LA-UR-97-1899

Indexes of the Proceedings for the Ten International Symposia on Detonation 1951-93

William E. Deal
John B. Ramsay
Alita M. Roach
Bruce E. Takala

Los Alamos National Laboratory

INDEXES OF THE PROCEEDINGS FOR THE TEN INTERNATIONAL SYMPOSIA ON DETONATION 1951-93

W. E. Deal
J. B. Ramsay
A. M. Roach
B. E. Takala

Los Alamos National Laboratory
Los Alamos, NM 87545

The Detonation Symposia

Number	Date	Location
1	11-12 January, 1951	Washington, District of Columbia
2	9-11 February, 1955	Washington, District of Columbia
3	26-28 September, 1960	Princeton, New Jersey
4	12-15 October, 1965	Silver Spring, Maryland, 1st International
5	18-21 August, 1970	Pasadena, California
6	24-27 August, 1976	Coronado, California
7	16-19 June, 1981	Annapolis, Maryland
8	15-19 July, 1985	Albuquerque, New Mexico
9	27 August-1 September, 1989	Portland, Oregon
10	12-16 July, 1993	Boston, Massachusetts
11	30 August-4 September, 1998	Snowmass, Colorado

Contents

INDEXES OF THE PROCEEDINGS FOR THE TEN INTERNATIONAL SYMPOSIA ON DETONATION, 1951–1993

William E. Deal, John B. Ramsay, Alita M. Roach, and Bruce E. Takala

ABSTRACT

The *Proceedings* of the ten Detonation Symposia have become the major archival source of information of international research in explosive phenomenology, theory, experimental techniques, numerical modeling, and high-rate reaction chemistry. In many cases, they contain the original reference or the only reference to major progress in the field. For some papers, the information is more complete than the complementary article appearing in a formal journal; yet for others, authors elected to publish only an abstract in the *Proceedings*. For the large majority of papers, the Symposia *Proceedings* provide the only published reference to a body of work. This report indexes the ten existing *Proceedings* of the Detonation Symposia by paper titles, topic phrases, authors, and first appearance of acronyms and code names.

INTRODUCTION

The indexes comprise four parts: (A) a listing of the paper titles and authors in order of appearance in each Symposium *Proceedings*, (B) an alphabetical listing of topic phrases, (C) an index of all authors, and (D) an index to first appearance of acronyms and code names of compositions and components that are defined.

Each index also lists the Symposium number and page number of the reference. These are the actual page numbers of the original *Proceedings* of the Fourth through the Ninth Symposia. The page numbers shown for the First and Second Symposia are for the single combined volume reprinted by the Detonation Symposium Committee in 1987 (NSWC MP 87-194), and not the original page numbers. Some confusion also exists for references from the Third Symposium in that it was initially published as three paperback volumes. These were combined into a single hardbound volume, identified by the publisher, The Office of Naval Research, U.S. Navy, as ACR-52. The page numbers used in these Indexes for the Third Symposium are those from this latter publication. If readers find errors in any of the sections, please contact one of the authors.

Along with this printed volume of the "Indexes", we include a floppy disk containing the complete text. The principal use of the disk version of the "Indexes" is envisioned to be to utilize the text string search capability of word processors. The disk is PC-formatted and the file is a Microsoft Word 97 document. Other

word processors may translate the document, but users should expect minor formating discrepancies typical with such translations.

A. TITLES INDEX

In this first index, the chronological order of the papers is preserved, beginning with the First Symposium and the first paper presented. We list the Symposium number, page number, paper title, co-authors, and nation of the first author.

B. TOPIC PHRASE INDEX

Here we list topic phrases alphabetically with reference to the Symposium number and page number. We considered using key words, which are cryptic and more mnemonic, rather than the longer and more descriptive topic phrases, but we decided on the latter because they provide more information for selecting the correct reference. The compilers have used their own judgment in selecting and defining the topic phrases and hope that the phrases are self-explanatory. At the present time, a significant cross-referencing capability is lacking within the index, and users are cautioned to check several different possible topics when searching.

C. AUTHOR INDEX

This index is a simple listing of all authors, giving the Symposium number and page number references. All except family names were contracted to initials. We have attempted to combine different presentations of an author's name (e.g., J. Ramsay and J.B. Ramsay) into a uniform entry.

D. ACRONYM AND CODE NAME INDEX

This index is an attempt to cite the *first use* of an acronym or code name for neat explosives, ingredients, and formulations, for which a definition of the term is also provided. The names of some explosive compositions that were "known to everyone" in 1950 are no longer in common usage, particularly within the international community. For example, the names MEDINA and DINA were used in at least one instance with no recognized chemical name or formula given. Rather interestingly, no definition of RDX was located within the *Proceedings* until the Fifth Symposium.

Many explosive compounds and compositions are named as a contraction of the chemical name (e.g., TNT); for others, the history of the name is lost in research laboratories (e.g. HMX**); and others have no relationship to the composition (e.g., X-0290).

A large number of papers within the Symposia *Proceedings* refer to compositions only by acronym or code name, with no formal definition of composition. Composition B (Comp B) is cited in many papers, yet at least 10 citations for Composition B provide similar, but different, compositions. Also, in some instances, the same explosive compound was defined by three or more different acronyms.

We intended that each citation be the earliest reference within the nine *Proceedings* to the use of the acronym coupled with a meaningful chemical definition. Errors in finding and entering the citations may have occurred.

** Ray Walker has told JBR that HMX most probably stands for High Melting eXplosive, but Walker has also heard a reasonable statement that the initials may have been derived from Holston Military eXplosive. It does not stand for His Majesty's eXplosive.

