

## 1 Identification

### Product identifier

**Product name:** Barium vanadium oxide

**Stock number:** 39180

**CAS Number:**

39416-30-3

**Relevant identified uses of the substance or mixture and uses advised against.**

**Identified use:** SU24 Scientific research and development

### Details of the supplier of the safety data sheet

#### Manufacturer/Supplier:

Alfa Aesar

Thermo Fisher Scientific Chemicals, Inc.

30 Bond Street

Ward Hill, MA 01835-8099

Tel: 800-343-0660

Fax: 800-322-4757

Email: tech@alfa.com

www.alfa.com

**Information Department:** Health, Safety and Environmental Department

#### Emergency telephone number:

During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0789.

## 2 Hazard(s) identification

**Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)**



GHS06 Skull and crossbones

Acute Tox. 3 H301 Toxic if swallowed.

Acute Tox. 3 H331 Toxic if inhaled.

**Hazards not otherwise classified** No information known.

### Label elements

**GHS label elements** The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

### Hazard pictograms



GHS06

### Signal word

Danger

### Hazard statements

H301+H331 Toxic if swallowed or if inhaled.

### Precautionary statements

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor/...

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P311 Call a POISON CENTER/doctor/...

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

### WHMIS classification

D1A - Very toxic material causing immediate and serious toxic effects



### Classification system

#### HMIS ratings (scale 0-4)

(Hazardous Materials Identification System)

HEALTH 2 Health (acute effects) = 2

FIRE 0 Flammability = 0

REACTIVITY 0 Physical Hazard = 0

### Other hazards

#### Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

## 3 Composition/information on ingredients

### Chemical characterization: Substances

#### CAS# Description:

39416-30-3 Barium vanadium oxide

## 4 First-aid measures

### Description of first aid measures

#### After inhalation

Supply fresh air. If required, provide artificial respiration. Keep patient warm.

Seek immediate medical advice.

#### After skin contact

Immediately wash with water and soap and rinse thoroughly.

Seek immediate medical advice.

**After eye contact** Rinse opened eye for several minutes under running water. Then consult a doctor.

**After swallowing** Seek medical treatment.

#### Information for doctor

**Most important symptoms and effects, both acute and delayed** No further relevant information available.

**Indication of any immediate medical attention and special treatment needed** No further relevant information available.

Product name: **Barium vanadium oxide**

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## 5 Fire-fighting measures

### Extinguishing media

**Suitable extinguishing agents** Product is not flammable. Use fire-fighting measures that suit the surrounding fire.

### Special hazards arising from the substance or mixture

If this product is involved in a fire, the following can be released:

Barium oxide

Toxic metal oxide fume

### Advice for firefighters

### Protective equipment:

Wear self-contained respirator.

Wear fully protective impervious suit.

## 6 Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

**Environmental precautions:** Do not allow material to be released to the environment without proper governmental permits.

### Methods and material for containment and cleaning up:

Dispose of contaminated material as waste according to section 13.

Ensure adequate ventilation.

**Prevention of secondary hazards:** No special measures required.

### Reference to other sections

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

## 7 Handling and storage

### Handling

#### Precautions for safe handling

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

**Information about protection against explosions and fires:** The product is not flammable

#### Conditions for safe storage, including any incompatibilities

### Storage

**Requirements to be met by storerooms and receptacles:** No special requirements.

**Information about storage in one common storage facility:** Not required.

#### Further information about storage conditions:

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

**Specific end use(s)** No further relevant information available.

## 8 Exposure controls/personal protection

### Additional information about design of technical systems:

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

### Control parameters

#### Components with limit values that require monitoring at the workplace:

Barium, and soluble compounds, as Ba  
mg/m<sup>3</sup>

ACGIH TLV 0.5; Not classified as a human carcinogen

Austria MAK 0.5

Belgium TWA 0.5

Denmark TWA 0.5

Finland TWA 0.5

Germany MAK 0.5 (total dust)

Hungary 0.5-STEL

Ireland TWA 0.5

Korea TLV 0.5

Netherlands MAC-TGG 0.5

Norway TWA 0.5

Poland TWA 0.5; 1.5-STEL

Sweden TWA 0.5

Switzerland MAK-W 0.5

United Kingdom LTEL 0.5

USA PEL 0.5

**Additional information:** No data

### Exposure controls

#### Personal protective equipment

#### General protective and hygienic measures

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Maintain an ergonomically appropriate working environment.

