



Page 1/5 Printing date 06/27/2017 Revision date 06/26/2017 Version 1

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Product name: Holminum(III) of holpide hexahydrate         Book number:         Constant of the safety data sheet         Deals of the safety data sheet         Constant of the safety data sheet         Deals of the safety data sheet         Constant of the safety data sheet         Deals of the safety data sheet <tr< td=""><td></td><td></td></tr<>		
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Press       Press <t< td=""><td>14914-84-2 EC number:</td><td></td></t<>	14914-84-2 EC number:	
The set of	Details of the supplier of the safety data sheet Manufacturer/Supplier:	
First Biol       Biol <td>Thermo Fisher Scientific Chemicals, Inc. 30 Bond Street</td> <td></td>	Thermo Fisher Scientific Chemicals, Inc. 30 Bond Street	
Interaction Department: Health, Safety and Environmental Department         Desage wird y Medwards-Friday, Sam-Tym EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0788.         2 Hazard(s) identification         Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)         Image: Samparity Medwards and Me	Fax: 800-322-4757 Email: tech@alfa.com	
During normal business hours, (Monday-Heday, Bam-Tom EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0789.         2 Hazard(s) identification         Cessification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)         Som Int 2, H315       Causes skin inflation.         Syn Int 2, H315       Causes skin inflation.         Filt       Filt         Hazard(s) identification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)         Sort SE 1, H315       Causes skin inflation.         Hazard sol otherwise classified No information known.       Label elements         CHS07       Stable elements         GHS07       Stable elements         G1507       Stable elements         G1607       Stable elements         G1607       Stable elements         G1607	www.ana.com Information Department: Health, Safety and Environmental Department Emergency: telephone number:	
Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)         With 24 H315 Causes serious eye inflation.         Strot H1: 24 H315 Causes serious eye inflation.         Strot H2: 24 H315 Causes serious eye inflation.         Name of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)         Abbei of energy and pictograms         Very Strot F2: 34 Hard Strot Strot Hard Strot Strot Hard Strot Hard Pictograms         Very Strot Pictograms         Very Strot Pictograms	During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-	0789.
Shin Int. 2 H315 Causes serious seg initiation. Explore 24 H319 Causes serious seg initiation. Strort SE 3 H319 Causes serious seg initiation. Hand short at therefore classified and labeled in accordance with 29 CFR 1910 (OSHA HCS) Weard pictograms CHSIT CHSI		
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GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)         Weard Statements         GHS07         Signal word Warning         Masser Statements         H101 Causes serious eye irritation.         H133 May cause respiratory irritation.         H133 May cause respiratory irritation.         H233 May cause respiratory irritation.         H236 May cause respiratory irritation.         P260 P4361 + P233 If in eyes. Rines cauliously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.         P204 P2340 If in eyes. Rines cauliously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.         P204 P2340 If in eyes. Rines cauliously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.         P204 P230 If in eyes. Rines cauliously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.         P204 P230 If is eyes. Rines cauliously with water for several minutes. Remove contact lenses.         WHMS classification system.         WHMS classification system.         (Hcardrough detartal causing other toxic effects) = 1         Provestitis of PB1 and VPVB assessment         PB1: Not applicable.         Yest: Not applicable.         2 Composition/information on ingredients         Concentration: stubsta		
Signal word Warning Heard's tatements Hill S Causes Skin Intel automation.         Hill S Causes Skin Intel automation.         Hill S Cause Skin Intel automation.         Hill S Cause Skin Intel automation.         Precautionary statements Precautionary statem	GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)	
