Printing date 07/20/2021

Reviewed on 07/20/2021

1 Identification

- · Product name
- · Trade name: Gallium(III) chloride, anhydrous, granular (99.999%-Ga) PURATREM
- Item number: 93-3140
- · CAS Number:
- 13450-90-3
- *EC number:* 236-610-0
- Details of the supplier of the safety data sheet • Manufacturer/Supplier:
- Strem Chemicals, Inc. 7 Mulliken Way NEWBURYPORT, MA 01950 USA info@strem.com
- · Information department: Technical Department
- Emergency telephone number: EMERGENCY: CHEMTREC: + 1 (800) 424-9300 During normal opening times: +1 (978) 499-1600

2 Hazard(s) identification

· Classification of the substance or mixture

GHS05 Corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.

Eye Dam. 1 H318 Causes serious eye damage.

- · Label elements
- · GHS label elements
- The substance is classified and labeled according to the Globally Harmonized System (GHS).
- Hazard pictograms



· Signal word Danger

Hazard-determining components of labeling: gallium trichloride
Hazard statements
H314 Causes severe skin burns and eye damage.
Precautionary statements
P231 Handle under inert gas.
P222 Do not allow contact with air.
P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present

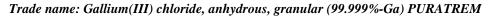
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P422 Store contents under inert gas.

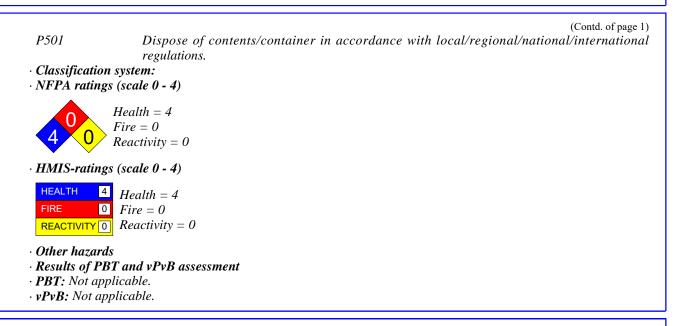
(Contd. on page 2)

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3 Composition/information on ingredients

- · Chemical characterization: Substances
- · CAS No. Description
- 13450-90-3 gallium trichloride
- Identification number(s)
- EC number: 236-610-0

4 First-aid measures

- · Description of first aid measures
- · General information: Immediately remove any clothing soiled by the product.
- After inhalation: In case of unconsciousness place patient stably in side position for transportation.
- · After skin contact: Immediately wash with water and soap and rinse thoroughly.
- · After eye contact: Rinse opened eye for several minutes under running water. Then consult a doctor.
- After swallowing: Drink copious amounts of water and provide fresh air. Immediately call a doctor.
- · Information for doctor:
- · Most important symptoms and effects, both acute and delayed No further relevant information available.
- Indication of any immediate medical attention and special treatment needed No further relevant information available.

5 Fire-fighting measures

- · Extinguishing media
- Suitable extinguishing agents: Use fire fighting measures that suit the environment.
- \cdot Special hazards arising from the substance or mixture
- During heating or in case of fire poisonous gases are produced.
- · Advice for firefighters
- Protective equipment: Mouth respiratory protective device.

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6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures Mount respiratory protective device.
- Wear protective equipment. Keep unprotected persons away.
- Environmental precautions: No special measures required.
 Methods and material for containment and cleaning up: Use neutralizing agent.
- Dispose contaminated material as waste according to item 13. Ensure adequate ventilation.
- **Reference to other sections** See Section 7 for information on safe handling. See Section 8 for information on personal protection equipment. See Section 13 for disposal information.

• Protective Action Criteria for Chemicals

· PAC-1:

2.9 mg/m3

32 mg/m3

930 mg/m3

• PAC-2:

· PAC-3:

7 Handling and storage

· Handling:

- · Precautions for safe handling
- Thorough dedusting.
- Ensure good ventilation/exhaustion at the workplace.
- Open and handle receptacle with care.
- · Information about protection against explosions and fires: Keep respiratory protective device available.
- · Conditions for safe storage, including any incompatibilities
- · Storage:
- Requirements to be met by storerooms and receptacles: No special requirements.
- Information about storage in one common storage facility: Not required.
- Further information about storage conditions: Keep receptacle tightly sealed.
- Store in cool, dry conditions in well sealed receptacles.
- *Specific end use(s) No further relevant information available.*

8 Exposure controls/personal protection

· Additional information about design of technical systems: No further data; see item 7.

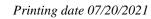
· Control parameters

- · Components with limit values that require monitoring at the workplace: Not required.
- Additional information: The lists that were valid during the creation were used as basis.