**Breathing equipment:** Use suitable respirator when high concentrations are present.

#### Protection of hands:

Impervious gloves

Check protective gloves prior to each use for their proper condition.

The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

**Eye protection:** Safety glasses

**Body protection:** Protective work clothing.

## 9 Physical and chemical properties

### Information on basic physical and chemical properties

#### General Information

#### Appearance:

Form: Powder

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USA

**Product name: Barium vanadium oxide**

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|                                                 |                                               |
|-------------------------------------------------|-----------------------------------------------|
| <b>Color:</b>                                   | White                                         |
| <b>Odor:</b>                                    | Not determined                                |
| <b>Odor threshold:</b>                          | Not determined.                               |
| <b>pH-value:</b>                                | Not applicable.                               |
| <b>Change in condition</b>                      |                                               |
| <b>Melting point/Melting range:</b>             | Not determined                                |
| <b>Boiling point/Boiling range:</b>             | Not determined                                |
| <b>Sublimation temperature / start:</b>         | Not determined                                |
| <b>Flash point:</b>                             | Not applicable                                |
| <b>Flammability (solid, gaseous)</b>            | Not determined.                               |
| <b>Ignition temperature:</b>                    | Not determined                                |
| <b>Decomposition temperature:</b>               | Not determined                                |
| <b>Auto igniting:</b>                           | Not determined.                               |
| <b>Danger of explosion:</b>                     | Product does not present an explosion hazard. |
| <b>Explosion limits:</b>                        |                                               |
| <b>Lower:</b>                                   | Not determined                                |
| <b>Upper:</b>                                   | Not determined                                |
| <b>Vapor pressure:</b>                          | Not applicable.                               |
| <b>Density at 20 °C (68 °F):</b>                | 5.176 g/cm <sup>3</sup> (43.194 lbs/gal)      |
| <b>Relative density</b>                         | Not determined.                               |
| <b>Vapor density</b>                            | Not applicable.                               |
| <b>Evaporation rate</b>                         | Not applicable.                               |
| <b>Solubility in / Miscibility with</b>         |                                               |
| <b>Water:</b>                                   | Insoluble                                     |
| <b>Partition coefficient (n-octanol/water):</b> | Not determined.                               |
| <b>Viscosity:</b>                               |                                               |
| <b>dynamic:</b>                                 | Not applicable.                               |
| <b>kinematic:</b>                               | Not applicable.                               |
| <b>Other information</b>                        | No further relevant information available.    |

**10 Stability and reactivity**

**Reactivity** No information known.  
**Chemical stability** Stable under recommended storage conditions.  
**Thermal decomposition / conditions to be avoided:** Decomposition will not occur if used and stored according to specifications.  
**Possibility of hazardous reactions** No dangerous reactions known  
**Conditions to avoid** No further relevant information available.  
**Incompatible materials:** No information known.  
**Hazardous decomposition products:**  
Toxic metal oxide fume  
Barium oxide

**11 Toxicological information**

**Information on toxicological effects**  
**Acute toxicity:**  
Harmful if inhaled.  
Harmful if swallowed.  
**LD/LC50 values that are relevant for classification:** No data  
**Skin irritation or corrosion:** Irritant to skin and mucous membranes.  
**Eye irritation or corrosion:** Irritating effect.  
**Sensitization:** No sensitizing effects known.  
**Germ cell mutagenicity:** No effects known.  
**Carcinogenicity:**  
EPA-D: Not classifiable as to human carcinogenicity: inadequate human and animal evidence of carcinogenicity or no data are available.  
ACGIH A4: Not classifiable as a human carcinogen: Inadequate data on which to classify the agent in terms of its carcinogenicity in humans and/or animals.  
**Reproductive toxicity:** No effects known.  
**Specific target organ system toxicity - repeated exposure:** No effects known.  
**Specific target organ system toxicity - single exposure:** No effects known.  
**Aspiration hazard:** No effects known.  
**Subacute to chronic toxicity:**  
Barium compounds may cause severe gastroenteritis, including abdominal pain, vomiting and diarrhea, tremors, faintness, paralysis of the arms and legs, and slow or irregular heartbeat. Severe cases may produce collapse and death due to respiratory failure. Soluble barium compounds are more likely to cause these effects than insoluble compounds. Inhalation of fumes may cause sore throat, coughing, labored breathing, and irritation of the respiratory tract as well as the above symptoms.  
Vanadium compounds act chiefly as an irritant to the eyes and respiratory tract. Exposure may cause conjunctivitis, rhinitis and reversible irritation of the respiratory tract. More severe cases may cause bronchitis, bronchospasms and asthma like disease. May cause polycythemia, red blood cell destruction and anemia, albuminuria and hematuria, gastrointestinal disorders, nervous complaints and severe cough.  
**Subacute to chronic toxicity:** No effects known.  
**Additional toxicological information:** To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

