

# Safety data sheet

according to 1907/2006/EC, Article 31

Revision: 03.09.2009

Printing date 01.07.2013

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier**

Trade name

**Zirconium n-butoxide, 80% in 1-butanol**

Stock number:

B23317

CAS Number:

1071-76-7

EC number:

213-995-3

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

Identified use:

SU24 Scientific research and development

**1.3 Details of the supplier of the safety data sheet**

Manufacturer/Supplier:

Alfa Aesar GmbH & Co.KG  
A Johnson Matthey Company  
Zeppelinstr. 7b  
76185 Karlsruhe / Germany  
Tel: +49 (0) 721 84007 280  
Fax: +49 (0) 721 84007 300  
Email: tech@alfa.com  
www.alfa.com

Informing department:

Product safety Tel + +049 (0) 7275 988687-0

**1.4 Emergency telephone number:**

Carechem 24: +44 (0) 1235 239 670 (Multi-language emergency number)

Poison Information Center Mainz

www.giftinfo.uni-mainz.de Telephone: +49(0)6131/19240

**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008



GHS02 flame

Flam. Liq. 3 H226 Flammable liquid and vapour.



GHS05 corrosion

Eye Dam. 1 H318 Causes serious eye damage.



GHS07

Skin Irrit. 2 H315 Causes skin irritation.

STOT SE 3 H335-H336 May cause respiratory irritation. May cause drowsiness or dizziness.

**Classification according to Directive 67/548/EEC or Directive 1999/45/EC**

Xi; Irritant

R37/38-41: Irritating to respiratory system and skin. Risk of serious damage to eyes.

R10-67: Flammable. Vapours may cause drowsiness and dizziness.

**Information concerning particular hazards for human and environment:**

Has a narcotizing effect.

**Other hazards that do not result in classification**

No information known.

**2.2 Label elements**

Labelling according to Regulation (EC) No 1272/2008

Hazard pictograms

Signal word

Hazard statements

The substance is classified and labelled according to the CLP regulation.

GHS02, GHS05, GHS07

Danger

H226 Flammable liquid and vapour.

H315 Causes skin irritation.

H318 Causes serious eye damage.

H335-H336 May cause respiratory irritation. May cause drowsiness or dizziness.

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P241 Use explosion-proof electrical/ventilating/lighting/equipment.

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.

P405

P501

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

**2.3 Other hazards**

Results of PBT and vPvB assessment

PBT:

Not applicable.

vPvB:

Not applicable.

**SECTION 3: Composition/information on ingredients****3.1 Substances**

CAS# Designation:

1071-76-7 Zirconium n-butoxide, 80% in 1-butanol

Identification number(s):

213-995-3

EC number:

213-995-3

Additional information:

Zirconium is routinely found with a low level of hafnium since separation of the two elements is difficult.

**SECTION 4: First aid measures****4.1 Description of 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 medical treatment.

**4.2 Most important symptoms and effects, both acute and delayed**

No further relevant information available.

**4.3 Indication of any immediate medical attention and special treatment needed**

No further relevant information available.

**SECTION 5: Firefighting measures****5.1 Extinguishing media**

Suitable extinguishing agents

CO2, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.

(Contd. on page 2)  
DE/E

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according to 1907/2006/EC, Article 31

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(Contd. of page 1)

**5.2 Special hazards arising from the substance or mixture**

If this product is involved in a fire, the following can be released:  
Carbon monoxide and carbon dioxide  
Metal oxide

**5.3 Advice for firefighters**  
**Protective equipment:**

Wear self-contained breathing apparatus.  
Wear full protective suit.

**SECTION 6: Accidental release measures****6.1 Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.  
Ensure adequate ventilation  
Keep away from ignition sources

**6.2 Environmental precautions:**

Do not allow material to be released to the environment without proper governmental permits.  
Do not allow product to reach sewage system or water bodies.  
Do not allow to enter the ground/soil.

**6.3 Methods and material for containment and cleaning up:**

Keep away from ignition sources.  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Ensure adequate ventilation.

**Prevention of secondary hazards:****6.4 Reference to other sections**

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.

**SECTION 7: Handling and storage****7.1 Precautions 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:**

Protect against electrostatic charges.  
Fumes can combine with air to form an explosive mixture.

**7.2 Conditions for safe storage, including any incompatibilities**

**Storage**  
**Requirements to be met by storerooms and containers:**  
**Information about storage in one common storage facility:**

No special requirements.

Store away from oxidizing agents.  
Store away from water.

**Further information about storage conditions:**

Store under dry inert gas.  
This product is moisture sensitive.  
Keep container tightly sealed.  
Store in cool, dry conditions in well sealed containers.  
Protect from humidity and keep away from water.  
No further relevant information available.

**7.3 Specific end use(s)****SECTION 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.

**8.1 Control parameters****Components with critical values that require monitoring at the workplace:****1-Butanol**

ppm  
ACGIH TLV 50-Ceiling (skin)  
Austria MAK 50  
Belgium 50-STEL (skin)  
Denmark TWA 50 (skin)  
Finland TWA 50; 75-STEL (skin)  
France VLE 50  
Germany MAK 100  
Hungary TWA 100 mg/m3; 200 mg/m3-STEL (skin)  
Japan OEL 50 (skin)  
Korea TLV 50-Ceiling (skin)  
Netherlands MAC-TGG 50 (skin)  
Norway TWA 25  
Poland TWA 50 mg/m3; 140 mg/m3-STEL  
Russia 50-STEL  
Sweden NGV 15; 30-TGV (skin)  
Switzerland MAK-W 50; 100-KZG-W (skin)  
United Kingdom 50-STEL (skin)  
USA PEL 100

**Zirconium and compounds, as Zr**

mg/m3  
ACGIH TLV 10; 10-STEL, Not classifiable as human carcinogen  
Australia TWA 5; 10-STEL  
Austria MAK 5  
Denmark TWA 5  
Finland TWA 5  
Korea TLV 5  
Hungary 5-STEL  
Poland TWA 5; 10-STEL  
Russia 6-STEL  
OSHA PEL 5  
No data

**Additional information:****8.2 Exposure controls****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.  
Avoid contact with the skin.

