

NAVY DEPARTMENT
BUREAU OF ORDNANCE
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ORDNANCE PAMPHLET 1631

AMMUNITION HAZARD CLASSIFICATION LIST

1. Ordnance Pamphlet 1631 contains the following information on ammunition handled, stowed, and used by the U. S. Navy and U. S. Marine Corps:

- a. Shipping data, including descriptive name of item, symbol indicating type of ammunition or explosive, number in and type of container, stowage dimensions, and weights;
- b. Hazard classifications as assigned in the U. S. Coast Guard Regulations, the Interstate Commerce Commission Regulations, the U. S. Army Classifications, and the U. S. Navy Bureau of Ordnance Stowage Classifications; and
- c. Kind of hazard.

2. The dimensions and weights for unit loads of palletized ammunition are given in Ordnance Specification 1588, the hazard classifications remaining the same as listed herein. The purpose of this publication is to assist Naval Ordnance Stations, Ammunition Depots, and coastal ship-loading activities to properly prepare shipments, to load cargo vessels, freight cars, and motor vehicles, and to stow ammunition in accordance with governing regulations. This publication is useful to Air Stations and all Naval activities handling or stowing ammunition or explosives in any quantity.

3. The classifications listed in columns 11, 12, and 13 were based respectively on the following publications:

- a. "Regulations Governing Transportation of Military Explosives on Board Vessels During Present Emergency" (U. S. Coast Guard, NAVCG 108, Revised 1 August 1945).
- b. "Transportation of Explosives and Other Dangerous Articles by Freight" (Agent H. A. Campbell's Freight Tariff No. 4 with supplements—Publishing Interstate Commerce Commission Regulations, 7 January 1941).
- c. "Ordnance Safety Manual" (O. O. Form No. 7224, U. S. Army, 3 May 1945).

4. The symbols listed in columns 2 and 14 are based on the information contained in the Bureau of Ordnance Manual (1943 edition) and Ordnance Pamphlet 5 (Volume 1, First Revision, 10 June 1944). Their derivation, meaning, and application are described in detail in the first chapter of this publication.

5. Because of the entry of new ammunition into the service, it is anticipated that changes will be required. These will be promulgated as necessary in the form of changes to this publication.

6. This pamphlet does not supersede any existing publication.

7. This publication is RESTRICTED and shall be safeguarded in accordance with the security provisions of U. S. Navy Regulations, 1920, Article 76.



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CONTENTS

Chapter	Page
1 Introduction.....	1
2 Navy Type Gun Ammunition.....	7
A. Fixed and Blank Cartridges in Boxes.....	7
B. Fixed Cartridges in Metal Tanks.....	8
C. Semi-Fixed Cartridges in Metal Tanks.....	9
D. Bag Charges in Metal Powder Tanks.....	11
E. Separate Loading Projectiles (Unboxed).....	14
F. Projectiles in Packing Boxes.....	16
G. Depth Charge Impulse Charges.....	16
H. Catapult Charges in Cartridge Tanks.....	16
I. Miscellaneous Ammunition Details.....	17
3 Small Arms, Machine Gun, and Aircraft Gun Ammunition.....	18
A. Small Arms and Machine Gun.....	18
B. 20-mm Aircraft (Army) Gun.....	21
4 Artillery and Landing Force Ammunition.....	22
A. Artillery Fuzes.....	22
B. Grenades.....	22
C. Army Type Gun Ammunition.....	23
D. Howitzer Ammunition.....	25
E. Land Mines.....	26
F. Mortar Ammunition.....	26
G. Artillery Primers.....	27
H. Propelling Charges.....	27
5 Aircraft Bomb Ammunition.....	28
6 Pyrotechnic and Chemical Ammunition.....	38
7 Rocket Type Ammunition.....	43
8 Torpedoes.....	46
9 Depth Charges.....	48
10 Mines.....	49
11 Demolition Material.....	54

CHAPTER 1—INTRODUCTION

1. Items of Ammunition and Explosives used by the U. S. Navy are classified by the Bureau of Ordnance into the types and kinds listed in the following table.

