

Safety Data Sheet

Issue Date: 07-Jun-2018

Revision Date: 11-Jun-2018

Version 1

1. IDENTIFICATION

Product Identifier

Product Name Soft Detonators Lead Free

Other means of identification

SDS # DLM-013

Synonyms SD-100LF, SD-75LF, SD-50LF, SD-25LF, SD-15LF, MD-2LF, and MD-1LF.

Recommended use of the chemical and restrictions on use

Recommended Use Soft detonator.

Details of the supplier of the safety data sheet

Supplier Address

De La Mare Engineering, Inc.
1910 First St.
San Fernando, CA 91340

Emergency Telephone Number

Company Phone Number 1-818-365-9208
Emergency Telephone (24 hr) INFOTRAC 1-352-323-3500 (International)
1-800-535-5053 (North America)

2. HAZARDS IDENTIFICATION

Appearance Polyurethane or Lacquered coated soft polyethylene tubes containing varying amounts of PETN. Detonators have wires for electrical ignition

Physical state Solid

Classification

Explosives

Division 1.4

Signal Word

Warning

Hazard statements

Fire or projection hazard



Precautionary Statements - Prevention

Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Ground/bond equipment and your person
Do not subject to grinding/shock/friction
Wear face protection

Precautionary Statements - Response

In case of fire: Evacuate area
 DO NOT fight fire when fire reaches explosives
 Fight fire with normal precautions from a reasonable distance

Precautionary Statements - Storage

Store locked up
 Store in accordance with local regulations

Precautionary Statements - Disposal

Dispose of contents/container to industrial incineration plant

Other hazards

Very toxic to aquatic life with long lasting effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms

SD-100LF, SD-75LF, SD-50LF, SD-25LF, SD-15LF, MD-2LF, and MD-1LF.

Chemical Name	CAS No.	Weight-grams
Pentaerythrite tetranitrate	78-11-5	Proprietary
Proprietary	Proprietary	.02 Max

If Chemical Name/CAS No is "proprietary" and/or Weight- is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

First Aid Measures

Eye Contact	Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes.
Inhalation	Remove to fresh air.
Ingestion	Clean mouth with water and drink afterwards plenty of water.

Most important symptoms and effects

Symptoms	Not determined.
-----------------	-----------------

Indication of any immediate medical attention and special treatment needed

Notes to Physician	Treat symptomatically.
---------------------------	------------------------

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Water. Foam.

Unsuitable Extinguishing Media Not determined.

Specific Hazards Arising from the Chemical

Highly explosive devices which can detonate any high explosive materials. Sensitive to friction, shock, heat, and electric current/electrostatic discharge. Radar and radio transmitters may set off non-shunted devices.

Hazardous Combustion Products Nitrogen oxides (NOx). Carbon oxides.

Explosion Data

Sensitivity to Mechanical Impact Yes.

Sensitivity to Static Discharge Yes.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Fight fire from an explosion resistant location. In advanced or massive fires, evacuate to safe area and guard against intruders. DO NOT fight fire when fire reaches explosives.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Remove all sources of ignition. Wear approved respirator and PPE. Isolate area.

Other Information Anticipated release would only be from a damaged device.

Environmental precautions

Environmental precautions See Section 12 for additional Ecological Information. Prevent runoff from entering drains, sewers or streams.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so. Dike spill and prevent spill from entering sewers and waterways.

Methods for Clean-Up Keep broken devices wet with water. Dispose of devices, contents, and materials used in spill cleanup using procedures approved by federal, state, and local agencies.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Do not cut or alter device. Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Do not remove devices from protective package or open wire shunts until ready to use. Treat as blasting caps. Ground yourself and equipment to eliminate static electric sparks.

Conditions for safe storage, including any incompatibilities

Storage Conditions Store locked up. Do not store improperly with other explosives (severe physical injury or death may occur from detonation). All storage magazines must be safely located, or approved design and securely locked. Store in accordance with all state, local, and federal regulations.

Incompatible Materials Acids. Alkalis. Oxidizers. Batteries. Storage cells.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

Appropriate engineering controls

Engineering Controls Apply technical measures to comply with the occupational exposure limits.

Individual protection measures, such as personal protective equipment

Eye/Face Protection	Face shield/goggles appropriate for high explosive handling.
Skin and Body Protection	Gloves are not required for intact devices.
Respiratory Protection	Not required for intact devices-use particulate respirator for damaged devices.
General Hygiene Considerations	Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Use anti-static precautions such as personal grounding work on straps, grounded and conductive surfaces.

