



A Group Company of MITSUBISHI CHEMICAL

**ZIRCONIUM n-PROPOXIDE, 70% in n-propanol**

## Safety Data Sheet AKZ975

Issue date: 12/30/2014

Revision date: 09/07/2022

Version: 2.1

**SECTION 1: Identification****1.1. Identification**

Product name : ZIRCONIUM n-PROPOXIDE, 70% in n-propanol  
 Product code : AKZ975  
 Product form : Mixture  
 Physical state : Liquid  
 Formula : C<sub>12</sub>H<sub>28</sub>O<sub>4</sub>Zr  
 Synonyms : ZIRCONIUM PROPYLATE  
 TETRAPROPYL ZIRCONATE  
 Chemical family : METAL ALKOXIDE

**1.2. Recommended use and restrictions on use**

Recommended use : Chemical intermediate

**1.3. Supplier****GELEST, INC.**

11 East Steel Road  
 Morrisville, PA 19067

**USA**

T 215-547-1015 - F 215-547-2484 - (M-F): 8:00 AM - 5:30 PM EST

[info@gelest.com](mailto:info@gelest.com) - [www.gelest.com](http://www.gelest.com)

**1.4. Emergency telephone number**

Emergency number : CHEMTREC: 1-800-424-9300 (USA); +1 703-527-3887 (International)

**SECTION 2: Hazard(s) identification****2.1. Classification of the substance or mixture****GHS US classification**

Flammable liquids Category 3	H226 Flammable liquid and vapor
Skin corrosion/irritation Category 2	H315 Causes skin irritation
Serious eye damage/eye irritation Category 2A	H319 Causes serious eye irritation
Specific target organ toxicity – Single exposure, Category 3, Narcosis	H336 May cause drowsiness or dizziness

Full text of H statements : see section 16

**2.2. GHS Label elements, including precautionary statements****GHS US labeling**

Hazard pictograms (GHS US) :



Signal word (GHS US) : Warning

Hazard statements (GHS US) : H226 - Flammable liquid and vapor  
 H315 - Causes skin irritation  
 H319 - Causes serious eye irritation  
 H336 - May cause drowsiness or dizziness

Precautionary statements (GHS US) : P280 - Wear protective gloves/protective clothing/eye protection/face protection.  
 P312 - Call a doctor if you feel unwell.  
 P261 - Avoid breathing vapors.  
 P264 - Wash hands thoroughly after handling.  
 P210 - Keep away from heat, open flames, sparks. - No smoking.  
 P240 - Ground/Bond container and receiving equipment.  
 P241 - Use explosion-proof electrical equipment.  
 P242 - Use only non-sparking tools.  
 P243 - Take precautionary measures against static discharge.  
 P271 - Use only outdoors or in a well-ventilated area.  
 P303+P361+P353 - If on skin (or hair): take off immediately all contaminated clothing. rinse skin with water/shower  
 P332+P313 - If skin irritation occurs: Get medical advice/attention.  
 P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing.  
 P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
 P337+P313 - If eye irritation persists: Get medical advice/attention.

# ZIRCONIUM n-PROPOXIDE, 70% in n-propanol

## Safety Data Sheet

P362 - Take off contaminated clothing and wash before reuse.  
P370+P378 - In case of fire: Use water spray, foam, carbon dioxide, dry chemical to extinguish.  
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.  
P403+P235 - Keep in a cool place  
P405 - Store locked up.  
P501 - Dispose of contents/container to licensed waste disposal facility..

### 2.3. Hazards not otherwise classified (HNOC)

Other hazards which do not result in classification : Material may form zirconium oxides or zirconate polymers on the skin, eyes or in the lungs.  
Prolonged exposure to zirconium compounds can induce formation of granulomatous lesions in the lungs or on the skin.

### 2.4. Unknown acute toxicity (GHS US)

Not applicable

## SECTION 3: Composition/Information on ingredients

### 3.1. Substances

Not applicable

### 3.2. Mixtures

Name	Product identifier	%	GHS US classification
Zirconium n-propoxide	(CAS-No.) 23519-77-9	70	Eye Irrit. 2A, H319
n-Propanol	(CAS-No.) 71-23-8	30	Flam. Liq. 3, H226 Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H336

Full text of hazard classes and H-statements : see section 16

## SECTION 4: First-aid measures

### 4.1. Description of first aid measures

First-aid measures general : Remove contaminated clothing and shoes. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). If possible show this sheet; if not available show packaging or label.

