

Material Safety Data Sheet

Tantalum(V) Oxide

Report No.: VIH241101009-1
Version: 2.1
Preparation Date:01/11/2024
Revision Date:01/11/2024

1. Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

| | |
|--------------|------------------------------------|
| Product Name | Tantalum(V) Oxide |
| Product No. | 730800 |
| Formula | Ta ₂ O ₅ |
| CAS No. | 1314-61-0 |
| Synonyms | Tantalum pentoxide, Tantalum oxide |

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

| | |
|----------------------|---|
| Identified uses | Laboratory chemicals, Scientific research |
| Uses advised against | Consulting manufacturers |

1.3 Details of the supplier of the safety data sheet

| | |
|--------------|---|
| Company Name | VI HALBLEITERMATERIAL GmbH |
| Street | Bergener Straße 14., |
| City | Hannover |
| State | Niedersachsen |
| Zip Code | 30625 |
| Country | Germany |
| Tel | 0049 1626484175 |
| Email | info@vimaterial.de |
| Website | https://vimaterial.de/ |

1.4 Emergency telephone number

| | |
|-------------------|-----------------|
| Emergency Phone # | 0049 1626484175 |
|-------------------|-----------------|

2. Hazards Identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP).

The substance is not classified as hazardous

2.2 Label elements

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

Not subject to labelling requirements.

2.3 Other hazards

According to the results of its assessment, this substance is not a PBT or a vPvB.

This product does not contain any known or suspected endocrine disruptors.

3. Composition/information on ingredients

3.1 Substances

| | |
|-----------------|---------|
| Chemical Family | Ceramic |
|-----------------|---------|

| Component | CAS No. | EC No. | Concentration |
|---|-----------|-----------|---------------|
| Tantalum(V) Oxide (Ta ₂ O ₅) | 1314-61-0 | 215-238-2 | <=100% |

4. First aid measures

4.1 Description of first aid measures

| | |
|-------------------|--|
| General Treatment | If symptoms persist, call a physician. |
| Inhalation | Remove victim to fresh air. If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. |
| Skin | Take off immediately all contaminated clothing. Rinse skin with water/ shower. Seek medical attention. |
| Eyes | Rinse with pure water for at least 15 minutes. Remove contact lenses, if present and easy to do. Seek medical attention. |
| Ingestion | Rinse mouth with water and drink afterwards plenty of water. Seek medical attention if you feel unwell. |

4.2 Most important symptoms and effects, both acute and delayed

Most important symptoms and effects, both acute and delayed, are included on labelling (Section 2.2) and in Section 11.

4.3 Indication of any immediate medical attention and special treatment needed

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| 1 | Based on the symptoms that appear, provide targeted treatment. |
| 2 | Be aware that symptoms may be delayed. |

5. Firefighting Measures

5.1 Extinguishing Media

| | |
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| Suitable extinguishing media | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. |
| Unsuitable extinguishing media | N/A |

5.2 Special hazards arising from the substance or mixture

| | |
|---|---|
| 1 | Tantalum oxides |
| 2 | Non-flammable |
| 3 | Ambient fires may release harmful vapors. |

5.3 Advice for firefighters

| | |
|---|--|
| 1 | As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. |
| 2 | Fight fire from a safe distance and with adequate protection. |
| 3 | Do not allow firefighting water to enter drains or water courses. |
| 4 | Collect contaminated firefighting water separately. |

6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

| | |
|-----------------------------|---|
| For non-emergency personnel | Remove persons to safety. Use personal protective equipment as required. Avoid dust formation. Ensure adequate ventilation. |
| For emergency responders | Wear breathing apparatus if exposed to vapours/dust/spray/gases. |

6.2 Environmental Precautions

| | |
|---|---|
| 1 | Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it. |
|---|---|

6.3 Methods and material for containment and cleaning up

| | |
|-----------------------------------|--|
| Advice on how to contain a spill | Covering of drains, Take up mechanically. |
| Advice on how to clean up a spill | Take up mechanically. Take care not to raise dust. |

| | |
|---|--|
| Other information relating to spills and releases | Place in appropriate containers for disposal. Ventilate affected area. |
|---|--|

6.4 Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

7. Handling and Storage

7.1 Precautions for safe handling

| | |
|------------------|--|
| Recommendations | Wear personal protective equipment/face protection. Ensure adequate ventilation. Avoid ingestion and inhalation. Avoid formation of dust. Do not get in eyes, on skin, or on clothing. |
| Hygiene Measures | Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work. |

7.2 Conditions for safe storage, including any incompatibilities

| | |
|--------------------------|--|
| Ventilation requirements | Keep containers tightly closed in a dry, cool and well-ventilated place. |
| Incompatible materials | See section 10.5. |