A. Titles Index
By Symposium and Page

A. Titles Index (Continued)

A. Titles Index (Continued)

A. Titles Index (Continued)

A. Titles Index (Continued)

A. Titles Index (Continued)

A. Titles Index (Continued)

A. Titles Index (Continued)

A. Titles Index (Continued)

A. Titles Index (Continued)

A. Titles Index (Continued)

A. Titles Index (Continued)

A. Titles Index (Continued)

A. Titles Index (Continued)

A. Titles Index (Continued)

A. Titles Index (Continued)

A. Titles Index (Continued)

B. Topic Phrase Index

Alphabetic

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

B. Topic Phrase Index (Continued)

C. Author Index

Alphabetic

C. Author Index (Continued)

C. Author Index (Continued)

C. Author Index (Continued)

C. Author Index (Continued)

C. Author Index (Continued)

C. Author Index (Continued)

C. Author Index (Continued)

C. Author Index (Continued)

C. Author Index (Continued)

C. Author Index (Continued)

C. Author Index (Continued)

C. Author Index (Continued)

C. Author Index (Continued)

C. Author Index (Continued)

D. Acronym and Code Name Index

Alphabetic, First Reference

Name	Sy.Pg	Makeup
1,1-DP	5.0090	1,1-bis(difluoroamino)propane
1,2-DB	5.0237	1,2-bis(difluoramino)butane
1,2-DP	5.0237	1,2-bis(difluoramino)propane
1,3-DP	5.0090	1,3-bis(difluoramino)propane
1-MNT	6.0232	1-methyl-5-nitrotetrazole
2,2-DB	5.0237	2,2-bis(difluoramino)butane
2,2-DP	5.0237	2,2-bis(difluoramino)propane
2-MNT	6.0232	2-methyl-5-nitrotetrazole
2-NE	7.0762	2-nitroethanol
A-3	9.0106	91 RDX/9 wax
A-5	7.0551	97 RDX/3 wax
A-589	5.0139	86 HMX/14 PB
A-590	5.0139	80.3 HMX/5.9 AP/13.8 PB
A-591	5.0139	69 HMX/17 AP/14 PB
A-592	5.0139	57 HMX/29 AP/14 PB
AAB 3189	7.0892	9.2 RDX/60.8 AP/15 Al/15 binder
AAB 3225	7.0892	7.1 RDX/62.9 AP/15 Al/15 binder
AAB 3267	7.0892	5 RDX/65 AP/15 Al/15 binder
ABH	8.0528	$C_{24}H_6N_{14}O_{24}$
ADDF	6.0467	1,4,4,10,10,13-hexafluoro-1,1,7,7,13,13-hexanitro-3,5,9,11- tetraoxotridecane
ADNBF	9.0566	7 amino-4,6 dinitrobenzofuroxan
ADNT	7.0801	ammonium salt of 3,5-dinitro-1,2,4-triazole
AF 902	9.0487	95 NQ/5 Viton A
AFX-108 E	9.1236	82 RDX/18 O
AFX1100	9.1284	66 TNT/16 OD2 wax/18 Al
AFX-521	8.1106	95 PYX/5 Kel-F 800
Amatex 20	6.0647	20 RDX/40 TNT/40 AN
Amatol	5.0501	20-60% AN/80-40% TNT
AMMO	9.0232	azidomethyl methyloxethane
AN	6.0439	ammonium nitrate
ANFO	3.0186	94.6 AN/5.4 fuel oil
ANFOAL-10	6.0546	87.4 AN/2.6 fuel oil/10 aluminum
ANT	10.0886	3-amino-5-nitro-1,2,4 triazole
AP	5.0139	ammonium perchlorate
ATEC	9.0539	acetyl triethyl citrate
ATX-27R	10.0891	33 EDD/33 AN/1.4 urea/3.1 oil/1.7 emulsifier/27 RDX/0.4 casting agent
B 2141	7.0409	88 RDX/12 HTPB
B 2142	7.0409	77 PETN/23 PU
B 2161	8.0437	40 HMX/30 AP/20 Al/10 polyurethane binder
B 2169	8.0437	83 PETN/17 polyurethane
B 2174	8.0437	47 HMX/30 AP/11 lead nitrate/12 polyurethane
B 2190	8.0437	30 PETN/70 HTPB
B 2191	8.0437	37 HMX/40 AP/11 lead nitrate/12 polyurethane
B 2192	8.0437	27 HMX/50 AP/11 lead nitrate/12 polyurethane
B 2203	10.0115	RDX/inert binder