2. These broad types are arranged in serial order in accordance with a general increasing potential hazard. Minor departures from this increasing hazard pattern, which do not materially effect its usefulness, have been included as a matter of convenience to collect as many as possible of the numerous ammunition and explosives items into as few as possible broad, easily recognized, general types. The potential hazard is an integration of the several factors of: ease of ignition or explosion, degree of instability, compatibility with components comprising an assembly, safety in handling, extent and nature of destructive damage, feasibility of fire-fighting, limits of propagation to adjacent items, ease of replacement of destroyed material, etc. The kinds of hazards are indicated qualitatively in the list for each item of ammunition and explosives.

3. Beside each type of ammunition is listed a symbol or abbreviation used in designating the type to which the numerous individual items of ammunition or explosives contained in the comprehensive list belongs.

4. For ease of reference and locating the permitted stowage, the serial order of the Ammunition or Explosives types is indicated by letters of the alphabet from a to z. These serial order designations consist of a single small letter or two or more capital and small letters. Small and capitals of any letter should not be interchanged or confused. The small letters predominate and were assigned wherever feasible and confusion would be unlikely in distinguishing the different permitted stowages. Inasmuch as the capital letters A, B, and C are used in the I. C. C. Regulations for classifying and identifying ammunition, explosives and dangerous articles, these letters are always small letters in the Bureau of Ordnance classification columns of the list and

tables. The Coast Guard Regulations use Roman numerals and capital letters to designate stowage classes, and the Army Safety Manual uses Arabic numerals to designate their classes.

5. The general requirements and specifications for magazines and storehouses for storage of ammunition, explosives, and dangerous articles ashore and the distance requirements and spacing of such buildings from inhabited buildings, passenger railroads, public highways, magazines, and other buildings and structures are contained in the Bureau of Ordnance Manual, Ordnance Pamphlet No. 5, and other publications. These publications also contain "Mixing Tables" showing permitted mixing of the various materials in the same magazines.

6. The Serial Order, however, contained in this table indicates the preferred stowage ashore and afloat, as well as the permitted mixing in the same magazine, hold, or compartment of both cargo and combatant vessels in accordance with the following plan:

- (i) Materials with different first small letters should not normally be stowed together.
- (ii) If the serial order is made up entirely of one or more small letters, the first small letter indicates the stowage hazard; that is, items with the same first small letter may be stowed together when separate stowage is not available.
- (iii) If the serial order consists of a CAPITAL letter followed by small letters, the first *small* letter indicates the hazard and similar material with which it preferably may be stowed when separate stowage is not available.
- (iv) Several items of an ammunition type have two stowage serial orders indicating that either may be used

when separate stowage is not available.

- (v) Serial orders followed by an asterisk (*) indicates that separate stowage should be used when available.
- (vi) Items marked thus, "#", separate stowage is mandatory.
- (vii) Items having small letter serial orders with the same first small letter but different second small

letters should be stowed separately when possible.

- (viii) Items marked "inert" are not normally stowed with explosives or live ammunition, but may be permitted under certain conditions.
- (ix) Items marked "Spec." require special stowage depending on circumstances, packing, quantities and other conditions.