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HMIS ratings (scale 0-4) (Hazardous Materials Identification System)         Health (acute effects) = 1 Flammability = 0 Physical Hazard = 1         Other hazards Results of PBT and vPvB assessment PBT: Not applicable. vPvB: Not applicable.         3 Composition/information on ingredients Chemical characterization: Substances CAS# Description: 14914-84-2 Holmium(III) chloride hexahydrate Concentration: S100% Identification number(s): EC number: 233-387-1         4 First-aid measures Description of first aid measures After inhalation Supply fresh air. If required, provide artificial respiration. Keep patient warm. Seek immediate medical advice. After skin contact Immediately wash with water and soap and rinse thoroughly.	Hazard statements       -         Precautionary statements       -         P260       Wear protective gloves / eye protection / face protection.         P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.         P305+P351+P330       IF INHALED: Remove person to fresh air and keep comfortable for breathing.         P405       Store locked up.         P501       Dispose of contents/container in accordance with local/regional/national/international regulations.         WHMIS classification	
HMIS ratings (scale 0-4) (Hazardous Materials Identification System)         Health (acute effects) = 1 Flammability = 0 Physical Hazard = 1         Other hazards Results of PBT and vPvB assessment PBT: Not applicable. vPvB: Not applicable.         3 Composition/information on ingredients Chemical characterization: Substances CAS# Description: 14914-84-2 Holmium(III) chloride hexahydrate Concentration: S100% Identification number(s): EC number: 233-387-1         4 First-aid measures Description of first aid measures After inhalation Supply fresh air. If required, provide artificial respiration. Keep patient warm. Seek immediate medical advice. After skin contact Immediately wash with water and soap and rinse thoroughly.	$(\mathbf{T})$	
#Elemmability = 0         Physical Hazard = 1         Other hazards         Results of PBT and VPVB assessment         PBT: Not applicable.         3 Composition/information on ingredients         Chemical characterization: Substances         CAS# Description:         14914-84-2 Holmim(III) chloride hexahydrate         Concentration: ≤100%         Identification number(s):         EC number: 233-387-1         4 First-aid measures         After inhalation         Supply fresh air. If required, provide artificial respiration. Keep patient warm.         Seek immediate medical advice.         After skin contact         Immediately wash with water and soap and rinse thoroughly.	HMIS ratings (scale 0-4) (Hazardous Materials Identification System)	
Results of PBT and vPvB assessment         PBT: Not applicable.         vPvB: Not applicable.         3 Composition/information on ingredients         Chemical characterization: Substances         CAS# Description:         14914-84-2 Holmium(III) chloride hexahydrate         Concentration: ≤100%         Identification number(s):         EC number: 233-387-1         4 First-aid measures         Description of first aid measures         After inhalation         Supply fresh air. If required, provide artificial respiration. Keep patient warm.         Seek immediate medical advice.         After skin contact         Immediately wash with water and soap and rinse thoroughly.	Fire     Image: Im	
Chemical characterization: Substances CAS# Description: 14914-84-2 Holmium(III) chloride hexahydrate Concentration: <100% Identification number(s): EC number: 233-387-1 4 First-aid measures Description of first aid measures After inhalation Supply fresh air. If required, provide artificial respiration. Keep patient warm. Seek immediate medical advice. After skin contact Immediately wash with water and soap and rinse thoroughly.	Results of PBT and vPvB assessment PBT: Not applicable.	
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4 First-aid measures Description of first aid measures After inhalation Supply fresh air. If required, provide artificial respiration. Keep patient warm. Seek immediate medical advice. After skin contact Immediately wash with water and soap and rinse thoroughly.	Concentration: <100%	
After inhalation Supply fresh air. If required, provide artificial respiration. Keep patient warm. Seek immediate medical advice. After skin contact Immediately wash with water and soap and rinse thoroughly.		
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Seek immediate medical advice. <b>After skin contact</b> Immediately wash with water and soap and rinse thoroughly.	After inhalation	
Immediately wash with water and soap and rinse thoroughly.	Supply fresh air. If required, provide artificial respiration. Keep patient warm. Seek immediate medical advice.	
		(Contd. on page 2)
		<u> </u>

