

# Accurate Energetic Systems, LLC

## MATERIAL SAFETY DATA SHEET

**LINEAR SHAPED CHARGE with HMX**  
(Aluminum, Copper, Lead, or Pewter Sheathed)

MSDS NO. 1002.001

**HAZARD RATING:**      **Health - 2**      **Flammability - 3**      **Reactivity - 4**      **Special - High Explosive Component**

### SECTION I - MANUFACTURE'S INFORMATION

**Manufacture/Distributor Name:** Accurate Energetic Systems, LLC  
**Address:** 5891 Highway 230 West, McEwen, TN 37101  
**Telephone Number:** (931) 729-4207  
**Emergency Telephone Number:** 1-800-255-3924  
**Date Prepared:** 04/20/01      **Supersedes:** 12/01/99

### SECTION II - CHEMICAL COMPOSITION

Component	CAS #	%	OSHA PEL	ACGIH TLV	Other Limits
HMX (cyclotetramethylene tetranitramine; octogen)	2691-41-0	As required	n/a	n/a	n/a
Aluminum (metallic sheathing)	7429-90-5		15 mg/m <sup>3</sup> (total dust) 5 mg/m <sup>3</sup> (resp. fract) - metal dust	10 mg/m <sup>3</sup> - metal dust	10 mg/m <sup>3</sup> (total dust) 5 mg/m <sup>3</sup> (resp. fract) - metal dust; NIOSH
Copper (metallic sheathing)	7440-50-8		0.1 mg/m <sup>3</sup> (fume) 1 mg/m <sup>3</sup> (dust/mist)	0.2 mg/m <sup>3</sup> (fume) 1 mg/m <sup>3</sup> (dust/mist)	0.1 mg/m <sup>3</sup> (fume) 1 mg/m <sup>3</sup> (dust/mist) - NIOSH
Lead (metallic sheathing)	7439-92-1		0.05 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>	<0.1 mg/m <sup>3</sup> NIOSH
Pewter (tin, copper, & antimony) (metallic sheathing)			n/a	n/a	0.5 - 2.0 mg/m <sup>3</sup>

NOTE: Hazard Class 1, Division 1; SCG "D"

NOTE: Materials in this product are subject to the reporting requirements of SARA, Title III, Section 313 as follows:  
aluminum (fume or dust); copper; lead; antimony

### SECTION III - PHYSICAL AND CHEMICAL DATA (NOTE: Data is for HMX only except for "Appearance and Odor")

**Boiling Point:** n/a  
**Specific Gravity:** 1.9  
**Melting Point:** 275<sup>0</sup>C  
**Vapor Pressure (mm Hg):** 3 X 10<sup>-9</sup> @ 100<sup>0</sup>C

### SECTION III - PHYSICAL AND CHEMICAL DATA (cont.)

**Vapor Density (Air = 1):** n/a  
**Evaporation Rate (Butyl Acetate = 1):** n/a  
**Solubility In Water:** Insoluble  
**Appearance And Odor:** Chevron-shaped silver, copper, or gray colored metal tube with core load white in color. No distinguishing odor

### SECTION IV - FIRE AND EXPLOSION HAZARDS

**Flash Point:** n/a  
**Flammable Limits:** LEL n/a UEL n/a  
**Extinguishing Media:** Water sprinkler or deluge system which is automatically activated.  
**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.

**Unusual Fire And Explosion Hazards:**

HIGH EXPLOSIVE!! The explosive is under confinement and may be caused to detonate by burning material surrounding the LSC. Metallic fragments are a secondary hazard.

### SECTION V - REACTIVITY/COMPATIBILITY DATA

**Stability:**

Stable under normal conditions. High heat, shock, friction, impact, electrical discharge when supplied in sufficient energy can cause the LSC to detonate.

**Incompatibility (materials to avoid):**

Avoid alkalis, acids, oxidizers, chlorine, turpentine, halogens.

**Hazardous Decomposition Products:**

During decomposition, emits carbon dioxide, carbon monoxide, and oxides of nitrogen.

**Hazardous Polymerization:**

Will not occur

### SECTION VI - HEALTH HAZARD DATA

NOTE: Under normal conditions of handling, personnel should not come in contact with the explosive material in the LSC. The metallic sheathing should not pose a serious health threat except possibly through post-detonation fumes or failure to thoroughly wash hands after contact.

**Routes Of Entry:**

**Eye?** Unlikely  
**Inhalation?** Yes (post-detonation fumes)  
**Skin?** Unlikely  
**Ingestion?** Yes (improper personal hygiene practices)

**Effects Of Over-Exposure:**

**Acute -** Slight to serious effects  
**Chronic -** Not fully known

## SECTION VI - HEALTH HAZARD DATA (cont.)

### Signs And Symptoms Of Exposure:

HMX can cause allergic skin reaction and eye irritation. Excessive exposure may cause convulsions, unconsciousness. Inhalation and ingestion can result in systemic poisoning, usually affecting the bone marrow and the liver. Overexposure to lead may cause adverse effects to the blood-forming, nervous, urinary, and reproductive systems including weakness, weight loss, insomnia, constipation, anemia, motor weakness, and encephalopathy. Lead may penetrate the placental barrier and has caused congenital abnormalities in animals.

### Medical Conditions Generally Aggravated By Exposure:

Personnel should be in generally good health

### Emergency First Aid Procedures:

- Eye -** Flush with water for 15 minutes. Remove contact lenses prior to flushing, if applicable. Get medical attention.
- Inhalation -** Remove to fresh air. Give oxygen if necessary. Get medical attention.
- Skin -** Wash with soap and warm water. Get medical attention for rash or irritation.
- Ingestion -** If conscious, drink large quantities of water and induce vomiting immediately. Contact a physician or Poison Control Center immediately.
- 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?** Yes \*

**OSHA Regulated?** Not listed

NOTE: \* Per IARC-2B: lead - possibly carcinogenic to humans; Per EPA-B2: lead - probable human carcinogen

## SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

### Steps To Follow If Material Is Spilled Or Released:

If explosive material is spilled from LSC, remove all sources of ignition. Avoid any and all situations which could initiate the material, such as friction, impact, heat, sparks, 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.

### Precautions To Be Taken In 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, initiating (Primary) explosives, flammable liquids or solvents.

### Other Precautions:

LSCs are UNO Class 1.1 hazardous material and the storage compatibility group (SCG) is "D".

## SECTION VIII - PERSONAL PROTECTION INFORMATION

### Respirator Protection (Specify Type):

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

## **SECTION VIII - PERSONAL PROTECTION INFORMATION (cont.)**

### **Protective Gloves:**

Impervious gloves are recommended to protect against possible contamination with lead.

### **Eye Protection:**

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

### **Other Protective Clothing Or Equipment:**

Cotton clothing recommended. Hearing protection should be worn when detonating LSC.

### **Work/Hygienic Practices:**

Wash hands thoroughly after handling.

## **SECTION IX - SPECIAL PRECAUTIONS**

### **Precautions To Be Taken:**

CAUTION: High explosives are extremely dangerous. When detonated, high velocity metallic fragments are generated. The LSCs must be handled only by qualified personnel who are experienced and highly trained in the use of and familiar with the hazards inherent in explosives. When the LSCs are detonated or destructively tested, all personnel must be protected from the effects of blast overpressure and fragments. Allow the post detonation fumes and dust to clear before entering the area. Lead fumes and dust are highly toxic. Chronic inhalation of tin oxide dust or fumes leads to stannosis. Personnel handling the lead sheathed LSCs should wash their hands before eating, drinking, or smoking. 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. Accurate Energetic Systems, LLC 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.**