

MATERIAL SAFETY DATA SHEET

AMTIR-1

Section 1 - Manufacturer Identification

Manufacturer's Name: Amorphous Materials, Inc.
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Section 2 - Ingredients/Identity Information

Ingredients (typical values; not specifications):

Germanium 33%
Arsenic 12 %
Selenium 55%

Product classified as: Non-hazardous

Warning statement: None considered necessary

A Threshold Limit Value (TLV) has not been established for AMTIR-1. Nor, has the Occupational Safety and Health Administration set a Permissible Exposure Limit (PEL). Recommended human exposure levels for the individual components of AMTIR-1 are as follows:

Germanium Compounds. Neither a PEL nor a TLV has been adopted for germanium and its compounds (except for germanium tetrahydride).

Arsenic compounds. 10 micrograms per cubic meter of air ($\mu\text{g}/\text{M}^3$) determined as a time-weighted average (TWA) exposure for up to eight hours of exposure. (Source: OSHA 29 CFR 1900.1018).

Selenium compounds. 0.2 mg/ M^3 determined as a TWA exposure of up to eight hours (Source: OSHA 29 CFR 1910.1000, Subpart Z, Table Z-1, revised).

Section 3-Physical/Chemical Characteristics

Boiling point: Not applicable.
Vapor pressure: Not applicable.
Vapor density (air=1): Not applicable.
Specific gravity: 4.4
Solubility in water: Insoluble
Percent volatile (by volume): Nil
Appearance: Dark colored, glassy metallic solid.

Section 4-Fire and Explosion Hazard Data

Flash point: None; Flammable limits: Non-flammable.
LEL: None; *UEL:* None.
Extinguishing media: None required.
Special fire fighting procedures: None required. Use extinguishing method appropriate for fire in surrounding area.
Unusual fire and explosion hazards: None.

Section 5-Reactivity Data

Stability: Stable compound.
Incompatibility (materials to avoid): None known.
Conditions to avoid: None known.
Hazardous polymerization: Will not occur.
Hazardous decomposition or by-products: None known.

Section 6-Health Hazard Data

Route(s) of entry: None.
Health hazards (acute and chronic): None.
Signs and symptoms of exposure: None known.
Medical conditions generally aggravated by exposure: None known.
Emergency and first aid procedures:
Eyes-Flush with flowing water for 15 minutes after contact with dust, fumes or slurry. Seek medical attention.
Skin-Flush with plenty of water after skin contact with dust, fumes or slurry.
Inhalation-If ill effects develop, remove exposed person to fresh air. Keep person warm and quiet. Seek medical attention.
Ingestion-Should not present a problem. If material is accidentally swallowed, induce vomiting. Seek medical assistance.

Section 7-Precautions For Safe Handling & Use

Action to take for spills: Any spill of AMTIR-1 will consist of solid particles. Contain the spill. Clean up the spill. Transfer spilled material to a separate container for recovery or disposal.
Waste disposal: Due to the value of scrap material, waste should be collected and returned to a vendor for salvage and/or reclamation. Non-reclaimable material should be disposed of in accordance with appropriate local, state or federal regulations.
Precautions during handling and storage: None needed during handling, storage or processing of AMTIR-1.
EPA Section 313 notification: Not required.

Section 8-Control Measures

Ventilation: Local ventilation should be provided that is sufficient to remove any dusts, mists or odors that may evolve during processing. Forced exhaust air of 100 lineal feet per minute (lfm) face velocity should be adequate. Avoid breathing any fumes or dusts that may be generated because of arsenic or selenium content of finished product.

Respiratory protection: Not required under ordinary circumstances if adequate ventilation is provided. In unventilated areas a high efficiency respirator approved for toxic dusts should be used.

Personal protective equipment (PPE): Rubber gloves and plastic aprons should be provided during abrasive polishing operations.

Eye protection: Chemical workers goggles or plastic face shields should be used to provide eye protection from dusts, fumes, mists or flying particles should product break or fragment during processing.

Special Note: This Material Safety Data Sheet is considered to be an essentially similar form to OSHA Form-20 (a non-mandatory form format) and is substituted in lieu thereof. This data is furnished gratuitously, independent of any sale of the product, only for your investigation and independent verification. While the information is believed to be correct, Amorphous Materials, Inc. makes no representation as to the absolute accuracy of the information contained herein. The final word on all OSHA regulations is that published in the Federal Register.

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