## Product name: Holmium(III) chloride hexahydrate

(Contd. of page 1) Seek immediate medical advice. After eye contact Rinse opened eye for several minutes under running water. Then consult a doctor. After swallowing Seek medical treatment. Information for doctor Information for doctor Most important symptoms and effects, both acute and delayed Causes skin irritation. Causes serious eye irritation. Indication of any immediate medical attention and special treatment needed No further relevant information available. 5 Fire-fighting measures Extinguishing media Suitable extinguishing agents Product is not flammable. Use fire-fighting measures that suit the surrounding fire. Special hazards arising from the substance or mixture If this product is involved in a fire, the following can be released: Hydrogen chloride (HCl) Holmium oxide Advice for firefighters **Protective equipment:** Wear self-contained respirator. Wear fully protective impervious suit. 6 Accidental release measures Personal precautions, protective equipment and emergency procedures Wear protective equipment. Keep unprotected persons away. Ensure adequate ventilation Environmental precautions: Do not allow material to be released to the environment without proper governmental permits. Environmental precautions: Do not allow material to be released to the environment will Methods and material for containment and cleaning up: Ensure adequate ventilation. Prevention of secondary hazards: No special measures required. Reference to other sections See Section 7 for information on safe handling See Section 7 for information on personal protection equipment. See Section 13 for disposal information. Protective Action Criteria for Chemicals PAC-1: Substance is not listed. PAC-3: Substance is not listed. 7 Handling and storage Handling Precautions for safe handling Handle under dry protective gas. Keep container tightly sealed. Ensure good ventilation at the workplace. Information about protection against explosions and fires: The product is not flammable Conditions for safe storage, including any incompatibilities Storage Requirements to be met by storerooms and receptacles: Refrigerate Information about storage in one common storage facility: Protect from heat. Store away from water/moisture. Store away from oxidizing agents. Further information about storage conditions: Further information about store Store under dry inert gas. This product is hygroscopic. Avoid contact with air/oxygen. Keep container tightly sealed. Protect from humidity and water. Refrinerate Refrigerate Specific end use(s) No further relevant information available. 8 Exposure controls/personal protection Additional information about design of technical systems: Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute. Control parameters Components with limit values that require monitoring at the workplace: The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace. Additional information: No data Exposure controls Personal protective equipment Personal protective equipment General protective and hygienic measures The usual precautionary measures for handling chemicals should be followed. Keep away from foodstuffs, beverages and feed. Remove all soiled and contaminated clothing immediately. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin. Maintain an ergonomically appropriate working environment. Breathing equipment: Use suitable respirator when high concentrations are present. Recommended filter device for short term use: Use a respirator with type N95 (USA) or PE (EN 143) cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards. Protection of hands: Impervious gloves Impervious gloves Check protective gloves prior to each use for their proper condition. The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer. **Eye protection:** Safety glasses with side shields / NIOSH (US) or EN 166(EU) **Body protection:** Protective work clothing.

(Contd. on page 3)

USA

# Product name: Holmium(III) chloride hexahydrate

(Contd. of page 2)

