



# Crystal Specialties

## MATERIAL SAFETY DATA SHEETS

First issued 4/11/1986

Emergency 24 hr. Contact (spill, fire, etc.):

### Section 1. MATERIAL IDENTIFICATION:

Chemical and common name: **GALLIUM ARSENIDE**

Chemical formula: GaAs

(Mfr. Information below)

**Revised 7/15/2005**

CHEMTREC 1-800-424-9300

Callers outside the United States call

CHEMTREC at

1-(703) 527-3887

(Emergency collect calls are accepted).

### Section 2. HAZARDOUS INGREDIENTS:

Gallium arsenide is an inorganic compound containing arsenic, subject to OSHA regulations under 29CFR1910,1018. Other regulations applicable to inorganic arsenic compounds also apply. Inorganic arsenicals are subject to the following occupational exposure limits and reference levels (in micrograms arsenic per cubic meter of air):

OSHA PEL: 10 TWA,

ACGIH TLV: 10 TWA,

NIOSH REL: 2 STEL

### Section 3. PHYSICAL DATA:

CAS Registry: #1303-00-0

Specific gravity: 5.32 gm/cc

Solubility in water: not available (very slight)

Appearance and odor: Cubic crystals with dark gray metallic sheen. No odor at room temperature.

Melting point: 1238°C

Vapor pressure: not available

### Section 4. REACTIVITY DATA:

Stable: Yes

Hazardous polymerization: Will not occur

Incompatibility (conditions to avoid): Finely divided gallium arsenide can react vigorously with energetic acids and oxidizers. Also avoid high temperatures and steam exposure to prevent release of arsenic fumes or arsine gas.

### Section 5. FIRE AND EXPOSION HAZARD DATA:

Flash point: not available

Extinguishing media: CO<sub>2</sub> or dry chemical recommended

Special firefighting procedures: A self-contained air-supplied breathing apparatus should be worn to protect against arsine gas and arsenic fumes.

**Unusual fire and explosion hazards:** Explosion hazard is slight, only in the form of finely divided dust exposed to flame. Gallium arsenide when exposed to high temperatures or in contact with acids or oxidizers can emit toxic fumes or arsine gas.

### Section 6. HEALTH EFFECTS OR RISKS FROM EXPOSURE:

As an inorganic compound containing arsenic, gallium arsenide is both **poison** and **carcinogenic**. Exposure to gallium arsenide is similar to inorganic arsenic exposure in general, as seen in the following arsenic exposure health effects or risks:

**Acute exposure:** (in generally increasing order of exposure) Arsenic ingestion results in marked irritation of the stomach and intestines with nausea, facial swelling, cramps, vomiting, diarrhea, bloody stool, and the patient goes into shock with weak, rapid pulse, cold sweats, coma and death.

**Chronic exposure:** Chronic arsenic poisoning from ingestion or inhalation may be manifest in a hoarse voice or digestive system disturbances such as loss of appetite or constipation. Liver damage, perforation of the nasal septum, disturbances of the blood, kidneys liver, lymph and nervous systems and pneumonia have been reported. Carcinogenic effects include lung cancer and skin abnormalities such as irritation, itching or pigmentation. Cancer of the bronchi has also been reported for arsenic exposure, as has pharyngitis and conjunctivitis.

**Medical conditions aggravated by exposure:** N/A

**Primary routes of entry:** Inhalation and ingestion

**Target organs:** Lungs and skin

**Identified as carcinogenic by NTP or OSHA:** Yes

Teratogenic (fetal harm) agent: The WHO reports teratogenicity in lab chicks, hamsters and rats from exposure to arsenic in aqueous solution. Applicability to gallium arsenide is not known.

#### **Section 7. SPILL OR LEAK RESPONSE PROCEDURES:**

Spill of solid form: wear gloves. In finely divided form: use **HEPA** filtered vacuum cleaner or wet the material before cleanup. Wear an N-100 respirator, do not use compressed air to blow off dust. Subject to Hazardous Materials Spill Reporting Requirements under CERCLA, with the statutory RQ of 1 lb (arsenic or compound).

#### **Section 8. SAFETY MEASURES, PRECAUTIONS AND CONTROLS:**

**Handling:** Wear gloves when handling. In the presence of airborne dust or fumes, wear an N-100 respirator. Wash face and hands after any contact, with soap and water. When working the gallium arsenide with processes which may generate airborne dust or fumes, use local ventilation at the source of that generation.

**First aid for eye contact:** Flush with water and avoid eye abrasion as for any crystalline material.

**First aid for skin contact:** Wash with soap and water.

**First aid for ingestion:** Treat as for arsenic: Induced vomiting and gastric lavage are typical first response treatments. Modern medical treatment for arsenical poisoning also uses exchange transfusion and dialysis. Success with muscular injections of dimercaprol or other chelators has been reported, with particular success when begun shortly after ingestion.

Note, the above information is presented in good faith and is based on data believed to be accurate and current. However, actual conditions of use of the material are beyond the control of Crystal Specialties, hence, no warrant for merchantability, fitness for specific use or other purpose is expressed or implied, and no liability assumed therefrom. Users should make their own investigations to determine suitability.