

## GERMANIUM CORPORATION OF AMERICA ® SAFETY DATA SHEET

### 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Identifier:** GERMANIUM TETRACHLORIDE

**SDS Number:** SDS-1

**Revised Date:** 7 MAY 2018

**MANUFACTURER:**

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**EMERGENCY PHONE:**

**CHEMTREC 24 hrs.**

**USA: 1 (800) 424-9300**

**Outside USA: +1 (703) 527-3887**

**Product Use:** Industrial Use - Used in the industrial manufacture of fiber optic equipment or other related uses.

### 2. HAZARDS IDENTIFICATION

**GHS:**



Signal Word: Danger

Hazard statement(s)

H314 Causes severe skin burns and eye damage

H318 Serious eye damage

H333 May be harmful if inhaled

EUH014 Reacts violently with water

Precautionary statement(s)

P233 Keep container tightly closed

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

P270 Do not eat, drink or smoke when using this product

P273 Avoid release to the environment

P280 Wear protective gloves/protective clothing/eye protection/face protection

P362 + P364 Take off contaminated clothing and wash before reuse

P301+330+331

+311 IF SWALLOWED: Rinse mouth, do NOT induce vomiting, call a POISON CENTER or doctor/physician

P302 +352 IF ON SKIN: Wash with plenty of soap and water

P304 + 341 +310 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing, immediately call a POISON CENTER or doctor/physician

P305 + 351 IF IN EYES: Rinse continuously with water for several minutes (15 mins)

P310 Immediately call a POISON CENTER/doctor

P402 + P404 Store in a dry place. Store in a closed container

**GHS Category Classification:**

Category 1 – Serious Eye Damage/Eye irritation

Category 1 B – Skin Corrosion/Irritant

Category 3- Single target organ toxicity-single exposure

**DANGER:** causes burns by all exposure routes. Product will fume in moist air. Material hydrolyzes in contact with moisture/water releasing toxic and corrosive fumes of hydrogen chloride and aqueous hydrochloric acid.

**PRIMARY ROUTES OF ENTRY:**

Eye ✓ Inhalation ✓ Skin ✓ Ingestion ✓

**Carcinogen listed in**

NTP IARC OSHA Not Listed ✓

**POTENTIAL HEALTH EFFECTS:**

**Eye Contact:** Lachrymator (substance which increases the flow of tears). Long and Short term exposure may cause tearing and burns.

**Ingestion:** May cause burns from mild to serious.

**Inhalation:** Short-term exposure may cause mild irritation to burns of the respiratory tract. Long term exposure or inhaling large doses may cause serious damage to the respiratory tract. Difficulty in breathing may be experienced, coughing and wheezing, shortness of breath and pulmonary edema.

**Skin Contact:** Contact will cause burns to the skin from mild to severe, especially if skin is wet.

**Chronic:** Contact will cause serious damage to respiratory tract, eyes and skin.

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

Components	Wt. %	CAS Registry #/EINECS	TWA (mg/m3)
GERMANIUM TETRACHLORIDE	100	10038-98-9/233-116-7	N.E.

### 4. FIRST AID MEASURES

**Eye Contact:** Hold eyelids apart and flush eyes with plenty of tepid water for at least 15 minutes or more until no evidence of chemical remains. Seek medical attention immediately.

**Ingestion:** If patient is conscious, ONLY induce vomiting as directed by trained personnel. NEVER give anything by mouth to an unconscious person. Seek medical attention immediately.

**Inhalation:** When safe to enter area, remove to fresh air. If not breathing, give artificial respiration or oxygen by trained personnel. Seek immediate medical attention.

**Skin Contact:** Remove contaminated clothing. Wash affected area with soap and large amounts of water until no evidence of chemical remains. Wash clothing before reuse. Destroy contaminated shoes. Get medical attention immediately.

