



MTI Corporation (Materials Tech. Intl.)
860 South 19th Street
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Tel: 510-525-3070 Fax:510-525-4705
FID# 68-0363534

MATERIAL SAFETY DATA SHEET

Identity: Gadolinium Gallium Garnet (GGG)

Formula: $Gd_3Ga_5O_{12}$

SECTION I - GENERAL INFORMATION

Manufacturer: MTI Corporation (Materials Tech. Intl.)

The information below is believed to be accurate and represents the best information available to MTI Corporation. However, MTI makes no warranty, expressed or implied with respect to such information and assumes no liability resulting from its use.

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Molecular weight: 1012.36

CAS #	OSHA PEL	ACGIH TLV	%
12024-36-1	100	NE	100.0%

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Physical States: Solid

Boiling Point: N/A

Vapor Pressure: NE

Melting Point: 1760°C

Vapor Density: (air=1): N/A

Evaporation Rate: (Butyl Acetate=1): N/A

Density: 7.09 g/mL at 25°C

Solubility in water: Insoluble

Flash point: N/A

Appearance and odor: White powder or pieces, no odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA:

Method Used: Unknown *Explosive Limits:* LEL: N/A UEL: N/A

Extinguishing Media: Not applicable. Use suitable extinguishing media for surrounding materials and type of fire.

Special Fire Fighting Procedures: Firefighters must wear full face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. Fumes from fire are hazardous. Isolate runoff to prevent environmental pollution.

Unusual Fire and Explosion Hazards: None recorded



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SECTION V - REACTIVITY DATA

Stability: Stable

Conditions to Avoid (instability): No data

Incompatibility – Materials to avoid: No data

Hazardous Decomposition or Byproducts: No data

Hazardous Polymerization: Will not occur.

Conditions to avoid (hazardous polymerization): None

SECTION VI - HEALTH HAZARD DATA

<u>Routes of entry:</u>	Inhalation? Yes	Ingestion? Yes	Skin? Yes	Eyes? Yes	Other? No
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To the best of our knowledge the chemical, physical and toxicological properties of gadolinium gallium oxide have not been thoroughly investigated and recorded.

Gadolinium is considered a rare earth metal. These metals are moderately to highly toxic. The symptoms of toxicity of the rare earth elements include writhing, ataxia, labored respiration, walking on the toes with arched back and sedation. The rare earth elements exhibit low toxicity by ingestion exposure. However, the intraperitoneal route is highly toxic while the subcutaneous route is poison to moderately toxic. The production of skin and lung granulomas after exposure to them requires extensive protection to prevent such exposure. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

Gallium compounds: Amounts up to 15 mg/kg of body weight were injected intravenously and were tolerated without harm by laboratory animals. Larger doses produced hemorrhagic nephritis. In the case of gallium lactate, work done at the Naval Medical Research Institute showed that intravenous injections of about 40 mg of gallium per kg of body weight in rats or rabbits were lethal. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

Signs and Symptoms of Overexposure:

Inhalation: May cause a red, dry throat and coughing.

Ingestion: May affect the coagulation time of the blood.

Skin: May cause redness, burning and itching.

Eye: May cause redness, burning, itching and watering.

Health Hazards (Acute and Chronic):

Inhalation:

Acute: May cause irritation to the upper respiratory system.

Chronic: May cause writhing, ataxia, labored respiration, walking on toes with arched back, sedation, pulmonary edema and lung granuloma.

Ingestion:

Acute: Considered to have low toxicity by ingestion.

Chronic: May cause hemorrhagic nephritis and act as a blood anticoagulant.

Skin:

Acute: May cause irritation.

Chronic: May cause skin granuloma.



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Eye:

Acute: May cause irritation.

Chronic: No chronic health effects recorded.

Target Organs: May affect the blood and lungs.

Carcinogenicity: NTP? No LARC Monographs? No OSHA Regulated? No

Medical Conditions Aggravated by Exposure: Pre-existing lung disorder

Emergency and First Aid Procedures:

Inhalation: Remove victim to fresh air; keep warm and quiet; give oxygen if breathing is difficult and seek medical attention.

Ingestion: Give 1-2 glasses of milk or water and induce vomiting; seek medical attention. Never induce vomiting or give anything by mouth to an unconscious person.

Skin: Remove contaminated clothing; brush material off skin; wash affected area with mild soap and water; seek medical attention.

Eye: Flush eyes with lukewarm water, lifting upper and lower eyelids, for at least 15 minutes. Seek medical attention.

SECTION VII – ENVIRONMENTAL INFORMATION

Steps to be taken in case material is released or spilled:

Wear appropriate respiratory and protective equipment specified in section VIII-control measures. Isolate spill area and provide ventilation. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for proper disposal. Take care not to raise dust.

Water Disposal Method:

Dispose of in accordance with local, state and federal regulations.

Hazard Label Information:

Keep container tightly closed. Store in cool, well-ventilated area. Wash thoroughly after use

SECTION VIII – PROTECTION INFORMATION

Protective Equipment Summary (Hazard Label Information):

NIOSH approved respirator, impervious gloves, safety glasses, vented goggles & clothes to prevent contact, goggles or face shield.

Ventilation:

Local Exhaust: Mechanical local exhaust.

Mechanical (General): Recommended

Work/Hygienic/Maintenance Practices:

Implement engineering and work practice controls to reduce and maintain concentration of exposure at low levels. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating or smoking. Do not blow dust off clothing or skin with compressed air.

Please be advised that N/A can either mean Not Applicable or No Data Has Been Established