(Contd. on page 3)  
DE/E

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(Contd. of page 2)

**Breathing equipment:**  
**Protection of hands:**

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

**Body protection:**

Avoid contact with the eyes and skin.  
Maintain an ergonomically appropriate working environment.  
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  
Tightly sealed safety glasses.  
Face protection  
Protective work clothing.

**SECTION 9: Physical and chemical properties****9.1 Information on basic physical and chemical properties****General Information****Appearance:**

**Form:** Liquid  
**Colour:** Pale yellow  
**Smell:** Alcohol-like  
**Odour threshold:** Not determined.

**pH-value:** Not determined.

**Change in condition**

**Melting point/Melting range:** Not determined  
**Boiling point/Boiling range:** Not determined  
**Sublimation temperature / start:** Not determined

**Flash point:** 38 °C  
**Inflammability (solid, gaseous)** Not determined.  
**Ignition temperature:** Not determined  
**Decomposition temperature:** Not determined  
**Self-inflammability:** Not determined.  
**Critical values for explosion:**  
**Lower:** Not determined  
**Upper:** Not determined  
**Steam pressure:** Not determined  
**Density at 20 °C** 1,07 g/cm<sup>3</sup>  
**Relative density** Not determined.  
**Vapour density** Not determined.  
**Evaporation rate** Not determined.  
**Solubility in / Miscibility with**  
**Water:** Not determined  
**Partition coefficient (n-octanol/water):** Not determined.  
**Viscosity:**  
**dynamic:** Not determined.  
**kinematic:** Not determined.  
**9.2 Other information** No further relevant information available.

**SECTION 10: Stability and reactivity**

**10.1 Reactivity** No information known.  
**10.2 Chemical stability** Stable under recommended storage conditions.  
**Thermal decomposition / conditions to be avoided:** No decomposition if used and stored according to specifications.  
**10.3 Possibility of hazardous reactions** No dangerous reactions known  
**10.5 Incompatible materials:** Oxidizing agents  
Water/moisture  
**10.6 Hazardous decomposition products:** Carbon monoxide and carbon dioxide  
Metal oxide

**SECTION 11: Toxicological information****11.1 Information on toxicological effects****Acute toxicity:** No effects known.**LD/LC50 values that are relevant for classification:****Skin irritation or corrosion:** No data  
Corrosive effect on skin and mucous membranes.**Eye irritation or corrosion:** Causes skin irritation.  
Strong corrosive effect.  
Irritant effect.**Sensitization:** Causes serious eye damage.**Germ cell mutagenicity:** No sensitizing effect known.**Carcinogenicity:** No effects known.

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:** May cause drowsiness or dizziness.

May cause respiratory irritation.

**Aspiration hazard:** No effects known.**Additional toxicological information:** To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.**SECTION 12: Ecological information****12.1 Toxicity****Aquatic toxicity:** No further relevant information available.**12.2 Persistence and degradability** No further relevant information available.**12.3 Bioaccumulative potential** No further relevant information available.**12.4 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.

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.

Avoid transfer into the environment.

(Contd. on page 4)  
DE/E

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(Contd. of page 3)

**12.5 Results of PBT and vPvB assessment**

**PBT:** Not applicable.  
**vPvB:** Not applicable.  
**12.6 Other adverse effects** No further relevant information available.

**SECTION 13: Disposal considerations****13.1 Waste treatment methods**

**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.

**SECTION 14: Transport information****UN-Number**  
**ADR, IMDG, IATA**

UN1120

**14.2 UN proper shipping name**  
**ADR**  
**IMDG, IATA**1120 BUTANOLS  
BUTANOLS**14.3 Transport hazard class(es)**

**ADR**



**Class** 3 (F1) Flammable liquids.  
**Label** 3  
**IMDG, IATA**



**Class** 3 Flammable liquids.  
**Label** 3

**Packing group**  
**ADR, IMDG, IATA**

III

**14.5 Environmental hazards:**

Not applicable.

**14.6 Special precautions for user**

**Kemler Number:** Warning: Flammable liquids.  
**EMS Number:** 30  
 F-E,S-D

**14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC**  
**Code**

Not applicable.

**Transport/Additional information:**

**ADR**

**Excepted quantities (EQ):** E1  
**Limited quantities (LQ)** 5L  
**Transport category** 3  
**Tunnel restriction code** D/E

**UN "Model Regulation":** UN1120, BUTANOLS, 3, III

**SECTION 15: Regulatory information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****Australian Inventory of Chemical**

**Substances** Substance is listed.

**Standard for the Uniform Scheduling of**

**Drugs and Poisons** Substance is not listed.

**National regulations**

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

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

**Other regulations, limitations and prohibitive regulations****ELINCS (European List of Notified Chemical**

**Substances)** Substance is not listed.

**Substances of very high concern (SVHC)**

**according to REACH, Article 57** Substance is not listed.

**REACH - Pre-registered substances**

**15.2 Chemical safety assessment:** Substance is listed.

A Chemical Safety Assessment has not been carried out.

**SECTION 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:****Abbreviations and acronyms:**

Health, Safety and Environmental Department.  
 RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)  
 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)  
 ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
 IMDG: International Maritime Code for Dangerous Goods  
 IATA: International Air Transport Association  
 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)  
 LC50: Lethal concentration, 50 percent  
 LD50: Lethal dose, 50 percent

DE/E