## 5. FIRE FIGHTING MEASURES

**Flash Point:** Not applicable. **Method:** Not established.

**Auto-ignition Temperature:** Not established.

**Flammable Limits:** Limits not established. Not flammable.

**Extinguishing Media:** Regular dry chemical, carbon dioxide and regular foam. Material will react with water and give off fumes. DO NOT USE WATER!

**Special Fire Fighting Procedures** Firefighters must wear NIOSH or other approved self-contained breathing apparatus and full protective clothing. Cool containers with water spray well after fire is out. Avoid getting water inside of containers. Stay away from the ends of the tanks. Avoid inhalation of material or combustion by-product. Stay upwind and keep out of low areas. Will decompose upon heating from a fire to produce corrosive and/or toxic fumes.

**Explosion Sensitivity:** Mechanical Impact: Not available **Static Discharge:** Not available

## 6. ACCIDENTAL RELEASE MEASURES

**Spill or Leak Procedures:** Wear the appropriate personal protective equipment (chemical resistant gloves, chemical resistant clothing, with a vapor barrier, chemical resistant boots or shoe covers and respirator) prior to addressing any type of spill. Do not touch spilled material. Stop leak if possible without personal risk. Small spills or leaks: Absorb with sand or other non-combustible material such as absorbent mat/ pillow/ boom. Do not allow any material to enter the drains. Collect spilled material and dispose of in a covered waste container. Properly label container. Large spills: Isolate area, keep unnecessary personnel away and deny entry. Contact the appropriate trained individuals who will be wearing the correct personal protective clothing including a self-contained breathing apparatus (SCBA) Spillage may require evacuation/isolation measures. Do not allow spillage to enter any drains, waterways or ground. Contain spill if necessary. Air circulating systems may need to be shut down to avoid spreading of vapors. All waste must be disposed of in accordance with applicable state, federal and local regulations. Consult the Emergency Guide Book, Guide #154 for additional emergency spill information and evacuation/isolation distances.

## 7. HANDLING AND STORAGE

### Handling and Storage Precautions:

Store product in cool dry area in tightly sealed containers. Product should be kept away from incompatible substances. Store under an inert atmosphere. Follow applicable regulations and requirements. Personnel should be familiar with the proper use of the material and the materials container.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Engineering Controls:** Handling of material shall be within a glove box or other equipment where conditions are controlled. Proper ventilation is required when handling product, in order to reduce or eliminate exposure. Material is reactive in air and will fume upon contact to air and water. Avoid exposure to product.

### Personal protection:

**Eyes:** Chemical safety glasses/goggles and face-shield. Provide an emergency eyewash/ shower in the immediate work area. Do not wear contact lenses when working with this product.

**Respirator:** A NIOSH approved or other authority approved full-face air purifying respirator with an acid gas/particulate chemical cartridge is recommended when exposure concentrations are at a minimum. For unknown

concentrations use either a self-contained breathing apparatus (SCBA) with full face piece, or any supplied-air respirator with full face-piece and operated in a pressure demand or other positive-pressure mode in combination with separate escape supply.

**Skin:** Compatible chemical (acid) resistant gloves. (Nitrile/Neoprene any rated for Hydrochloric acid)

**Other:** Lab coat or chemical resistant clothing, eyewash shower unit in work area. Avoid the use of contact lenses when using this product.

**Work/Hygienic Practices:** Maintain good housekeeping. Clean up spills immediately. Avoid eating, smoking or drinking in the work area. Wash hands thoroughly with soap and water immediately upon leaving the work area.

Important: Maintain an eyewash/shower unit at or near the usage point of this product.

No established OSHA Permissible Exposure Levels for Germanium Tetrachloride.

