

Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 08/13/2004

Reviewed on 06/03/2004

- **1 Identification of substance:**

- **Product details:**

- **Product name:** Titanium (IV) isobutoxide

- **Stock number:** 89455

- **Manufacturer/Supplier:**

Alfa Aesar, A Johnson Matthey Company
Johnson Matthey Catalog Company, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Emergency Phone: (978) 521-6300
CHEMTREC: (800) 424-9300
Web Site: www.alfa.com

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

- **Emergency information:**

During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

- **2 Composition/Data on components:**

- **Chemical characterization:**

Description: (CAS#)

titanium (IV) isobutoxide (CAS# 681-98-1); 100%

- **3 Hazards identification**

- **Hazard description:** C Corrosive

- **Information pertaining to particular dangers for man and environment**

R 10 Flammable.

R 34 Causes burns.

- **Classification system**

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

(Hazardous Materials Identification System)

Health (acute effects) = 2

Flammability = 2

Reactivity = 2

• **4 First aid measures**

• **General information**

Immediately remove any clothing soiled by the product.

• **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 immediate medical advice.

• **5 Fire fighting measures**

• **Suitable extinguishing agents** Extinguishing powder. Do not use water.

• **For safety reasons unsuitable extinguishing agents**
Water

• **Protective equipment:**

Wear self-contained respirator.

Wear fully protective impervious suit.

• **6 Accidental release measures**

• **Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Keep away from ignition sources

• **Measures for environmental protection:**

Do not allow material to be released to the environment without proper governmental permits.

• **Measures for cleaning/collecting:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Use neutralizing agent.

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

Keep away from ignition sources.

- **Additional information:**

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**

- **Information 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:**

Keep ignition sources away.

Protect against electrostatic charges.

Fumes can combine with air to form an explosive mixture.

- **Storage**

- **Requirements to be met by storerooms and receptacles:**

No special requirements.

- **Information about storage in one common storage facility:**

Store away from oxidizing agents.

Store away from water/moisture.

- **Further information about storage conditions:**

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

Store under lock and key and with access restricted to technical experts or their assistants only.

- **8 Exposure controls and 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.

Components with limit values that require monitoring

at the workplace:

Not required.

- **Additional information:** No data

- **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.
Avoid contact with the eyes and skin.
- **Breathing equipment:**
Use suitable respirator when high concentrations are present.
- **Protection of hands:** Impervious gloves
- **Eye protection:**
Safety glasses
Tightly sealed goggles
Full face protection
- **Body protection:** Protective work clothing.

• **9 Physical and chemical properties:**

• **General Information**

- **Form:** Liquid
- **Color:** Clear
- **Odor:** Alcohol-like

<u>Method</u>	<u>Value/Range</u>	<u>Unit</u>
• Change in condition		
• Melting point/Melting range:	30	° C
• Boiling point/Boiling range:	296	° C
• Sublimation temperature / start:	Not determined	
• Flash point:	77	° C
• Ignition temperature:	Not determined	
• Decomposition temperature:	Not determined	
• Danger of explosion: Product is not explosive. However, formation of explosive air/vapor mixtures is possible.		
• Explosion limits:		
• Lower:	Not determined	

- **Upper:** Not determined
- **Vapor pressure:** Not determined
- **Density:** at 20 ° C 0.96
g/cm³
- **Solubility in / Miscibility with**
- **Water:** Reacts
Not determined

• **10 Stability and reactivity**

- **Thermal decomposition / conditions to be avoided:**
Decomposition will not occur if used and stored according to specifications.
- **Materials to be avoided:**
Oxidizing agents
Water/moisture
Acids
- **Dangerous reactions** Reacts with water and acids
- **Dangerous products of decomposition:** Carbon monoxide and carbon dioxide

• **11 Toxicological information**

- **Acute toxicity:**
- **Primary irritant effect:**
- **on the skin:**
Corrosive effect on skin and mucous membranes.
Irritant to skin and mucous membranes.
- **on the eye:**
Strong corrosive effect.
Irritating effect.
- **Sensitization:** No sensitizing effects known.
- **Subacute to chronic toxicity:**
Titanium and titanium compounds are considered physiologically inert. There are no reported cases in the literature where titanium as such has caused human intoxication.
- **Subacute to chronic toxicity:**
Corrosive materials are acutely destructive to the respiratory tract, eyes, skin and digestive tract.
Eye contact may result in permanent damage and complete vision loss. Inhalation may result in respiratory effects such as inflammation, edema, and chemical pneumonitis. May cause coughing, wheezing, laryngitis, shortness of breath, headache, nausea and

vomiting. Ingestion may cause damage to the mouth, throat and esophagus. May cause skin burns or irritation depending on the severity of the exposure.

- **Additional toxicological information:**

Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

- **12 Ecological information:**

- **General notes:**

Do not allow material to be released to the environment without proper governmental permits.

- **13 Disposal considerations**

- **Product:**

- **Recommendation**

Consult state, local or national regulations to ensure proper disposal.

- **Uncleaned packagings:**

- **Recommendation:**

Disposal must be made according to official regulations.

- **14 Transport information**

- **DOT regulations:**

- **Hazard class:** 3

- **Identification number:** UN2924

- **Packing group:** III

- **Proper shipping name (technical name):**

n.o.s., titanium isobutoxide
Flammable liquid, corrosive, (IV)

- **Land transport ADR/RID (cross-border)**

- **ADR/RID class:** 3 Flammable liquids

- **Item:** 33c

- **Danger code (Kemler):** 38

- **UN-Number:** 2924
- **Description of goods:** Flammable liquid, corrosive,
n.o.s., titanium
(IV) isobutoxide
- **Maritime transport IMDG:**
- **IMDG Class:** 3
- **UN Number:** 2924
- **Packaging group:** III
- **Proper shipping name:** Flammable liquid, corrosive,
n.o.s., titanium
(IV) isobutoxide
- **Air transport ICAO-TI and IATA-DGR:**
- **ICAO/IATA Class:** 3
- **UN/ID Number:** 2924
- **Packaging group:** III
- **Proper shipping name:** Flammable liquid, corrosive,
n.o.s., titanium
(IV) isobutoxide

- **15 Regulations**

- **Product related hazard informations:**
- **Hazard symbols:** C Corrosive
- **Risk phrases:**
 - 10 Flammable.
 - 34 Causes burns.
- **Safety phrases:**
 - 24/25 Avoid contact with skin and eyes.
 - 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
- **National regulations**

This product is not listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical Substance Inventory. Use of this product is restricted to research and development only.
- **Information about limitation of use:**

For use only by technically qualified individuals.

- **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 MSDS:** Health, Safety and Environmental Department.
- **Contact:** Darrell R. Sanders