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LIST OF AMMUNITION AND EXPLOSIVES—TYPES AND KINDS

Serial Order	Type of Ammunition or Explosive	Symbol or Abbreviation
a	Small Arms Ammunition (Caliber 0 to .60-in.) Shotgun Shells (All gauges), and Aircraft Engine Starter Cartridges.	S/A
(Ha)	Time Fuzes, Mechanical.....	(See Fuzes)
(Ja)	Lock Primers, and Similar Primers.....	(See Primers)
b	Smokeless Powder.....	SP
ba	Smokeless Powder, Bulk (Pyro, NC, NH, FNH).....	SP
bb	Smokeless Powder, Bulk (Sheet or Grains for Rockets, SPCG, SPCA, NG, Ballistite, Cordite, Albanite, etc.).	SP
bc	Smokeless Powder, BAG CHARGES (All Calibers and Types).	BC
c	Pyrotechnics (Fireworks). Signals, Stars, Smokes, Candles, Flares, Lights, Tracers, etc. (Photo-flash Bombs).....	PY (See Bombs)
d	Chemical Ammunition (Smokes, Incendiaries, and Tear).....	Chem.
dd	Chemical Ammunition, WP, PWP—Solid.....	WP
dc	Chemical Ammunition, HC—Solid.....	HC
dz	Chemical Ammunition, FS or FM—Liquid.....	FS or FM
dy	Chemical Ammunition, CN—Tear.....	CN
dg	Chemical Incendiary (IM, PT, NP)—Oil Gels.....	INCEND.
dw	Chemical Water Activated.....	WA
dj	Chemical Incendiary, TH—Solid.....	TH
<p>Note: Fixed Ammunition with the above chemical loaded projectiles is classed as and stowed with Fixed ammunition when separate stowage is not available or is not specifically directed.</p>		
e	Semi-fixed Cartridges (for Guns, Howitzers, and Mortars)— (Calibers 5"/38, 5"/51, 5"/54, 6"/47, 8"/55, Catapult, etc.).	S/FA
Re	Rocket Motors.....	(See Rockets)
f	Fixed Ammunition (for Guns, Howitzers and Mortars)— (Calibers 20-mm to 5-in. inclusive).	FA
f*	Fixed Ammunition Requiring Separate Stowage when Available (such as Chemical Rounds).	FA/CHEM.
fx	Fixed Ammunition, Lethal Gas (Separate Stowage).....	FA/Gas (1)
fy	Fixed Ammunition, Non-lethal Gas (Separate Stowage).....	FA/Gas
Rf	Rockets.....	(See Rockets)
G	GRENADES, Hand or Rifle (Fragmentation, Offensive, Defensive, Chemical, Signal, Smoke, etc. Types).	GRENADES
Ga	Grenades, Hand, Fragmentation (EC Powder Loaded Only).....	GRENADES
Ga	Grenades, Empty Primed.....	GRENADES
Gc	Grenades, Hand Illuminating or Smoke Signal.....	GRENADES
Gdj*	Grenades, Incendiary.....	GREN./CHEM.
Gdd*	Grenades, Smoke, Hand or Rifle, WP.....	GREN./CHEM.
Gd, Gc	Grenades, Smoke, HC.....	GREN./CHEM.
Gf	Grenades, Hand Fragmentation, Fuzed.....	GRENADES
Gf	Grenades, Rifle, AT.....	GRENADES
Gp	Grenades, Hand or Rifle, Cast HE, Unfuzed.....	GRENADES
Gk	Grenades, Fuzes or Bouchons with Detonators.....	(See Det.)