Hydrogen chloride 7647-01-0 (ACGIH 2 ppm ceiling limit, OSHA 5 ppm ceiling limit)

OEL – Russia: Short term exposure level (STEL) 1 mg/m<sup>3</sup> January 1993

Bulgaria: TWA 1mg/m<sup>3</sup>

Latvia: TWA 1 mg/m<sup>3</sup>

Lithuania: 1 mg/m<sup>3</sup> (germanium)

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:** Colorless, mobile, fuming liquid

**Odor:** Acidic odor/Irritating odor

**Specific Gravity:** 1.87 @20 C

**Vapor Pressure:** 76 mmHg @20 C

**Vapor Density:** Not available

**Melting/Freezing Point:** -57 F (-49.5 C)

**Odor Threshold:** Not available

**Flash Point:** Not applicable

**Boiling Point:** 83.1 C / 84 C@ 750 mm Hg

**pH:** <1 (corrosive)

**Solubility in Water:** Reacts

**Evaporation Rate:** Not available

**Molecular weight:** 214.40

## 10. STABILITY AND REACTIVITY

**General:** May react with evolution of heat on contact with water. Releases toxic fuming gases. Releases corrosive fuming gases.

**Conditions to Avoid:** Contact with water. Avoid heat, flames, sparks and other sources of ignition. May ignite or explode on contact with combustible materials.

**Incompatible Materials:** Bases, oxidizing materials, water.

**Hazardous Decomposition /Combustion:** Thermal decomposition products: hydrogen chloride gas, germanium oxides. Contact with air or water will generate – fuming products such as hydrogen chloride.

**Hazardous Polymerization:** Will not occur.

**Physical Hazards:** Reacts on contact with air, water or heat: fuming material.

## 11. TOXICOLOGICAL INFORMATION

**Carcinogenicity:** NTP: No

**OSHA:** No  
**IARC:** No

**Irritation Data:** 50-mg eyes- rabbit severe  
**LD50:** 56 mg/kg intravenous-mouse  
**LC50:** 44 gm/m<sup>3</sup>/2 hour (s) inhalation-mouse  
**TCLo lowest published toxic concentration – inhalation:** rodent (mouse) 500 mg/m<sup>3</sup> – 2 hours/40 D-I  
**Local Effect:** Corrosive: inhalation, skin, eye, ingestion  
See Registry of Toxic Effects of Chemical Substances (RTECS) Number – LY5225000 for additional information.

## Health Effects

### Inhalation:

**Acute Exposure:** Germanium Tetrachloride: can cause irritation and burns to the respiratory system.

**Chronic Exposure:** There have been lasting changes in the respiratory system function reported in animals. Extremely destructive to tissue of the mucous membranes and upper respiratory tract.

### Skin Contact:

**Acute Exposure:** May cause irritation or acid type burns, possibly severe.

**Chronic Exposure:** Effects depend on concentration and duration of exposure. Repeated or prolonged contact with corrosive substances may result in dermatitis or effects as in acute exposure.

### Eye Contact:

**Acute Exposure:** Vapor may cause tearing, conjunctivitis, and irritation, possibly severe.

**Chronic Exposure:** Effects depend on concentration and duration of exposure. Repeated or prolonged contact with corrosive substances may result in conjunctivitis or effects as in acute exposure.

### Ingestion:

**Acute Exposure:** Corrosive substance. May cause immediate pain and severe burns of the mucous membranes. There may be discoloration of the tissues. Swallowing and speech may be difficult at first and then almost impossible. The effects on the esophagus and gastrointestinal tract may range from irritation to severe corrosive. Edema of the epiglottis and shock may occur.

**Chronic Exposure:** Corrosive substance. Depending on the concentration level, repeated ingestion may cause effects as with acute ingestion. Ingestion of high concentrations may cause death.

**Reproductive Toxicology:** Not available  
**Sensitization to Product:** See Section 3  
**Irritancy to Product:** See Section 3  
**Teratogenicity:** Not available  
**Mutagenicity:** Not available  
**Synergistic Products:** Not available

Specific target organ toxicant, single exposure, Category 3 with respiratory tract irritation (hydrochloric acid)

Signs and symptoms of over exposure such as - burning sensation, cough, wheezing, shortness of breath, inflammation and edema of the bronchi. Product may be destructive to tissue of the mucous membranes and upper respiratory tract, eyes and skin.