D. Acronym and Code Name Index (Continued)

Name	Sy.Pg	Makeup
B 2208	10.0899	82 HMX/polyurethane binder
B 2209	10.0899	81.5 HMX/silicon(*sic*) binder
B 2210	10.0899	72 HMX/florinated binder
B 2214	9.1008	12 HMX/72 NTO/16 inert binder
B 2214	10.0115	HMX/NTO/inert binder
B 2220	10.0115	RDX/inert binder
B 2241	10.0899	82.8 HMX/HTPB
B 3003	8.0437	80 HMX/20 NC-NGl
B 3100	10.0646	42 HMX/9 AP/19 Al/30 binder
B 3103	10.0646	51 HMX/19 Al/30 binder
B 3108	10.0115	HMX/Al/energetic binder
Baratol	3.0563	76 barium nitrate/24 TNT
Baratol	4.0361	70 barium nitrate/30 TNT
Baratol	6.0629	72 barium nitrate/28 TNT
Baratol 76	6.0647	76 barium nitrate/24 TNT
Baratol UK	9.0793	70 TNT/30 $BaNO_3$
BDNPA	9.1018	bis (2,2-dinitropropyl)-acetal
BDNPA-F	9.1236	eutectic
BDNPF	9.1018	bis (2,2-dinitropropyl)-formal
BH-1	8.0083	plastic-bonded RDX
blasting gelatin	3.0045	91 NG/8 NC/1 chalk
BO-1	8.0093	plastic-bonded HMX, similar to PBX 9404
Boracitol	10.0418	40 TNT/60 boric acid
Bridgwater Type A	10.0089	59.5 RDX/39.5 TNT/1.0 Beeswax
BTF	6.0712	benzotrifuroxane
BTFMA	6.0467	1-fluoro-1,1-dinitro-4,4-bis(trifluoromethyl)-3,5-dioxohexane
BTNEN	3.0070	bis-(2,2,2-trinitroethyl)nitramine
BTX	6.0460	5,7-dinitro-1-picrylbenzotriazole
BTZ	8.1019	bitetrazole
BWX	2.0661	beeswax
BX1	8.1106	60 TATB/35 (95 RDX/5 HMX)/5 Kel-F
BX2	8.1106	60 TATB/35 (95 RDX/5 HMX)/5 PTFE
BX3	8.1106	60 TATB/35 (90 RDX/10 HMX)/5 Kel-F
BX4	8.1106	60 TATB/35 (90 RDX/10 HMX)/5 PTFE
C-4	4.0097	91 RDX/9 wax
CAB	9.0539	cellulose acetate butyrate
CACTP	6.0455	catena-μ-cyanotetraammine cobalt(III) perchlorate
CDB	10.0095	42 nitrocellulose/46 nitroglycerin (cast double base)
Cedosol 10	9.1082	$B_{10}H_{12}(CsNO_3)_2$
CEF	4.0005	tris ß-chloroethylphosphate
CH6	9.0100	97.5 RDX/0.5 polyisobutylene/0.5 calcium stearate/0.5 graphite
CMBD	9.0007	NC/NG/HMX/Al/AP
Comp A	3.0687	91 RDX/9 wax
Comp A	6.0647	92 RDX/8 wax
Comp A 3	9.1463	91 RDX/9 polyethylene
Comp A 5	8.0265	98.5 RDX/1.5 stearic acid
Comp A 5	7.0928	98 RDX/2 stearic acid
Comp A 5	7.0551	97 RDX/3 wax
Comp B	2.0479	60 RDX/40 TNT, wax and other additives (1 to 1.5%)

D. Acronym and Code Name Index (Continued)

Name	Sy.Pg	Makeup
Comp B	4.0048	60 RDX/40 TNT
Comp B	6.0493	60 RDX/40 TNT/1 wax
Comp B	6.0629	59.5 RDX/39.5 TNT/1 beeswax
Comp B	6.0647	63 RDX/36 TNT/1 wax
Comp B	7.0353	45 RDX/55 TNT/1 wax
Comp B (ISL)	7.0317	65 RDX/35 TNT
Comp B, Grade A	4.0005	64 RDX/36 TNT
Comp B, Grade A	5.0198	59.5 RDX/39.5 TNT/1.0 wax
Comp B-3	4.0361	64 RDX/36 TNT
Comp B-3	5.0004	60±1.5 RDX/40±1.5 TNT
Comp B-3	9.1236	60 RDX/40 TNT
Comp B-3 (ISL)	7.0317	60 RDX/40 TNT
Comp B3 (waxed)	5.0280	60 RDX/40 TNT/1 wax
Comp B4	7.0900	60 RDX/40 TNT, no wax
CP	6.0455	1-(5-cyanotetrazolato)pentaammine cobalt(III) perchlorate
CTX-1	8.0265	15 RDX/40 AP/23 Al/22 TNT + additives
CW3	9.1323	analog of 60 RDX/40 TNT
CX-84	8.0366	84 RDX/9.7 R45-HT/5.6 DOA/0.7 TDI
CX-84A	9.1482	84 RDX/16 HTPB
CX-85	10.0307	84.25 HMX/15/75 HTPB
Cyclonite	3.0437	RDX
Cyclotol	3.0502	65 RDX/35 TNT
Cyclotol	5.0065	72 RDX/25 TNT
Cyclotol 25/75	9.1236	25 RDX/75 TNT
Cyclotol 60/40	9.1236	60 RDX/40 TNT
Cyclotol 77/23	6.0647	77 RDX/23 TNT
D-2	9.1236	84 D2 wax/14 NC/2 lecithin
DANTNP	10.0885	5-nitro-4,6 bis((5nitro,1H-1,2,4 triazole-3yl) amino pyrimidine
DAT	10.0588	3,6-diaminotetrazine
DATB	3.0761	1,3-diamino-2,4,6-trinitrobenzene
DBA	3.0379	Dense Blasting Agent, slurries of TNT or Composition B
DDI	10.0095	Dimeryl diisocyanate
DDNP	3.0012	diazodinitrophenol
Debrix 18AS	8.0265	95.5 RDX/2.5 wax/2 additives
Debrix-2	8.1106	95 RDX/5 wax
DEGDN	7.0762	diethylene glycol dinitrate
DETA	10.0105	diethylenetriamine
DFB	6.0467	2,2-difluoro-2-nitroethly-5,5-difluoro-2-(3',3'-difluoro-3'-nitro-1-oxopropyl)-5,5-dinitro-3-oxopentanoate
DFF	6.0467	bis(2-fluoro-2,2-dinitroethyl)difluoroformal
DFNT	6.0467	2,2-difluoro-2-nitroethyl-trifluoromethane-sulfonate
DHE	8.0365	2-hydroxymethyl dimethylhydantoin
dichloro TEDNCP	10.0157	derivitive of cyclotriphosphazene
difluoro TEDNCP	10.0157	derivitive of cyclotriphosphazene
DINA	3.0066	di-ß-nitroxyethyl nitramine
DINGU	7.0540	dinitroglycolurile
DIPM	10.0414	$C_{12}H_6N_8O_{12}$
DiTeU	4.0435	dinitroethyl-uric *(sic)*
Dithekite	3.0186	a mixture of 82.8% nitric acid, nitrobenzene, and water