9. PHYSICAL AND CHEMICAL PROPERTIES**Information on basic physical and chemical properties**

Physical state	Solid		
Appearance	Polyurethane or Lacquered coated soft polyethylene tubes containing varying amounts of PETN. Detonators have wires for electrical ignition	Odor	Not determined
Color	Not determined	Odor Threshold	Not determined
Property	Values	Remarks • Method	
pH	Not determined		
Melting point / freezing point	140 °C / 284 °F	(PETN)	
Boiling Point / Boiling Range	Not applicable		
Flash Point	Not applicable		
Evaporation Rate	Not applicable		
Flammability (Solid, Gas)	210 °C	PETN explodes	
Flammability Limit in Air			
Upper Flammability Limit	Not applicable		
Lower Flammability Limit	Not applicable		
Vapor Pressure	Not applicable		
Vapor Density	Not applicable		
Relative Density	1.7-1.8	(1=Water)	
Water Solubility	Slightly soluble		
Solubility in other solvents	Not determined		
Partition Coefficient	Not determined		
Autoignition temperature	210 °C / 410 °F	Detonates (PETN)	
Decomposition Temperature	>150°C		
Kinematic Viscosity	Not determined		
Dynamic Viscosity	Not determined		
Explosive Properties	Not determined		
Oxidizing Properties	Not determined		

10. STABILITY AND REACTIVITY**Reactivity**

Not reactive under normal conditions.

Chemical Stability

UNSTABLE.

Possibility of Hazardous Reactions

None under normal processing.

Hazardous Polymerization	Hazardous polymerization does not occur.
---------------------------------	--

Conditions to Avoid

Heat, shock, friction, static charges, and electrical current sources.

Incompatible Materials

Acids. Alkalis. Oxidizers. Batteries. Storage cells.

Hazardous Decomposition Products

Nitrogen oxides (NOx). Carbon oxides.

11. TOXICOLOGICAL INFORMATION**Information on likely routes of exposure**

Product Information	Product presents a hazard to health only when detonated or contents are released from encapsulated device
Eye Contact	Avoid contact with eyes.
Skin Contact	Avoid contact with skin.
Inhalation	Do not inhale.
Ingestion	Do not ingest.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Pentaerythrite tetranitrate 78-11-5	= 1660 mg/kg (Rat)	-	-

Information on physical, chemical and toxicological effects

Symptoms Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity Based on the information provided, this product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

Numerical measures of toxicity

Not determined.

12. ECOLOGICAL INFORMATION**Ecotoxicity**

Very toxic to aquatic life with long lasting effects.

Persistence/Degradability

Not determined.

Bioaccumulation

Not determined.

Mobility

Not determined

Other Adverse Effects

Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

- Disposal of Wastes** Dispose of in accordance with federal, state and local regulations. Please contact manufacturer for more detailed disposal information.
- Contaminated Packaging** Disposal should be in accordance with applicable regional, national and local laws and regulations.

California Hazardous Waste Status

Chemical Name	California Hazardous Waste Status
Pentaerythrite tetranitrate 78-11-5	Reactive
Proprietary	Ignitable Reactive

14. TRANSPORT INFORMATION

- Note** Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.
- DOT** Please contact manufacturer for most current information
- IATA** Please contact manufacturer for most current information
- IMDG** Please contact manufacturer for most current information

15. REGULATORY INFORMATION

International Inventories

Chemical Name	TSCA	DSL/NDSL	EINECS/E LINCS	ENCS	IECSC	KECL	PICCS	AICS
Pentaerythrite tetranitrate	X	X	X	X		X		X

- Legend:**
- TSCA - United States Toxic Substances Control Act Section 8(b) Inventory*
 - DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List*
 - EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances*
 - ENCS - Japan Existing and New Chemical Substances*
 - IECSC - China Inventory of Existing Chemical Substances*
 - KECL - Korean Existing and Evaluated Chemical Substances*
 - PICCS - Philippines Inventory of Chemicals and Chemical Substances*
 - AICS - Australian Inventory of Chemical Substances*

US Federal Regulations

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

US State Regulations**California Proposition 65**

This product contains the following Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Pentaerythrite tetranitrate 78-11-5	X		

16. OTHER INFORMATION**NFPA****Health Hazards**

Not determined

Flammability

Not determined

Instability

Not determined

Special Hazards

Not determined

HMIS**Health Hazards**

Not determined

Flammability

Not determined

Physical hazards

Not determined

Personal Protection

Not determined

Issue Date: 07-Jun-2018
 Revision Date: 11-Jun-2018
 Revision Note: New format

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet