

MATERIAL SAFETY DATA SHEET

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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(304) 836-5646 (Maxam North America, Inc. Plant)

TRADE NAME: Z-BOOST™, RIOBOOSTER™ DET, RIOPRIME™ DET

CAS NUMBER: 1002.020-MAXAM

SECTION 2 – COMPOSITION/INFORMATION ON INGREDIENTS

Exposure Limits (mg/m³ unless noted)

Component	CAS No.	ACGIH TLV	OSHA PEL	% w/w Typical
TNT (trinitrotoluene; trinitrotoluol; tolite)	118-96-7	0.1 mg/m ³ TWA (skin)	As required 1.5 mg/m ³ (skin)	
RDX (cyclotrimethylene trinitramine; hexogen; cyclonite)	121-82-4	0.5 mg/m ³ TWA (skin)	As required n/a 1.5 mg/m ³ NIOSH (skin)	3.0 mg/m ³ STEL (skin)
HMX (cyclotetramethylene tetranitramine; octogen)	2691-41-0	As required n/a	n/a	n/a
PETN (pentaerythritol tetranitrate)	78-11-5	As required n/a	n/a	n/a

SECTION 3 – HAZARDS IDENTIFICATION

US OSHA HAZARD COMMUNICATION STANDARD: Under normal conditions of handling, the cast booster should not pose a serious health threat except possibly through post-detonation fumes.

EYE: Unlikely

INHALATION: Yes (post-detonation fumes)

SKIN: Unlikely

INGESTION: Yes (post-detonation fumes)

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SIGNS AND SYMPTOMS OF OVEREXPOSURE: Post-detonation fumes are toxic. NOTE: The following information is for the explosives constituents. Can cause allergic skin reaction and irritation to mucous membranes. Excessive exposure may cause convulsions, unconsciousness, headache, dizziness, flushing of skin, vomiting, fall in blood pressure, and methemoglobinemia. Inhalation and ingestion can result in systemic poisoning, usually affecting the bone marrow and the liver. Excessive exposure to TNT can cause liver damage; jaundice; cyanosis; sneezing; coughing and sore throat; peripheral neuropathy; muscular pain; kidney damage; cataracts; leukocytosis (increased blood leukocytes); cardiac irregularities; anorexia; nausea and vomiting; blood damage; and aplastic anemia. TNT can be absorbed through skin.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Cardiovascular diseases, glaucoma, and liver, blood, and kidney disorders. Personnel should be in generally good health.

EMERGENCY RESPONSE DATA:

DOT EMERGENCY RESPONSE GUIDE NO.: 112

HAZARD RATING:

Health - 2
Flammability - 3
Reactivity - 4
Special - High Explosive Component

X SECTION 4 – FIRST AID AND MEASURES

EFFECTS OF OVEREXPOSURE:

Acute - Slight to serious effects
Chronic - Not fully known
Skin, hair, and nails may be stained yellow. Avoid inhalation and ingestion of dust, fumes, mist, or vapors.

EMERGENCY AND FIRST AID PROCEDURES:

INHALATION - Remove to fresh air. Give oxygen if necessary. Get medical attention..

INGESTION - If conscious, drink large quantities of water and induce vomiting immediately. Contact a physician or Poison Control Center immediately.

SKIN - Wash with soap and warm water. Get medical attention for rash or irritation.

EYES - Flush with copious amounts of clean or buffered water for at least 15 minutes. Remove contact lenses prior to flushing, if applicable. Seek medical attention.

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OTHER - Accidental detonation may result in severe personal injury. Provide first aid as applicable and obtain medical attention immediately.

CARCINOGENICITY:

NTP: Not listed

IARC Monographs: Not listed

OSHA Regulated: Not listed

NOTE: Per EPA-C: cyclonite and trinitrotoluene - possible human carcinogen

X SECTION 5 – FIRE-FIGHTING MEASURES

FLASH POINT: Not established

FLAMMABLE LIMITS: Not Available

UEL: Not Available

EXTINGUISHING MEDIA: Water sprinkler or deluge system which is automatically activated.

UNUSUAL FIRE & EXPLOSION HAZARDS: HIGH EXPLOSIVE!! The explosive materials are under confinement and may be caused to detonate by burning material surrounding the charges. Additional hazard would be secondary fragmentation.

SPECIAL FIRE FIGHTING PROCEDURES: Do not attempt to fight fires involving high explosives. Isolate area and immediately evacuate all personnel from the area to a safe distance using as much protective cover as possible.

X SECTION 6 – ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

- Remove all sources of ignition and avoid any and all situations which could initiate the
- material, such as heat and/or shock, sparks, impact, friction, or electrostatic discharge.
- Wet down material with water.
- Sweep up spill with a soft bristle brush and a non-sparking pan or shovel.
- Place material in a properly labeled storage container and store in an approved storage magazine for further disposition.

