

GERMANIUM CORPORATION OF AMERICA ®

SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product Identifier: GERMANIUM DIOXIDE

SDS Number: SDS- 4304

Revised Date: 16 FEBRUARY 2021

Version: 1.3

1.2 Relevant identified uses of the substance or mixture and uses advised against

Product Use: Industrial Use GeO₂

Germanium dioxide is a white powder which is manufactured in crystalline as well as amorphous form. Germanium dioxide's refractive index (1.7) and its optical dispersion properties make it useful for making wide-angle lenses and optical microscope objective lenses. It is transparent in infrared. Germanium dioxide is also used as a catalyst in production of polyethylene terephthalate resin, and for production of other germanium compounds. It also finds use in production of some phosphors and semiconductor materials

1.3 Details of the supplier of the safety data sheet

MANUFACTURER/SUPPLIER/IMPORTER/EXPORTER:

In America:

Germanium Corporation of America
5636 Success Drive, Rome, New York 13404
Technical & Safety Information: (315) 853-4900
Safety & SDS Information: nswarts@indium.com
Corporation web page: <http://www.indium.com>

Indium Corporation of America
34 Robinson Rd., Clinton, New York 13323
(315) 853-4900

In Korea:

Indium Corporation (Korea) Co., Ltd.
248-6, Songjeong-dong, Heungdeok-gu, Cheongju-si
Chungcheongbuk-do, Korea PC: 361-290
Information: +82-43-271-9823
Fax: +82-43-271-9828

1.4 Emergency telephone number

FOR CHEMICAL EMERGENCY ONLY PHONE *:

CHEMTREC 24 hrs.

USA: 1 (800) 424-9300

Outside USA: +1 (703) 527-3887

*** Used only for spill/leak/fire/exposure/accident**

France: 33-975181407

In France emergency information (French poison center): INRS (ORFILA) +33 (0) 1 45 42 59 59

Germany: toll free- 0800-181-7059 or (Frankfurt) 49-69643508409

Italy: toll free- 800-789-767

Poland: (Warsaw) 48-223988029

Portugal: 351-308801773

Hungary: (Budapest) 36-18088425

Romania: 40-37-6300026

United Kingdom: (London) 44-870-8200418 and 44-2038073798

ALL OTHER INQUIRIES: TOLL FREE: +1-800-448-9240 Indium Corporation

SECTION 2. HAZARDS IDENTIFICATION

PRIMARY ROUTES OF ENTRY:

Eye

Inhalation

Skin

Ingestion

NTP

IARC

OSHA

Not Listed

Carcinogen listed in

2.1 Classification:

CLP/GHS Classification-substance

STOT Rep Exp 2

Repr 2

Aquatic acute 1

Aquatic chronic 3

GHS:

2.2 Label Elements

Labeling according to Regulation (EC) No. 1272/2008



Signal Word: Warning

Hazard Statement(s)

H361 Suspected of damaging fertility or the unborn child

H373 May cause damage to organs (kidneys) through prolonged or repeated exposure

H400 Very toxic to aquatic life

H412 Harmful to aquatic life with long lasting effects

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 + P314 IF SWALLOWED: Get Medical advice/attention if you feel unwell

P302 +P352 IF ON SKIN: Wash with plenty of soap and water

P304 + 341 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing

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

P405 Store locked up

P501 Dispose of content/container to proper authority or recycle material.

2.3 OTHER HAZARDS:**POTENTIAL HEALTH EFFECTS:**

- Eye Contact:** Dust may cause slight irritation to eyes.
- Ingestion:** May cause irritation. May be harmful if swallowed.
- Inhalation:** May cause irritation and acute germanium toxicity. May be harmful.
- Skin Contact:** Contact may cause irritation to the skin.
- Chronic Effects:** May cause chronic germanium toxicity. Kidney/liver injury may occur.

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS**3.1 Substance:**

Components	CAS Registry #/ EINECS#
GERMANIUM DIOXIDE	1310-53-8/215-180-8

SECTION 4. FIRST AID MEASURES**4.1 Description of first aid measures:**

- Eye Contact:** Hold eyelids apart and flush eyes with plenty of tepid water for at least 15 minutes. Seek medical attention if irritation persists. Burns require IMMEDIATE medical care.
- 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:** 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 water. Wash clothing before reuse. If irritation persists, obtain medical attention.