· Exposure controls

· Personal protective equipment: Wear protective clothing

• General protective and hygienic measures:



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	(Contd. of page 3			
Immediately remove all soiled and c	ontaminated clothing.			
Wash hands before breaks and at the	e end of work.			
Avoid contact with the eyes.				
Avoid contact with the eyes and skin				
• Breaking equipment: A NIOSH app • Protection of hands:	proved respirator in accordance with $29 \ CFR \ 1910.134$.			
Trotection of nunus.				
Protective gloves				
The glove material has to be imperm	neable and resistant to the product/ the substance/ the preparation.			
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/				
chemical mixture.				
	pnsideration of the penetration times, rates of diffusion and the degradation			
 Material of gloves The selection of the suitable gloves does not only depend on the material, but also on further marks of quality a varies from manufacturer to manufacturer. Penetration time of glove material 				
				to be found out by the manufacturer of the protective gloves and has to be
			observed.	
• Eye protection:				
Tightly sealed goggles				
	-ti as			
P Physical and chemical proper				
P Physical and chemical proper • Information on basic physical and o				
Physical and chemical proper • Information on basic physical and o • General Information				
P Physical and chemical proper • Information on basic physical and o				
P Physical and chemical proper • Information on basic physical and o • General Information • Appearance:	chemical properties Crystalline powder White			
 Physical and chemical proper Information on basic physical and a General Information Appearance: Form: Color: Odor: 	chemical properties Crystalline powder White Acidic			
 Physical and chemical proper Information on basic physical and a General Information Appearance: Form: Color: 	chemical properties Crystalline powder White			
 Physical and chemical proper Information on basic physical and a General Information Appearance: Form: Color: Odor: 	chemical properties Crystalline powder White Acidic			
 Physical and chemical proper Information on basic physical and a General Information Appearance: Form: Color: Odor: Odor threshold: 	chemical properties Crystalline powder White Acidic Not determined.			
 Physical and chemical proper Information on basic physical and of General Information Appearance: Form: Color: Odor: Odor threshold: pH-value: Change in condition Melting point/Melting range: 	chemical properties Crystalline powder White Acidic Not determined. Not applicable. 77.9 °C (172 °F)			
 Physical and chemical proper Information on basic physical and a General Information Appearance: Form: Color: Odor: Odor threshold: pH-value: Change in condition 	chemical properties Crystalline powder White Acidic Not determined. Not applicable.			
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 Physical and chemical proper Information on basic physical and a General Information Appearance: Form: Color: Odor: Odor: Odor threshold: pH-value: Change in condition Melting point/Melting range: Boiling point/Melting range: Flash point: Flammability (solid, gaseous): Ignition temperature: Decomposition temperature: Auto igniting: Danger of explosion: 	chemical properties Crystalline powder White Acidic Not determined. Not applicable. 77.9 °C (172 °F) 201.3 °C (394 °F) Not applicable. Not determined. Not determined. Not determined.			
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CHEMICALS, INC

Safety Data Sheet according to OSHA HCS

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Reviewed on 07/20/2021

Trade name: Gallium(III) chloride, anhydrous, granular (99.999%-Ga) PURATREM

	(C	ontd. of page
Upper:	Not determined.	
Vapor pressure at 25 °C (77 °F):	0.51 hPa	
<i>Density at 20 °C (68 °F):</i>	2.47 g/cm ³ (20.61215 lbs/gal)	
Relative density	Not determined.	
Vapor density	Not applicable.	
Evaporation rate	Not applicable.	
Solubility in / Miscibility with Water:	Insoluble.	
Partition coefficient (n-octanol/wate	r): Not determined.	
Viscosity:		
Dynamic:	Not applicable.	
Kinematic:	Not applicable.	
Solvent content:		
Organic solvents:	0.0 %	
VOC content:	0.0 g/l / 0.00 lb/gl	
Solids content:	100.0 %	
Other information	No further relevant information available.	

10 Stability and reactivity

· Reactivity No further relevant information available.

- · Chemical stability
- Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
- · Possibility of hazardous reactions No dangerous reactions known.
- · Conditions to avoid No further relevant information available.
- Incompatible materials: No further relevant information available.
- · Hazardous decomposition products: No dangerous decomposition products known.

11 Toxicological information

- · Information on toxicological effects
- Acute toxicity:
- · Primary irritant effect:
- on the skin: Caustic effect on skin and mucous membranes.
- \cdot on the eye:
- Strong caustic effect.

Strong irritant with the danger of severe eye injury.

- · Sensitization: No sensitizing effects known.
- · Additional toxicological information:

Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

· Carcinogenic categories

· IARC (International Agency for Research on Cancer)

Substance is not listed.

· NTP (National Toxicology Program)

Substance is not listed.

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Trade name: Gallium(III) chloride, anhydrous, granular (99.999%-Ga) PURATREM

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· OSHA-Ca (Occupational Safety & Health Administration)

Substance is not listed.