Information on toxicological effects Acute toxicity: No effects known. UDLCS0 values that are relevant for classification: No data Skin irritation or corrosion: Irritating effect, known. Germ cell mutagencity: No effects known. Germ cell mutagencity: No effects known. Specific target organ system toxicity - repeated exposure: No effects known. Specific target organ system toxicity - single exposure: No effects known. Subacute to chronic toxicity: No effects known. Specific target organ system toxicity - single exposure: No effects known. Subacute to chronic toxicity: No effects known. Comparison and toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known. Comparison and toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known. Comparison and advector and advector available. Fersistence and degradability No further relevant information available. Mobility in soil No further relevant information available. Concerning and the cological information: German functs: Do not allow material to be released to the environment without proper governmental permits. Do not allow undiluded product or large quantities to reach ground water, water course or sewage system. Avaid transfer information: Results of PBT and VPVB assessment PBT: Not applicable. Disposal considerations Waste treatment methods Resonmentation council state, local or national regulations to ensure proper disposal.			(Contd. of page 2)
Information on basic physical and chemical properties General information General info	9 Physical and chemical propertie	S	
General Information Genera			
Form:         Crystaline eagregrates           Oddr threshold:         Mot applicable           Other manufacture:         Mot applicable           Change in condition         The "Cit23 "F)           Beding point/Beding many:         Mot applicable           Flash point/Beding many:         Mot applicable           Flash point/Beding contributing many:         Mot applicable           Flash point/Beding contributing many:         Mot applicable           Beding contributing many:         Mot applicable           Bedintromanic control (Mot applicable         Mot ap	General Information		
Oddr. modt:         Oddrebase           Dorr thread:         Mot determined           Derror thread:         Mot deter	Appearance:	Crustelline aggregates	
Odor threshold:         And advantage           Privative:         Not applicable.           Change in condition going pointiging range: Subliming pointiging ran		Odorless	
Change in condition Median pointwithing ranges Building both withing and the construction of the constru			
Change in condition Median pointwithing ranges Building both withing and the construction of the constru	pH-value:	Not applicable.	
Median positival etting range: 718 C (1324 °F) Sublimitation temperature : Not determined Fash point: Not determined Fash point: Not determined Fash point: Not determined Composition temperature : Not determined Composition is composition temperature : Not determined Composition : Not applicable. Composition : Notage Composition : Notapplicable. Composition			
Beding packul/Bolling angles	Melting point/Melting range:	718 °C (1324 °F)	
Firsh point:         Not applicable           Firsh point:         Product is not formable.           Acto igniting:         Product does not present an explosion hazard.           Danger of explosion:         Product does not present an explosion hazard.           Danger of explosion:         Product does not present an explosion hazard.           Danger of explosion:         Product does not present an explosion hazard.           Danger of explosion:         Product does not present an explosion hazard.           Danger of explosion:         Product does not present an explosion hazard.           Danger of explosion:         Not determined           Danger of explosion:         Not determined.	Boiling point/Boiling range:	Not determined	
Finanziahily (solid, gasous) Product is not fammable. Geoorgasition memorature: Not determined Arto (gitting: Not determined Decomposition memorature: Not determined Lyper: Not determined Upper: Not determined Not determined	Sublimation temperature / start:		
Grafton temperature:         Mid determined           Charling of explosion:         Product does not present an explosion hazard.           Explosion intris:         Nid determined           Explosion intris:         Nid determined           Explosion intris:         Nid determined           Exponsion intris:         Nid applicable.           Explosing intris:         Nid applicable.           Explosing intris:         Nid applicable.           Partition contraction (no-ctanol/water): Nid determined.         Nid applicable.           Other information norw.         Reactivity Ni information norw.           Chemical stability: Stable under recommended storage conditions.         Nid applicable.           Conditions to avail Nin Information available.         Nid applicable.           Autor oppical information in toxicological inforts:         Nid applicable.           Autor oppical infortexit         Nid determined is applicable. <th></th> <td>Not applicable</td> <th></th>		Not applicable	
Decomposition temperature: Med defermined Med Adverse Parposition imite: Product Gase not present an explosion hezard. Explosion limite: Med defermined Parposion limite: Me	Flammability (solid, gaseous)	Product is not flammable.	
