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

1.1. Product identifier

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product form</td>
<td>Substance</td>
</tr>
<tr>
<td>Physical state</td>
<td>Solid</td>
</tr>
<tr>
<td>Substance name</td>
<td>TANTALUM PENTAKIS(DIMETHYLAMIDE)</td>
</tr>
<tr>
<td>Product code</td>
<td>OMTA075</td>
</tr>
<tr>
<td>Formula</td>
<td>C10H30N5Ta</td>
</tr>
<tr>
<td>Synonyms</td>
<td>PENTAKIS(DIMETHYLAMIDO)TANTALUM</td>
</tr>
<tr>
<td>Chemical family</td>
<td>METAL COMPOUND</td>
</tr>
</tbody>
</table>

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 - www.gelest.com

GELEST INC.
Fritz-Klatte-Strasse 8
65933 Frankfurt
Germany
T +49 (0) 69 3535106-500 - F +49 (0) 69 3535106-501 - (M-F): 8:00 AM - 4:00 PM
info@gelestde.com - 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]

<table>
<thead>
<tr>
<th>Classification</th>
<th>H314</th>
<th>H318</th>
<th>H335</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin corrosion/irritation, Category 1C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serious eye damage/eye irritation, Category 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full text of H statements : see section 16</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

<table>
<thead>
<tr>
<th>Hazard pictograms (CLP)</th>
<th>GHS07</th>
<th>GHS05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signal word (CLP)</td>
<td>Danger</td>
<td></td>
</tr>
</tbody>
</table>
| Hazard statements (CLP) | H314: Causes severe skin burns and eye damage. | H335: May cause respiratory irritation.
Precautionary statements (CLP) : P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P264 - Wash hands thoroughly after handling.
P303+P361+P353 - IF ON SKIN (or hair): 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.
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P310 - Immediately call a POISON CENTER or doctor/physician

2.3. Other hazards
Other hazards not contributing to the classification : Additional dimethylamine may be formed by reaction with moisture and water. The US OSHA PEL (TWA) for dimethylamine is 10 ppm.

SECTION 3: Composition/information on ingredients

3.1. Substances
Substance type : Mono-constituent
Name : TANTALUM PENTAKIS(DIMETHYLAMIDE)
CAS-No. : 19824-59-0

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>Classification according to Regulation (EC) No. 1272/2008 [CLP]</th>
</tr>
</thead>
</table>
| Tantalum pentakis(dimethylamide) | (CAS-No.) 19824-59-0 | 95 - 100 | Skin Corr. 1C, H314  
|                             |                    |         | Eye Dam. 1, H318  
|                             |                    |         | 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.
First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing. Get medical advice/attention.
First-aid measures after skin contact : Wash with plenty of water….. Get immediate 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 immediate 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 : Causes severe skin burns and eye damage.
Symptoms/effects after inhalation : May cause respiratory irritation.
Symptoms/effects after skin contact : Causes (severe) skin burns.
Symptoms/effects after eye contact : Causes serious eye damage.
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
Unsuitable extinguishing media : Do not use straight streams.

5.2. Special hazards arising from the substance or mixture
Fire hazard : Irritating fumes of dimethylamine and organic acid vapors may develop when material is exposed to water or open flame.

5.3. Advice for firefighters
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 contact with skin and eyes. Do not breathe dust.
# TANTALUM PENTAKIS(DIMETHYLAMIDE)
## Safety Data Sheet

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

<table>
<thead>
<tr>
<th>6.1.1. For non-emergency personnel</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Protective equipment</td>
<td>Wear protective equipment as described in Section 8.</td>
</tr>
<tr>
<td>Emergency procedures</td>
<td>Evacuate unnecessary personnel.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6.1.2. For emergency responders</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Protective equipment</td>
<td>Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8: &quot;Exposure controls/personal protection&quot;.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6.2. Environmental precautions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevent entry to sewers and public waters. Notify authorities if product enters sewers or public waters.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6.3. Methods and material for containment and cleaning up</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>For containment</td>
<td>Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.</td>
</tr>
<tr>
<td>Methods for cleaning up</td>
<td>Clean up any spills as soon as possible, using an absorbent material to collect it. Sweep or shovel spills into appropriate container for disposal.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6.4. Reference to other sections</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>See Heading 8. Exposure controls and personal protection.</td>
<td></td>
</tr>
</tbody>
</table>

