



Material Safety Data Sheet



Naval Company, Inc.

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This Material Safety Data Sheet has been prepared in compliance with Federal OSHA Hazard Communication Standard 29 CFR 1910.1200, ANSI Z400.1-1993 and the ISO Safety Data Sheet Standard. This product may be considered to be a hazardous chemical under CFR 1910.1200. This information is required to be disclosed for safety in the workplace. This MSDS is applicable only to the product identified herein and only when used properly.

1. PRODUCT IDENTIFICATION

Trade Name: **45/70 Blank Cartridges** (*Blank Cartridges for Bridger™ Line Throwing Gun made by Naval Co. Inc.*)

Proper DOT Shipping Name: **Cartridges, small arms, blank -or- Cartridges for weapons, blank**

Identification Number: **UN0014**

Formula: **Not applicable/mixture**

DOT hazard Classification: **Class 1.4S Explosive, packing group II**

CHEMTREC 24-HOUR EMERGENCY NUMBERS

Emergency: 1-800-424-9300 / International: 1-703-527-3887 (collect calls accepted)

2. INGREDIENTS AND COMPOSITION

Principal Hazardous Component Ingredient	Percent %	ACGIH TLV Threshold Limit	OSHA PEL
Potassium Nitrate ¹	38-42%	N/E*	N/E
Sodium Nitrate ¹	38-42%	N/E*	N/E
Charcoal	3-10%	N/E	N/E
Sulphur	4-11%	N/E	N/E
Graphite	trace	15 mppct (TWA)	2.5mg/m ²
Empty unprimed brass shell	25-40%		
Wad, vegetable fiber	3-6%		
Primer	1-5%		

¹These cartridges contain either potassium nitrate *or* sodium nitrate in the percentages indicated. These cartridges *do not contain both*.

*NE = Not established.

3. HEALTH HAZARDS

General	FFG Black Powder is an explosive, and detonation may cause severe physical injury, including death. All explosives are dangerous and must be handled carefully and used following approved safety procedures under the direction of competent, experienced persons in accordance with all applicable federal, state, and local laws, regulations, and ordinances.
Carcinogenicity	None of the components of black powder are listed as a carcinogen by NTP, IARC, or OSHA.
Symptoms of Exposure	N/A
Medical Conditions Aggravated by Exposure	N/A
Primary Route of Entry	N/A
ACGIH Threshold Limit Value	N/A
OSHA Threshold Limit Value	N/A

4. HAZARDS IDENTIFICATION

HAZARD CLASS:	Division 1.4S - Articles and substances presenting no significant hazard.
Flash Point (°F)	N/A
Flammable Limits	N/A
Auto Ignition Temperature	Approximately 200°C-464°C (392°F-867°F)
Explosives Temps (5 Sec) – Ignited	Approximately 427°C (801°F)

Velocity In the open, trains of black powder usually burn very slowly, measurable in seconds per foot. Confined, as in steel pipe, speeds of explosions have been times at values from 560 feet per second for very coarse granulations to 2.070 feet per second for finer granulations. Confinement and granulation will affect the values.

5. FIRST AID

Eyes:	Not a likely route of exposure. Flush eyes with water.
Skin:	Not a likely route of exposure. Wash skin with soap and water.
Ingestion:	Not a likely route of exposure. If ingested, induce vomiting immediately by giving two glasses of water and sticking finger down throat.
Inhalation:	Not a likely route of exposure. A very small amount of inhalable particles may be created when cartridge is fired.
INJURY FROM DETONATION:	Seek prompt medical attention!

6. FIRE FIGHTING and EXPLOSION HAZARD DATA

Flash Point (°F)	N/A
Flammable Limits	N/A
Special Fire Fighting Procedures	DO NOT FIGHT FIRES
Unusual Fire & Explosion Hazards	DO NOT FIGHT FIRES. Black powder may deflagrate or explode in a fire while confined. EVACUATE AREA.
Extinguishing Media	WATER
Special Fire Fighting Procedures	DO NOT FIGHT FIRES! Prevent fire from reaching explosives. Guard against intruders.
Hazard Class:	1.4S Explosive, packing group II Articles and substances presenting no significant hazard.

7. ACCIDENTAL SPILL or LEAK PROCEDURES

Spill/Leak Response	Encapsulated in the shell, this is unlikely to be a concern. However, in case ANY powder is exposed or there is a threat of instability in the area, use appropriate personal protective equipment. Isolate areas and remove sources of friction, impact, heat, low level electric current, electrostatic or RF energy. Only competent, experienced persons should be involved in clean-up procedures.
Waste Disposal	Carefully pick up spills with non-sparking and non-static producing tools. Desensitize exposed powder by diluting in water. Dispose of in compliance with federal regulations under the authority of the Resource Conservation and Recovery Act (40 CFR Parts 260-271)

8. SPECIAL PRECAUTIONS

Hygienic Practices in Handling and Storage:

Wear only metal free and non-static producing clothes. Impervious rubber gloves are recommended.
Wash hands and shower after handling.

Precautions for Repair and Maintenance of Contaminated Equipment:

Affected equipment must be thoroughly water cleaned before attempting repairs. Use only non-sparking tools.

Other Precautions:

NO SMOKING.

Store in cool, dry place.

Keep away from friction, impact, heat, and open flame.