Auto igniting: Net determined. Denger of explosion: Product does not present an explosion hazard. Explosion: Net determined Upper: Net determined Upper: Net determined Upper: Net determined Vance present: Net deplicable. Vance density Subie under recommended storage conditions. Thermal decomposition records in formation available. Vance density Subie under records in formation available. Vance density Net relevant information available. Vance	Decomposition temperature:		
Explosion limits: Upper			
Explosion limits: Upper	Danger of explosion:	Product does not present an explosion hazard.	
Upper:         Not determined           Vapor density         Solubility           Solubility in / Miscibility with         Solubility           Solubility in / Miscibility with         Not determined           Partition conficient (n-octanol/water): Not determined.         Partition conficient (n-octanol/water): Not determined.           Partition conficient (n-octanol/water): Not determined.         Not applicable.           Other information         Not applicable.           Other information         Not applicable.           Stability of hazerdous reactions Reacts with storing outditing agents         Not applicable.           Chemical stability of hazerdous reactions Reacts with storing outditing agents         Not applicable.           Solubility of hazerdous reactions Reacts with storing outditing agents         Not applicable.           More applicable outditing agents         Not applicable.         Not applicable.           Solubility of hazerdous reactions Reacts with storing outditing agents         Not applicable.         Not applicable.	Explosion limits:		
Vajor pressure: Not applicable. Valor applicable.			
Density: Mot determined. We determined. We applicable. Belative density Mot applicable. Belative density Stable under recommended storage conditions. Thermal decomposition / conditions to be avoided. Decomposition will not occur if used and stored according to specifications. Provide information Sender. Belative density Stable under recommended storage conditions. Thermal decomposition / conditions for go addition genets Belative density Stable under recommended storage conditions. Thermal decomposition / conditions for go addition genets Belative density Belative Motion active addition. Belative density Belative Motion active addition. Belative density Belative Motion active addition. Belative density Belative Motion active decomposition roducts: Horompathe materials: Belative density Belative Motion active density and motions membranes. Belative density Belative Motion active decomposition roducts: Horompathe no toxicological information LDUCSO values that are relevant for classification: No data Stability Belative Motion. LDUCSO values that are relevant for classification: No data Stability Belative Motion. Belative decisity: No dessification data on carcinogenic properties of this material is available from the EPA, MARC, NTP, OSHA or ACGH. Carcinogenicity: No defeats known. Specific target organ system toxicity - speated exposure: No class strong in tradition. Assification hazard: No effects known. Specific target organ system toxicity - speated exposure: No class strong in tradition. Assification hazard: No effects known. Specific target organ			
Very density         Mot applicable.           Southality         Not applicable.           Water         Mot applicable.           Southality         Not applicable.           Water         Not applicable.           Water         Not applicable.           Water         Not applicable.           Water         Not applicable.           Stability and reactivity         Not subjects.           Reactivity Not information hown.         Not full applicable.           Stability and reactivity         Not subjects.           Possibility of the information hown.         Not subjects.           Conditions to avoid No turber relevant information available.         Subjects.           Possibility of the information hown.         Subjects.           Conditions to avoid No turber relevant information available.         Subjects.           Possibility of the information informatin to skin and the inf			
Evaporation Tate Nilscibility with a policicable. Water Stressely: Subject of the information available. Stability and reactivity is information known. Cherrical stability Stable under recommended storage conditions. Thermal decomposition in conventions in the available. Stability and reactivity Reactivity No information in conventions in the available. Stability and reactivity Reactivity No information in conventions in the available. Stability and reactivity Reactivity No information in conventions in the available. Stability and reactivity is the information available. Stability and reactivity is the information available. Stability and reactivity is the information in the available. Stability and reactivity is the information available. Stability and reactivity is the information available. Reactivity No information in convolutions is the available. Reactivity No information available. Reactivity No information products: Horospatible materials: Reactivity No effects known. LoU.CSO values that are relevant for classification: No data Shin initiation on corrosoin: Information available. Reactivity: No effects known. Carcinogenicity: No ef	Relative density		
Solubility in / Miscibility with With Solution and Solution in the second secon			
