

**VANADIUM TRI-n-PROPOXIDE OXIDE**

Safety Data Sheet AKV915

Date of issue: 02/09/2015 Version: 1.0

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

|                 |   |
|-----------------|---|
| Product form    | : Substance   |
| Physical state  | : Liquid  |
| Substance name  | : VANADIUM TRI-n-PROPOXIDE OXIDE  |
| Product code    | : AKV915  |
| Formula         | : C <sub>9</sub> H <sub>21</sub> O <sub>4</sub> V                             |
| Synonyms        | : VANADIUM OXIDE TRI-N-PROPYLATE; VANADYL PROPYLATE;<br>OXOTRIPROPOXYVANADIUM |
| Chemical family | : METAL COMPOUND  |

**1.2. Relevant identified uses of the substance or mixture and uses advised against****1.2.1. Relevant identified uses**

Use of the substance/mixture : Chemical intermediate

**1.2.2. Uses advised against**

No additional information available

**1.3. Details of the supplier of the safety data sheet****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)**GELEST INC.**Fritz-Klatte-Strasse 8  
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T +49 (0) 69 3535106-500 - F +49 (0) 69 3535106-501 - (M-F): 8:00 AM - 4:00 PM

[info@gelestde.com](mailto:info@gelestde.com) - [www.gelestde.com](http://www.gelestde.com)**1.4. Emergency telephone number**

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

**SECTION 2: Hazards identification****2.1. Classification of the substance or mixture****Classification according to Regulation (EC) No. 1272/2008 [CLP]**

|   |      |
|---|------|
| Skin corrosion/irritation, Category 2   | H315 |
| Serious eye damage/eye irritation, Category 2   | H319 |
| Specific target organ toxicity — Single exposure, Category 3,<br>Respiratory tract irritation | H335 |

Full text of H statements : see section 16

**Adverse physicochemical, human health and environmental effects**

No additional information available

**2.2. Label elements****Labelling according to Regulation (EC) No. 1272/2008 [CLP]**

Hazard pictograms (CLP) :



GHS07

Signal word (CLP) :

: Warning

Hazard statements (CLP) :

: H315 - Causes skin irritation.

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### Precautionary statements (CLP)

H319 - Causes serious eye irritation.  
H335 - May cause respiratory irritation.  
: P280 - Wear protective gloves/protective clothing/eye protection/face protection.  
P264 - Wash hands thoroughly after handling.  
P302+P352 - IF ON SKIN: Wash with plenty of soap and water.  
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.  
P312 - Call a doctor if you feel unwell.

### 2.3. Other hazards

No additional information available

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Substance type : Mono-constituent  
Name : VANADIUM TRI-n-PROPOXIDE OXIDE  
CAS-No. : 1686-23-3  
EC-No. : 216-871-7

| Name                  | Product identifier                        | %        | Classification according to Regulation (EC) No. 1272/2008 [CLP] |
|-----------------------|---|----------|---|
| Oxotripropoxyvanadium | (CAS-No.) 1686-23-3<br>(EC-No.) 216-871-7 | 95 - 100 | Skin Irrit. 2, H315<br>Eye Irrit. 2, H319<br>STOT SE 3, H335    |

Full text of H-statements: see section 16

### 3.2. Mixtures

Not applicable

## 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. IF exposed or concerned: Get medical advice/attention.  
First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing. If you feel unwell, seek medical advice.  
First-aid measures after skin contact : Wash with plenty of 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, both acute and delayed

Symptoms/effects after inhalation : May cause respiratory irritation.  
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. Indication of any immediate medical attention and special treatment needed

No additional information available

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media : Water spray. Foam. Carbon dioxide. Dry chemical.  
Unsuitable extinguishing media : Do not use straight streams.

### 5.2. Special hazards arising from the substance or mixture

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

### 5.3. Advice for firefighters

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

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### SECTION 6: Accidental release measures

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

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

##### 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. Sweep or shovel spills into appropriate container for disposal. 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 : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Precautions for safe handling : Avoid all eye and skin contact and do not breathe vapour and mist. Provide good ventilation in process area to prevent formation of vapour. Ground/bond container and receiving equipment. 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

Storage conditions : Keep container tightly closed. Keep in a cool place. Store locked up.