D. Acronym and Code Name Index (Continued)

Name	Sy.Pg	Makeup
Dithekite 13	3.0493	63 nitric acid/24 nitrobenzene/13 water
Dithekite 13/20	2.0648	dithekite with 13/20 wt% water
DNBF	9.0566	4,6-dinitrobenzofuroxan
DNNC	9.0232	1,3,5,5-tetranitro-hexahydropyrimidine
DNP	7.0374	dinitrophenol
DNPA	4.0005	2,2-dinitropropylacrylate
DNPF	3.0685	bis-dinitropropyl fumarate
DNPP	6.0467	2,2-dinitropropyl perchlorate
DNPTB	3.0070	2,2-dinitropropyl 4,4,4-trinitrobutyrate
DNT	7.0374	dinitrotoluene
DNT	7.0802	3,5-dinitro-1,2,4-triazole
DOA	8.0363	dioctyl adipate
DOP	4.0005	dioctylphthalate
DREV-Explosive	8.0363	84 RDX/16 polybutadiene
DXD-01	9.0475	84% RDX/16% binder
EA	7.0548	50 EDD(ethylenediamine dinitrate)/50 AN
EAK	8.1002	46 ethylenediamine dinitrate/46 ammonium nitrate/8 potassium nitrate
EAR	7.0551	42.5 EDD/42.5 AN/15 RDX
EARK	7.0551	42.5 EDD/36.1 AN/15 RDX/6.4 potassium nitrate
EARL-1	7.0551	40.3 EDD/40.3 AN/14.2 RDX/5.2 Al
EARL-2	7.0551	36.2 EDD/36.2 AN/12.8 RDX/14.8 Al
EDC-29	9.0793	95 HMX/5 polyurethane
EDC-32	9.0793	85 HMX/15 Viton
EDC-35	9.0123	95 TATB/5 Kel-F 800
EDD	6.0439	ethylenediamine dinitrate
EDNA	6.0314	ethylenedinitramine
EDNP	5.0139	ethyl-4,4-dinitropentanoate w/1% Cab-O-Sil gelling agent
EE	9.0585	emulsion explosive
EGD	3.0456	ethylene glycol dinitrate
EGDN	3.0438	ethylene glycol dinitrate
EGN	2.0659	ethylene glycol dinitrate
EIE	4.0159	exchanged-ion explosive (10 NG/90 stoichiometric ammonium chloride-potassium nitrate mixture)
EJC-90	9.1236	26 HMX/14 NC/32 NG/5 AP/18 Al/5 O
Emulite	8.1071	AN/FO/water with gas-filled microspheres
EN	3.0813	ethyl nitrate
Estane	4.0005	trademark for polyester-urethane of adipic acid 1,4-butanediol, diphenylmethane diisocyanate
ET	3.0744	homogeneous mixture of ethyldecaborane in tetranitromethane
EtDP	4.0005	ethyl 4,4-dinitropentanoate
eutectic	9.1015	50 BDNPA/50 BDNPF
EXP-D	10.0414	$C_6H_6N_8O_{12}$(ammonium picrate)
FDA	6.0467	bis(2-fluoro-2,2-dinitroethyl) acetal
FDE	6.0467	1,1,4-trifluoro-1,4,4-trinitro-3-oxobutane
FDEE	6.0467	1,5,-difluoro-1,1,5,5-tetranitro-3-oxopentane
FDEK	7.0804	2.55 AN/0.3 ADNT/1 EDD/0.36 potassium nitrate, the numbers are vol%
FDNE-A	6.0467	1,9-difluoro-1,1,5,5,9,9-hexanitro-3,7-dioxononane
FDNE-N	6.0467	2-fluoro-2,2,-dinitroethyl nitrate
FDNEP	6.0467	2-fluoro-2,2-dinitroethyl perchlorate

D. Acronym and Code Name Index (Continued)

Name	Sy.Pg	Makeup
FDNE-S	6.0467	bis(2-fluoro-2,2-dinitroethyl)sulfate
FEFO	6.0467	bis(2-fluoro-2,2-dinitroethyl)formal
FNR	4.0005	tetrafluoroethylene-trifluoro-nitroso methane copolymer
FO	6.0546	fuel oil #1
FT-1	9.0879	21 thiokol/8 Al/65AP
FT-2	9.0879	11 HTPB/18 Al/68 AP
FTE	6.0467	1,1,1,4-tetrafluoro-4,4-dinitro-3-oxobutane
GAP	10.0603	glycidyl azide polymer binder
GBFO	6.0467	1,12-difluoro-1,1,12,12-tetranitro- 3,5,8,10-tetraoxododecane
GMB	8.0993	glass microballoons
Gurit	8.1071	NG/EGDN/SiO_2
H/HN	9.0487	21 hydrazine/79 hydrazine nitrate
H19	9.1061	32 Al/5 AP/51 KCl/9 HTPB/2 DOA
H-6	5.0255	45 RDX/30 TNT/20 Al/5 wax
HAV-10	5.0139	74.7 HMX/10.6 Al/14.7 Viton
HAV-20	5.0139	65.7 HMX/18.9 Al/15.4 Viton
HBX	2.0737	45 RDX/30 TNT/25 Al
HBX	5.0073	75 Composition B/25 Al
HBX-1	5.0524	40 RDX/38.1 TNT/17.1 Al/4.8 Wax
HBX-1	9.1236	40 RDX/36 TNT/19 Al/5 D-2
HBX-3	9.1236	30 RDX/26 TNT/38 Al/6 D-2
HCX	8.1011	heterogeneous composite explosive
HDBA	8.0365	4-hydroxy-N-N-dimethylbutyramide
heat powder	9.1082	88 Fe/12 KP
HEP	8.0883	high-energy propellant
HEP-1	10.0956	60 wt% solids propellant (RDX/AP) 0.8 wt% $PbCO_3$
HEP-2	10.0956	60 wt% solids propellant (HMX/AN)
HEP-3	10.0956	60wt% solid propellant (RDX/AN)
Hexatol 60/40	6.0546	59 RDX/40 TNT/1 wax
Hexatonal 15	6.0546	42.1 RDX/42.1 TNT/0.8 wax/15 Al
Hexogen	4.0159	RDX
Hexol	10.0115	60 RDX/40 TNT
Hexotol 60/40	6.0511	60 RDX/40 TNT
Hexotolif 15	6.0511	42.5 RDX/42.5 TNT/15 LiF
Hexotonal 15	6.0511	42.5 RDX/42.5 TNT/15 Al
HH	9.0940	hydrazine hydrate
HMTA	4.0184	hexamethylenetetramine
HMX	6.0712	cyclotetramethylene tetranitramine
HN	1.0027	hydrazine mononitrate
HNAB	7.0416	hexanitroazobenzene
HNB	7.0647	hexanitrobenzene
HNDZ	9.0232	1,3,3,5,7,7-hexanitrodiazacyclooctane
HNS	5.0222	hexanitrostilbene
HTPB	8.1036	hydroxyl-terminated polybutadiene
HV4	5.0280	85 HMX/15 Viton
HW4	5.0280	95 HMX/5 wax
HX72	9.0963	80 RDX/20 PB
HX78	9.0963	55 NQ/30 RDX/15 PB
HXA123	9.0963	70 RDX/15 PB/15 Al