Water:         Soluble           Partition coefficient (n-octanol/water): Not determined.         Not applicable.           When mic:         Not applicable.           Cher Information         Not subther relevant information available.           Stability and reactivity         Reactivity Not information howm.           Reactivity Not information howm.         Reactivity Not information howm.           Conditions to avoid No further relevant information available.         Not subther and the subther applicable.           Stability			
Viscosity: dynamic: other information Stability and reactivity Reactivity Noinformation known. Chemical stability single bundler recommended storage conditions. Thermal decomposition / contributions to be swidded: Decomposition will not occur if used and stored according to specifications. Possibility of hazardous reactions Reacts with storag conditions. Thermal decomposition / controllers to be swidded: Decomposition will not occur if used and stored according to specifications. Possibility of hazardous reactions Reacts with storag conditions. Thermal decomposition / controllers to be swidded: Decomposition will not occur if used and stored according to specifications. Possibility of hazardous reactions Reacts with storag conditions will not occur if used and stored according to specifications. Possibility of hazardous reactions Reacts with storag conditions will not occur if used and stored according to specifications. Possibility of hazardous reactions Reacts with storage conditions will not occur if used and stored according to specifications. Possibility of hazardous reactions available: Bases Bases Bases Toxicological Information Information on toxicological effects Acute toxicity: No effects known. Stin infration or corrosion: Infant to skin and mucous membranes. Ever Intiation or corrosion: Infant to skin and mucous membranes. Ever Intiation or corrosion: Infant to skin and mucous membranes. Ever Intiation or corrosion: Infant to skin and mucous membranes. Ever Intiation or corrosion: Infant to skin and mucous membranes. Ever Intiation or corrosion: Infant to skin and mucous membranes. Ever Intiation or corrosion: Infant to skin and mucous membranes. Ever Intiation or corrosion: Infant to skin and mucous membranes. Ever Intiation or corrosion: Infant to skin and mucous membranes. Ever Intiation or corrosion: Infant to skin and mucous membranes. Ever Intiation or corrosion: Infant to skin and mucous membranes. Ever Intiation or corrosion: Infant to skin and mucous membrane	Water:		
dynamic: Other information         Not applicable. No further relevant information available.           Stability and reactivity         Reactivity No information known. Reactivity No information known. Thermal decomposition / conditions to be avoided: Decomposition will not occur if used and stored according to specifications. Possibility of Natardous reactions Reads with storing oxidiant gents Conditions to avoid No further relevant information available. Notations agents Arr Oxidizing agents Heatmonosture		: Not determined.	
Winematic:         Not significable.           Other Information         Not significable.           Stability and reactivity         Reactivity No information known.           Chemical stability Stable under recommended storage conditions.         Thermal decomposition / conditions to be avoided. Decomposition will not occur if used and stored according to specifications.           Conditions to void No Auther relevant information available.         Second Secon		Not applicable	
Other Information         No further relevant information available.           Stability and reactivity         Reactivity No information known.           Chemical stability Stable under recommended storage conditions.         Themal decomposition / conditions to be avoided: Decomposition will not occur if used and stored according to specifications.           Possibility of hazardous reactions Reacts with storag oxidiang agents         Incompatibul conditions to be avoided: Decomposition will not occur if used and stored according to specifications.           Possibility of hazardous reactions Reacts with storag oxidiang agents         Incompatibul conditions to be avoided: Decomposition will not occur if used and stored according to specifications.           Possibility of hazardous reactions Reacts with storag oxidiang agents         Incompatibul conditions to be avoided: Decomposition will not occur if used and stored according to specifications.           Possibility of hazardous feedomosition products:         Hydrogen childre           Had         Hazardous decomposition products:           Hydrogen childre         Heat           Hazardous decomposition roducts:         Hydrogen childre           Hord mutagenitis: No effects known.         Exercise theorem.           LDI LCSO values that are relevant for classification: No data         Shi irritation or corolisi: Triating refersi           Specific target organ system toxicity - repeated exposure: No effects known.         Exercise known.           Carcinogenicity: No classification da		Not applicable.	
Reactivity No information known. Chemical stability Stabie under recommended storage conditions. Thermal decomposition / conditions to be avoided: Decomposition will not occur if used and stored according to specifications. Possibility of hazardous reactions Reads with storag outdaing agents Conditions to avoid No further relevant information available. Bases Ar Outdains gents Heat Meanimosture Hazardous reactions Reads with storag outdaing agents Areas A	Other information	No further relevant information available.	