Incompatible materials : Moist air. Water.

Storage area : Store in a well-ventilated place. Store away from heat.

#### 7.3. Specific end use(s)

No additional information available

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

##### Oxotripropoxyvanadium (1686-23-3)

USA OSHA

OSHA PEL (TWA) (mg/m<sup>3</sup>)

0.05 mg/m<sup>3</sup> V205

#### 8.2. Exposure controls

##### Appropriate engineering controls:

Provide local exhaust or general room ventilation.

##### 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

##### Eye protection:

Chemical goggles. Contact lenses should not be worn

##### Skin and body protection:

Wear suitable protective clothing

##### Respiratory protection:

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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                             | : 242.21 g/mol  |
| Colour                                     | : Clear to greenish. Turns orange-brown on exposure to moist air. |
| Odour                                      | : characteristic. n-Propanol.                                     |
| Odour threshold                            | : No data available   |
| Refractive index                           | : 1.5   |
| pH   | : No data available   |
| Relative evaporation rate (butylacetate=1) | : No data available   |
| Melting point                              | : No data available   |
| Freezing point                             | : < 0 °C  |
| Boiling point                              | : 100 - 102 °C @ 2 mm Hg  |
| Flash point                                | : 62 °C   |
| Auto-ignition temperature                  | : No data available   |
| Decomposition temperature                  | : No data available   |
| Flammability (solid, gas)                  | : Combustible liquid  |
| Vapour pressure                            | : No data available   |
| Relative vapour density at 20 °C           | : > 1   |
| Relative density                           | : 1.077   |
| Solubility                                 | : Reacts with water.  |
| Log Pow                                    | : No data available   |
| Log Kow                                    | : No data available   |
| Viscosity, kinematic                       | : No data available   |
| Viscosity, dynamic                         | : No data available   |
| Explosive properties                       | : No data available   |
| Oxidising properties                       | : No data available   |
| Explosive limits                           | : No data available   |

#### 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 in sealed containers.

#### 10.3. Possibility of hazardous reactions

Material reacts rapidly with water or moist air, liberating isopropanol and vanadium oxide gel. Decomposes at temperatures greater than 140°C.

#### 10.4. Conditions to avoid

Heat. Open flame. Sparks.

#### 10.5. Incompatible materials

Moist air. Water.

#### 10.6. Hazardous decomposition products

Organic acid vapors. Vanadium oxide fumes.

### SECTION 11: Toxicological information

#### 11.1. Information on toxicological effects

|                                   |                                  |
|-----------------------------------|----------------------------------|
| Acute toxicity                    | : Not classified                 |
| Skin corrosion/irritation         | : Causes skin irritation.        |
| Serious eye damage/irritation     | : Causes serious eye irritation. |
| Respiratory or skin sensitisation | : Not classified                 |
| Germ cell mutagenicity            | : Not classified                 |

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|                                     |                                     |
|-------------------------------------|-------------------------------------|
| Carcinogenicity                     | : Not classified                    |
| Reproductive toxicity               | : Not classified                    |
| STOT-single exposure                | : May cause respiratory irritation. |
| STOT-repeated exposure              | : Not classified                    |
| Aspiration hazard                   | : Not classified                    |
| Symptoms/effects after inhalation   | : May cause respiratory irritation. |
| 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.      |
| Reason for classification           | : Expert judgment                   |

### SECTION 12: Ecological information

#### 12.1. Toxicity

|                          |                  |
|--------------------------|------------------|
| Acute aquatic toxicity   | : Not classified |
| Chronic aquatic toxicity | : Not classified |

#### 12.2. Persistence and degradability

No additional information available

#### 12.3. Bioaccumulative potential

No additional information available

#### 12.4. Mobility in soil

No additional information available

#### 12.5. Results of PBT and vPvB assessment

No additional information available

#### 12.6. Other adverse effects

No additional information available

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment 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. |
| Ecology - waste materials                  | : Avoid release to the environment.  |

