



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

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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	
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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.	(\mathbf{T})	
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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	
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Change in condition Median pointwithing ranges Building both withing and the construction of the constru	pH-value:	Not applicable.	
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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:		
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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.		
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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.			
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	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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