

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

**1.1 Product identifier**  
Trade name **Zirconium(IV) sulfate hydrate**  
Stock number: A15877  
CAS Number: 14644-61-2  
EC number: 238-694-4

**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  
Product safety Tel + +049 (0) 7275 988687-0  
Call Carechem 24 at +44 (0) 1865 407333  
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

**Informing department:**  
**1.4 Emergency telephone number:**

**SECTION 2: Hazards identification**

**2.1 Classification of the substance or mixture**  
Classification according to Regulation (EC) No 1272/2008

 GHS05 corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.

 GHS07

Acute Tox. 4 H302 Harmful if swallowed.

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

 C; Corrosive

R34: Causes burns.

 Xn; Harmful

R22: Harmful if swallowed.

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

Not applicable

**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**

**Precautionary statements**

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

GHS05, GHS07

Danger

H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage.

P260

Do not breathe dust/fume/gas/mist/vapours/spray.

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.

P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

P405

P501

Store locked up.  
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:**

14644-61-2 Zirconium(IV) sulfate hydrate

**Identification number(s):**

**EC number:**

238-694-4

**Additional information:**

CAS# for anhydrous form: 14644-61-2

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

**Impurities and stabilising additives:**

Sulfuric acid

**SECTION 4: First aid measures**

**4.1 Description of first aid measures**

**General information**

**After inhalation**

Instantly remove any clothing soiled by the product.

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

Seek immediate medical advice.

**After skin contact**

Instantly 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 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**

Use fire fighting measures that suit the environment.

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

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

Metal oxide

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**5.3 Advice for firefighters  
Protective equipment:**

Sulphur oxides (SO<sub>x</sub>)  
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

**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:**

Use neutralizing agent.  
Dispose of contaminated material as waste according to item 13.  
Ensure adequate ventilation.

**Prevention of secondary hazards:**

No special measures required.

**6.4 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 information on disposal.

**SECTION 7: Handling and storage****7.1 Precautions for safe handling**

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:**

The product is not flammable

**7.2 Conditions for safe storage, including any incompatibilities****Storage  
Requirements to be met by storerooms and containers:**

No special requirements.

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

Store away from oxidizing agents.

**Further information about storage conditions:**

Keep container tightly sealed.  
Store in cool, dry conditions in well sealed containers.  
Store in a locked cabinet or with access restricted to technical experts or their assistants.  
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:**

Zirconium and compounds, as Zr  
mg/m<sup>3</sup>  
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

**14644-61-2 Zirconium(IV) sulfate hydrate (100,0%)**

AGW (Germany) 1E mg/m<sup>3</sup>  
1(l);  
MAK (TRGS 900) (Germany) 5 E mg/m<sup>3</sup>  
25; (DFG)  
PEL (USA) 5 mg/m<sup>3</sup>  
as Zr  
REL (USA) Short-term value: 10 mg/m<sup>3</sup>  
Long-term value: 5 mg/m<sup>3</sup>  
as Zr  
TLV (USA) Short-term value: 10 mg/m<sup>3</sup>  
Long-term value: 5 mg/m<sup>3</sup>  
as Zr

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 eyes and skin.  
Maintain an ergonomically appropriate working environment.

**Breathing equipment:**

Use breathing protection with high concentrations.

**Protection of hands:**

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.

**Material of gloves**

Impervious gloves

**Penetration time of glove material**

Not determined

**Eye protection:**

Tightly sealed safety glasses.

Full face protection

**Body protection:**

Protective work clothing.

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

**Form:** Crystalline powder  
**Colour:** White  
**Smell:** Not determined  
**Odour threshold:** Not determined.

**pH-value:** Not applicable.

**Change in condition**

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

**Flash point:** Not applicable  
**Inflammability (solid, gaseous):** Not determined.  
**Ignition temperature:** Not determined  
**Decomposition temperature:** Not determined  
**Self-inflammability:** Not determined.

**Danger of explosion:** Product is not explosive.

**Critical values for explosion:**

**Lower:** Not determined  
**Upper:** Not determined  
**Steam pressure:** Not applicable.  
**Density:** Not determined  
**Relative density:** Not determined.  
**Vapour density:** Not applicable.  
**Evaporation rate:** Not applicable.

**Solubility in / Miscibility with**

**Water:** Soluble  
**Partition coefficient (n-octanol/water):** Not determined.

**Viscosity:**  
**dynamic:** Not applicable.  
**kinematic:** Not applicable.

**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

**10.6 Hazardous decomposition products:**Carbon monoxide and carbon dioxide  
Metal oxide  
Sulphur oxides (SOx)**SECTION 11: Toxicological information****11.1 Information on toxicological effects****Acute toxicity:**Harmful if swallowed.  
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.**LD/LC50 values that are relevant for classification:**

No data

**Skin irritation or corrosion:**

Causes severe skin burns.

**Eye irritation or corrosion:**Irritant effect.  
Causes serious eye damage.**Sensitization:**

No sensitizing effect known.

**Germ cell mutagenicity:**

No effects known.

**Carcinogenicity:**

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.

**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.**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.

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DE/E

**Safety data sheet**  
according to 1907/2006/EC, Article 31

Revision: 11.12.2007

Printing date 01.07.2013

Trade name **Zirconium(IV) sulfate hydrate**

Recommended cleaning agent: Water, if necessary with cleaning agent.

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**SECTION 14: Transport information**

<b>UN-Number</b> ADR, IMDG, IATA	UN3260
<b>14.2 UN proper shipping name</b> ADR	3260 CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S. (Zirconium(IV) sulfate hydrate)
<b>IMDG, IATA</b>	CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S. (Zirconium(IV) sulfate hydrate)
<b>14.3 Transport hazard class(es)</b> ADR	
	
<b>Class</b> <b>Label</b> IMDG, IATA	8 (C2) Corrosive substances. 8
	
<b>Class</b> <b>Label</b>	8 Corrosive substances. 8
<b>Packing group</b> ADR, IMDG, IATA	III
<b>14.5 Environmental hazards:</b>	Not applicable.
<b>14.6 Special precautions for user</b> Kemler Number: <b>Segregation groups</b>	Warning: Corrosive substances. 80 Acids
<b>14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>	Not applicable.
<b>Transport/Additional information:</b>	
<b>ADR</b> <b>Excepted quantities (EQ):</b> <b>Limited quantities (LQ)</b>	E1 5 kg
<b>UN "Model Regulation":</b>	UN3260, CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S. (Zirconium(IV) sulfate hydrate), 8, III

**SECTION 15: Regulatory information**

<b>15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture</b>	
<b>Australian Inventory of Chemical Substances</b>	Substance is listed.
<b>Standard for the Uniform Scheduling of Drugs and Poisons</b>	Substance is not listed.
<b>National regulations</b>	
<b>Information about limitation of use:</b>	Employment restrictions concerning young persons must be observed. For use only by technically qualified individuals.
<b>Water hazard class:</b>	Water hazard class 1 (Self-assessment): slightly hazardous for water.
<b>Other regulations, limitations and prohibitive regulations</b>	
<b>ELINCS (European List of Notified Chemical Substances)</b>	Substance is not listed.
<b>Substances of very high concern (SVHC) according to REACH, Article 57</b>	Substance is not listed.
<b>REACH - Pre-registered substances</b>	Substance is listed.
<b>15.2 Chemical safety assessment:</b>	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:** Health, Safety and Environmental Department.  
**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)  
 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