### SECTION 7: Handling and storage
#### 7.1. Precautions for safe handling

| Precautions for safe handling | Avoid contact with skin and eyes. Do not breathe dust. Avoid dust formation. Use only outdoors or in a well-ventilated area. |
| Hygiene measures | Wash contaminated clothing before reuse. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. |

<table>
<thead>
<tr>
<th>7.2. Conditions for safe storage, including any incompatibilities</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage conditions</td>
<td>Keep container tightly closed. Store locked up.</td>
</tr>
<tr>
<td>Incompatible materials</td>
<td>Acids, alcohols, Oxidizing agent, Moisture, Water.</td>
</tr>
<tr>
<td>Storage area</td>
<td>Store in a well-ventilated place. Store away from heat.</td>
</tr>
</tbody>
</table>

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

No additional information available

### SECTION 8: Exposure controls/personal protection
#### 8.1. Control parameters

No additional information available

#### 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 or face shield. 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 dust and mist (orange cartridge) respirator.

### SECTION 9: Physical and chemical properties
#### 9.1. Information on basic physical and chemical properties

| Physical state | Solid |
### TANTALUM PENTAKIS(DIMETHYLAMIDE)
#### Safety Data Sheet

**Appearance**: Solid.

**Molecular mass**: 401.33 g/mol

**Colour**: Yellow-orange.

**Odour**: Acrid. Amine.

**Odour threshold**: No data available

**Refractive index**: No additional information available

**pH**: No data available

**Relative evaporation rate (butylacetate=1)**: No data available

**Melting point**: > 150 °C decomposes

**Freezing point**: No data available

**Boiling point**: 100 °C @ 0.01 mm Hg sublimes

**Flash point**: > 65 °C

**Auto-ignition temperature**: No data available

**Decomposition temperature**: No data available

**Flammability (solid, gas)**: No additional information available

**Vapour pressure**: < 0.1 mm Hg

**Relative vapour density at 20 °C**: > 1

**Relative density**: > 1

**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

**STOT - single exposure**: May cause respiratory irritation.

**STOT - repeated exposure**: Not classified

**Aspiration hazard**: Not classified

**Germ cell mutagenicity**: Not classified

**Carcinogenicity**: Not classified

**Reproductive toxicity**: Not classified

**Reactivity**: No additional information available

**Chemical stability**: Stable in sealed containers stored under a dry inert atmosphere.

**Possibility of hazardous reactions**: Reacts with water and moisture in air, liberating dimethylamine.

**Conditions to avoid**: Heat. Open flame. Sparks.


### SECTION 10: Stability and reactivity

#### Reactivity
No additional information available

#### Chemical stability
Stable in sealed containers stored under a dry inert atmosphere.

#### Possibility of hazardous reactions
Reacts with water and moisture in air, liberating dimethylamine.

#### Conditions to avoid
Heat. Open flame. Sparks.

#### Incompatible materials

#### Hazardous decomposition products

### SECTION 11: Toxicological information

#### Information on toxicological effects

**Acute toxicity**: Not classified

**Skin corrosion/irritation**: Causes severe skin burns and eye damage.

**Serious eye damage/irritation**: Causes serious eye damage.

**Respiratory or skin sensitisation**: Not classified

**Germ cell mutagenicity**: Not classified

**Carcinogenicity**: Not classified

**Reproductive toxicity**: Not classified

**STOT - single exposure**: May cause respiratory irritation.

**STOT - repeated exposure**: Not classified

**Aspiration hazard**: Not classified
# TANTALUM PENTAKIS(DIMETHYLAMIDE)
## Safety Data Sheet

<table>
<thead>
<tr>
<th>Symptoms/effects after inhalation</th>