4.2 Most important symptoms and effect, both acute and delayed:

Skin contact may cause irritation.
 Eye exposure may cause irritation.
 Inhalation may cause harm, by prolonged exposures.

4.3 Indication of any immediate medical attention and special treatment needed:

No specific special treatment information is available. Review data provided in this document to understand the hazards when working with the product. No other information is available at this time.
 Seek medical attention following flushing of eyes.
 If respiratory discomfort is evident seek immediate medical advice. Inhalation may cause harm.

SECTION 5. FIRE FIGHTING MEASURES

5.1 Extinguishing Media: Use extinguishers appropriate for the surrounding fire conditions. Water, CO2, foam media.

5.2 Special hazards arising from the substance or mixture: May produce toxic fumes if burning.

5.3 Advice for Firefighters Fire-fighters must wear approved self-contained breathing apparatus and full protective clothing.

Material product is not flammable. No other information is available.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

For non-emergency personnel:

Keep away from the spill. Remove sources of ignition. Keep exhaust ventilation system running. In the event of a fire evacuate area.

For emergency responders:

Wear safety glasses, gloves when cleaning up any spill. Other equipment may be necessary based on the immediate area and other chemicals unrelated to the product that may be in use. Adequate ventilation should be available. Keep unnecessary personnel away from area during clean up. If on floor wear foot protection to avoid any direct contamination to shoes and boots. Avoid conditions that create fumes or fine dust. Use an approved respirator with particulate cartridge. Dust type masks are not recommended.

6.2 Environmental Precautions: Material has reclaim value. Recycle/recover/reuse value. If recycling cannot be done then dispose of material following all applicable governmental regulations.

6.3 Methods and material for containment and cleaning up:

Contain spill. Do not sweep. Keep dust to as low as possible. Vacuum up the solids. Wear PPE for clean-up.

6.4 Reference to other sections: See Section 8 for exposure levels.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions

Ventilation is recommended when there is a potential for work place exposures. Ensure engineering controls are used to protect the worker. Avoid breathing dust. Wear other PPE to keep exposure to as low as possible.

7.2 Conditions for Safe Storage, including any incompatibilities:

Storage Precautions: Store product in tightly capped original containers in a cool, dry area.

7.3 Specific End Use(s): Various

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control Parameters:

			<u>TWA</u>	<u>STEL</u>
		<u>CAS#/EINECS#</u>	mg/m ³	mg/m ³
GERMANIUM DIOXIDE	100	1310-53-8/215-180-8	N.E.	N.E.

TWA = time weighted average

STEL = short term exposure level

N.E. = Not established

8.2 Exposure Controls:

Engineering Controls: Local and/or Mechanical exhaust ventilation or point source exhaust is required to control any airborne contaminants and to reduce potential exposures to workers. Avoid inhalation of particulate/dust/spray. Use exhaust when there is any doubt in whether the operator/user is getting any exposure. Measurement of exposure may be required.

Personal protection:

Eyes: Chemical safety glasses/goggles. Face shield may be required in dusty areas.

Respiratory: An approved air-purifying respirator (half or full face) with a HEPA rated particulate filter or HEPA quality dust mask is required under certain circumstances where airborne concentrations are expected to be elevated. Avoid breathing dust. Keep exposures to as low as possible.

Skin: Compatible chemical resistant gloves when handling dust material.
Other personal protective equipment is recommended when working with and handling the material. Lab coat other work clothes. If dusty may need hair protection

Other: Eye-wash fountain in work area. Suggest shower unit nearby in some applications. Avoid the use of contact lenses.

Work/Hygienic Practices: Maintain good housekeeping. Clean up spills immediately.

