

Material Safety Data Sheet

Identity: Bismuth titanate

Formula: Bi₄Ti₃O₁₂

SECTION I - GENERAL INFORMATION

Manufacturer: [Stanford Advanced Materials](#) (SAM)

The information below is believed to be accurate and represents the best information available to SAM. However, SAM 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: 625.76

CAS #	OSHA PEL	ACGIH TLV	%
1210-77-4	N/A	N/A	0-100

SECTION III – PHYSICAL/CHEMICAL CHARACTERISTICS

Physical States: Solid

Boiling Point: 870.00 °C

Vapor Pressure: (vs. air or mmHg): N/A

Melting Point: 870.00 °C

Density: N/A

Evaporation Rate: N/A

Flash Point: N/A

Solubility in water: insoluble

Appearance and odor: Light, yellow, powder and pieces, no odor.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA:

Method Used: Non-Flammable

Explosive Limits: LEL: N/A

UEL: N/A

Extinguishing Media: Use suitable extinguishing agent for surrounding material 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.

SECTION V - REACTIVITY DATA

Stability: Stable

Conditions to Avoid (stability): None

Incompatibility: None recorded.

Hazardous Decomposition or Byproducts: None recorded

Hazardous Polymerization: Will not occur.

Conditions to avoid (hazardous polymerization): None.

SECTION VI - HEALTH HAZARD DATA

Routes of entry: Inhalation? Skin? Eyes? Ingestion? Other?

Signs and Symptoms of Overexposure:

Inhalation: May cause redness, coughing, foul breath, metallic taste and dry throat.

Ingestion: May cause diarrhea, bodily discomfort, albumin or other protein substances in the urine and skin disorders.

Skin: May cause redness, itching and inflammation.

Eye: May cause redness, burning and watering.

Health Hazards (Acute and Chronic):

Bismuth and its salts can cause kidney damage, although the degree of such damage is usually mild. Large doses can be fatal. Industrially, it is considered one of the less toxic of the heavy metals. Serious and sometimes fatal poisoning may occur from the injection of large doses into closed cavities and from less extensive burns. It is stated that the administration of bismuth should be stopped when gingivitis appears, for otherwise serious ulceration stomatitis is likely to result. Other toxic results may develop, such as a vague feeling of bodily discomfort, presence of albumin or other protein substances in the urine, diarrhea, skin reactions and sometimes serious exodermatitis. (Sax, Dangerous Properties of Industrial Materials, eighth edition).

Titanium compounds are generally considered to be physiologically inert. There are no reported cases in literature where titanium has caused human intoxication. Sax, Dangerous Properties of Industrial Materials, eighth edition).

Inhalation:

Acute: Poison, dusts are more than nuisance to respiratory system

Chronic: May affect function of liver and kidneys

Ingestion:

Acute: Poison, may cause skin reactions, diarrhea, headache, fever, rheumatic pain black line on gums, and/or malaise.

Chronic: May affect function of liver and kidneys, along with anemia, and ulcers.

Skin:

Acute: May cause irritation.

Chronic: May cause dermatitis

Eye:

Acute: May cause irritation, watering, burning and itching

Chronic: None recorded

Target Organs: Kidneys and liver

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

Medical Conditions Aggravated by Exposure:

Emergency and First Aid Procedures:

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

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

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

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

Wear appropriate respiratory and protective equipment specified in section VIII. Isolate spill area, provide ventilation and extinguish sources of ignition. 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.

Waste disposal method:

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

Hazard Label Information:

Store in cool, dry area and in tightly sealed container. Wash thoroughly after handling.

SECTION VIII - CONTROL MEASURES

Protective Equipment Summary (Hazard Label Information):

NIOSH approved respirator, impervious gloves, safety glasses, clothes to prevent contact.

Ventilation:

Local Exhaust: To maintain concentration at low exposure levels.

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