

## Material Safety Data Sheet

<b>NFPA</b>	<b>HMIS</b>	<b>Personal Protective Equipment</b>						
	<table border="1"> <tr> <td>Health Hazard</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Fire Hazard</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Reactivity</td> <td style="text-align: center;">0</td> </tr> </table>	Health Hazard	2	Fire Hazard	0	Reactivity	0	
Health Hazard	2							
Fire Hazard	0							
Reactivity	0							
		See Section 15.						

<b>Section 1. Chemical Product and Company Identification</b>		<i>Page Number: 1</i>
<b>Common Name/ Trade Name</b>	<b>Thorium nitrate</b>	<b>Catalog Number(s).</b> T1044, T1045
		<b>CAS#</b> 13470-07-0; 13823-29-5 (anhydrous)
<b>Supplier</b>	United Nuclear Scientific 125 N. 8th Street Klamath Falls, OR 97601	<b>RTECS</b> XO6825000
		<b>TSCA</b> TSCA 8(b) inventory: CAS no. 13470-07-0 is not TSCA listed because it is a hydrate. CAS no. 13823-29-5 is TSCA listed
<b>Commercial Name(s)</b>	Not available.	<b>CI#</b> Not available.
<b>Synonym</b>	Nitric acid, thorium (4+) salt tetrahydrate; Thorium tetranitrate tetrahydrate; Thorium (4+) nitrate tetrahydrate	<b>IN CASE OF EMERGENCY</b> <a href="tel:800-255-3924">VelocityEHS (24 HR) 800-255-3924</a>
<b>Chemical Name</b>	Thorium (IV) Nitrate tetrahydrate	
<b>Chemical Family</b>	Not available.	
<b>Chemical Formula</b>	Th(NO <sub>3</sub> ) <sub>4</sub> ·4H <sub>2</sub> O	
<b>Supplier</b>	UNITED NUCLEAR SCIENTIFIC. 125 N. 8th Street Klamath Falls, OR 97601	

<b>Section 2. Composition and Information on Ingredients</b>					
Name	CAS #	Exposure Limits			% by Weight
		TWA (mg/m <sup>3</sup> )	STEL (mg/m <sup>3</sup> )	CEIL (mg/m <sup>3</sup> )	
1) Thorium nitrate	13470-07-0; 13823-29-5 (anhydrous)				100
<b>Toxicological Data on Ingredients</b>					
<b>Thorium nitrate anhydrous (CAS no. 13823-29-5):</b> ORAL (LD50): Acute: 1760 mg/kg [Mouse].					

**Section 3. Hazards Identification**

<b>Potential Acute Health Effects</b>	Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Prolonged exposure may result in skin burns and ulcerations. Over-exposure by inhalation may cause respiratory irritation.
<b>Potential Chronic Health Effects</b>	<p><b>CARCINOGENIC EFFECTS:</b> Not available.</p> <p><b>MUTAGENIC EFFECTS:</b> Not available.</p> <p><b>TERATOGENIC EFFECTS:</b> Not available.</p> <p><b>DEVELOPMENTAL TOXICITY:</b> Not available.</p> <p>The substance may be toxic to kidneys, lungs, bone marrow.</p> <p>Repeated or prolonged exposure to the substance can produce target organs damage.</p>

**Section 4. First Aid Measures**

<b>Eye Contact</b>	Check for and remove any contact lenses. Flush with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Cold water may be used. Get medical attention. Seek medical attention in case of eye contact with a radioactive material.
<b>Skin Contact</b>	In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
<b>Serious Skin Contact</b>	Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention in case of skin contact with a radioactive material.
<b>Inhalation</b>	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
<b>Serious Inhalation</b>	Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention in case of inhalation of a radioactive material.
<b>Ingestion</b>	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.
<b>Serious Ingestion</b>	Not available.

**Section 5. Fire and Explosion Data**

<b>Flammability of the Product</b>	Non-flammable.
<b>Auto-Ignition Temperature</b>	Not applicable.
<b>Flash Points</b>	Not applicable.
<b>Flammable Limits</b>	Not applicable.
<b>Products of Combustion</b>	Not available.
<b>Fire Hazards in Presence of Various Substances</b>	organic materials. combustible materials.
<b>Explosion Hazards in Presence of Various Substances</b>	<p>Risks of explosion of the product in presence of mechanical impact: Not available.</p> <p>Risks of explosion of the product in presence of static discharge: Not available.</p> <p>Slightly explosive in presence of combustible materials, of organic materials.</p>
<b>Fire Fighting Media and Instructions</b>	OXIDIZING MATERIAL. Use DRY chemicals, CO <sub>2</sub> , water spray or foam.
<b>Special Remarks on Fire Hazards</b>	Oxidizing agent; may ignite oxidizable materials. Contact with combustible or organic materials may cause fire. It increases the flammability of any combustible substance.
<b>Special Remarks on Explosion Hazards</b>	In contact with easily oxidizable substances, it may react rapidly enough to cause violent combustion or explosion.

