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MATERIAL SAFETY DATA SHEET

Section 1- PRODUCT IDENTIFICATION

COMPOSITION Ge	PRODUCT NAME Germanium
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Section 2- HAZARDOUS INGREDIENTS

Note: Products under normal conditions do not represent an inhalation, ingestion or contact health hazard.

MATERIAL OR COMPONENT	CAS NUMBER	WT%	EXPOSURE LIMITS	
			OSHA PEL (Mg/M3)	ACGIH TLV(MG/M3)
Ge	7440-56-4	100.0	15mg/m³	10mg/m³

Section 3- PHYSICAL DATA

MATERIAL IS (AT NORMAL CONDITIONS) <input type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas <input type="checkbox"/> Other	APPEARANCE AND ODOR Grey-White Metalloid; crystalline & brittle, no odor
MELTING POINT (BASE METAL) 925-975 (937.12 best value)	SPECIFIC GRAVITY 5.323(g/cc) at 25°

Section 4- FIRE AND EXPLOSION

Flash Point (Method Used) N/A	Flammable Limits N/A	LEL N.A.	UEL N.A.
EXTINGUISHING MEDIA Do not use water on metal fires. Use dry chemical, CO2.			
SPECIAL FIRED FIGHTING PROCEDURES Wear full face, self-contained breathing apparatus with full protective clothing.			
UNUSUAL FIRE AND EXPLOSION HAZARDS Material may omit toxic fumes in a fire. Moderate fire and explosion hazard as fine powder or dust when exposed to heat and flame. Relatively stable, unaffected by air. Becomes oxidized above 600°.			

Section 5- REACTIVITY DATA

STABILITY Stable	INCOMPATABILITY (MATERIALS TO AVOID) H2SO4, fused alkalis, nitrates, carbonates, halogens and oxidants.
CONDITIONS TO AVOID Heat and incompatible materials.	
HAZARDOUS DECOMPOISTION PRODUCTS GeO2 and GeO	

Section 6- HEALTH HAZARD GUIDE

MAJOR EXPOSURE HAZARD

Inhalation Skin Skin Absorption Eye Contact Ingestion

EFFECTS OF OVEREXPOSURE

INHALATION: A respiratory irritant, coughing, sneezing, breathing difficulties and pulmonary edema possible. May irritate the mucous membrane of the nose and throat.

DERMAL/EYE CONTACT: Irritation, inflammation, redness, may cause dermatitis and watering.

OTHER: Germanium is considered to be of a low order of toxicity, but rare instances of poisoning have been reported in literature. Interest is high in this material because of its close chemical relationship to arsenic. It has been found that the dioxide stimulates the generation of red blood cells, but it is believed to be relatively non-toxic. When germanium is given in sub-lethal amounts, it causes a pronounced tolerance to be exhibited. Germanium compounds are considered much less toxic than corresponding lead and tin compounds.

EMERGENCY & FIRST AID PROCEDURES

INHALATION: Remove from exposed area to fresh air immediately; give oxygen if breathing is difficult. Seek medical attention.

INGESTION: If conscious give 1-2 glasses of milk or water and induce vomiting; seek medical attention. Never give anything by mouth or induce vomiting to an unconscious victim.

SKIN CONTACT: Remove contaminated clothing; brush material off skin. Wash affected area with soap or mild detergent and large amounts of water.

EYE CONTACT: Flush eyes with lukewarm water lifting up the upper and lower lids for at least fifteen minutes.

Section 7- SPILL OR LEAK PROCEDURES

SPILL OR LEAK PROCEDURES

Wear appropriate respiratory and protective equipment. Isolate the area where the spill occurred and provide ventilation. Vacuum up the spill using a high efficiency unit. Take care not to raise dust.

WASTE DISPOSAL METHODS

Observe all federal, state and local regulations when storing or disposing.

Section 8- SPECIAL PROTECTION

RESPIRATORY

NIOSH approved dust-mist-fume cartridge respirator.

VENTILATION

Recommended, maintain exposure levels below TLV.

EYE PROTECTION & PROTECTIVE CLOTHING

Wear safety glasses for eyes and neoprene gloves for hands.

Section 9- SPECIAL PRECAUTIONS

WORK/HYGIENIC/MAINTENANCE PRACTICES

Store in tightly closed container in a cool dry place. Wash thoroughly before eating or smoking.

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