D. Acronym and Code Name Index (Continued)

Name	Sy.Pg	Makeup
IBA	5.0237	1,2-bis(difluoramino)-2-methylpropane (isobutylene adduct)
ICCP	6.0455	isothiocyanatopentaammine cobalt(III) perchlorate
IPDI	8.1036	isophorone diisocyanate
IRX-1	10.0732	Coarse HMX/HTPB
IRX-3	10.0732	Coarse HMX/HTPB/Al
JA2	9.0539	59 NC/15 NG/25 DEGDN
K-6	10.0862	1,3,5-trinitro-2-oxo-1,3,5-triazacyclo-hexane
keto-RDX	10.0862	1,3,5-trinitro-2-oxo-1,3,5-triazacyclo-hexane
KHNO	9.1082	potassium salt of hexanitro diphenylamine
KP	5.0139	potassium perchlorate
LAC	9.0975	β-lactose
LG/UW-4	10.0732	AP/Al/TMETN/Other
LP	5.0139	lithium perchlorate
LS	8.0711	lead styphnate, $Pb(C_6O_9N_3H_3)$
LX-01	10.0414	$C_{1.52}H_{3.73}N_{1.69}O_{3.39}$
LX-03-0	9.1236	70 HMX/20 DATB/10 Viton A
LX-04-1	4.0489	85 HMX/15 Viton, "1" denotes fine-particle-sized HMX
LX-07	5.0065	90 HMX/10 Viton
LX-07-0	4.0005	90 HMX/10 Viton
LX-09	5.0065	93.3 HMX/4.2 DNPA/2.5 FEFO
LX-10	5.0065	95 HMX/5 Viton
LX-10-1	10.0786	94.5 HMX/5.5 Viton, "1" denotes fine-particle-sized HMX
LX-11	5.0139	80 HMX/20 Viton
LX-13	8.1091	80 PETN/20 Sylgard (see XTX-8003)
LX-14	8.0614	95.5 HMX/4.5 Estane 5702-F1
LX-15	8.1106	95 HNS/5 Kel-F 800
LX-17	7.0488	92.5 TATB/7.5 Kel-F (formerly RX-03-BB)
M2	9.0539	75 NC
M5	9.0539	82 NC/20 NG
MA	6.0467	1,1,7-trifluoro-4-methyl-1,7,7-trinitro-3,5-dioxoheptane
MAN	6.0439	methylammonium nitrate
MDF	9.1510	mild detonating fuse or fuze
MEDINA	3.0674	$CH_4N_4O_4$, methylene dinitramine
MEN-II	10.0414	$C_{2.06}H_{7.06}N_{1.33}O_{3.10}$
MF	6.0467	1,1,7-trifluoro-1,7,7-trinitro-3,5-dioxoheptane
MF	8.0711	mercury fulminate, $Hg(ONC)_2$
MFDNB	6.0467	methyl-4-fluoro-4,4-dinitrobutyrate
M-FEFO	6.0467	1,7-difluoro-4-(1-oxomethyl)-1,1,7,7-tetranitro- 3,5-dioxoheptane
MFF	6.0467	1,4,4,7,7-pentafluoro-1,1,7-trinitro-3,5-dioxoheptane
Minol 2	4.0463	aluminized ammonium nitrate/TNT
MMAN	7.0374	monomethylamine nitrate
MN	5.0267	methylnitrate
NB-40	6.0771	60 pyroxyline/40 nitroglycerine
NC	4.0005	nitrocellulose
NDAG	10.0588	Diaminoguanidinium nitrate
NF	9.0995	nitroform
NG	3.0066	nitroglycerin
NGl	7.0043	nitroglycol
Nigu	8.0577	nitroguanidine

