

School Material Safety Data Sheet

Genium Publishing Corporation
1145 Catalyn Street
Schenectady, NY 12303-1836 USA
(518) 377-8855



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**BISMUTH METAL,
POWDER**
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SECTION 1. INTRODUCTORY INFORMATION

MATERIAL NAME AND FORMULA: BISMUTH METAL, POWDER; Bi

SYNONYMS: None Found

CAS NUMBER: 7440-69-9

INGREDIENTS: Bismuth, >99%

MANUFACTURERS: Always request Material Safety Data Sheets from your chemical supplier. These should indicate the manufacturer of the substance and include an emergency phone number to call. The Manufacturers section of this book contains a listing of some of the larger manufacturers and available emergency numbers.

DESCRIPTION: Bismuth is a low-melting-point, silver white metal with a reddish tinge and rhombic crystals. This material is odorless, diamagnetic (repelled by a magnet), and a poor conductor of electricity and heat.

PRELIMINARY INFORMATION:

In powdered form, bismuth is readily flammable. It is of relatively low toxicity. Most common area of use would be in the chemistry lab.



SECTION 2. USE AND STORAGE INFORMATION

-- PRELIMINARY PLANNING CONSIDERATIONS --

- Safety glasses or goggles and protective clothing (rubberized apron, etc.) should be worn for all experiments.
- Be sure eyewash station and safety shower are in good working order and readily available.
- Always provide for safe disposal of all chemical waste generated in the lab. Check applicable regulations prior to use.
- Eliminate sources of accidental ignition.
- Reacts with oxidizing agents and is attacked by HNO_3 , H_2SO_4 and (slowly) by HCR.
- Toxic fumes can be emitted on reaction with acid or acid fumes.
- Combustion products can be toxic - especially if chloride salt is formed.

-- USAGE PRECAUTIONS AND PROCEDURES --

- For safety, contact lenses should not be worn in the laboratory: Soft lenses may absorb and all lenses may concentrate irritants. Particles may adhere to contact lenses and cause corneal damage.
- READ THE LABEL and follow all precautions.
- Maintain good housekeeping practices to avoid unintentional mixing with incompatible materials.
- No smoking in storage or use area.
- Keep away from strong oxidizing agents and sources of heat or ignition. Bismuth is a moderate fire hazard when exposed to flame and by reaction with oxidizing agents. Powdered form is especially flammable.
- Avoid creating airborne dust conditions.
- After working with this material, always wash hands and face before eating, drinking, or smoking.
- Chronic inhalation or ingestion can be hazardous.

-- ADDITIONAL INFORMATION --

- Incompatible under various circumstances with chloric acid, HNO_3 (when metal is molten), perchloric acid, fused NH_4NO_3 , and others.
- Burns in air to form Bi_2O_3 .
- Burns spontaneously in gaseous chlorine.

-- PREFERRED STORAGE LOCATION AND METHODS --

- Storage area should be cool and well ventilated. Containers should be tightly closed.
- All chemical containers should be protected from physical damage and kept out of direct sunlight.
- Purchase only amounts equivalent to one year's needs.
- Should be stored in approved FLAMMABLES cabinet, away from oxidizing agents and sources of heat or ignition.
- No smoking in storage or use area.

SECTION 3. SPILLS AND DISPOSAL PROCEDURES

IF MATERIAL IS SPILLED:

- Eliminate all sources of ignition.
- Provide adequate ventilation.
- Cleanup personnel should have protection against inhalation of dust.
- Avoid creating airborne dust conditions. (Wet mopping or vacuuming are preferred.)
- Place in a tightly closed container for disposal.

DISPOSAL OF SMALL QUANTITIES:

- Small quantities of waste material may be buried in an approved landfill, if approved methods and applicable regulations are followed.
- Aquatic life and potable water supplies may be threatened by excessive and improper discharge of bismuth compounds.
- Contact your supplier for specific treatment/disposal procedures.

DISPOSAL OF LARGER AMOUNTS: Contact a licensed disposal company.

*** FOLLOW ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS FOR ALL WASTE DISPOSAL ***

SECTION 4: HEALTH HAZARDS

No TLV established. Bismuth is not listed as a carcinogen by OSHA, IARC, or NTP.

- Bismuth metal is of relatively low toxicity and has little or no effect on intact skin or mucous membranes. It is absorbed only slightly through broken skin.
- The metal itself is not particularly hazardous on ingestion; but excessive ingestion of its soluble salts can produce damage to kidneys and liver, spots on the mucous membranes of the mouth and colon, foul breath, stomatitis, gingivitis, and salivation.

SECTION 5: FIRST AID PROCEDURES**Eye contact:**

- Flush eyes promptly with plenty of running water for at least 15 minutes, including under the eyelids.
- Get prompt medical attention.*

Skin contact:

- Wash exposed areas of skin with soap and water. Get medical attention if irritation occurs.*

Inhalation:

- Remove victim to fresh air; restore and/or support breathing as necessary.
- Get medical help for coughing or breathing difficulty.*

Ingestion:

- Get prompt medical attention.* Give several glasses of milk or water to drink.
- Induce vomiting -- but ONLY if victim is conscious and alert.*
- Never give anything by mouth to a person who is unconscious or convulsing.

* Get medical help (in school, paramedic, or community) for further treatment, observation, and support after first aid.

SECTION 6: FIRE PROCEDURES AND DATA

- Extinguishing media: Water spray, carbon dioxide, dry chemical or alcohol type of foam.
- For major fires, or if large quantities of this material are involved, fire fighters should wear appropriate protective clothing and use respiratory protection. Self-contained breathing apparatus is recommended, especially if chloride salt is formed.
- Use of a direct water stream may scatter fire.
- A water spray may be used to cool fire-exposed containers and disperse vapors.

FLASH POINT AND METHOD(S) ... Not Found

AUTOIGNITION TEMPERATURE ... Not Found

FLAMMABILITY LIMITS IN AIR (vol. %) :

Lower ... Not Found

Upper ... Not Found

SECTION 7: PHYSICAL DATA

BOILING POINT (@ 1 atm) ... 2840°F (1560°C) (+/- 5°)

VAPOR PRESSURE (@ 1021°C, mm Hg) ... 1

SOLUBILITY IN WATER (@ 20°C) ... Insoluble

SPECIFIC GRAVITY (20°/4°C) ... 9.8

MELTING POINT ... 520.3°F (271.3°C)

ATOMIC WEIGHT ... 208.98

DATA SOURCE: Genium's Industrial MSDS #60 (4/80) and references 2, 5-12, 25, 26, 504
(see glossary for titles)

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Approvals:

Author

Indust. Hygiene/Safety

Medical Review

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