

# Organo-Titanate

## Safety Data Sheet

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision Date: January 6, 2020

Date of Issue: November 24, 2015

Version: 1.3

## Section 1: Identification

### 1.1 Product Identifier

<b>Product Form:</b>	Mixture
<b>Product Name:</b>	Organo-Titanate
<b>Chemical Formula:</b>	Trade Secret/Confidential Business Information
<b>Synonyms:</b>	Trade Secret/Confidential Business Information

### 1.2 Intended Use of the Product

<b>Use of the Substance/Mixture:</b>	Specific use is trade secret/confidential business information. Generic use is as an electrolyte.
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### 1.3 Name, Address, and Telephone Number of the Responsible Party

<b>Company:</b>	Lockheed Martin Advanced Energy Storage
<b>Address:</b>	61 Moulton Street, Cambridge, Massachusetts 02138
<b>Telephone Number:</b>	(617) 374 – 3797

### 1.4 Emergency Contact Information

<b>Emergency Telephone Number:</b>	CHEMTREC – 1-800-424-9300
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## Section 2: Hazards Identification

### 2.1 Classification of Substance or Mixture

GHS – US Classification

Eye Irrit. 2B      H320

Skin Sens. 1      H317

Muta. 2      H341

Full Text of H-Phrases: See Section 16

### 2.2 Label Elements

**GHS – US Labeling**

**Hazard Pictograms (GHS – US):**



**Signal Word:**

Warning

**Hazard Statements (GHS – US):**

H317 – May Cause an Allergic Skin Reaction  
H320 – Causes Eye Irritation  
H341 – Suspected of Causing Genetic Defects  
H350 – May Cause Cancer  
H401 – Toxic to Aquatic Life

**Precautionary Statements (GHS – US):**

P201 – Obtain Special Instructions Before Use  
P202 – Do Not Handle Until All Safety Precautions Have Been Read and Understood  
P261 – Avoid Breathing Vapors, Mist, or Spray  
P262 – Do Not Get in Eyes, On Skin, or On Clothing  
P264 – Wash Hands, Forearms, and Other Exposed Areas Thoroughly After Handling  
P272 – Contaminated Work Clothing Must Not Be Allowed Out of the Workplace  
P273 – Avoid Release to the Environment  
P280 – Wear Protective Gloves, Protective Clothing, and Eye Protection  
P302 + P352 – If on Skin, Wash with Plenty of Water  
P305 + P351 + P338 – If in Eyes: Rinse Cautiously with Water for Several Minutes. Remove Contact Lenses if Present and Easy to Do. Continue Rinsing.  
P308 + P313 – If Exposed or Concerned: Get Medical Attention  
P321 – Specific Treatment (See Section 4 on this SDS)  
P333 + P313 – If Skin Irritation Occurs: Get Medical Advice/Attention  
P337 + P313 – If Eye Irritation Persists: Get Medical Advice/Attention  
P405 – Store Locked Up  
P501 – Dispose of Contents/Container in Accordance with Local, Regional, National, and International Regulations

## 2.3 Other Hazards

Hazardous gases may evolve from this material under certain operating scenarios. Contact the manufacturer for specific parameters for use of the material including container headspace purging and ventilation requirements. Handle in accordance with good industrial hygiene and safety procedures. Exposure may aggravate those with pre-existing eye, skin, or respiratory conditions.

## 2.4 Unknown Acute Toxicity (GHS – US)

No Data Available.

# Section 3: Composition/Information on Ingredients

## 3.1 Substance

Not Applicable

### 3.2 Mixture

Name	Product Identifier	% (W/W)
Water	(CAS No.) 7732-18-5	59.2
Organo-Titanate	(PMN No.) P-16-600	39.9

## Section 4: First Aid Measures

### 4.1 Description of First Aid Measures

**First Aid Measures – General:** Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label when possible).

**First Aid Measures – After Inhalation:** When symptoms occur: Go into open air and ventilate suspected area. Obtain medical attention if breathing difficulty persists

**First Aid Measures – After Skin Contact:** Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Dispose of contaminated clothing. Obtain medical attention if irritation develops or persists.