<th>May cause respiratory irritation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptoms/effects after skin contact</td>
<td>Causes (severe) skin burns.</td>
</tr>
<tr>
<td>Symptoms/effects after eye contact</td>
<td>Causes serious eye damage.</td>
</tr>
<tr>
<td>Symptoms/effects after ingestion</td>
<td>May be harmful if swallowed.</td>
</tr>
<tr>
<td>Reason for classification</td>
<td>Expert judgment</td>
</tr>
</tbody>
</table>

## SECTION 12: Ecological information

<table>
<thead>
<tr>
<th>12.1. Toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute aquatic toxicity</td>
</tr>
<tr>
<td>Chronic aquatic toxicity</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12.2. Persistence and degradability</th>
</tr>
</thead>
<tbody>
<tr>
<td>No additional information available</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12.3. Bioaccumulative potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>No additional information available</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12.4. Mobility in soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>No additional information available</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12.5. Results of PBT and vPvB assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>No additional information available</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12.6. Other adverse effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>This substance may be hazardous to the environment.</td>
</tr>
</tbody>
</table>

## SECTION 13: Disposal considerations

<table>
<thead>
<tr>
<th>13.1. Waste treatment methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sewage disposal recommendations</td>
</tr>
<tr>
<td>Product/Packaging disposal recommendations</td>
</tr>
<tr>
<td>Ecology - waste materials</td>
</tr>
</tbody>
</table>

## SECTION 14: Transport information

<table>
<thead>
<tr>
<th>14.1. UN number</th>
</tr>
</thead>
<tbody>
<tr>
<td>In accordance with ADR / RID / IMDG / IATA / ADN</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>14.1. UN number</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN-No. (ADR)</td>
</tr>
<tr>
<td>UN-No. (IMDG)</td>
</tr>
<tr>
<td>UN-No. (IATA)</td>
</tr>
<tr>
<td>UN-No. (ADN)</td>
</tr>
<tr>
<td>UN-No. (RID)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>14.2. UN proper shipping name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper Shipping Name (ADR)</td>
</tr>
<tr>
<td>Proper Shipping Name (IMDG)</td>
</tr>
<tr>
<td>Proper Shipping Name (IATA)</td>
</tr>
<tr>
<td>Proper Shipping Name (ADN)</td>
</tr>
<tr>
<td>Proper Shipping Name (RID)</td>
</tr>
<tr>
<td>Transport document description (ADR)</td>
</tr>
<tr>
<td>Transport document description (IMDG)</td>
</tr>
<tr>
<td>Transport document description (IATA)</td>
</tr>
<tr>
<td>Transport document description (ADN)</td>
</tr>
<tr>
<td>Transport document description (RID)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>14.3. Transport hazard class(es)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADR</td>
</tr>
<tr>
<td>Danger labels (ADR)</td>
</tr>
</tbody>
</table>
TANTALUM PENTAKIS(DIMETHYLAMIDE)
Safety Data Sheet

IMDG
Transport hazard class(es) (IMDG) : 8
Danger labels (IMDG) : 8

IATA
Transport hazard class(es) (IATA) : 8
Hazard labels (IATA) : 8

ADN
Transport hazard class(es) (ADN) : 8
Danger labels (ADN) : 8

RID
Transport hazard class(es) (RID) : 8
Danger labels (RID) : 8

14.4. Packing group
Packing group (ADR) : III
Packing group (IMDG) : III
Packing group (IATA) : III
Packing group (ADN) : III
Packing group (RID) : III

14.5. Environmental hazards
Dangerous for the environment : No
Marine pollutant : No
Other information : No supplementary information available

14.6. Special precautions for user
- Overland transport
  Classification code (ADR) : C10
  Special provisions (ADR) : 274
TANTALUM PENTAKIS(DIMETHYLAMIDE)
Safety Data Sheet