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Serial Order	Type of Ammunition or Explosive	Symbol or Abbreviation
Gu, Gt	Grenades, Hand Offensive Mark III A1 or A2, Unfuzed.....	GRENADES
Gdx*	Grenades, Hand, Irritant (CN-DM).....	GREN./CHEM.
Gdy*	Grenades, Hand, Tear CN.....	GREN./CHEM.
G	Grenades, Hand, Practice.....	GRENADES
G	Grenades, Rifle, Practice.....	GRENADES
H	FUZES.....	F
Ha	Fuzes; Time, Mechanical for Projectiles.....	F/MT
Ha	Fuzes; Time, Mechanical for Bombs or Flares.....	F/BMT
Hh	Fuzes; Time, Powder Train (Incl. Comb. Time-percussion).....	F/PT
Hh	Fuzes; Ignition, Small Caliber B. D., Point Det. (PD), Percussion.....	F/Ig; F/Det., F/PD, F/Perc.
Hh	Fuzes; Detonating, Bomb Nose or Tail or Hydrostatic, Rocket Nose or Base, Base (Large BD), Demolition, Auxiliary Detonating (Aux. Det.), VT.	F/Det., F/Det. BN, F/Det. BT, F/Det. BH, F/Det. R
Hh	Fuzes, Mine Detonator—Booster Assembly and Mine Firing Devices.	F/Det. M
Hh, Ha	Firing Devices, Ignition for Demolition Charges.....	F/Ign.
Hh	Torpedo Igniters (See Miscellaneous).....	Torp. Ign.
Gk	Fuzes, Grenade Firing Detonator or Bouchon Detonator.....	(See Detonator)
Jh	Primers.....	(See Primers)
I	Impulse Ammunition and Blank Ammunition.....	IMP.
Is	Torpedo Impulse Charges, Black Powder (SN or SpheX.).....	TORP. IMP.
Is	Depth Charge Impulse Charges, Black Powder.....	IMP./DC
Is	Y Gun or K Gun Charges (Depth Charge Impulse—B.Pdr.).....	Y Gun Chgs., K Gun Chgs.
Is	Line Throwing or Line Carrying Charges (B.Pdr.).....	LT Chgs.
Is	Saluting Charges (Blank—B.Pdr.).....	SAL. Chgs.
Is	Signal Gun Charges (Blank—B.Pdr.).....	SIG. Chgs.
Ie	Signal Gun Charges (Blank—SP).....	SIG. Chgs.
Ie	Catapult Charges.....	CAT.
J	PRIMERS.....	Pr
Ja	(Percussion Caps), (Lock, Lock Comb., Lock Electric, Lock Drill Comb.).....	Pr/Lock
Ja	Saluting, Mine Electric, etc.....	Pr/M.Elec.— Pr/SAL.
Ja	Case Percussion (CPP).....	CPP
Jh	Case Percussion Ignition (CPIP).....	CPIP
Jh	Case Combination Ignition (CCIP).....	CCIP
Jh	Catapult Primers.....	Pr/Cat
k	DETONATORS.....	Det.
	Blasting Caps, Electric Detonators, Percussion Detonators, Warhead Detonators, Mine Detonators, Depth Charge Detonators, Primer-Detonators, Detonator Grenade Fuzes, Destructor Detonators, Antitank Mine Chemical Detonators, Demolition Detonators.	
	Depth Charge Pistol with Special Detonator Booster.....	D/C Pistol— Sp. Det.
L	BOOSTERS and BURSTERS.....	Booster
Lt, Lv	Booster, Separate HE.....	Booster
Lt, Lv	Burster, Separate HE.....	Booster
Ls	Burster, Separate, B.Pdr.....	Burster

Serial Order	Type of Ammunition or Explosive	Symbol or Abbreviation
Lt, Lv	Booster, Auxiliary, HE	Booster
Lt, Lv*	Booster, Torpedo Warhead, HE	Booster
Lt, Lv	Booster, Depth Charge, HE	Booster
Lt, Lv	Booster, Mine, HE	Booster
M	MORTAR AMMUNITION (for Trench Mortar, Chemical Mortar, Stokes and Stokes-Brandt Mortars—Various cal.).	MORTAR
Mf, Md	Mortar; Bomb, Smoke or Shell, Smoke	M
Mf	Mortar, Shell HE	M/Smoke
Mf	Mortar, Shell Illum.	M
Mf*, Md*	Mortar Shell, Smoke WP	M
Mx	Mortar, Shell, Gas Lethal	M/Chem.
Mp	Mortar, Loaded Projectile Without Fuze, Fin, Ign. and Propellant.	M/Gas
Mf	Mortar Fin Assembly with Ign., Propellant and Fuze	M/LP
N	Mines, Land	M
Nf	Mines, Land, Antitank	Mines/Land
Nf	Mines, Land, Antipersonnel	Mines/AT
O	Mines, Land, Antipersonnel	Mines/L, Ap.
	Miscellaneous—Squibs, Safety Fuze, Primacord, Cordeau Detonant, Quick Match.	
Od*, dw*	Igniters for Gasoline Bombs	IGN.
Oa, Hh	JATO Unit Igniters	JATO. IGN.
Oa, Oc	Fuse Lighters	Miscell.
Hh	Torpedo Igniters	TORP. IGN.
Oy	Spray Guns	Spray Guns
dw*	Shells, Cans, Markers, Torch Pots, etc. Water Activated	WA.
p	PROJECTILES, D-loaded	LP/D
p/o	PROJECTILES, Loaded Other than "D"	LP/O
p/o*	PROJECTILES, Loaded Chemical (Separate Stowage if Available).	LP/Chem.
p/#	PROJECTILES, Loaded Chemical (Separate Stowage)	LP/Chem.
p/x#	PROJECTILES, Loaded Gas Lethal	LP/Gas
Rp	Rocket Heads	(See Rockets)
Q	PROJECTOR AMMUNITION	Prjr. Chgs.
Qf	7.2 Projector Charges	
Rf	Rockets (for Aircraft, Ship, or Ground Use)	R
Rf*	Rockets, Chemical, WP (Separate Stowage if Available)	R/Chem.
Rf*	Rockets, Chemical, FS or FM	R/Chem.
Rv	Rocket HEADS, Explosive (200-lbs. or More Gross Wt.)	RH
Rp/o	Rocket HEADS, Explosive (Thick Walls and Less than 200-lbs.).	RH
Rp/o*, Rdz	Rocket HEADS, Chemical Smoke, FS or FM	RH/Chem.
Rdd, Rp/o*	Rocket HEADS, Chemical WP, or PWP	
Rp/o	Rocket HEADS, Illuminating	RH/ILL.
Re	ROCKET MOTORS	RM
inert	Rocket Heads, Solid or Inert Loaded	RH/inert
inert	Rocket Motor Fins, Inert	RM/inert
v/J*	Jet Assist Take Off Units	(See Bombs)
s	BLACK POWDER (Low explosives) Bulk	BPdr.
s	Ignition ends, BPdr. for Powder Bags	
s	Powder Bags with Attached Ignition Ends	
t	BULK HIGH EXPLOSIVES	HE/Bulk