**First Aid Measures – After Eye Contact:** Rinse continuously with water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention.

**First Aid Measures – After Ingestion:** Rinse mouth. Do NOT induce vomiting. Obtain medical attention.

### 4.2 Most Important Symptoms and Effects, Both Acute and Delayed

**Symptoms/Injuries:** Causes eye irritation. Skin sensitization. Suspected of causing genetic defects. May cause cancer.

**Symptoms/Injuries After Inhalation:** Prolonged exposure may cause irritation.

**Symptoms/Injuries After Skin Contact:** May cause an allergic skin reaction. May cause mild skin irritation.

**Symptoms/Injuries After Eye Contact:** May cause moderate irritation, including burning sensation, tearing, redness, or swelling.

**Symptoms/Injuries After Ingestion:** Ingestion may cause adverse effects.

**Chronic Symptoms:** The results of a bacterial reverse mutation assay indicate that this product is mutagenic. This substance may cause cancer.

### 4.3 Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention. If medical advice is needed, have product container or label at hand.

## Section 5: Fire Fighting Measures

### 5.1 Extinguishing Media

**Suitable Extinguishing Media:** Use extinguishing media appropriate for surrounding fire.

**Unsuitable Extinguishing Media:** Do not use a heavy water stream. Use of heavy water stream may spread fire.

### 5.2 Special Hazards Arising from the Substance or Mixture

**Fire Hazard:** Not flammable

**Explosion Hazard:** Product is not explosive.

**Reactivity:** Hazardous reactions will not occur under normal conditions.

### 5.3 Advice for Firefighters

**Precautionary Measures Fire:**

Exercise caution when fighting any chemical fire

**Firefighting Instructions:**

Use water spray or fog for cooling exposed containers

**Protection During Firefighting:**

Do not enter the fire area without proper protective equipment, including respiratory protection

## Section 6: Accidental Release Measures

### 6.1 Personal Precautions, Protective Equipment, and Emergency Procedures

**General Measures:** Do not get in eyes, on skin, or on clothing. Do not breathe vapor, mist, or spray.

#### 6.1.1 For Non-Emergency Personnel

**Protective Equipment:** Use appropriate personal protective equipment

**Emergency Procedures:** Evacuate unnecessary personnel

#### 6.1.2 For Emergency Responders

**Protective Equipment:** Equip cleanup crew with proper protection

**Emergency Procedures:** Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit.

### 6.2 Environmental Precautions

Prevent entry to sewers and public waters. Do not release to waterways or aquatic systems.

### 6.3 Methods and Material for Containment and Cleaning Up

**For Containment:** Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams

**Methods for Cleaning Up:** Clean up spills immediately and dispose of waste in accordance with local, State, Federal, and international regulations, as applicable. Transfer spilled material to a suitable container for disposal.

### 6.4 Reference to Other Sections; Additional Information

See Section 8: Exposure Controls/Personal Protection. See Section 13: Disposal Considerations.

## Section 7: Handling and Storage

### 7.1 Precautions for Safe Handling

**Precautions for Safe Handling:** Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and when leaving work. Obtain special instructions before use. Do not breathe vapors, mist, or spray. Do not handle until all safety precautions have been read and understood. Do not get in eyes, on skin, or on clothing.

**Hygiene Measures:** Handle in accordance with good industrial hygiene and safety procedures.

## 7.2 Conditions for Safe Storage, Including Any Incompatibilities

<b>Storage Conditions:</b>	Keep container closed when not in use. Keep/store away from direct sunlight, extremely high or low temperatures, and incompatible materials.
<b>Incompatible Materials:</b>	Strong oxidizers. Charged Posolyte.
<b>Storage Temperatures:</b>	-5 - 45 °C
<b>Special Rules on Packaging:</b>	Store in a sealed container under an inert atmosphere (N <sub>2</sub> or Ar)

## 7.3 Specific End Use

Specific end use is trade secret/confidential business information. Generic end use is as electrolyte.

# Section 8: Exposure Controls/Personal Protection

## 8.1 Control Parameters

For substances listed in Section 3 that are not listed here, there are no established exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), AIHA (WEEL), NIOSH (REL), or OSHA (PEL).