12 Ecological information

- · Toxicity
- Aquatic toxicity: No further relevant information available.
- *Persistence and degradability No further relevant information available.*
- · Behavior in environmental systems:
- · Bioaccumulative potential No further relevant information available.
- \cdot Mobility in soil No further relevant information available.
- · Additional ecological information:
- · General notes: Must not reach bodies of water or drainage ditch undiluted or unneutralized.
- · Results of PBT and vPvB assessment
- · **PBT:** Not applicable.
- **vPvB:** Not applicable.
- · Other adverse effects No further relevant information available.

13 Disposal considerations

- · Waste treatment methods
- *Recommendation: Must not be disposed of together with household garbage. Do not allow product to reach sewage system.*
- · Uncleaned packagings:
- *Recommendation:* Disposal must be made according to official regulations.

· UN-Number		
DOT, IMDG, IATA	UN1759	
· UN proper shipping name		
DOT	Corrosive solids, n.o.s.	
IMDG, IATA	CORROSIVE SOLID, N.O.S.	
• Transport hazard class(es) • DOT		
CORROSVE 8		
· Class	8 Corrosive substances	
· Label	8	

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	(Contd. of	pa
· IMDG, IATA		
8		
Class	8 Corrosive substances	
· Label	8	
· Packing group		
· DOT, IMDG, IATA	II	
· Environmental hazards:		
• Marine pollutant:	No	
· Special precautions for user	Warning: Corrosive substances	
· Danger code (Kemler):	65	
· EMS Number:	F- A , S - B	
· Stowage Category	Α	
• Transport in bulk according to Annex		
MARPOL73/78 and the IBC Code	Not applicable.	
· Transport/Additional information:		
·DOT		
• Quantity limitations	On passenger aircraft/rail: 15 kg	
	On cargo aircraft only: 50 kg	
· IMDG		
· Limited quantities (LQ)	1 kg	
\cdot Excepted quantities ($\widetilde{E}Q$)	Code: E2	
	Maximum net quantity per inner packaging: 30 g	
	Maximum net quantity per outer packaging: 500 g	
· UN ''Model Regulation'':	UN 1759 CORROSIVE SOLIDS, N.O.S., 8, II	

15 Regulatory information

 \cdot Safety, health and environmental regulations/legislation specific for the substance or mixture \cdot Sara

· Section 355 (extremely hazardous substances):

Substance is listed.

· Section 313 (Specific toxic chemical listings):

Substance is not listed.

· TSCA (Toxic Substances Control Act):

Substance is listed.

· Proposition 65

· Chemicals known to cause cancer:

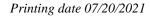
Substance is not listed.

· Chemicals known to cause reproductive toxicity for females:

Substance is not listed.

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Trade name: Gallium(III) chloride, anhydrous, granular (99.999%-Ga) PURATREM

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- · Chemicals known to cause reproductive toxicity for males:
- Substance is not listed.
- · Chemicals known to cause developmental toxicity:
- Substance is not listed.
- · Carcinogenic categories
- · EPA (Environmental Protection Agency)
- Substance is not listed.
- TLV (Threshold Limit Value established by ACGIH)
- Substance is not listed.
- · NIOSH-Ca (National Institute for Occupational Safety and Health)
- Substance is not listed.

· GHS label elements

- The substance is classified and labeled according to the Globally Harmonized System (GHS).
- Hazard pictograms



- · Signal word Danger
- · Hazard-determining components of labeling:
- gallium trichloride
- · Hazard statements
- H314 Causes severe skin burns and eye damage.
- · Precautionary statements
- P231 Handle under inert gas.
- P222 Do not allow contact with air.
- P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
- P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P422Store contents under inert gas.P501Dispose of contents/container in accordance with local/regional/national/international
regulations.
- · Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- · Department issuing SDS: Technical Department.
- · Contact: Technical Director
- · Date of preparation / last revision 07/20/2021 / -
- Abbreviations and acronyms:

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 Transportation IATA: International Air Transport Association
- ACGIH: American Conference of Governmental Industrial Hygienists

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EINECS: European Inventory of Existing Commercial Chemical Substances CAS: Chemical Abstracts Service (division of the American Chemical Society) NFPA: National Fire Protection Association (USA) HMIS: Hazardous Materials Identification System (USA) VOC: Volatile Organic Compounds (USA, EU) PBT: Persistent, Bioaccumulative and Toxic vPvB: very Persistent and very Bioaccumulative NIOSH: National Institute for Occupational Safety OSHA: Occupational Safety & Health TLV: Threshold Limit Value	(Contd. of page 8)
NIOSH: National Institute for Occupational Safety	
TLV: Threshold Limit Value	
PEL: Permissible Exposure Limit REL: Recommended Exposure Limit	
Skin Corr. 1B: Skin corrosion/irritation – Category 1B	
Eye Dam. 1: Serious eye damage/eye irritation – Category 1	LIC