Acute toxicity: No effects known. LDLCSO vulues that are relevant for classification: No data Skin irritation or corrosion: Irritant to skin and mucous membranes. Eye irritation or corrosion: Irritant o skin and mucous membranes. Sensitization: No sensitizing effects known. Carcinogenicity: No effects known. Carcinogenicity: No effects known. Specific target organ system toxicity - repeated exposure: No effects known. Specific target organ system toxicity - repeated exposure: May cause respiratory irritation. Aspiration hazard: No effects known. Specific target organ system toxicity - repeated exposure: May cause respiratory irritation. Aspiration hazard: No effects known. Subacute to chronic toxicity: No effects known. Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known. Ecological information Toxicity Aquatic toxicity: No further relevant information available. Persistence and degradability No further relevant information available. Mobility in soil No further relevant information available. Additional ecological information General ecological information available. Additional ecological information available. Mobility in soil No further relevant information available. Mobility in soil No further relevant information available. Additional ecological information: General ecological information: General ecological information: General ecological information available. Additional ecological information available. PST: Not applicable. PYB: Not applicable. PYB: Not applicable. PYB: Not applicable. PYB: Not applicable. PYB: Not applicable. Coconsiderations Waste treatment methods R	Bases' Air Oxidizing agents Water/moisture Heat <b>Hazardous decomposition products</b> . Hydrogen chloride (HCI) Holmium oxide <b>11 Toxicological information</b>		
Toxicity Aquatic toxicity: No further relevant information available. Persistence and degradability No further relevant information available. Bioaccumulative potential No further relevant information available. Mobility in soil No further relevant information available. Additional ecological information: General notes: Do not allow material to be released to the environment without proper governmental permits. Do not allow material to be released to the environment without proper governmental permits. Do not allow undiluted product or large quantities to reach ground water, water course or sewage system. Avoid transfer into the environment. Results of PBT and vPvB assessment PBT: Not applicable. VPvB: Not applicable. Other adverse effects No further relevant information available. Disposal considerations Waste treatment methods Recommendation Consult state, local or national regulations to ensure proper disposal.	Acute toxicity: No effects known. LD/LC50 values that are relevant for classification: No data Skin irritation or corrosion: Irritating effect. Sensitization: No sensitizing effects known. Germ cell mutagenicity: No effects known. Carcinogenicity: No effects known. Carcinogenicity: No effects known. Specific target organ system toxicity - repeated exposure: No effects known. Specific target organ system toxicity - single exposure: May cause respiratory irritation. Aspiration hazard: No effects known. Subacute to chronic toxicity: No effects known.		
Aquatić toxicity: No further relevant information available. Persistence and degradability No further relevant information available. Bioaccumulative potential No further relevant information available. Mobility in soil No further relevant information available. Additional ecological information: General notes: Do not allow material to be released to the environment without proper governmental permits. Do not allow undiluted product or large quantities to reach ground water, water course or sewage system. Avoid transfer into the environment. Results of PBT and vPvB assessment PBT: Not applicable. VPvB: Not applicable. Other adverse effects No further relevant information available. Disposal considerations Waste treatment methods Recommendation Consult state, local or national regulations to ensure proper disposal.	12 Ecological information Toxicity		
Waste treatment methods Recommendation Consult state, local or national regulations to ensure proper disposal.	Aquatić toxicity: No further relevant in Persistence and degradability No fur Bioaccumulative potential No further Mobility in soil No further relevant info Additional ecological information: General notes: Do not allow material to be released to Do not allow undiluted product or large Avoid transfer into the environment. Results of PBT and vPvB assessmen PBT: Not applicable.	her relevant information available. relevant information available. rmation available. the environment without proper governmental permits. quantities to reach ground water, water course or sewage system. nt	
Waste treatment methods Recommendation Consult state, local or national regulations to ensure proper disposal.			
Recommendation Consult state, local or national regulations to ensure proper disposal.	-		
Recommendation Consult state, local or national regulations to ensure proper disposal.		ar national regulations to ansure menor diar	
	Recommendation Consult state, local	or national regulations to ensure proper disposal.	(Contd. on page 4