Good personal hygiene is essential. Avoid eating, smoking or drinking in the work area. Wash hands thoroughly with soap and water immediately upon leaving the work area. Do not wear work clothes into lunchroom areas.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

Appearance: White crystalline powder

Boiling Point/Range: Not available

Odor: slight

Odor Threshold: Not established

Specific Gravity: Not available

Vapor Pressure: Negligible

Relative Density: 4.22 g/cm³ @25C (77F)

Auto-ignition Temperature: Not applicable

UEL/LEL Limits: Not applicable

Molecular weight: 104.64 g/mol

Freezing Point: >400C(>752F)

Evaporation Rate: Not applicable

pH: 5-7

Vapor Density: (air=1) Not applicable.

Flash Point: Not established

Flammable Limits: Limits not established

Decomposition Temp: Not applicable

Viscosity: Not established**Explosive properties:** Not applicable**Oxidizing Properties:** Not established

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity: Stable.**10.2 Chemical Stability:** Stable.**10.3 Possibility of Hazardous Reactions:** Not established**10.4 Conditions To Avoid:** None known**10.5 Incompatible Materials:** Strong oxidizing agents**10.6 Hazardous Decomposition / Combustion:** Harmful toxic oxide fumes may form at elevated temperatures.**10.7 Hazardous Polymerization:** Will not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008:

Acute toxicity: Not established**Mutagenicity:**

Not established

Irritation: Not established**Toxicity for Reproduction:**

Suspected of damaging fertility

Corrosivity: Not applicable**Absence of specific data:**

None available (not tested)

Sensitization: Not available**Repeated dose toxicity:** Not established**Carcinogenicity:** Not established**Likely Routes of Entry:** eyes (irritation), skin (irritation) inhalation (irritant)**Interactive effects:** None known

Symptoms related to the physical, chemical and toxicological characteristics:

May cause irritation. May be harmful if swallowed. May be harmful if inhaled.

Delayed and immediate effects as well as chronic effects from short and long-term exposure:

No information is available at this time.

Mixture verses substance information: None known

Other Information:

NTP: No (National Toxicity Program)**OSHA:** No (US Occupational Safety & Health Administration)**IARC:** No (U.N. International Agency for Research on Cancer)

RTECS: LY5240000 for additional information

LD50 Oral 1250 mg/kg (rat) LC50 inhalation 1420 mg/m3 (rat) 4h

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity: No information is available

12.2 Persistence and degradability: No information available

12.3 Bioaccumulative potential: No information is available

12.4 Mobility in soil: No information available

12.5 Results of PBT and vPvB assessments: No data is available

12.6 Other adverse effects: No information is available. Avoid release to environment.

Very toxic to aquatic life. Based on aquatic testing reported to EU ECHA.

Freshwater fish- LC50 103.5mg/l

SECTION 13. DISPOSAL CONSIDERATION

13.1 Waste treatment method:

Dispose of or recycle when possible in accordance with environmental regulations.

RoHS (Restriction of Hazardous Substances): Compliant with RoHS.

SECTION 14. TRANSPORT INFORMATION

Transport in accordance with applicable regulations and requirements.

Non - hazardous under shipping modes

14.1 UN Number or ID Number: None

14.2 UN proper shipping name: None

14.3 Transport hazard class(s): None

14.4 Packing group: None

14.5 Environmental hazards: None

14.6 Special precautions for user: None

14.7 Maritime transport in bulk according to IMO instruments: Not applicable

SECTION 15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:

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

Ingredients are listed on the USEPA TSCA Inventory.

Safety data sheet was developed using guidance from EC 1907/2006 amended as of 6 February 2020, EU No 2015/830, 2020/878 June 2020 and information as stated under regulation EC No 1272/2008 CLP Regulation, and EU 649/2012 guidance on exports and imports.

GHS classification based on information strictly provided by EU ECHA agency for this substance.

GHS = Global Harmonized System

CLP= Classification, labeling and packaging

Product does not contain any substances ozone depleting substances and therefore not subject to EC 1005/2009.

WGK German Water Hazard Class according AwsV in part 15 - 1

15.2 Chemical safety assessment: None performed.

SECTION 16. OTHER INFORMATION

NOTE: **The Indium Corporation does not recommend, manufacture, market or endorse any of its products for human consumption.**

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Changes provided on this SDS were based on the requirements of EU 2020/171 as of amendments February 6, 2020 and 2020/878 June 2020 regarding EC No. 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation,

Authorization and Restriction of Chemicals (REACH).

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