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If you feel unwell, seek medical advice.

First-aid measures after skin contact : Wash with plenty of soap and water. Get medical advice/attention.

First-aid measures after eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.

First-aid measures after ingestion : Never give anything by mouth to an unconscious person. Get medical advice/attention.

### 4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects after inhalation : May cause drowsiness or dizziness. May cause irritation to the respiratory tract.

Symptoms/effects after skin contact : Causes skin irritation.

Symptoms/effects after eye contact : Causes serious eye irritation.

Symptoms/effects after ingestion : May be harmful if swallowed.

### 4.3. Immediate medical attention and special treatment, if necessary

No additional information available

## SECTION 5: Fire-fighting measures

### 5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Water spray. Foam. Carbon dioxide. Dry chemical.

Unsuitable extinguishing media : Do not use straight streams.

### 5.2. Specific hazards arising from the chemical

Fire hazard : Flammable liquid and vapor. Irritating fumes and organic acid vapors may develop when material is exposed to elevated temperatures or open flame.

### 5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions : Exercise caution when fighting any chemical fire. Use water spray to cool exposed surfaces.

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection. Avoid all eye and skin contact and do not breathe vapor and mist.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

General measures : Eliminate ignition sources. Use special care to avoid static electric charges.

# ZIRCONIUM n-PROPOXIDE, 70% in n-propanol

## Safety Data Sheet

### 6.1.1. For non-emergency personnel

Protective equipment : Wear protective equipment as described in Section 8.  
Emergency procedures : Evacuate unnecessary personnel.

### 6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8: "Exposure controls/personal protection".

### 6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

### 6.3. Methods and material for containment and cleaning up

For containment : Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.  
Methods for cleaning up : Clean up any spills as soon as possible, using an absorbent material to collect it. Use only non-sparking tools.

### 6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Additional hazards when processed : Handle empty containers with care because residual vapors are flammable.  
Precautions for safe handling : Avoid all eye and skin contact and do not breathe vapor and mist. Ground/bond container and receiving equipment. Take precautionary measures against static discharge. Use only outdoors or in a well-ventilated area. Use only non-sparking tools.  
Hygiene measures : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Wash contaminated clothing before reuse.

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

Technical measures : Proper grounding procedures to avoid static electricity should be followed. Use explosion-proof electrical equipment.  
Storage conditions : Keep container tightly closed. Keep in a cool place. Store locked up.  
Incompatible materials : Water.  
Storage area : Store in a well-ventilated place. Store away from heat.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

Zirconium n-propoxide (23519-77-9)		
OSHA	OSHA PEL (TWA) [1]	5 mg/m <sup>3</sup> (Zirconium)
n-Propanol (71-23-8)		
ACGIH	ACGIH OEL TWA [ppm]	100 ppm
OSHA	OSHA PEL (TWA) [1]	500 mg/m <sup>3</sup>
OSHA	OSHA PEL (TWA) [2]	200 ppm
IDLH	IDLH [ppm]	800 ppm
NIOSH	NIOSH REL (TWA)	500 mg/m <sup>3</sup>
NIOSH	NIOSH REL TWA [ppm]	200 ppm
NIOSH	NIOSH REL (STEL)	625 mg/m <sup>3</sup>
NIOSH	NIOSH REL STEL [ppm]	250 ppm

### 8.2. Appropriate engineering controls

Appropriate engineering controls : Provide local exhaust or general room ventilation.

### 8.3. Individual protection measures/Personal protective equipment

#### Personal protective equipment:

Avoid all unnecessary exposure. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

#### Hand protection:

Neoprene or nitrile rubber gloves

# ZIRCONIUM n-PROPOXIDE, 70% in n-propanol

## Safety Data Sheet

### Eye protection:

Chemical goggles. Contact lenses should not be worn

### Skin and body protection:

Wear suitable protective clothing

### Respiratory protection:

Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. NIOSH-certified organic vapor (black cartridge) respirator.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: Clear liquid.
Molecular mass	: 327.56 g/mol
Color	: Light. Amber.
Odor	: Characteristic.
Odor threshold	: No data available
Refractive index	: 1.457
pH	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Melting point	: No data available
Freezing point	: No data available
Boiling point	: 208 °C @ 0.1 mm Hg
Flash point	: 23 °C
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability	: Flammable liquid and vapor
Vapor pressure	: 15 mm Hg @ 25°C
Relative vapor density at 20 °C	: 2.1 (n-propanol)
Relative density	: 1.05
% Volatiles	: > 30 %
Solubility	: Reacts with water.
Partition coefficient n-octanol/water (Log Pow)	: No data available
Partition coefficient n-octanol/water (Log Kow)	: No data available
Viscosity, kinematic	: 60 – 90 cSt
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosion limits	: 2.2 – 13.7 vol % (lower; upper; n-propanol)

### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No additional information available

### 10.2. Chemical stability

Stable.