## 8.2 Exposure Controls

<b>Appropriate Engineering Controls:</b>	This material may generate hazardous gases under certain operating conditions. Ensure container headspace is ventilated and purged when the material is used in designed applications. Ensure all local, State, Federal, and international regulations, as applicable, are observed.
<b>Personal Protective Equipment:</b>	Ensure eyewash fountains and safety showers are available. Gloves. Protective Clothing. Protective Safety Glasses/Goggles. Insufficient Ventilation – Wear Respiratory Protection.



<b>Materials for Protective Equipment:</b>	Chemically resistant materials and fabrics.
<b>Hand Protection:</b>	Wear protective gloves.
<b>Eye Protection:</b>	Chemical safety glasses/goggles
<b>Skin and Body Protection:</b>	Wear suitable protective clothing.
<b>Respiratory Protection:</b>	In case of inadequate ventilation, oxygen deficient atmosphere, or where exposure levels are not known, wear approved respiratory protection
<b>Other information:</b>	When using, do not eat, drink, or smoke.

## Section 9: Physical and Chemical Properties

### 9.1 Information on Basic Physical and Chemical Properties

<b>Physical State:</b>	Liquid
<b>Appearance:</b>	Dark Red Solution
<b>Odor:</b>	None
<b>Odor Threshold:</b>	No Data Available
<b>pH:</b>	11
<b>Evaporation Rate:</b>	No Data Available
<b>Melting Point:</b>	No Data Available
<b>Freezing Point:</b>	No Data Available
<b>Boiling Point:</b>	101 °C (214 °F)
<b>Flash Point:</b>	No Data Available
<b>Auto-Ignition Temperature:</b>	No Data Available
<b>Decomposition Temperature:</b>	No Data Available
<b>Flammability (Solid, Gas):</b>	No Data Available
<b>Vapor Pressure:</b>	No Data Available
<b>Relative Vapor Density at 20 °C:</b>	No Data Available
<b>Specific Gravity:</b>	1.26
<b>Density (Imperial):</b>	10.47 lbs/gal
<b>Solubility In Water:</b>	High
<b>Partition Coefficient N-Octanol/Water:</b>	No Data Available
<b>Viscosity:</b>	14
<b>Molecular Weight:</b>	450.2
<b>Specific Heat Capacity:</b>	2.9 J g <sup>-1</sup> K <sup>-1</sup>

### 9.2 Other Information

No additional information available.

## Section 10: Stability and Reactivity

### 10.1 Reactivity

Hazardous reactions will not occur under normal conditions.

### 10.2 Chemical Stability

Stable under recommended handling and storage conditions (See Section 7)

### 10.3 Possibility of Hazardous Reactions

Hazardous polymerization will not occur.

### 10.4 Conditions to Avoid

Direct sunlight, extremely high or low temperatures, and incompatible materials.

### 10.5 Incompatible Materials

Strong oxidizers, Charged Posolyte

## 10.6 Hazardous Decomposition Products

No decomposition products have been identified under normal storage and handling conditions.

## Section 11: Toxicological Information

### 11.1 Information on Toxicological Effects

Acute Toxicity:

Not Classified

<b>Negolyte</b>	
LD50 Oral Rat	> 2000 mg/kg
LD50 Dermal Rat	> 2000 mg/kg
LC50 Inhalation Rat	> 5.07 mg/L
Bacterial Reverse Mutation Assay	Positive
Skin Irritation Rabbit	Slightly Irritating 30% Organo-Titanate in Solution (pH 9.5)
Eye Irritation Rabbit	Mildly Irritating 30% Organo-Titanate in Solution (pH 9.5 – 11)
Skin Sensitization LLNA	Contact Dermal Sensitizer
Mouse Lymphoma Study	Positive

**Skin Corrosion/Irritation:**

Causes Skin Irritation (pH 9.5)

**Serious Eye Damage/Irritation:**

Causes Eye Irritation (pH 9.5)

**Respiratory or Skin Sensitization:**

May Cause an Allergic Skin Reaction

**Germ Cell Mutagenicity:**

Suspected of Causing Genetic Defects

**Carcinogenicity:**

May Cause Cancer

**Reproductive Toxicity:**

Not Classified

**Specific Organ Toxicity (Single Exposure):**

Not Classified

**Specific Organ Toxicity (Repeated Exposure):**

Not Classified

**Aspiration Hazard:**

Not Classified

**Symptoms/Injuries After Inhalation:**

Prolonged Exposure May Cause Irritation

**Symptoms/Injuries After Skin Contact:**

May Cause an Allergic Skin Reaction. May Cause Mild Skin Irritation.