**12 Ecological information**

**Toxicity**  
**Aquatic toxicity:** No further relevant information available.  
**Persistence and degradability** No further relevant information available.  
**Bioaccumulative potential** No further relevant information available.  
**Mobility in soil** No further relevant information available.  
**Additional ecological information:**  
**General notes:**  
Do not allow material to be released to the environment without proper governmental permits.  
Do not allow undiluted product or large quantities to reach ground water, water course or sewage system.  
Avoid transfer into the environment.  
**Results of PBT and vPvB assessment**  
**PBT:** Not applicable.  
**vPvB:** Not applicable.  
**Other adverse effects** No further relevant information available.

**13 Disposal considerations**

**Waste treatment methods**  
**Recommendation** Consult state, local or national regulations to ensure proper disposal.

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USA

**Product name: Barium vanadium oxide****Uncleaned packagings:****Recommendation:** Disposal must be made according to official regulations.

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**14 Transport information****UN-Number**  
**DOT, IMDG, IATA**

UN1564

**UN proper shipping name**  
**DOT**  
**IMDG, IATA**Barium compounds, n.o.s. (Barium vanadium oxide)  
BARIUM COMPOUND, N.O.S. (Barium vanadium oxide)**Transport hazard class(es)**  
**DOT****Class**  
**Label**  
**Class**  
**Label**  
**IMDG, IATA**6.1 Toxic substances.  
6.1  
6.1 (T5) Toxic substances  
6.1**Class**  
**Label**6.1 Toxic substances.  
6.1**Packing group**  
**DOT, IMDG, IATA**

II

**Environmental hazards:**

Not applicable.

**Special precautions for user**

Warning: Toxic substances

**Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.**Transport/Additional information:****DOT**  
**Marine Pollutant (DOT):**  
**Item:**

No

**UN "Model Regulation":**

UN1564, Barium compounds, n.o.s. (Barium vanadium oxide), 6.1, II

**15 Regulatory information****Safety, health and environmental regulations/legislation specific for the substance or mixture****GHS label elements** The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)**Hazard pictograms**

GHS06

**Signal word** Danger**Hazard statements**

H301+H331 Toxic if swallowed or if inhaled.

**Precautionary statements**

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor/...

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P311 Call a POISON CENTER/doctor/...

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

**National regulations**

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.

**SARA Section 313 (specific toxic chemical listings)**

39416-30-3 Barium vanadium oxide

**California Proposition 65****Prop 65 - Chemicals known to cause cancer** Substance is not listed.**Prop 65 - Developmental toxicity** Substance is not listed.**Prop 65 - Developmental toxicity, female** Substance is not listed.**Prop 65 - Developmental toxicity, male** Substance is not listed.**Information about limitation of use:**

For use only by technically qualified individuals.

This product contains barium and is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.

**Other regulations, limitations and prohibitive regulations****Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.** Substance is not listed.**The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.**

Substance is not listed.

**Annex XIV of the REACH Regulations (requiring Authorisation for use)** Substance is not listed.**Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.**16 Other information**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing SDS:** Global Marketing Department**Date of preparation / last revision** 11/24/2015 / -**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

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USA

**Product name: Barium vanadium oxide**

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IMDG: International Maritime Code for Dangerous Goods  
DOT: US Department of Transportation  
IATA: International Air Transport Association  
CAS: Chemical Abstracts Service (division of the American Chemical Society)  
HMIS: Hazardous Materials Identification System (USA)  
WHMIS: Workplace Hazardous Materials Information System (Canada)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent  
vPvB: very Persistent and very Bioaccumulative  
ACGIH: American Conference of Governmental Industrial Hygienists (USA)  
OSHA: Occupational Safety and Health Administration (USA)  
NTP: National Toxicology Program (USA)  
IARC: International Agency for Research on Cancer  
EPA: Environmental Protection Agency (USA)