### 10.3. Possibility of hazardous reactions

Material decomposes slowly in contact with water.

### 10.4. Conditions to avoid

Heat. Open flame. Sparks.

### 10.5. Incompatible materials

Water.

### 10.6. Hazardous decomposition products

Organic acid vapors. Zirconium oxide fumes.

# ZIRCONIUM n-PROPOXIDE, 70% in n-propanol

## Safety Data Sheet

### SECTION 11: Toxicological information

#### 11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified  
Acute toxicity (dermal) : Not classified  
Acute toxicity (inhalation) : Not classified

n-Propanol (71-23-8)	
LD50 oral rat	1870 mg/kg
LD50 dermal rabbit	4049 mg/kg
LC50 Inhalation - Rat [ppm]	> 13548 ppm/4h

Skin corrosion/irritation : Causes skin irritation.  
Serious eye damage/irritation : Causes serious eye irritation.  
Respiratory or skin sensitization : Not classified  
Germ cell mutagenicity : Not classified  
Carcinogenicity : Not classified

None of the components in this product at concentrations >0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

Reproductive toxicity : Not classified  
STOT-single exposure : May cause drowsiness or dizziness.

STOT-repeated exposure : Not classified  
Aspiration hazard : Not classified  
Symptoms/effects after inhalation : May cause drowsiness or dizziness. May cause irritation to the respiratory tract.  
Symptoms/effects after skin contact : Causes skin irritation.  
Symptoms/effects after eye contact : Causes serious eye irritation.  
Symptoms/effects after ingestion : May be harmful if swallowed.

### SECTION 12: Ecological information

#### 12.1. Toxicity

n-Propanol (71-23-8)	
LC50 - Fish [1]	4480 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
EC50 - Crustacea [1]	3642 mg/l (Exposure time: 48 h - Species: Daphnia magna)
EC50 - Crustacea [2]	3339 – 3977 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])

#### 12.2. Persistence and degradability

No additional information available

#### 12.3. Bioaccumulative potential

n-Propanol (71-23-8)	
Partition coefficient n-octanol/water (Log Pow)	0.25 – 0.34

#### 12.4. Mobility in soil

No additional information available

#### 12.5. Other adverse effects

Other adverse effects : May be hazardous to aquatic life if released to open waters.  
Effect on the ozone layer : No additional information available

### SECTION 13: Disposal considerations

#### 13.1. Disposal methods

Sewage disposal recommendations : Do not dispose of waste into sewer.  
Product/Packaging disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to licensed waste disposal facility..  
Additional information : Handle empty containers with care because residual vapors are flammable.  
Ecology - waste materials : Avoid release to the environment.

# ZIRCONIUM n-PROPOXIDE, 70% in n-propanol

## Safety Data Sheet

### SECTION 14: Transport information

#### 14.1. UN number

UN-No.(DOT) : 1274  
DOT NA No UN1274

#### 14.2. UN proper shipping name

Transport document description (DOT) : UN1274 n-Propanol (ZIRCONIUM n-PROPOXIDE, 70% in n-propanol), 3, III  
Proper Shipping Name (DOT) : n-Propanol  
ZIRCONIUM n-PROPOXIDE, 70% in n-propanol  
Class (DOT) : 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120  
Packing group (DOT) : III - Minor Danger  
Hazard labels (DOT) : 3 - Flammable liquid



DOT Packaging Non Bulk (49 CFR 173.xxx) : 203  
DOT Packaging Bulk (49 CFR 173.xxx) : 242  
DOT Packaging Exceptions (49 CFR 173.xxx) : 150

#### 14.3. Additional information

Emergency Response Guide (ERG) Number : 129  
Other information : No supplementary information available.

#### Transport by sea

DOT Vessel Stowage Location : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.

