

**1 Identification of substance****Product details**

Trade name

**Poly[titanium(IV) n-butoxide]**

Stock number:

L17492

Manufacturer/Supplier:

Alfa Aesar GmbH & Co.KG  
Benzstrasse 3  
D-76185 Karlsruhe / GermanyE-mail: gcat@matthey.com  
www.alfa-chemcat.com

Informing department:

Product safety department.

Emergency information:

Giftnotruf Universität Mainz / Poison Information Center Mainz  
www.giftinfo.uni-mainz.de Telefon:+49(0)6131/19240**2 Hazards identification**

Hazard designation:



Xi Irritant

Information pertaining to particular dangers for man and environment

R 10 Flammable.  
R 36/38 Irritating to eyes and skin.

GHS label elements

**Warning**

H226 - Flammable liquid and vapour.

**Warning**

H315 - Causes skin irritation.  
 H319 - Causes serious eye irritation.  
 P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.  
 P241 Use explosion-proof electrical/ventilating/lighting/equipment.  
 P302+P352 IF ON SKIN: Wash with plenty of soap and water.  
 P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.  
 P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Prevention:

Response:

Disposal:

**3 Composition/information on ingredients**

Chemical characterization:

Designation: (CAS#)

Poly[titanium(IV) n-butoxide] (CAS# 162303-51-7)

Identification number(s):

NLP Number:

500-687-1

**4 First aid measures**

After inhalation

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

After skin contact

Seek immediate medical advice.  
Instantly wash with water and soap and rinse thoroughly.

After eye contact

Seek immediate medical advice.  
Rinse opened eye for several minutes under running water. Then consult doctor.

After swallowing

Seek immediate medical advice.

**5 Fire fighting measures**

Suitable extinguishing agents

CO<sub>2</sub>, sand, extinguishing powder. Do not use water.

For safety reasons unsuitable extinguishing agents

Water.

Special hazards caused by the material, its products of combustion or flue gases:

Can be released in case of fire:  
Carbon monoxide and carbon dioxide  
Metal oxide

Protective equipment:

Wear self-contained breathing apparatus.  
Wear full protective 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:

Measures for cleaning/collecting:

Do not allow material to be released to the environment without proper governmental permits.  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Ensure adequate ventilation.

Additional information:

Keep away from ignition sources.  
See Section 7 for information on safe handling  
See section 8 for information on personal protection equipment.  
See Section 13 for information on disposal.**7 Handling and storage**

Handling

Information for safe handling:

Handle under dry protective gas.  
Keep containers tightly sealed.  
Store in cool, dry place in tightly closed containers.  
Ensure good ventilation/exhaustion at the workplace.

Information about protection against explosions and fires:

Keep ignition sources away - Do not smoke.  
Protect against electrostatic charges.  
Fumes can combine with air to form an explosive mixture.

Storage

Requirements to be met by storerooms and containers:

Information about storage in one common storage facility:

No special requirements.

Further information about storage conditions:

Store away from water.  
Store away from oxidizing agents.  
Store under dry inert gas.  
This product is moisture sensitive.  
Keep container tightly sealed.

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Store in cool, dry conditions in well sealed containers.  
Protect from humidity and keep away from water.

**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 critical 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 should be adhered to in handling the chemicals.

Keep away from foodstuffs, beverages and food.  
Instantly remove any soiled and impregnated garments.  
Wash hands during breaks and at the end of the work.

Do not inhale gases / fumes / aerosols.

Avoid contact with the eyes and skin.

Use breathing protection with high concentrations.

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

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Impervious gloves

Not determined

**Penetration time of glove material****Eye protection:**

Safety glasses

Face protection

**Body protection:**

Protective work clothing.

**9 Physical and chemical properties:****General Information**

**Form:** Liquid  
**Colour:** Colourless  
Yellow  
**Smell:** Not determined

**Change in condition**

**Melting point/Melting range:** Not determined

**Boiling point/Boiling range:** Not determined

**Sublimation temperature / start:** Not determined

**Flash point:**

45°C

**Ignition temperature:**

Not determined

**Decomposition temperature:**

Not determined

**Critical values for explosion:**

**Lower:** Not determined

**Upper:** Not determined

**Steam pressure:**

Not determined

**Density at 20°C**

1.11 g/cm<sup>3</sup>

**Solubility in / Miscibility with**

**Water:** Hydrolyzes

**10 Stability and reactivity****Thermal decomposition / conditions to be avoided:**

No decomposition if used and stored according to specifications.

**Materials to be avoided:**

Water/moisture

Oxidizing agents

**Dangerous reactions:**

No dangerous reactions known

**Dangerous products of decomposition:**

Carbon monoxide and carbon dioxide

Metal oxide

**11 Toxicological information****Acute toxicity:****Primary irritant effect:****on the skin:**

Irritant for skin and mucous membranes.

**on the eye:**

Irritant effect.

**Sensitization:**

No sensitizing effect known.

**Additional toxicological information:**

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:****Additional ecological information:****General notes:**

Water hazard class 1 (Self-assessment): slightly hazardous for water.

Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.

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

**13 Disposal considerations****Product:****Recommendation**

Hand over to disposers of hazardous waste.

Must be specially treated under adherence to official regulations.

Consult state, local or national regulations for proper disposal.

**Uncleaned packagings:****Recommendation:**

Disposal must be made according to official regulations.

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**14 Transport information****Land transport ADR/RID and GGVS/GGVE (cross-border/domestic)**

ADR/RID-GGVS/E Class: 3 (F1) Flammable liquids.  
 Kemler Number: 30  
 UN-Number: 1993  
 Packaging group: III  
 Label: 3  
 Designation of goods: 1993 FLAMMABLE LIQUID, N.O.S. (not viscous) (Poly[titanium(IV) n-butoxide])  
 Limited quantities (LQ): LQ7  
 Transport category: 3  
 Tunnel restriction code: D/E

**Maritime transport IMDG/GGVSea:**

IMDG/GGVSea Class: 3  
 UN Number: 1993  
 Label: 3  
 Packaging group: III  
 EMS Number: F-E, S-E  
 Marine pollutant: No  
 Correct technical name: FLAMMABLE LIQUID, N.O.S. (Poly[titanium(IV) n-butoxide])

**Air transport ICAO-TI and IATA-DGR:**

ICAO/IATA Class: 3  
 UN/ID Number: 1993  
 Label: 3  
 Packaging group: III  
 Correct technical name: FLAMMABLE LIQUID, N.O.S. (Poly[titanium(IV) n-butoxide])

**UN "Model Regulation":**

UN1993, FLAMMABLE LIQUID, N.O.S., 3, III

**15 Regulatory information****Designation according to EC guidelines:****Code letter and hazard designation of product:**

Xi Irritant

**Risk phrases:** 10 Flammable.  
 36/38 Irritating to eyes and skin.

**Safety phrases:** 23 Do not breathe fumes.  
 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
 37 Wear suitable gloves.

**National regulations**

**Information about limitation of use:** For use only by technically qualified individuals.  
 Employment restrictions concerning young persons must be observed.

**Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.

**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 data specification sheet:** Health, Safety and Environmental Department.

**Contact:** Zachariah Holt

**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)  
 RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)  
 IMDG: International Maritime Code for Dangerous Goods  
 IATA: International Air Transport Association  
 IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)  
 ICAO: International Civil Aviation Organization  
 ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)  
 GHS: Globally Harmonized System of Classification and Labelling of Chemicals  
 EINECS: European Inventory of Existing Commercial Chemical Substances  
 CAS: Chemical Abstracts Service (division of the American Chemical Society)