## 12. ECOLOGICAL INFORMATION

Do not discharge to any water way or sewer drain.

No further information is available at this time.

## 13. DISPOSAL CONSIDERATION

**Waste Disposal Method:** Dispose of in accordance with all applicable regulations. In US follow 40 CFR 262, Hazardous Waste D002 and D003 classification. In Europe follow the Special Waste Regulations. Containers are to be properly disposed of when they have reached their useful life. Do not reuse the container for anything other than this product.

## 14. TRANSPORT INFORMATION

Transport in accordance with applicable regulations and requirements. US DOT 49 CFR 172.101 Shipping Information:

### **UN 2922, Corrosive Liquids, Toxic, N.O.S., 8, PG II (Germanium Tetrachloride) (Fuming Material)**

Transport labeling requirements: Corrosive Class 8 and Toxic Class 6.1

Note: Product must have protective cap and be placed within a protective container designed especially for this product.

Other:

Cargo Aircraft: 30 liter maximum quantity per container allowed - IATA

Due to safety reasons transport by cargo aircraft only – IATA. No passenger aircraft.

IMDG: Stowage Segregation: “Stow Clear of living quarters” – IMDG

Stowage Location: Category B: may be stowed “on deck” or “under deck” cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than 25.

IMDG Code segregation group 1 – Acids

EmS: F-A, S-B



North American Emergency Guide Book – Guide #154

All containers (product and if applicable over-pack) must be properly marked and labeled.

Marine pollutant: No

## 15. REGULATORY INFORMATION

The information in this Safety Data Sheet meets the requirements of the United States Occupational Safety and Health Act and regulations promulgated thereunder (29 CFR 1910.1200 ET. SEQ.),

This product has been classified in accordance with the hazard criteria of the Canadian Products Regulation (CPR).



Canadian WHMIS:

This product has been classified in accordance with the Mexican regulations NOM-018-STPS-2015 and NOM-010-STPS-2014.

Malaysia:

This product has been classified in accordance with: Malaysian – OCCUPATIONAL SAFETY AND HEALTH (CLASSIFICATION, LABELING AND SAFETY DATA SHEET OF HAZARDOUS CHEMICALS) REGULATION OCTOBER 2013 – (CLASS). (GHS)

In China:

Decree No. 591: Regulations on the Control over Safety of Hazardous Chemicals  
GB 30000.2-29-2013, Rules for classification and labeling of chemicals. (GHS)  
GB/T 16483-2008, GB/T 17517-2013

This product has been classified using the Chinese Occupational Limit for Hazardous Agents in the Workplace, GBZ2-2007.

This product has been classified in accordance with the hazard criteria of the Commission Directive 91/155/EEC and EH40.

This product has been classified in accordance with the guidelines set by the Dept. of Industrial Health of the Republic of Singapore.

California PROP 65: No

SARA 311/312: Acute: Y, Chronic: N, Fire: N, Reactive: Y, Sudden Release: N

SARA 313 Listing: No

SARA 302/304: No

CERCLA 103: No

EPA TSCA 12(b) Export Notification: Not Listed

Listed:

EPA TSCA Inventory

Canadian Domestic Substance List

Europe Inventory of Existing Commercial Chemical Substances (EINECS): 233-116-7

China Inventory of Existing Chemical Substances

Philippines Inventory of Chemicals and Chemical Substances

Korean Existing Chemical Inventory

Additional chemical lists: Australia/New Zealand/Japan/Taiwan

RoHS 2 (2011/65/EU) compliant. RoHS 3 – compliant.

## 16. OTHER INFORMATION

### HMIS (hazardous material information system)

**RATING:      HEALTH =3                  FIRE = 0                  PHYSICAL HAZARD = 2**

**Revised Date:**                  7 MAY 2018

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