### SECTION 14: Transport information

#### 14.1. UN number

In accordance with ADR / RID / IMDG / IATA / ADN

#### 14.1. UN number

|               |                  |
|---------------|------------------|
| UN-No. (ADR)  | : Not applicable |
| UN-No. (IMDG) | : Not applicable |
| UN-No. (IATA) | : Not applicable |
| UN-No. (ADN)  | : Not applicable |
| UN-No. (RID)  | : Not applicable |

#### 14.2. UN proper shipping name

|                             |                  |
|-----------------------------|------------------|
| Proper Shipping Name (ADR)  | : Not applicable |
| Proper Shipping Name (IMDG) | : Not applicable |
| Proper Shipping Name (IATA) | : Not applicable |
| Proper Shipping Name (ADN)  | : Not applicable |
| Proper Shipping Name (RID)  | : Not applicable |

#### 14.3. Transport hazard class(es)

##### ADR

|                                  |                  |
|----------------------------------|------------------|
| Transport hazard class(es) (ADR) | : Not applicable |
|----------------------------------|------------------|

##### IMDG

|                                   |                  |
|-----------------------------------|------------------|
| Transport hazard class(es) (IMDG) | : Not applicable |
|-----------------------------------|------------------|

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### IATA

Transport hazard class(es) (IATA) : Not applicable

### ADN

Transport hazard class(es) (ADN) : Not applicable

### RID

Transport hazard class(es) (RID) : Not applicable

### 14.4. Packing group

Packing group (ADR) : Not applicable

Packing group (IMDG) : Not applicable

Packing group (IATA) : Not applicable

Packing group (ADN) : Not applicable

Packing group (RID) : Not applicable

### 14.5. Environmental hazards

Dangerous for the environment : No

Marine pollutant : No

Other information : This product is Combustible as defined by the US Department of Transportation (DOT). It is regulated for transport in the US in container > 119 gallons (450 liters). The product is not regulated for transport by the IATA, ADR/RID, ADNR or the IMDG regulations.

### 14.6. Special precautions for user

#### - Overland transport

No data available

#### - Transport by sea

No data available

#### - Air transport

No data available

#### - Inland waterway transport

Not applicable

#### - Rail transport

Not applicable

### 14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

## SECTION 15: Regulatory information

### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

#### 15.1.1. EU-Regulations

No REACH Annex XVII restrictions

VANADIUM TRI-n-PROPOXIDE OXIDE is not on the REACH Candidate List

VANADIUM TRI-n-PROPOXIDE OXIDE is not on the REACH Annex XIV List

VANADIUM TRI-n-PROPOXIDE OXIDE is not subject to REGULATION (EU) No 649/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 concerning the export and import of hazardous chemicals.

VANADIUM TRI-n-PROPOXIDE OXIDE is not subject to Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC

#### 15.1.2. National regulations

##### Germany

12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV : Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

##### Netherlands

SZW-lijst van kankerverwekkende stoffen : The substance is not listed

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|   |                               |
|---|-------------------------------|
| SZW-lijst van mutagene stoffen  | : The substance is not listed |
| NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding   | : The substance is not listed |
| NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid | : The substance is not listed |
| NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling   | : The substance is not listed |

### Denmark

|                             |  |
|-----------------------------|--|
| Class for fire hazard       | : Class III-1  |
| Store unit                  | : 50 liter   |
| Classification remarks      | : Flammable according to the Danish Ministry of Justice; Emergency management guidelines for the storage of flammable liquids must be followed |
| Danish National Regulations | : Young people below the age of 18 years are not allowed to use the product  |

### 15.2. Chemical safety assessment

No additional information available

## SECTION 16: Other information

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 |
|--|--|

Other information : Prepared by safety and environmental affairs.

Full text of H- and EUH-statements:

|               |  |
|---------------|--|
| Eye Irrit. 2  | Serious eye damage/eye irritation, Category 2  |
| Skin Irrit. 2 | Skin corrosion/irritation, Category 2  |
| STOT SE 3     | Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation |
| H315          | Causes skin irritation.  |
| H319          | Causes serious eye irritation.   |
| H335          | May cause respiratory irritation.  |

SDS EU (REACH Annex II) - Custom

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