#### Air transport

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 60 L  
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 220 L

### SECTION 15: Regulatory information

#### 15.1. US Federal regulations

Commercial status of components according to the United States Environmental Protection Agency's Toxic Substances Control Act (TSCA):

Name	CAS-No.	Listing	Commercial status	Flags
Zirconium n-propoxide	23519-77-9	Present	Active	
n-Propanol	71-23-8	Present	Active	

#### 15.2. International regulations

##### CANADA

###### Zirconium n-propoxide (23519-77-9)

Listed on the Canadian NDSL (Non-Domestic Substances List)

###### n-Propanol (71-23-8)

Listed on the Canadian DSL (Domestic Substances List)

##### EU-Regulations

###### Zirconium n-propoxide (23519-77-9)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

###### n-Propanol (71-23-8)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

# ZIRCONIUM n-PROPOXIDE, 70% in n-propanol

## Safety Data Sheet

### National regulations

#### Zirconium n-propoxide (23519-77-9)

Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)  
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
Listed on KECL/KECI (Korean Existing Chemicals Inventory)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)  
Listed on the TCSI (Taiwan Chemical Substance Inventory)  
Listed on the NCI (Vietnam - National Chemical Inventory)  
Listed on TECI (Thailand Existing Chemicals Inventory)

#### n-Propanol (71-23-8)

Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)  
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
Listed on KECL/KECI (Korean Existing Chemicals Inventory)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)  
Listed on INSQ (Mexican National Inventory of Chemical Substances)  
Listed on CICR (Turkish Inventory and Control of Chemicals)  
Listed on TECI (Thailand Existing Chemicals Inventory)  
Listed on the TCSI (Taiwan Chemical Substance Inventory)  
Listed on the NCI (Vietnam - National Chemical Inventory)

### 15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

#### n-Propanol (71-23-8)

U.S. - Massachusetts - Right To Know List  
U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - Pennsylvania - RTK (Right to Know) List

## SECTION 16: Other information

Full text of H-phrases::

H226	Flammable liquid and vapor
H302	Harmful if swallowed
H315	Causes skin irritation
H319	Causes serious eye irritation
H336	May cause drowsiness or dizziness

Abbreviations and acronyms

: Abbreviations: ND: Not Determined, No Data; NA: Not Applicable; LD: Lethal Dose; LC: Lethal Concentration; ATE: Acute Toxicity Estimates; H: hour; °: °C unless otherwise stated; mm: millimeters Hg, torr; PEL: permissible exposure level; TWA: time weighted average; TLV: threshold limit value; TG: Test Guideline; NIOSH: National Institute for Occupational Safety and Health; IARC: International Agency for Research on Cancer; NTP: National Toxicology Program; HMIS: Hazardous Material Information System; CAS No.: Chemical Abstract Service Registration Number; EC No.: European Commission Registration Number; EC Index No.: European Commission Index Number; OECD: The Organisation for Economic Co-operation and Development; GHS: The Globally Harmonized System of Classification and Labelling; APF: Assigned Protection Factor.

### Hazard Rating

Health : 2 Moderate Hazard - Temporary or minor injury may occur  
Flammability : 3 Serious Hazard - Materials capable of ignition under almost all normal temperature conditions. Includes flammable liquids with flash points below 73 F and boiling points above 100 F. as well as liquids with flash points between 73 F and 100 F. (Classes IB & IC)  
Physical : 1 Slight Hazard - Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.

Prepared by safety and environmental affairs.

Print date: 09/07/2022

EN (English US)

SDS ID: AKZ975

7/8

# ZIRCONIUM n-PROPOXIDE, 70% in n-propanol

## Safety Data Sheet

---

Issue date: 12/30/2014

Revision date: 09/07/2022

Version: 2.1

SDS US (GHS HazCom 2012) - Custom

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

*The information contained in this document has been gathered from reference materials and/or Gelest, Inc. test data and is to the best knowledge and belief of Gelest, Inc. accurate and reliable. Such information is offered solely for your consideration, investigation and verification. It is not suggested or guaranteed that the hazard precautions or procedures described are the only ones which exist. Gelest, Inc. makes no warranties, express or implied, with respect to the use of such information and assumes no responsibility therefore. Information on this safety data sheet is not intended to constitute a basis for product specifications.*

© 2020 Gelest Inc. Morrisville, PA 19067