**Symptoms/Injuries After Eye Contact:**

May Cause Moderate Irritation, Including Burning Sensation, Tearing, Redness, or Swelling.

**Symptoms/Injuries After Ingestion:**

Ingestion May Cause Adverse Effects

**Chronic Symptoms:**

The Results of a Bacterial Reverse Mutation Assay Indicate This Product May Be Mutagenic. This Substance May Cause Cancer.

## Section 12: Ecological Information

### 12.1 Toxicity

This substance may be toxic to aquatic organisms.

## 12.2 Persistence and Degradability

No additional information available.

## 12.3 Bioaccumulative Potential

No additional information available.

## 12.4 Mobility in Soil

No additional information available.

## 12.5 Other Adverse Effects

**Other Information:** Avoid Release to the Environment. Do not Release to Water.

# Section 13: Disposal Considerations

## 13.1 Waste Treatment Methods

**Waste Disposal Recommendations:** Dispose of contents/container in accordance with local, regional, national, and international regulations.

**Additional Recommendations:** Container may remain hazardous when empty. Continue to observe all precautions.

**Ecology – Waste Materials:** Avoid release to the environment. Do not release to water.

# Section 14: Transport Information

## 14.1 In Accordance with DOT

Not Regulated for Transport

## 14.2 In Accordance with IMDG

Not Regulated for Transport

## 14.3 In Accordance with IATA

Not Regulated for Transport

# Section 15: Regulatory Information

## 15.1 US Federal Regulations

**SARA Section 311/312 Hazard Classes:**

Immediate (Acute) Health Hazard

Delayed (Chronic) Health Hazard

**Toxic Substances Control Act (TSCA):**

All Constituents Listed or Exempted from Listing on the TSCA Inventory

Subject to Section 5(e) Consent Order – Organo-Titanate, PMN No. P-16-600

Subject to Section 12(b) Export Notification

Requirement – Organo-Titanate, PMN No. P-16-600



## 15.2 US State Regulations

Neither this product nor its chemical components appear on any US State lists

## Section 16: Other Information, Including Date of Preparation or Last Revision

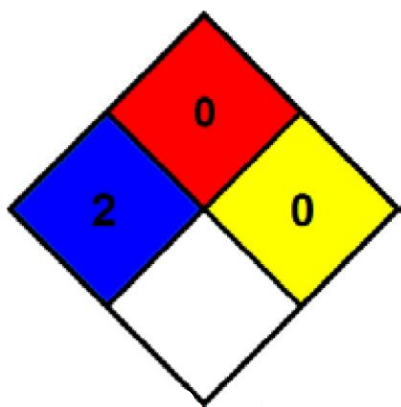
**Revision Date:** January 6, 2020

**Other Information:** This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard, 29 CFR 1910.1200

### GHS Full Text Phrases:

Eye Irrit. 2B	Serious Eye Damage/Eye Irritation Category 2B
Muta. 2	Germ Cell Mutagenicity Category 2
Skin Sens. 1	Skin Sensitization Category 1
H317	May Cause an Allergic Skin Reaction
H320	Causes Eye Irritation
H341	Suspected of Causing Genetic Defects

### NFPA Diamond:



### NFPA Health Hazard:

2 – Intense or Continued Exposure Could Cause Temporary Incapacitation or Possible Residual Injury Unless Prompt Medical Attention is Given

### NFPA Fire Hazard:

0 – Material is Nonflammable

### NFPA Reactivity:

0 – Material Will Not React

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety, and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*