D. Acronym and Code Name Index (Continued)

Name	Sy.Pg	Makeup
Nitromixture	2.0648	83% nitromethane/17 2-nitropropane
NM	4.0126	nitromethane
NME	9.1019	nitromethane
NONA	5.0222	nonanitroterphenyl
NQ	7.0566	nitroguanidine
NTO	9.1001	3-nitro-1,2,4 triazole-5-one
NTODAG	10.0588	NTO-diaminoguanidinium
O	9.1236	other material
Octogen	9.1236	HMX
Octol	4.0005	78 HMX/22 TNT
Octol	6.0647	77 HMX/23 TNT
Octol	9.0069	64 RDX/36 TNT
Octol 75/25	10.0307	75 HMX/25 TNT
Octol-A	5.0280	80 HMX/20 TNT/1 Wax
Octol-B	5.0280	70 HMX/30 TNT/1 Wax
Octorane 86A	9.1047	84 HMX/16 PU
ORA 86	9.1008	86 HMX/14 inert binder
OTTO	6.0467	1,1,1,7,7,13,13,13-octafluoro-4,4,10,10-tetranitro-2,6,8,12- tetraoxotridecane
P2100 B	8.0626	88 HMX/12 HTPB
PA	3.0700	picric acid
PB	5.0139	hydroxyterminated polybutadiene
PB	8 1132	polybutadiene
PBH-9D	9.0144	HMX, plastic bonded
PBX-0280	9.1463	95 RDX/5 Estane
PBX-0280/PE	9.1463	95 RDX/5 polyethylene
PBX-1	10.0956	RDX/single cast-cured non-energetic binder
PBX-2	10.0956	TATB/HMX/HTPB binder
PBX-9007	10.0415	$C_{1.97}H_{3.22}N_{2.43}O_{2.44}$
PBX-9010	4.0005	90 RDX/10 Kel-F
PBX-9010	9.1082	90 HMX/10 Kel-F 800
PBX-9011	4.0005	90 HMX/10 Estane
PBX-9205	5.0599	92 RDX/6 polystyrene/2 dioctyl phthalate
PBX-9404	5.0060	94 HMX/3 nitrocellulose/3 tris-ß-chloroethyl phosphate
PBX-9404-03	4.0005	94 HMX/3 NC/3 CEF
PBX-9407	7.0928	94 RDX/6 EXON 461
PBX-9501	6.0647	95 HMX/2.5 Estane/1.25 BDNPA/1.25 BDNPF
PBX-9502	7.0052	95 TATB/5 Kel-F 800 (formerly X-0290)
PBX-9503	8.1106	80 TATB/15 HMX/5 Kel-F 800
PBXC-117	9.1236	71 RDX/17 Al/12 other
PBXC-121	9.1236	82 HMX/18 other
PBXN-103	9.1236	23 TT/40 AP/27 Al/10 other
PBXN-110	10.0732	formerly PBXW-113 II
PBXN-111	10.0732	formerly PBXW-115
PBXN-5	7.0928	95 HMX/5 Viton A
PBXW	8.0883	RDX/inert binder
PBXW-106 E	9.1236	75 RDX/18 BDNPA-F/7 other
PBXW-108 I	9.1236	85 RDX/15 other
PBXW-109 E	9.1236	64 RDX/20 Al/16 other
PBXW-109 I	9.1236	65 RDX/20 Al/15 other

D. Acronym and Code Name Index (Continued)

Name	Sy.Pg	Makeup
PBXW-113 II	9.1236	68 HMX/12 other
PBXW-114 II	9.1236	78 HMX/10 Al/12 other
PBXW-115	9.0806	20 RDX/43 AP/25 Al/12 HTPB
PBXW-121	10.0732	NTO/Al/HTPB/RDX
PBXW-122	10.0732	NTO/AP/Al/HTPB/RDX
PBXW-123	10.0063	aluminum/AP/TMETN (ratios not specified)
PBXW-7	9.0106	36 RDX/60 TATB/5 Viton A
Pc	3.0323	Primacord
PCP	10.0095	polycaprolactone
PE	6.0543	86 PETN/14 wax
PE 4	8.0265	88 RDX/12 plasticizer
PE 6	5.0139	6-polyethylene
PE4	10.0089	88 RDX/12 grease
PEG	10.0095	polyethylene glycol
Pentanex	6.0546	45 PETN/37 AN/2 glycol/15.5 water/0.5 guar
Pentolite	1.0014	50 PETN/50 TNT
PETN	3.0012	pentaerythritol tetranitrate
PHX31	9.0963	85 RDX/15 Cariflex 1107
Picratol	10.0415	52 EXP-D/48 TNT
Polystyr	4.0005	polystyrene
PSF	9.0822	polysulfone
PTFE	6.0626	polytetrafluoroethylene
PVA	2.0712	polyvinyl alcohol
PYX	8.1106	2,6-bis(picrylamino)-3,5-dinitropyridine
QMAN	6.0439	tetramethylammonium nitrate
RB-100 - 90	10.0803	aluminum/AP/HMX/PEG/microballoons
RDX	5.0222	cyclotrimethylenetrinitramine
RDX	7.0928	1,3,5-trinitro 1,3,5-tetrazacyclohexane
Reolit	4.0435	slurry with 62.6% nitrate/25% TNT/12% water/0.4% guar
REX-20	6.0467	2,2,2-trifluoroethyl-4-fluoro-4,4-dinitrobutyrate
RGPA	8.0265	70 RDX/19 plasticizer/5.5 polyurethane/5.5 ?
RX-03-BB	7.0488	92.5 TATB/7.5 Kel-F (new name is LX-17)
RX-04-AT	4.0005	88 HMX/12 carborane-fluorocarbon copolymer
RX-04-AU	5.0139	92 HMX/8 Viton
RX-04-AV	4.0005	92 HMX/8 PE
RX-04-BM	5.0139	81.6 HMX/4 Al/14.4 Viton
RX-04-BN	5.0139	79 HMX/6.6 Al/14.3 Viton
RX-04-BO	5.0139	72.7 HMX/13.3 Al/14.0 Viton
RX-04-BT	5.0139	76 HMX/10 LiF/14 Viton
RX-04-BY	4.0005	86 HMX/14 FNR
RX-04-DS	5.0139	81 HMX/9.9 Al/9.1 Viton
RX-04-P1	4.0005	80 HMX/20 Viton
RX-05-AA	4.0005	80 RDX/8 polystyrene/2 DOP
RX-08-EL	9.1312	73 HMX/25 FEFO/1 PCL 240/other
RX-08-FL	9.0007	75.9 HMX/22.2 FEFO/1.9 polyvinyl binder
RX-08-GB	9.0026	61 HMX/36 FEFO/3.1 urethane
RX-08-GG	9.0026	61 HMX/36 FEFO/3.1 urethane
RX-09-AA	4.0005	93.7 HMX/5.7 DNPA/0.6 EtDP
RX-11-AF	5.0139	52 HMX/43 KP/5 PE

