

Material Safety Data Sheet

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MSDS # 1121

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Supersedes

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EBCo. ENSI122

SECTION I - PRODUCT IDENTIFICATION

Trade Name(s):

| | |
|--------------------------|----------------------------------|
| 8/40 RDX NYLON LS | 8/40 HMX NYLON LS |
| 8/40 RDX NYLON RIBBON LS | 8/40 HMX NYLON RIBBON LS |
| 17/80 RDX NYLON | 10/50 HMX LOPRO NYLON LS |
| 17/80 RDX NYLON LS | 13/60 HMX NYLON LS |
| 17/80 RDX NYLON XHV LS | 13/60 HMX HI-TEMP LOW PROFILE LS |
| 17/80 PETN Plastic | 13/60 HMX HI-TEMP LS |
| 21/100 PETN Plastic | 17/80 HMX NYLON LS |
| 17/80 HNS LS | 17/80 HMX HI-TEMP LS |
| | 17/80 HMX NYLON XHV LS |
| | 17/80 HMX EXPOSED |

Product Class: Detonating Cord, Specialty (Oil Field)

Product Appearance & Odor: Flexible white or colored cord of woven textile with a protected explosive core of RDX (dyed pink), PETN, HMX (white crystalline powders) or HNS (yellow) and covered by a white or colored nylon, fluoropolymer or polyethylene plastic or textile jacket. No odor.

DOT Hazard Shipping Description: UN0065 Cord, detonating 1.1D II
-or- UN0289 Cord, detonating 1.4D II
-or- UN0349 Articles, explosive, n.o.s. (*explosive name*) 1.4S II
where the *explosive name* would be either RDX, HMX or HNS (spelled out)

NFPA Hazard Classification: Not Applicable (See Section IV - Special Fire Fighting Procedures)

SECTION II - HAZARDOUS INGREDIENTS

| Ingredients | CAS# | EXPOSURE LIMITS | |
|--|------------|---------------------|------------------------------|
| | | OSHA PEL | TLV-ACGIH ² |
| Pentaerythritol tetranitrate (PETN) | 78-11-5 | None ¹ | None ² |
| Cyclotrimethylene trinitramine (RDX) | 121-82-4 | None ¹ | 0.5 mg/m ³ (skin) |
| Cyclotetramethylene tetranitramine (HMX) | 2691-41-0 | None ¹ | None ² |
| Hexanitrostilbene | 20062-22-0 | None ¹ | None ² |
| Ammonium Hydroxide | 1336-21-6 | None ¹ | None ² |
| Tributyl phosphate | 126-73-8 | 5 mg/m ³ | 0.2 mg/m ³ |

¹ Use limit for particulates not otherwise regulated (PNOR): Total dust, 15 mg/m³; respirable fraction, 5 mg/m³.

² Use limit for particulates not otherwise classified (PNOC): Inhalable particulate, 10 mg/m³; respirable particulate, 3 mg/m³.

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Ingredients, other than those mentioned above, as used in this product are not hazardous as defined under current Department of Labor regulations, or are present in de minimus concentrations (less than 0.1% for carcinogens, less than 1.0% for other hazardous materials).

* Core powder is predominantly one of the four explosive powders (PETN, RDX, HMX or HNS) with the possible trace amount of the other listed hazardous material. The approximate amount of explosive in a given grade of cord is expressed as that number of grams/grains of explosive per linear meter/foot of cord.

Example: 17/80 RDX NYLON contains about 17 gram/meter or 80 grains/foot of RDX. (1 gram/meter = 4.7 grains/foot)

SECTION III - PHYSICAL DATA

Boiling Point: Not Applicable

Percent Volatile by Volume: Not Applicable

Melting Point: PETN decomposes at melting point, about 141°C

RDX decomposes at 190 – 200°C

HMX decomposes violently at melting point, about 278°C

HNS decomposes at 316 - 327°C

Vapor Pressure: Not Applicable

Vapor Density: (Air = 1) Not Applicable

Solubility in Water: Insoluble.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point: Not Applicable

Flammable Limits: Not Applicable

Extinguishing Media: (See Special Fire Fighting Procedures section.)

Special Fire Fighting Procedures: Do not attempt to fight fires involving explosive materials. Evacuate all personnel to a predetermined safe, distant location. Allow fire to burn unless it can be fought remotely or with fixed extinguishing systems (sprinklers). For transportation fires involving large quantities of detonating cord, such as a trailer load, evacuate no less than 2,500 feet in all directions.