(Contd. of page 3)

## Product name: Holmium(III) chloride hexahydrate

Uncleaned packagings: Recommendation: Disposal must be made according to official regulations. Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information		
UN-Number DOT, ADN, IMDG, IATA	Not applicable	
UN proper shipping name DOT, ADR, ADN, IMDG, IATA	Not applicable	
Transport hazard class(es)		
DOT, ADR, ADN, IMDG, IATA Class	Not applicable	
Packing group DOT, ADR, IMDG, IATA	Not applicable	
Environmental hazards: Marine pollutant (IMDG):	No	
Special precautions for user	Not applicable.	
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.		
Transport/Additional information:		
DOT Marine Pollutant (DOT):	No	
UN "Model Regulation":	Not applicable	

### 15 Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS) Hazard pictograms



 

 Signal word Warning Hazard statements

 H315 Causes skin irritation.

 H315 Causes skin irritation.

 H319 Causes serious eye irritation.

 Precautionary statements

 P261
 Avoid breathing dust/fume/gas/mist/vapors/spray

 P261
 Avoid breathing dust/fume/gas/mist/vapors/spray

 P280
 Wear protective gloves / eye protection / face protection.

 P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

 P304+P340
 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

 P405
 Store locked up.

 Dispose of contents/container in accordance with local/regional/national/international regulations.

 Via the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventor

 Comestic Substances List (DSL).

 National regulations All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory. All components of this product are listed on the Canadian Domestic Substances List (DSL). SARA Section 313 (specific toxic chemical listings) Substance is not listed. California Proposition 65 Prop 65 - Chemicals known to cause cancer Substance is not listed. Prop 65 - Developmental toxicity, female Substance is not listed. Prop 65 - Developmental toxicity, female Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity female Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed. Prop 65 - Developmental toxicity, and Substance is not listed. Prop 65 - Developmental toxicity, and Substance is not listed. Prop 65 - Developmental toxicity, and Substance is not listed. Prop 65 - Developmental toxicity, and Substance is not listed. Prop 65 - Developmental toxicity, and Substance is not listed. Prop 65 - Developmental toxicity, and Substance is not listed. Prop 65 - Developmental toxicity, and Substance is not listed. Differention about limitations and prohibitive regulations Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006. Substance is not listed. The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed. market and use must be observed. Substance is not listed. Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is not listed. Chemical safety assessment: A Chemical Safety Assessment has not been carried out. 16 Other information Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user. Department issuing SDS: Global Marketing Department Date of preparation/Revision: Print date, revision date and version number are in the header of each page. Abbreviations and acronyms: RID: Reighement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail) IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA) ICAO: Thermational Concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail) IATA-DGR: Dangerous Goods Regulations by the "International Civil Aviation Organisation" (ICAO) ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road) IMDG: International Maritime Code for Dangerous Goods DOT: US Department of Transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road) IMDG: International Air Transport Association IATA: International Air Transport Association IATA: International Air Transport Association IATA: International Air Transport Association UNIS: Hazardous Materials Identification System (USA) WHMIS: Hazardous Materials Information System (Canada) LC50: Lethal concentration, 50 percent DBT: Persistent, Bioaccumulative and Toxic SVHC: Substances of Very High Concern VPWE: very Persistent and very Bioaccumulative ACGIH: American Conference of Governmental Industrial Hygienists (USA) OSHA: Occupational Safety and Health Administration (USA) MARC: International Agency for Research on Cancer Department issuing SDS: Global Marketing Department (Contd. on page 5)

# Product name: Holmium(III) chloride hexahydrate

EPA: Environmental Protection Agency (USA) Skin Irrit. 2: Skin corrosion/irritation – Category 2 Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A STOT SE 3: Specific target organ toxicity (single exposure) – Category 3 (Contd. of page 4)

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