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

8. Exposure Controls/Personal Protection

8.1 Control parameters

| Substance | CAS No. | Source | TWA (8 h)/ mg/m ³ | Remarks |
|--|-----------|---------------------------|--|-------------------------------------|
| Tantalum pentoxide (Ta ₂ O ₅) | 1314-61-0 | TRGS 900 (DE) | 1,0 (inhalable fraction, as Ta) | AGW; Category 4; DFG classification |
| Tantalum pentoxide (Ta ₂ O ₅) | 1314-61-0 | EU SCOEL (Indicative OEL) | No indicative limit | - |
| Tantalum pentoxide (Ta ₂ O ₅) | 1314-61-0 | ACGIH TLV (USA) | 5,0 (respirable fraction, as Ta metal & oxide) | TLV-TWA; Nuisance dust |
| Tantalum pentoxide (Ta ₂ O ₅) | 1314-61-0 | NIOSH REL (USA) | 5,0 (TWA, total dust) | Recommended exposure limit; |

| | | | | |
|--|-----------|----------------|-----------------------|--|
| Tantalum pentoxide (Ta ₂ O ₅) | 1314-61-0 | OSHA PEL (USA) | 5,0 (TWA, total dust) | Nuisance particulate Permissible exposure limit; As Ta compound |
|--|-----------|----------------|-----------------------|--|

Notes:

TWA: Time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified)

Predicted No-Effect Concentration (PNEC)

| Exposure scenario | Organism | Environmental compartment | PNEC value |
|------------------------------|-------------------|------------------------------|---------------|
| short-term (single instance) | aquatic organisms | sewage treatment plant (STP) | PNEC=200 mg/l |

8.2 Exposure controls

Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles) (European standard - EN166) and face protection.

Skin protection

-Hand Protection

Protective gloves (The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.)

-Other protection measures

Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Respiratory Protection

No protective equipment is needed under normal use conditions.

| | |
|-----------------------------------|---|
| Large scale/emergency use | Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced Recommended Filter type: Particulates filter |
| Small scale/Laboratory use | Maintain adequate ventilation |

Environmental exposure controls

No special environmental precautions required.

9. Physical and Chemical Characteristics

9.1 Information on basic physical and chemical properties

| | |
|---|-----------------------|
| Physical State | Powder, Solid |
| Colour | White |
| Odor | Odorless |
| Melting Point/Range | 1.862~1.882°C |
| Boiling Point/Range | No data available |
| Flammability (liquid) | Not applicable |
| Flammability (solid, gas) | No data available |
| Explosion limits | No data available |
| Flash Point | No data available |
| Autoignition Temperature | No data available |
| Decomposition Temperature | No data available |
| pH | No data available |
| Viscosity | Not applicable |
| Water Solubility | Insoluble |
| Solubility in other solvents | No data available |
| Partition Coefficient (n-octanol/water) | No data available |
| Vapor Pressure | No data available |
| Density / Specific Gravity | 8,2 g/cm ³ |
| Vapor Density | Not applicable |
| Particle characteristics | No data available |

9.2 Other information

| | |
|-------------------|--------------------------------|
| Molecular formula | Ta ₂ O ₅ |
| Molecular weight | 441,89 g/mol |
| Evaporation Rate | Not applicable - Solid |

10. Stability and reactivity

10.1 Reactivity

None known, based on information available.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Hazardous Polymerization: No information available

Hazardous Reactions: None under normal processing

10.4 Conditions to avoid

No data available.

10.5 Incompatible materials

Strong oxidizing agents.

10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Tantalum Oxides

Other decomposition products - No data available

In the event of fire: see section 5

11. Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

| | | |
|-----------------------------------|--|---|
| Acute toxicity | Oral: | LD50 - Rat - 8.000 mg/kg(Ditantalum pentaoxide) |
| | Dermal: | No data available. |
| | Inhalation: | No data available. |
| Skin corrosion/irritation | No data available. | |
| Serious eye damage/irritation | No data available. | |
| Respiratory or skin sensitization | Respiratory | No data available. |
| | Skin | No data available. |
| Germ cell mutagenicity | No data available. | |
| Carcinogenicity | No data available. | |
| | There are no known carcinogenic chemicals in this product. | |
| Reproductive toxicity | No data available. | |
| STOT - single exposure | No data available. | |
| STOT - repeated exposure | No data available. | |
| Aspiration hazard | Not applicable. Solid | |

11.2 Information on other hazards

Endocrine Disrupting Properties: Assess endocrine disrupting properties for human health. This product does not contain any known or suspected endocrine disruptors.

