

Accurate Energetic Systems, LLC

MATERIAL SAFETY DATA SHEET

LINEAR SHAPED CHARGE with PETN, Desensitized (Aluminum, Copper, Lead, or Pewter Sheathed)

MSDS NO. 1002.022

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: 05/03/02 **Supercedes:**

SECTION II - CHEMICAL COMPOSITION

Component	CAS #	%	OSHA PEL	ACGIH TLV	Other Limits
PETN (pentaerythritol tetranitrate)	78-11-5	As required	n/a	n/a	n/a
Desensitizing wax (* These exposure limits are for paraffin wax fume, similar to this material)		As required	n/a	2 mg/m ³ *	2 mg/m ³ * NIOSH
Graphite	7782-42-5	As required	15 mg/m ³ (total dust) 5 mg/m ³ (resp. fract)	2 mg/m ³ TWA	2.5 mg/m ³ (resp. dust) - NIOSH TWA
Aluminum (metallic sheathing)	7429-90-5		15 mg/m ³ (total dust) 5 mg/m ³ (resp. fract) - metal dust	10 mg/m ³ - metal dust	10 mg/m ³ (total dust) 5 mg/m ³ (resp. fract) - metal dust; NIOSH
Copper (metallic sheathing)	7440-50-8		0.1 mg/m ³ (fume) 1 mg/m ³ (dust/mist)	0.2 mg/m ³ (fume) 1 mg/m ³ (dust/mist)	0.1 mg/m ³ (fume) 1 mg/m ³ (dust/mist) - NIOSH
Lead (metallic sheathing)	7439-92-1		0.05 mg/m ³	0.05 mg/m ³	<0.1 mg/m ³ NIOSH
Pewter (tin, copper, & antimony) (metallic sheathing)			n/a	n/a	0.5 - 2.0 mg/m ³

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 PETN only except for "Appearance and Odor")

Boiling Point: n/a
Specific Gravity: 1.77
Melting Point: PETN - 140⁰C; Wax - 80⁰C
Vapor Pressure (mm Hg): n/a

SECTION III - PHYSICAL AND CHEMICAL DATA (cont.)

Vapor Density (Air = 1):	n/a
Evaporation Rate (Butyl Acetate = 1):	n/a
Solubility In Water:	Very slight
Appearance And Odor:	Chevron-shaped silver, copper, or gray colored metal tube with core load ranging from white to dark gray in color depending on wax and/or graphite content. 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:

PETN can cause allergic skin reaction and eye irritation. Excessive exposure may cause headache, dizziness, flushing of skin, vomiting, fall in blood pressure by vasodilation, and methemoglobinemia. 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.

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