Limited quantities (ADR) : 5kg
Excepted quantities (ADR) : E1
Packing instructions (ADR) : P002, IBC08, LP02, R001
Mixed packing provisions (ADR) : MP10
Portable tank and bulk container instructions (ADR) : T1
Portable tank and bulk container special provisions (ADR) : TP33
Tank code (ADR) : SGAV, L4BN
Vehicle for tank carriage : AT
Transport category (ADR) : 3
Special provisions for carriage - Bulk (ADR) : VC1, VC2, AP7
Hazard identification number (Kemler No.) : 80
Orange plates

Tunnel restriction code (ADR) : E
EAC code : 2X

- Transport by sea
Special provisions (IMDG) : 223, 274
Limited quantities (IMDG) : 5 kg
Excepted quantities (IMDG) : E1
Packing instructions (IMDG) : P002, LP02
IBC packing instructions (IMDG) : IBC08
IBC special provisions (IMDG) : B3
Tank instructions (IMDG) : T1
Tank special provisions (IMDG) : TP33
EmS-No. (Fire) : F-A
EmS-No. (Spillagae) : S-B
Stowage category (IMDG) : A
Properties and observations (IMDG) : Causes burns to skin, eyes and mucous membranes.

- Air transport
PCA Excepted quantities (IATA) : E1
PCA Limited quantities (IATA) : Y845
PCA limited quantity max net quantity (IATA) : 5kg
PCA packing instructions (IATA) : 860
PCA max net quantity (IATA) : 25kg
CAO packing instructions (IATA) : 864
CAO max net quantity (IATA) : 100kg
Special provisions (IATA) : A3
ERG code (IATA) : 8L

- Inland waterway transport
Classification code (ADN) : C10
Special provisions (ADN) : 274
Limited quantities (ADN) : 5 kg
Excepted quantities (ADN) : E1
Equipment required (ADN) : PP, EP
Number of blue cones/lights (ADN) : 0

- Rail transport
Classification code (RID) : C10
Special provisions (RID) : 274
Limited quantities (RID) : 5kg
Excepted quantities (RID) : E1
Packing instructions (RID) : P002, IBC08, LP02, R001
Special packing provisions (RID) : B3
TANTALUM PENTAKIS(DIMETHYLAMIDE)
Safety Data Sheet

Print date: 10/04/2019  EN (English)  SDS ID: OMTA075 8/9

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
TANTALUM PENTAKIS(DIMETHYLAMIDE) is not on the REACH Candidate List
TANTALUM PENTAKIS(DIMETHYLAMIDE) is not on the REACH Annex XIV List
TANTALUM PENTAKIS(DIMETHYLAMIDE) 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.

15.1.2. National regulations

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

Netherlands
SZW-lijs van kankerverwekkende stoffen: The substance is not listed
SZW-lijs van mutagene stoffen: The substance is not listed
NIET-limitatieve lijst van voor de voortplanting gifige stoffen – Borstvoeding: The substance is not listed
NIET-limitatieve lijst van voor de voortplanting gifige stoffen – Vruchtbaarheid: The substance is not listed
NIET-limitatieve lijst van voor de voortplanting gifige stoffen – Ontwikkeling: The substance is not listed

Denmark
Classification remarks: 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 Dam. 1 Serious eye damage/eye irritation, Category 1
Skin Corr. 1C Skin corrosion/irritation, Category 1C
STOT SE 3 Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation
H314 Causes severe skin burns and eye damage.
TANTALUM PENTAKIS(DIMETHYLAMIDE)
Safety Data Sheet

<table>
<thead>
<tr>
<th>H318</th>
<th>Causes serious eye damage.</th>
</tr>
</thead>
<tbody>
<tr>
<td>H335</td>
<td>May cause respiratory irritation.</td>
</tr>
</tbody>
</table>

SDS EU (REACH Annex II) - Custom

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.

© 2019 Gelest Inc. Morrisville, PA 19067