**Section 6. Accidental Release Measures**

<b>Small Spill</b>	Use appropriate tools to put the spilled solid in a convenient waste disposal container.
<b>Large Spill</b>	Radioactive material. Oxidizing material. Stop leak if without risk. Do not attempt recovery actions unless for rescue purposes. Do not touch damaged container or spilled material. Do not clean-up or dispose except under supervision of a specialist. Avoid contact with a combustible material (wood, paper, oil, clothing...). Keep substance damp using water spray. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal.

**Section 7. Handling and Storage**

<b>Precautions</b>	Keep away from heat. Keep away from sources of ignition. Keep away from combustible material.. Do not ingest. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as combustible materials, organic materials.
<b>Storage</b>	Keep container tightly closed. Keep container in a cool, well-ventilated area. Separate from acids, alkalis, reducing agents and combustibles. See NFPA 43A, Code for the Storage of Liquid and Solid Oxidizers.

**Section 8. Exposure Controls/Personal Protection**

<b>Engineering Controls</b>	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
<b>Personal Protection</b>	Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
<b>Personal Protection in Case of a Large Spill</b>	Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
<b>Exposure Limits</b>	Not available.

**Section 9. Physical and Chemical Properties**

<b>Physical state and appearance</b>	Solid. (Deliquescent solid.)	<b>Odor</b>	Odorless.
<b>Molecular Weight</b>	552.12 g/mole	<b>Taste</b>	Not available.
<b>pH (1% soln/water)</b>	Not available.	<b>Color</b>	White.
<b>Boiling Point</b>	Not available.		
<b>Melting Point</b>	Decomposition temperature: 500°C (932°F)		
<b>Critical Temperature</b>	Not available.		
<b>Specific Gravity</b>	Not available.		
<b>Vapor Pressure</b>	Not applicable.		
<b>Vapor Density</b>	Not available.		
<b>Volatility</b>	Not available.		
<b>Odor Threshold</b>	Not available.		
<b>Water/Oil Dist. Coeff.</b>	Not available.		
<b>Ionicity (in Water)</b>	Not available.		
<b>Dispersion Properties</b>	See solubility in water.		
<b>Solubility</b>	Easily soluble in cold water. Very soluble in alcohol (ethanol), acids.		

Continued on Next Page

**Section 10. Stability and Reactivity Data**

<b>Stability</b>	The product is stable.
<b>Instability Temperature</b>	Not available.
<b>Conditions of Instability</b>	Incompatible materials
<b>Incompatibility with various substances</b>	Highly reactive with combustible materials, organic materials. Reactive with reducing agents, acids.
<b>Corrosivity</b>	Non-corrosive in presence of glass.
<b>Special Remarks on Reactivity</b>	Also incompatible with finely powdered metals.
<b>Special Remarks on Corrosivity</b>	Not available.
<b>Polymerization</b>	Will not occur.

**Section 11. Toxicological Information**

<b>Routes of Entry</b>	Inhalation. Ingestion.
<b>Toxicity to Animals</b>	For Thorium Nitrate Anhydrous, (CAS number 13823-29-5): Acute oral toxicity (LD50): 1760 mg/kg [Mouse].
<b>Chronic Effects on Humans</b>	May cause damage to the following organs: kidneys, lungs, bone marrow.
<b>Other Toxic Effects on Humans</b>	Hazardous in case of skin contact (irritant), of ingestion, of inhalation.
<b>Special Remarks on Toxicity to Animals</b>	Not available.
<b>Special Remarks on Chronic Effects on Humans</b>	May cause adverse reproductive effects. Thorium reproductive effects, if they occur, are likely to be mediated by ionizing radiation. Thorium is a suspected carcinogen. Thorium Nitrate emits radiation which could cause cancer, but no evidence of cancer has yet been found. May affect genetic material (mutagenic)
<b>Special Remarks on other Toxic Effects on Humans</b>	Acute Potential Health Effects: Skin: Causes skin irritation with a rash, or burning feeling on contact. Eyes: Causes eye irritation. Inhalation: It can irritate the respiratory tract (nose, throat). Ingestion: May be harmful if swallowed. It may cause nausea, vomiting, dizziness, abdominal cramps, ulceration or bleeding from the small intestine, bloody diarrhea, weakness, convulsions, general depression, headache, mental impairment. Chronic Potential Health Effects: Skin: May cause dermatitis. Ingestion and Inhalation: Repeated or prolonged exposure may affect the liver, kidneys, lungs, bone marrow. It may reduce the ability of the bone marrow to make blood cells. Prolonged or repeated inhalation may cause scarring of the lungs. Note: Thorium can accumulate in the bones, lungs and lymph system. Thorium that is absorbed into the body can remain for long periods of time and increase the risk of radiation induced cancer in tissues where it is retained.