D. Acronym and Code Name Index (Continued)

Name	Sy.Pg	Makeup
RX-11-AI	5.0139	52 HMX/43 KP/5 PE
RX-11-AJ	5.0139	52 HMX/43 KP/5 PE
RX-11-AW	5.0139	51 HMX/35 KP/14 PB
RX-11-AX	5.0139	51 HMX/35 KP/14 PB
RX-11-AY	5.0139	33.4 HMX/53.4 KP/13.2 PB
RX-11-AZ	5.0139	33.4 HMX/53.4 KP/13.2 PB
RX-11-BA	5.0139	51 HMX/39 AP/10 Viton
RX-18-AB	5.0139	51 HMX/20 AP/29 EDNP
RX-18-AE	5.0139	51 HMX/20 AP/29 EDNP
RX-18-AG	5.0139	51 HMX/20 AP/29 EDNP
RX-18-AH	5.0139	71 HMX/29 EDNP
RX-18-AJ	5.0139	52.6 HMX/34.7 KP/12.7 PB
RX-18-BA	5.0139	31 HMX/45 KP/24 EDNP
RX-22-AG	5.0139	73.6 HMX/26.4 LP
RX-23-AA	6.0712	79 hydrazine nitrate/21 hydrazine
RX-23-AB	6.0712	70 hydrazine nitrate/5.9 hydrazine/24.1 water
RX-23-AC	6.0712	30 hydrazine nitrate/70 hydrazine
RX-25-AA	5.0139	22 HMX/58 AP/10 Al/10 Viton
RX-25-BF	9.0526	38 HMX/36 AP/22 ZrH_2/4 Estane
RX-25-BH	9.0526	19 HMX/47 AP/30 ZrH_2/4 Estane
RX-25-BP	9.0526	38 HMX/36 AP/22 ZrH_2/4 Estane
RX-25-BQ	9.0526	38 HMX/36 AP/22 ZrH_2/4 Estane
RX-26-AF	7.0059	49.3 HMX/46.6 TATB/4.1 Estane
RX-30-AA	6.0731	60.8 AP/38 NM/1.2 guar
RX-30-AB	6.0731	61.1 AP/37.9 NM/1 guar
RX-30-AC	6.0731	47.6 KP/50.8 NM/1.6 guar
RX-30-AD	6.0731	47.1 KP/51.3 NM/guar 1.6
RX-30-AE	6.0731	57.9 AN/40.8 NM/1.3 guar
RX-30-AF	6.0731	57.9 AN/40.8 NM/1.3 guar
RX-31-AA	6.0731	28.8 AN/47 NM/22.8 Al/1.4 guar
RX-31-AB	6.0731	43.2 AN/47 NM/8.3 Al/1.5 guar
RX-35-AP	9.1313	60 HMX/40 NG, TA, PEG binder
RX-36-AA	8.1020	1 HMX/1 TATB/1 BTF, note mole ratios
RX-36-AB	8.1020	1 TAT B/1 BTF, note mole ratios
RX-36-AC	8.1020	4 HMX/1 TATB/1 BTF, note mole ratios
RX-36-AD	8.1020	1 HMX/3 TATB/1 BTF, note mole ratios
RX-36-AE	8.1020	1 HMX/1 BTF, note mole ratios
RX-36-AF	8.1020	1 HMX/1 TATB, note mole ratios
RX-36-AG	8.1020	1 HMX/1 TATB/3 BTF, note mole ratios
RX-40-AA	10.0629	95 PETN/5 Al(5 μm)
RX-40-AB	10.0629	90 PETN/10 Al(5 μm)
RX-40-AC	10.0629	80 PETN/20 Al(5 μm)
RX-40-AF	10.0629	95 PETN/5 Al(18 μm)
RX-40-AG	10.0629	90 PETN/10 Al(18 μm)
RX-40-AH	10.0629	80 PETN/20 Al(18 μm)
RX-40-CA	10.0629	95 TNT/5 Al(5 μm)
RX-40-CB	10.0629	90 TNT/10 Al(5 μm)
RX-40-CF	10.0629	95 TNT/5 Al(18 μm)
RX-40-CG	10.0629	90 TNT/10 Al(18 μm)

