

MATERIAL SAFETY DATA SHEET

SECTION 1 – PRODUCT IDENTIFICATION

Product Name: **Yttrium Oxide Powder**
Product Item: **400102**
Product Code: **HA 4002**

Supplier: **HAI Advanced Material Specialists, Inc.**
1688 Sierra Madre Circle
Placentia, CA 92870
(714)-414-0575

Emergency Contact: (888) 255 3924 – Toll free
Chemical Family: Metal Oxides
Formula: Y_2O_3
Molecular Weight: 225.81

SECTION 2 – HAZARDOUS INGREDIENTS

IMPORTANT! This section covers the material from which these products are manufactured. Dust and gases produced when spraying with normal use of these products are covered in Section 5.

Material or Component	CAS Number	Concentration	OSHA PEL	ACGIH TLV	Other Limits *
Yttrium Oxide [Y_2O_3]	1314-36-9	0 - 100%	1 mg/m ³	1 mg/m ³	NE

US EPA SARA TITLE III

Material or Component	CAS Number	Sec. 302 (EHS)	Sec. 304 RQ	Sec. 313 (TRI)
Yttrium Oxide [Y_2O_3]	1314-36-9	No	No	No

SECTION 3 – PHYSICAL/CHEMICAL CHARACTERISTICS

Physical States: [] Gas [] Liquid [X] Solid
Melting Point: 2410 °C (4370 °F)
Boiling Point: 4300 °C (7772 °F)
Specific gravity (water=1): 4.8. – 5.03 g/cm³
Vapor pressure (mmHg): No data
Vapor Density (Air=1): No data
Evaporation rate (Butylacetate=1): No data
Solubility in water: insoluble
Percent volatile (vol.): N/A
Corrosion Rate: No data
Appearance and odor: Yellowish-white powder, no odor
Other: None

SECTION 4 – FIRE AND EXPLOSION HAZARD DATA

Flash point: N/A Method Used: Unknown
Auto ignition temp.: N/A
Flammable limits: N/A
Explosive Limits: LEL: N/A UEL: N/A
Extinguishing Media: N/A Use suitable extinguishing medias 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 determined

SECTION 5 – REACTIVITY DATA

Stability: Unstable [] Stable [X]
Conditions to avoid - Instability: Readily absorbs water and carbon dioxide from the air
Incompatibility – Materials to avoid: Carbon dioxide, water, ammonium salts
Hazardous decomposition products: none determined
Hazardous polymerization: Will occur [] Will not occur [X]
Conditions to avoid – Hazardous polymerization: None
Product corrosive: Yes [] No [X]

SECTION 6 – HEALTH HAZARD DATA

Health Hazards (Acute and Chronic)

To the best of our knowledge the chemical, physical and toxicological properties of yttrium oxide have not been thoroughly investigated and recorded.

Yttrium 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, eight edition).

Inhalation: Acute: May cause irritation to the respiratory tract and mucous membrane. Dust may cause asthma attacks lung damage such as lung granulomas.
Chronic: May cause cough, chest tightness, possible lung fibrosis. Prolonged or repeated inhalation may cause writhing, loss of muscle coordination, labored respiration, sedation, hypotension, fibrosis and cardiovascular collapse.

Ingestion: Acute: May cause gastrointestinal irritation. Moderately toxic by intraperitoneal route.
Chronic: May affect the coagulation rate of the blood.

Skin: Acute: May cause irritation.
Chronic: No chronic health effects recorded.

Eye: Acute: May cause irritation.
Chronic: No chronic health effects recorded.

Target Organs: May affect the respiratory system and the blood.

Carcinogenicity: NTP? [No] ARC Monographs? [No] OSHA Regulated? [No]

Carcinogenicity / other Information:

Orl-rat LDLo: >10 g/kg
Orl-mus LDLo: >6 g/kg
Inh-rat 10 mg/m³/6H/17W-I-Toxic effects; blood changes
Ipr-rat LD50: 500 mg/kg

Recommended Exposure Limits See "Section II"

LD 50 / LC 50 See "Carcinogenicity / other Information"

Signs and Symptoms of Exposure

Inhalation: May cause writhing, ataxia, labored respiration, walking on the toes with arched back and sedation.

Ingestion: May cause nausea, vomiting, diarrhea, abdominal burning and cramp-like pain.

Skin: May cause redness and itching.

Eye: May cause redness, itching and watering.

Medical Conditions Generally Aggravated by Exposure

Pre-existing respiratory disorders.

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 if irritation persists.

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

SECTION 7 - PRECAUTIONS FOR SAFE HANDLING AND USE/DISPOSAL

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.

Waste Disposal Method

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

Hazard Label Information

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

Precautions to be Taken in Handling

None

Precautions to be Taken in Storing

None

Other Precautions

None

SECTION 8 - CONTROL MEASURES

Protective Equipment Summary - Hazard Label Information:

NIOSH approved respirator Impervious gloves Safety glasses Clothes to prevent skin contact

Respiratory Equipment (Specify Type)

NIOSH - approved respirator

Eye Protection

Safety glasses

Protective Gloves

Rubber gloves

Other Protective Clothing

Protective gear suitable to prevent contamination

Ventilation

Local Exhaust: Local exhaust ventilation may necessary to control any air contaminants to within their PELs or TLVs during the use of this product.

Other: Good general ventilation is 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 and smoking.

Do not blow dust off clothing or skin with compressed air.

SECTION 9 – OTHER

Control of Substances Hazardous to Health Regulations
EH40 Occupational Exposure Limits

Maximum Exposure Limit: NE

Occupational Exposure Standard: NE

HAI Advanced Material Specialists, Inc. requests the users of this product to study this Material Safety Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify its employees, agents, and contractors of the information on this MSDS and any product hazard and safety information, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the product hazards and safety information.

Company Policy or Disclaimer

The above information is accurate to the best of our knowledge. However, since data, safety standards, and government regulations are subject to change, and the conditions of handling and use or misuse are beyond our control, HAI MAKES NO WARRANTY, EITHER EXPRESSED NOR IMPLIED, WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN, AND DISCLAIMS ALL LIABILITY FOR RELIANCE THEREON. Users should satisfy themselves that they have all current data relevant to their particular use.

Abbreviations used: N/A=Not Applicable NE: Not Established