<-15^oC** ° F. VAPOR DENSITY (Air = 1) _____

SPECIFIC GRAVITY (H₂O = 1) **0.95** EVAPORATION RATE (_____ = 1) _____

SOLUBILITY IN WATER Pts/100 pts H₂O **insoluble** VOLATILE % Vol. % Wt.

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 **wear full protective clothing**

UNUSUAL FIRE AND EXPLOSION HAZARDS _____

PRODUCT DESIGNATION

Ethyl-O-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 liquid storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

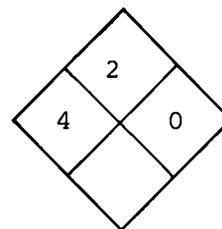
DATE

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. _____

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

TRADE NAME AND SYNONYMS _____ CHEMICAL FAMILY _____

CHEMICAL NAME AND SYNONYMS _____ FORMULA _____

Ethyl-P-Toluidine

CH₃C₆H₄NHC₂H₅

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 10 mm Hg.

MELTING POINT -- °F. VAPOR DENSITY (Air = 1) _____

SPECIFIC GRAVITY (H₂O = 1) 0.94 EVAPORATION RATE (_____ = 1) _____

SOLUBILITY IN WATER Pts/100 pts H₂O insoluble VOLATILE % Vol. % Wt.

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 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 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 liquid storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

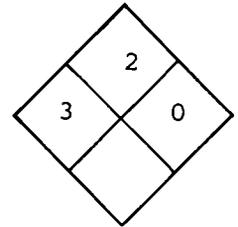
DATE

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 P-Fluorobromobenzene	FORMULA C₆H₄Br

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 - 175.01

BOILING POINT 155⁰C	⁰ F.	VAPOR PRESSURE	mm Hg.
MELTING POINT -8⁰C	⁰ 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

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
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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

SIGNATURE

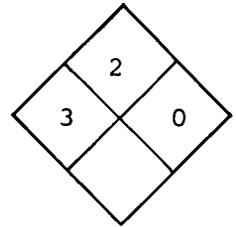
DATE

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 C_6H_4Cl

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

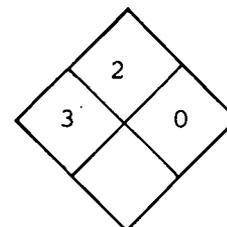
DATE

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

C_6H_4Cl

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 (H₂O = 1) _____ EVAPORATION RATE (_____ = 1) _____

SOLUBILITY IN WATER Pts/100 pts H₂O VOLATILE _____ % Vol. _____ % Wt.

APPEARANCE AND ODOR
liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT not available FLAMMABLE (EXPLOSIVE) LIMITS UPPER LOWER

METHOD USED _____

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

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

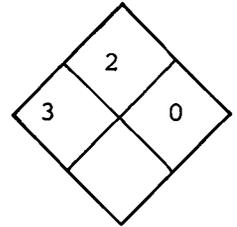
DATE

257-2545B

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 $CH_3C_6H_4F$

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 rubber
SPECIAL	RESPIRATOR with proper filter
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

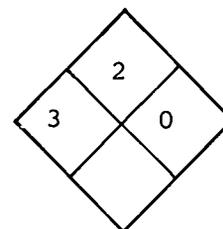
DATE

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 CH ₃ C ₆ H ₄ 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

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
MECHANICAL (GENERAL)	goggles
SPECIAL	GLOVES
OTHER PROTECTIVE EQUIPMENT	rubber
	RESPIRATOR
	with proper filter

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

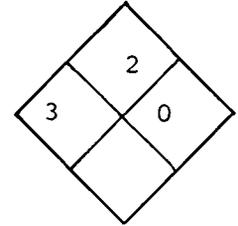
DATE

257-3455B

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 _____ FORMULA _____

P-Fluoromethyl benzene

C₆H₄CF₃

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			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
MECHANICAL (GENERAL)	goggles
SPECIAL	GLOVES
OTHER PROTECTIVE EQUIPMENT	gloved
	RESPIRATOR
	with proper filter

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

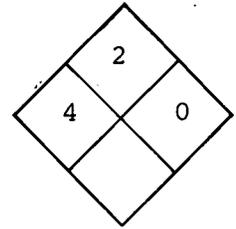
OTHER PRECAUTIONS

SIGNATURE _____ DATE _____

CAS: 000050000

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 Methanal	FORMULA 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

RELEVANT 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

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

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.