D. Acronym and Code Name Index (Continued)

Name	Sy.Pg	Makeup
RXAC	8.0802	70 hydrazine/30 hydrazine nitrate
S-2	9.1236	63 RDX/22 TNT/15 Al
SPIS-44	7.0620	20 HMX/49 AP/21 Al/10 binder
SRI-1	6.0467	1,1,1-trifluoro-4,4,4-trinitro-2-oxobutane
SRI-2	6.0467	1,1,1,4-tetrafluoro-4,4-dinitro-2-oxobutane
SRI-3	6.0468	1,1,1-trifluoro-4,4-dinitro-2-oxopentane
SRI-4	6.0468	1,1,1,7,7,7-hexafluoro-4,4-dinitro-2,6-dioxoheptane
SRI-5	6.0468	1-fluoro-1,1,3,3-tetranitro-5-oxohexane
Startex	4.0435	60% DiTeU/20% nitrates,17.5% water/2% hydrocarbons/0.5% guar
s-TCB	7.0425	symmetrical 1,3,5-trichlorobenzene (precursor to TATB)
SW-21	10.0732	Fine HMX/Other
SX-2	6.0493	RDX/filler, sheet explosive
SYEP	6.0468	4,4-bis(difluoramino)-1,7-difluoro-1,1,7,7-tetranitro- 3,5-dioxoheptane
T	7.0697	95.5 TATB/4.5 Viton
T1	8.0151	95.5 TATB/?
T2	8.0151	97 TATB/?
TA	2.0659	triacetin
TACOT	10.0416	$C_{12}H_4N_8O_8$
TATB	6.0659	1,3,5-triamino-2,4,6-trinitrobenzene
TBP	9.1236	tris-β-chloroethyl phosphate
TCE	7.0374	trichloroethylene
TCTNB	7.0425	1,3,5-trichloro-2,4,6-trinitrobenzene (precursor for TATB)
TDI	8.0363	toluenediisocyanate
TDPF	6.0468	1,1,1,13,13,13-hexafluoro-4,4,10,10-tetranitro-2,6,8,12- tetraoxotridecane
TEDNCP	10.0157	derivitive of cyclotriphosphazene
Tetryl	6.0427	N-methyl-N-nitro-2,4,6-trinitroaniline
TFA	6.0468	1,7,difluoro-1,1,7,7-tetranitro-4-trifluoromethyl- 3,5-dioxoheptane
TFMA	6.0468	1-fluoro-1,1-dinitro-4-trifluoromethyl-3,5-dioxohexane
TFMDA	6.0468	1-fluoro-4-difluoronitromethyl-1, 1-dinitro-4-trifluoromethyl-3, 5-dioxoheptane
TFMFF	6.0468	1,1,1,4,4,7-hexafluoro-7,7-dinitro-3,5-dioxoheptane
TFNA	8.0802	1,1,1-trifluoro-3,5,5-trinitro-3-azahexane
TMETN	3.0813	trimethylolethane trinitrate
TNA	8.0746	trinitroaniline, picramide
TNB	3.0066	1,3,5 trinitrobenzene
TNETB	3.0070	2,2,2-trinitroethyl-4,4,4-trinitrobutyrate
TNM	4.0126	tetranitromethane
TNT	3.0066	2,4,6-trinitrotoluene
TNTAB	8.0802	1,3,5-triazido-2,4,6-trinitrobenzene
TO	9.1001	1,2,4-triazole-5-one
Torpex	4.0463	aluminized RDX/TNT
Torpex 2B	8.0265	42 RDX/40 TNT/18 Al/5 desensitizer
TPH12076	9.1061	Al/AP/HTPB
Tritonal	2.0735	80 TNT/20 Al
Trotyl	9.1236	TNT
TS3659	9.0297	79.9 NC/21.6 NG
TT	9.1236	trimethylolethane trinitrate
TTF	6.0468	1,1,1-trifluoro-7,7,7-trinitro-3,5-dioxoheptane
TZL-4	9.0232	1,5-dinitro-tetrazole

D. Acronym and Code Name Index (Continued)

Name	Sy.Pg	Makeup
TZX	10.0588	3,6-diaminotetrazin-1,4-dioxide
UFD	9.0407	ultrafine diamonds
UGS	9.1062	20 DBP/5 Al/65 Na_2SO_4/9 HDAP
UP	6.0450	ureamonoperchlorate
UPS	6.0450	90 wt% aqueous solution of UP
Viton	5.0139	vinylidine fluoride-hexafluoropropylene copolymer
WAK2	9.1062	Al/HMX/AP
WC 140	9.0297	98 NC
WC 231	8.0883	75 NC/25 NG "commercial reloading powder"
WC 231	9.0297	74.8 NC/25.2 NG
WG-2	6.0546	MMAN-sensitized watergel explosive 7% Al
WG-4	6.0546	MMAN-sensitized watergel explosive 13% Al
X-0204	4.0005	83 HMX/17 Teflon
X-0219	6.0647	90 TATB/10 Kel-F 800
X-0233	8.0979	85.48 tungsten/13.22 HMX/0.8 polystyrene/0.5 DOP
X-0242	9.1015	94 HMX/3 Estane/5 eutectic
X-0290	6.0637	95 TATB/5 Kel-F 800 (changed to PBX 9502)
X-0319	7.0567	50 TATB/45 HMX/5 Kel-F 800
X-0320	7.0567	60 TATB/35 HMX/5 Kel-F 800
X-0321	7.0567	75 TATB/20 HMX/5 Kel-F 800
X-0341	7.0567	90.25 TATB/4.75 HMX/5 Kel-F 800
X-0342	7.0567	85.5 TATB/9.5 HMX/5 Kel-F 800
X-0343	7.0567	80.75 TATB/14.25 HMX/5 Kel-F 800
X-0344	7.0567	71.25 TATB/23.75 HMX/5 Kel-F 800
X-0407	8.0123	70 TATB/25 PETN/5 Kel-F
X-0420	9.0487	94 DINGU/5 Exon/1 titanate
X-0430	9.1015	88 HMX/6 Kraton/6 Tufflo oil
X-0432	9.0487	57 DINGU/43 TNT
X-0444	9.1015	88 HMX/6 Estane/6 eutectic
X1	8.0151	96 HMX/?
XLDB	10.0115	HMX/AP/Al/energetic binder
XM39	9.0539	76 RDX/15 NG/12 CAB/8 ATEC
XTX-8003	6.0647	80 PETN/20 silicone rubber
XTX-8004	10.0418	80 HMX/20 Sylgard 182
Z TACOT	8.0528	$C_{12}H_4N_8O_8$
ZOX	9.0995	zero-oxygen-balance explosive
ZOX	9.0995	2,2,2-trinitro ethyl-N-nitroethylenediamine
ZPCP	9.1083	azidopentamine cobalt (III) perchlorate