Serial Order	Type of Ammunition or Explosive	Symbol or Abbreviation
u	DEMOLITION CHARGES and Material	DEMO.
v	BOMB TYPE AMMUNITION	Bomb Type
v-v/B	Bombs, Aircraft, Frag., Demolition, G. P., A. P., SAP etc. Aircraft Depth Bombs.	Bombs
W-v/W	Warheads, Torpedo	WH
v/DC	Depth Charges	DC
v/M	Mines, Navy	Mines
v/R	Rocket Heads (200-lbs. or More Gross Wt.)	RH
v/B*	Photoflash Bombs	Photo fl. B
v/B*	Bombs, Cluster, Frag. Fuzed	Bombs/Cl. F.
v/J	Jet Assist Take Off Units	JATOS
v	Bangalore Torpedoes	Bangalore Torp.
vd, dc	Bombs, Smoke, HC	Bombs/Sm.
vd*	Bombs, Incendiary, IM, PT, NP, Oil Gel	Bombs/Inc.
vd*	Bombs, Incendiary, TH	Bombs/Inc.
vd*	Bombs, Chemical, WP	Bombs/Chem.
vx*	Bombs, Chemical, Gas, Lethal	Bombs/Gas
inert	Bombs, Miniature Practice	Bombs/MPr.
inert	Bombs, Practice, Waterfillable	Bombs/PrWF
	* Bomb type ammunition items marked * require separate stowage.	
x	CHEMICAL GAS, Lethal	Gas/poison
y	CHEMICAL GAS, Non-lethal	Gas/non-lethal
z	CHEMICAL SMOKE, LIQUIDS, Bulk	CHEM/Smoke
inert	DRILL AMMUNITION	DRILL
inert	Miscellaneous Inert Items, such as Adapters, bomb Fins, Markers, DC Pistols Inert, etc.	Miscell.
Spec.	OXIDIZING MATERIALS	OXID.
Spec.	METAL POWDERS	M. Pdrs.
Spec.	COMBUSTIBLES AND INFLAMMABLE SOLIDS	INFL/S
Spec.	INFLAMMABLE LIQUIDS	INFL/L
Spec.	CORROSIVE LIQUIDS	CORROS/L
Spec.	COMPRESSED GASES	COMP/G, In.
Spec.	Compressed Non-inflammable gases	COMP/G, N
Spec.	Poisons, A, B	POISON
Spec.	Hazardous Articles	DANGER Art.