**Section 12. Ecological Information**

<b>Ecotoxicity</b>	Not available.
<b>BOD5 and COD</b>	Not available.
<b>Products of Biodegradation</b>	Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
<b>Toxicity of the Products of Biodegradation</b>	The products of degradation are less toxic than the product itself.
<b>Special Remarks on the Products of Biodegradation</b>	Not available.

**Section 13. Disposal Considerations**

<b>Waste Disposal</b>	Waste must be disposed of in accordance with federal, state and local environmental control regulations.
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**Section 14. Transport Information**

<b>DOT Classification</b>	CLASS 5.1: Oxidizing material.
<b>Identification</b>	UNNA: 1477 : Nitrate, inorganic, n.o.s (Thorium Nitrate) PG: III
<b>Special Provisions for Transport</b>	Not available.
<b>DOT (Pictograms)</b>	

**Section 15. Other Regulatory Information and Pictograms**

<b>Federal and State Regulations</b>	<p>California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Thorium nitrate (listed as Radionuclides)</p> <p>California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Thorium nitrate (Listed as Radionuclides)</p> <p>Connecticut hazardous material survey.: Thorium nitrate (CAS no. 13823-29-5)</p> <p>Rhode Island RTK hazardous substances: Thorium nitrate (CAS no. 13823-29-5)</p> <p>Pennsylvania RTK: Thorium nitrate (CAS no. 13823-29-5)</p> <p>Massachusetts RTK: Thorium nitrate (CAS no. 13823-29-5)</p> <p>New Jersey: Thorium nitrate (CAS no. 13823-29-5)</p> <p>CAS no. 13470-07-0 is not TCSA listed because it is a hydrate. CAS no. 13823-29-5 is TSCA listed.</p>
<b>California Proposition 65 Warnings</b>	<p>California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Thorium nitrate (listed as Radionuclides)</p> <p>California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.</p>
<b>Other Regulations</b>	<p>OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). For CAS number 13470-07-0:</p> <p>EINECS: This product is not on the European Inventory of Existing Commercial Chemical Substances.</p> <p>Canada: Not listed on Canadian Domestic Substance List (DSL) or Canadian Non- Domestic Substance List (NDSL).</p> <p>China: Not listed on National Inventory.</p> <p>Japan: Not listed on National Inventory (ENCS).</p> <p>Korea: Not listed on National Inventory (KECI).</p> <p>Philippines: Not listed on National Inventory (PICCS).</p> <p>Australia: Not listed on AICS.</p>

Continued on Next Page

For CAS number 13823-29-5:  
 EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances. (EINECS No. 237-514-1).  
 Canada: Listed on Canadian Domestic Substance List (DSL).  
 China: Listed on National Inventory.  
 Japan: Not listed on National Inventory (ENCS).  
 Korea: Listed on National Inventory (KECI).  
 Philippines: Listed on National Inventory (PICCS).  
 Australia: Listed on AICS.

**Other Classifications**

<b>WHMIS (Canada)</b>	CLASS C: Oxidizing material. CLASS D-2A: Material causing other toxic effects (VERY TOXIC).
<b>DSCL (EEC)</b>	R8- Contact with combustible material may cause fire. R36/38- Irritating to eyes and skin. R45- May cause cancer. S17- Keep away from combustible material. S36/37- Wear suitable protective clothing and gloves. S46- If swallowed, seek medical advice immediately and show this container or label.

**HMIS (U.S.A.)**

Health Hazard	2
Fire Hazard	0
Reactivity	0
Personal Protection	X

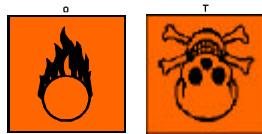
**National Fire Protection Association (U.S.A.)**

Health  Flammability  
 Reactivity  
 Specific hazard

**WHMIS (Canada) (Pictograms)**



**DSCL (Europe) (Pictograms)**







**TDG (Canada) (Pictograms)**



**ADR (Europe) (Pictograms)**



**Protective Equipment**

-  Gloves.
-  Lab coat.
-  Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.
-  Splash goggles.

**Section 16. Other Information****MSDS Code** T3490**References** Not available.**Other Special Considerations** Not available.

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CALL (541) 205-6855

**Notice to Reader**

*All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, United Nuclear Scientific, LLC. assumes no responsibility for the completeness or accuracy of the information contained herein.*