Unusual Fire and Explosion Hazards: Can explode or detonate under fire conditions. Burning or detonating material may produce toxic vapors.

SECTION V - HEALTH HAZARD DATA

Effects of Overexposure

This is a packaged product that will not result in exposure to the explosive core material under normal conditions of use.

Eyes: May cause irritation, redness and tearing.

Skin: May cause irritation.

Ingestion: PETN is moderately toxic if ingested. HMX and RDX are poisonous by ingestion. HNS may be a mutagen. See systemic effects below.

Inhalation: See systemic effects below.

Systemic or Other Effects: PETN is a known coronary vasodilator, and ingestion or inhalation may result in a lowering of blood pressure, headache or faintness, and a decreased tolerance for grain alcohol. Repeated over-exposure may result in chest pains in the absence of exposure. Systemic effects by ingestion include dermatitis.

Nitramines (RDX, HMX) are known sensitizers, meaning some people tend to become highly allergic over time to these materials, particularly if ingested or inhaled. Breathing RDX dust can cause spasms, nasal and respiratory irritation and cardiovascular collapse, and may affect the central nervous system and liver. HNS showed positive activity in the Ames test so a mutagen effect cannot be excluded.

Carcinogenicity: No constituents are listed by NTP, IARC or OSHA.

Emergency and First Aid Procedures

Eye: Irrigate with running water for at least fifteen minutes. If irritation persists, seek medical attention.

Skin: Wash thoroughly with soap and water. If skin irritation occurs, seek medical attention.

Ingestion: Seek medical attention. Treat ingestion of RDX with gastric wash.

Inhalation: Remove to fresh air. If symptoms persist, seek medical attention.

Special Considerations: None.

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SECTION VI - REACTIVITY DATA

Stability: Stable under normal conditions, may explode when subjected to fire, supersonic shock or high-energy projectile impact, especially when confined or in large quantities.

Conditions to Avoid: Keep away from heat, flame, ignition sources, impact, friction, electrostatic discharge and strong shock.

Materials to Avoid (Incompatibility): Corrosives (strong acids and strong bases or alkalis).

Hazardous Decomposition Products: Nitrogen Oxides (NO_x), Carbon Monoxide (CO)

Hazardous Polymerization: Will not occur.

SECTION VII - SPILL OR LEAK PROCEDURES

Steps to be taken in Case Material is Released or Spilled: Protect from all ignition sources. In case of fire evacuate all personnel to a safe distant area and allow to burn or fight fire remotely. Notify authorities in accordance with emergency response procedures. Only personnel trained in emergency response should respond. If explosive powder is spilled from damaged detonating cord, remove all other explosives from the spill area. Wet down and clean spilled powder using a damp sponge or rag, avoid applying friction or pressure to the explosive, and place in a (Velostat) electrically conductive bag. Contamination of this material with sand, grit or dirt will render the material more sensitive to detonation. If no fire danger is present, and product is undamaged and/or uncontaminated, repackage product in original packaging or other clean DOT approved container. Ensure that a complete account of product has been made and is verified. Follow applicable Federal, State, and local spill reporting requirements.

Waste Disposal Method: Disposal must comply with Federal, State and local regulations. If product becomes a waste, it is potentially regulated as a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR, part 261. Review disposal requirements with a person knowledgeable with applicable environmental law (RCRA) before disposing of any explosive material.

SECTION VIII - SPECIAL PROTECTION INFORMATION

Ventilation: Not required for normal handling.

Respiratory Protection: None normally required.

Protective Clothing: Work gloves and work clothing that reduce the possibility of skin abrasion and that would prevent contact with spilled explosive powder is suggested.

Eye Protection: Safety glasses or goggles are recommended.

Other Precautions Required: None.

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be taken in handling and storage: Store in cool, dry, well-ventilated location. Store in compliance with Federal, State and local regulations. Only properly qualified and authorized personnel should handle and use explosives. Keep away from heat, flame, ignition sources, impact, friction, electrostatic discharge and strong shock.

Precautions to be taken during use: Use accepted safe industry practices when using explosive materials. Unintended detonation of explosives or explosive devices can cause serious injury or death. Avoid breathing the fumes or gases from detonation of explosives. Detonation in confined or unventilated areas may result in exposure to hazardous fumes or oxygen deficiency.

Other Precautions: It is recommended that users of explosive materials be familiar with the Institute of Makers of Explosives Safety Library Publications.

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SECTION X - SPECIAL INFORMATION

This product contains the following substances that are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

Chemical Name
None

CAS Number

% By Weight

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