CHAPTER 2.—NAVY TYPE GUN AMMUNITION

DESCRIPTION (Name, Mk and Mod)	Symbol	SHIPPING CON-TAINER		STOWAGE DIMENSIONS					WEIGHT			CLASSIFICATION			Kind of hazard	
		No. in	Type of	Length (in.)	Width (in.)	Height (in.)	Diamete (in.)	Volume (cu. ft.)	Libs.	Coast Guard	I. C. C.	Army	Navy			
A. FIXED AND BLANK CARTRIDGES IN BOXES.																
20-mm AA (Navy), HE, HET, or HEI	FA	180	Steel box	18.3	9.25	12.8		1.23	125	IV-B	A	4	f			Fire and missile
20-mm AA (Navy), HE, HET, or HEI	FA	180	Wood box	21.8	9.9	12.8		1.69	124	IV-B	A	4	f			Fire and missile
20-mm AA (Navy), HE, HET, or HEI	FA	180	Steel box	18.24	9.08	12.95		1.24	120	IV-B	A	4	f			Fire and missile
20-mm AA (Navy), AP, APT, BL&T, or BL&P	FA		Same quantities, containers and weights as above							I	C	1	f			Fire and missile
20-mm AA (Navy) Drill Chgs.	Drill		Same quantities, containers and weights as above							Inert	Inert	Inert	Inert			Inert
40-mm HEP, HETSD, HEITSD, HESD, HEIP, or HEISD	FA	16	Steel box	12.00	11.75	22.00		1.80	115	IV-B	A	4	f			Fire and missile
40-mm AP, APT, BL&T, or BL&P	FA		Same quantities, containers and weights as above							IV-A	C	4	f			Fire and missile
40-mm Drill Chgs.	Drill		Same quantities, containers and weights as above							Inert	Inert	Inert	Inert			Inert
1.1-in. AA, or AA-SD	FA	36	Steel box	12.00	12.00	14.00		1.17	105	IV-B	A	4	f			Fire and missile
1-in. BL&T	FA		Same quantities, containers and weights as above							I	B	4	f			Fire and missile
1.1-in. Drill Chgs.	Drill		Same quantities, containers and weights as above							Inert	Inert	Inert	Inert			Inert
1-Pdr. (Saluting Chgs.)	Sal. chg.	60	Wood, box	12.81	20.88	9.88		1.53	57	I	B	4	Is			Explosion
1-Pdr. (Com.)	FA		Same quantities, containers and weights as above						120	I	A	4	f			Fire and missile
1-Pdr. (BL&T)	FA		Same quantities, containers and weights as above						120	I	B	4	f			Fire and missile
1-Pdr. (BL&F)	FA		Same quantities, containers and weights as above							I	B	4	f			Fire and missile
3-Pdr. (Line Throwing, or Saluting Chgs.)	LT chgs. Sal. chgs.	16	Wood box	12.63	12.63	11.63		1.07	49	IV-A	B	4	Is			Explosion
3-Pdr. (Line Throwing, or Saluting Chgs.)	LT chgs. Sal. chgs.	16	Wood box	12.63	12.63	11.63		1.07	55	IV-A	B	4	Is			Explosion
3-Pdr. (Line Throwing, or Saluting Chgs.)	LT chgs. Sal. chgs.	16	Wood box	21.00	12.63	12.63		2.12	115	IV-A	B	4	Is			Explosion
6-Pdr. (Line Throwing Chgs.)	LT chgs.	11	Wood box	14.00	10.13	8.88		.73	41	IV-A	B	4	Is			Explosion
6-Pdr. (Saluting Chgs.)	Sal. chgs.	11	Wood box	14.00	10.13	8.88		.73	42	IV-A	B	4	Is			Explosion
6-Pdr. (Saluting Chgs.)	Sal. chgs.	11	Wood box	21.86	10.13	14.38		1.84	125	IV-A	B	4	Is			Explosion
6-Pdr. (Com.)	FA	7	Steel box	21.77				1.24	90	IV-B	A	4	f			Fire and missile
6-Pdr. Tar.	FA		Same quantities, containers, and weights as above							IV-A	B	4	f			Fire and missile
3-in./23 (AA, Com., HC, Illum.)	FA	4	Wood box	23.10	10.06	10.13		1.37	86	IV-B	A	4	f			Fire and missile
3-in./23 (AA, Com., HC, Illum.)	FA	6	Wood box	21.44	13.13	9.63		1.50	120	IV-B	A	4	f			Fire and missile

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