12. Ecological Information

12.1 Toxicity

| | |
|----------|-------------------|
| Toxicity | No data available |
|----------|-------------------|

12.2 Persistence and degradability

| | |
|---------------|-------------------|
| Persistence | No data available |
| Degradability | No data available |

12.3 Bioaccumulative potential

| | |
|---------------------------|-------------------|
| Bioaccumulative potential | No data available |
|---------------------------|-------------------|

12.4 Mobility in soil

| | |
|------------------|--------------------|
| Mobility in soil | No data available. |
|------------------|--------------------|

12.5 Results of PBT and vPvB assessment

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|------------------------------------|--|
| Results of PBT and vPvB assessment | In accordance with Annex XIII of the REACH Regulation, inorganic substances do not require assessment. |
|------------------------------------|--|

12.6 Endocrine disrupting properties

| | |
|---------------------------------|--|
| Endocrine Disruptor Information | This product does not contain any known or suspected endocrine disruptors. |
|---------------------------------|--|

12.7 Other adverse effects

| | |
|------------------------------|--|
| Persistent Organic Pollutant | This product does not contain any known or suspected substance |
| Ozone Depletion Potential | This product does not contain any known or suspected substance |

13. Disposal Considerations

13.1 Waste treatment methods

Dispose of in accordance with all applicable local and national regulations. Use recovery/recycling where feasible, otherwise incineration is the recommended method of disposal. Empty containers may contain hazardous residues. Do not cut, puncture or weld on or near to the container. Labels should not be removed from containers until they have been cleaned. Contaminated containers must not be treated as household waste. Containers should be cleaned by appropriate methods and then re-used or disposed of by landfill or incineration as appropriate. Do not incinerate closed containers.

14. Transport information

IMDG

| | |
|---|--|
| 14.1. UN number | Not regulated |
| 14.2. UN Proper shipping name | Not classified as hazardous for transport. |
| 14.3. Transport hazard class(es) | Not applicable |
| 14.4. Packaging group | Not applicable |

ADR/RID/ADN

| | |
|---|--|
| 14.1. UN number | Not regulated |
| 14.2. UN Proper shipping name | Not classified as hazardous for transport. |
| 14.3. Transport hazard class(es) | Not applicable |
| 14.4. Packaging group | Not applicable |

ICAO-IATA/DGR

| | |
|---|--|
| 14.1. UN number | Not regulated |
| 14.2. UN Proper shipping name | Not classified as hazardous for transport. |
| 14.3. Transport hazard class(es) | Not applicable |
| 14.4. Packaging group | Not applicable |

| | |
|--|---------------------------------|
| 14.5. Environmental hazards | No hazards identified |
| 14.6. Special precautions for user | No special precautions required |
| 14.7. Maritime transport in bulk according to IMO instruments | Not applicable, packaged goods |

15. Regulatory information

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

This Safety Data Sheet is prepared in accordance with Commission Regulation (EC) 1907/2006, amended by Commission Regulation (EU) 2020/878.

Authorisations/Restrictions

| | |
|--|----------------|
| Regulation (EC) 1907/2006, REACH, Annex XIV list of substances subject to authorisation: | Not applicable |
| Regulation (EC) 1907/2006, REACH, Annex XVII restrictions on the manufacture, placing on the market and use of certain dangerous substances: | Not applicable |
| Regulation (EC) 1005/2009 on substances that deplete the ozone | Not applicable |

layer:

Regulation (EC) 850/2004 on persistent organic pollutants, amended by (EU) No 2019/1021: Not applicable

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance.

16. Other information

Revision information

| | |
|------------------|------------|
| Preparation date | 01/11/2024 |
| Revision date | 01/11/2024 |
| Revision reason | Creation. |

Abbreviations and acronyms

| | |
|------|---|
| CAS | Chemical Abstracts Service |
| ADR | European Agreement concerning the International Carriage of Dangerous Goods by Road |
| RID | Regulation concerning the International Carriage of Dangerous Goods by Rail |
| IATA | International Air Transportation Association |
| IMDG | International Maritime Dangerous Goods |
| LC50 | Lethal Concentration 50% |
| LD50 | Lethal Dose 50% |
| TWA | Time Weighted Average |
| STOT | Specific target organ toxicity |
| PBT | Persistent, Bioaccumulative, Toxic |
| vPvB | Very Persistent, very Bioaccumulative |
| WEL | Workplace exposure limit |

References

- [1] CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>
- [2] ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>
- [3] eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- [4] Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>
- [5] HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- [6] IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>
- [7] IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>

[8] ERG - Emergency Response Guidebook by U.S. Department of Transportation, website:
<http://www.phmsa.dot.gov/hazmat/library/erg>

List of relevant phrases (code and full text as stated in chapter 2 and 3)

N/A

Disclaimer

The information of this safety data sheet is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products. For further information please contact info@vimaterial.de.