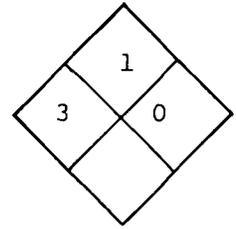
OTHER PRECAUTIONS

SIGNATURE

DATE

250-3965B

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 HCONH 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.
			7500		Rat	
Intramuscular - guinea pig LD50 2539 mg/kg.						

SECTION III PHYSICAL DATA

BOILING POINT 211 ^o C	^o F.	VAPOR PRESSURE at 130 ^o C	MW - 45.04	mm Hg. 30
MELTING POINT 2.6 ^o C	^o F.	VAPOR DENSITY (Air = 1)		
SPECIFIC GRAVITY (H ₂ O = 1) 1.13		EVAPORATION RATE (_____ = 1)		
SOLUBILITY IN WATER Pts/100 pts H ₂ O very soluble		VOLATILE	% Vol.	% Wt.
APPEARANCE AND ODOR Colorless, hygroscopic, oily, liquid, odorless				

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 310 ^o F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED (COC)		LOWER
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

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

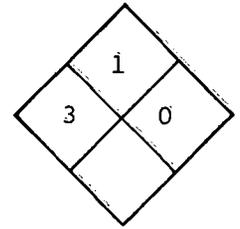
Stored in closed container away from moisture.

OTHER PRECAUTIONS

SIGNATURE

DATE

MATERIAL SAFETY DATA SHEET



PRODUCT DESIGNATION
 03-257-4405
 Formanilide

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 ₆ H ₅ NCHO

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 rubber
SPECIAL	RESPIRATOR with proper filter
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

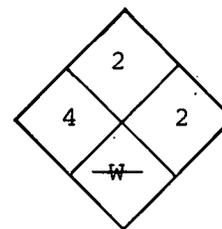
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MATERIAL SAFETY DATA SHEET



PRODUCT DESIGNATION

03-257-5405
Fumaryl chloride

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 Trans-Butenedioyl chloride	FORMULA (CIOCCH)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) 1.408		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 Unknown	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
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

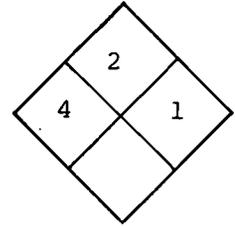
OTHER PRECAUTIONS

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DATE

257-5405B

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 162°C	°F.	VAPOR PRESSURE	MW - 96.1	mm Hg.
MELTING POINT -36.5°C	°F.	VAPOR DENSITY (Air = 1)	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 140°F	FLAMMABLE (EXPLOSIVE)	UPPER 16.3%
METHOD USED C.C.	LIMITS	LOWER 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 TLV - 5 PPM, 20 mg/C.M. (Skin) CARCINOGENIC 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

INCOMPATABILITY (MATERIALS TO AVOID)
Avoid contact with strong mineral acids or alkalis.

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.

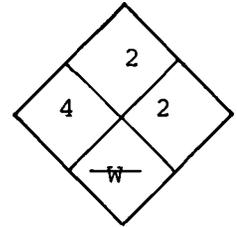
OTHER PRECAUTIONS

SIGNATURE _____ DATE _____

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 Furoyl chloride	FORMULA C₄H₃OCOC₁

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
METHOD USED		LOWER
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
Crotoanaldehyde	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
Decahydronapthelene	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
Diethylamine 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
Ethylbenzylaniline	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
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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

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