WASTE DISPOSAL METHOD: Dispose of in accordance with applicable local, state, and federal regulations.

X SECTION 7 – HANDLING AND STORAGE

DURING HANDLING AND STORAGE: Handle with care. Store only in authorized High Explosives magazine with compatible material and away from all sources of ignition and flammable materials. Do not store with detonators or initiating (Primary) explosives.

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OTHER PRECAUTIONS: Maxam's cast booster is UNO Class 1.1 hazardous material and the storage compatibility group (SCG) is D. Material should remain in original shipping container or equivalent for storage purposes.

X SECTION 8 – EXPOSURE CONTROL / PERSONAL PROTECTION

RESPIRATORY: Under normal handling, none required.

VENTILATION: Local Exhaust - Under normal handling, none required; Mechanical (General) - Under normal handling, none required; Special - n/a; Other - n/a.

GLOVES: Under normal handling, none required.

EYE: Safety glasses or goggles that meet or exceed ANSI Z87.1 (latest revision)

OTHER PROTECTIVE EQUIPMENT: Hearing protection should be worn when detonating unit.

X SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: 4640F (TNT explodes)

MELTING POINT: TNT - 790-800C

VAPOR PRESSURE (MM Hg): RDX/TNT - 0.1 @ 1000C

VAPOR DENSITY (Air=1): N/A

DENSITY: 1.15 minimum

EVAPORATION RATE: Butyl Acetate = 1: N/A

PERCENT VOLATILE BY VOLUME: N/A

SOLUBILITY IN WATER: 0.01% @ 680F (TNT)

APPEARANCE AND ODOR: Cardboard tube containing tan to grayish-brown solid. No distinguishing odor.

X SECTION 10 – STABILITY AND REACTIVITY

STABILITY: Stable under normal conditions.

CONDITIONS TO AVOID: Avoid subjecting to heat, sparks, impact, friction, and electrostatic discharge.

INCOMPATIBILITY (MATERIALS TO AVOID): Alkalis, alkoxides, and ammonia react with TNT to form dangerously sensitive compounds. Avoid contact with potassium hydroxide, sodium carbonate, sodium sulfide, and potassium methylate. Avoid alkalis, acids, strong oxidizers, ammonia, reducing agents, initiating explosives, and physical sensitizers such as glass, sand, and metal fragments.

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HAZARDOUS DECOMPOSITION PRODUCTS: Toxic, avoid inhalation and ingestion. During decomposition, emits toxic oxides of nitrogen, carbon dioxide, carbon monoxide.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 – TOXICOLOGICAL DATA

ACUTE TOXICITY: Not Established

SECTION 12 – ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE AND EFFECTS: Not established

SECTION 13 – DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: Dispose of in accordance with applicable local, state, and federal regulations.

RCRA INFORMATION: Materials in this product are subject to the reporting requirements of SARA, Title III, Section 313 as follows: None.

SECTION 14 – TRANSPORTATION INFORMATION

REGULATORY CLASSIFICATIONS:

USA DOT: Boosters, 1.1D, UN0042, PG-II

OSHA: Boosters, 1.1D, UN0042

USA DOT:

SHIPPING NAME:	Boosters
HAZARD CLASS AND DIV.:	1.1D
ID NUMBER:	UN0042
APPROVAL No.:	EX0102265
PACKING GROUP:	II
DANGEROUS WHEN WET:	No
POISON:	No
LABEL(S):	1.1D
PLACARD(S):	1.1D
PRODUCT RQ:	N/A
ERG NUMBER:	112

CANADA: Class 3.2, Boosters, UN0042, 1.1D, PG II

INTERNATIONAL: Boosters, 1.1D, UN0042, PG II

SECTION 15 – REGULATORY INFORMATION

GOVERNMENTAL INVENTORY STATUS: All components comply with TSCA, and EINECS/ELINCS.

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US SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) TITLE III: This product is considered an "Extremely Hazardous Substance." This product contains Ammonium Nitrate which is reportable to SARA (313) Toxic Release Program.

X SECTION 16 – OTHER INFORMATION

SPECIAL PRECAUTIONS:CAUTION: High explosives are extremely dangerous. When initiated, the cast booster detonates producing a severe blast overpressure with the possibility of secondary fragments from the surface which the charge is placed against. The cast boosters should be handled only by qualified personnel who are experienced and highly trained in the use of and familiar with the hazards inherent with this product. When the cast booster is detonated or destructively tested, all personnel must be protected from the effects of blast overpressure and fragmentation. Allow the post-detonation fumes and dust to clear prior to entering the area. Follow all safety regulations and precautions when handling, storing, or processing explosive material.

The information contained herein is believed to be accurate and represents the best information currently available. Maxam North America, Inc. makes no warranties or guarantees with respect to the safety or suitability of this product or the results obtained, either expressed or implied. Buyer and user assume any and all risk, responsibility, and liability for any and all injury (including death), loss, or damage arising from usage.