Use only non-sparking tools when working with or around blank cartridges

Shelf Life: 25-30 years

Incompatible Materials for Storage or Transport: **Class A & B explosives, strong oxidizers and/or acids**

9. SPECIAL PROTECTION and EXPOSURE CONTROL

Ventilation	Use only with adequate ventilation.
Respiratory	Ventilation is not required in open, unconfined areas.
Eye	None
Gloves	Impervious rubber gloves
Other	Metal free and non-static producing clothes when handling

10. PHYSICAL DATA

Boiling Point (°F)	N/A
Vapor Pressure (mm Hg.)	N/A
Vapor Density (Air = 1)	N/A
Solubility in Water	Good
Specific Gravity	1.70 – 1.82(mercury method) 1.92-2.08 (pycnometer)
PH	6.0 – 8.0
Evaporation rate	N/A
Appearance and Odor	Sealed blank brass cartridge (cylindrical tube) contains black granular powder. No detectable odor.

11. STABILITY and REACTIVITY

Stability	Stable
Hazardous Polymerization	Will not occur
Conditions to Avoid	Keep away from heat, sparks, and open flame. Avoid impact, friction, and static electricity.
Materials to Avoid	N/A
Conditions to Avoid	N/A
Flash Point (°F)	N/A
Flammable Limits	N/A
Auto Ignition Temperature	Approximately 200°C-464°C (392°F-867°F)
Explosives Temps (5 Sec) – Ignited	Approximately 427°C (801°F)

Incompatible Materials for Storage or Transport: **Class A & B explosives, strong oxidizers, and acids**

12. TOXICOLOGICAL INFORMATION

Skin:	LD50 not determined
Ingestion:	LD50 not determined
Inhalation:	LD50 not determined
Chronic/carcinogenicity:	Not carcinogenic per ACGH, OSHA, IARC, and NTP

13. ECOLOGICAL / ENVIRONMENTAL PROTECTION PROCEDURES

Spill Response: Carefully pick up spills with non-sparking and non-static producing tools. Supervision only by a person knowledgeable in explosives. See XIII. Disposal Considerations.

14. DISPOSAL CONSIDERATIONS

Waste Disposal: Carefully pick up spills with non-sparking and non-static producing tools. Desensitize exposed powder by diluting in water. Water will dissolve out the potassium nitrate. By leaching out the potassium nitrate, the residue of sulfur and charcoal is non-explosive, but combustible – dispose separately. Dispose of in compliance with federal regulations under the authority of the Resource Conservation and Recovery Act (40 CFR Parts 260-271)

15. TRANSPORTATION INFORMATION

This material is regulated as a DOT HAZARDOUS MATERIAL.

ICAO / IATA ERG CODE: 3L

UN Number UN0014
Proper Shipping Name Cartridges, small arms, blank
Hazard Class 1.4S
Freight Class 85
DOT label & Placard None required for ground, Use DOT 1.4S for Air shipments
Packing Group II
Box Spec Box

DOT (USA) ERG # 114

LABEL: 1.4S (exception: ORM-D ground)

Reportable quantity: Not applicable (Per 49 CFR 172.101, Appendix)

The material described above is subject to the U. S. DOT HAZARDOUS MATERIALS REGULATIONS via the modes and packaging quantities indicated below with the letter "X":

MODE		PACKAGING QUANTITIES	
<u>X</u>	<u>Rail</u>	<u> </u> Bulk	<u>X</u> <u> </u> Non-Bulk
<u>X</u>	<u>Motor</u>	<u> </u> Bulk	<u>X</u> <u> </u> Non-Bulk
<u>X</u>	<u>Water</u>	<u> </u> Bulk	<u>X</u> <u> </u> Non-Bulk
<u>X</u>	<u>Air</u>	<u> </u> Bulk	<u>X</u> <u> </u> Non-Bulk

The applicable packaging sections in 49 CFR are 173.63 and 173.62 or in IATA Packing Instructions 130. Truck driver must have a current ERG in their truck when transporting any dangerous goods / hazardous materials. DO NOT COVER marking and labeling on boxes when transporting!

16. REGULATIONS

1.4S label required for all AIR or ground "Hazmat" shipments of this item. The applicable packaging sections in 49 CFR are 173.63 and 173.62 or in IATA Packing Instructions 130. Notice state and carrier variations. May be reclassified as an ORM-D for ground shipments in the USA only – no label required for ORM-D shipments of this item. Packages going by passenger aircraft may not exceed 25 Kg net or 100 Kg for cargo aircraft only. **NO ORM-D AIR!** See both CFR-49 and IATA regulations for all air shipments.

17. OTHER

A copy of this MSDS is available at <http://www.navalcompany.com/msds.pdf>

THE INFORMATION IN THIS MATERIAL SAFETY DATA SHEET SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS, AND MANAGEMNT, AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. NAVAL COMPANY INC. BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS MATERIAL SAFETY DATA SHEET IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT NAVAL COMPANY INC. AT THE PHONE NUMBER LISTED BELOW TO MAKE CERTAIN THAT THIS MSDS IS CURRENT.

NAVAL COMPANY INC.

Cold Spring Creamery Road, Doylestown, PA 18902-1208 USA

Phone Number: +1-215-348-8982

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International: 1-703-527-3887 (collect calls accepted)