

Product name: Tantalum (Ta), >99.9% pure in various solid forms
Document Nr.: SDS00170TA5710

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Section 1: Identification of the substance or mixture and the company

1.1. Product Identifier

Tantalum (Ta), >99.9% pure in various manufactured forms. EC #: 231-135-5 CAS #: 7440-25-7
The substances do not require registration according to regulation (EC) N. 1907/2006 (REACH).

1.2 Relevant applications of the material and uses advised against

Tungsten (W) target material, evaporation source for vacuum deposition.

1.3. Company details

Rave Scientific
100 Franklin Square Dr.
Suite 101
Somerset, NJ 08873
Telephone: 1-732-898-3828
Email: info@ravescientific.com
Web: www.ravescientific.com

1.4 Emergency telephone number

Rave Scientific: 1-732-898-3828

Section 2: Hazards identification

2.1. Classification of the substance or mixture according to Regulation EC Nr. 1272/2008 CLP

This substance is not classified as hazardous in accordance with regulation Nr. 1272/2008/EC

2.2 Labeling elements

Labelling accordance to Regulation EC. Nr 1272/2008

Not needed

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2.3 Other hazards

Results of PBT and vPvB assessment

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

Section 3: Composition / information on components

3.1. Substances

Tantalum (Ta), >99.9% pure in various manufactured forms. EC #: 231-135-5 CAS #: 7440-25-7

3.2 Mixtures

Not applicable

Section 4: First aid measures

4.1. Description of first aid measures

| | |
|--------------------|--|
| Contact with eyes: | Rinse cautiously with water for several minutes. If possible, remove contact lenses. Continue rinsing. |
| Contact with skin: | Brush off loose particles from skin. Rinse skin with water/shower. |
| Inhalation: | Provide fresh air. There is no major dust generation possible. |
| Ingestion: | Rinse mouth. Seek medical assistance if you feel unwell |

4.2. Important symptoms and effects, either immediate or delayed

No effects known to date.

4.3. Indication of any immediate medical attention and special treatment

General advice: If you feel unwell, seek medical advice; show product label if possible
If symptoms persist, always call a doctor

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Section 5: Firefighting Measures

5.1. Extinguishing media

Dry extinguishing powder, ABC powder. Do not use water jet or foam.

5.2 Special hazards arising from the substance or mixture

Tantalum oxide

5.3 Advice to firefighters

Fight fire from a safe distance, with adequate cover.
Do not move the load if exposed to heat.
In case of fire: do not breathe fumes.
Wear self-contained breathing apparatus for fire fighting

Section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

No special measures are necessary. Avoid dust formation

6.2 Environmental precautions

Do not allow to enter public sewers and waterways

6.3 Methods and material for containment and clean up

Pick up mechanically

6.4 Reference to other sections

For further information see section 7, 8 and 13.

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Section 7: Handling and storage**7.1. Precautions for safe handling**

No special measures are necessary.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool dry place

7.3 Specific end uses(s)

Not required

Section 8: Exposure control and personal protection**8.1. Control parameters****Occupational exposure limits (OEL)**

| Ingredient | Material Name | Source | TWA | STEL | Ceiling -C | Notes |
|------------|---------------|--------|---------------------|----------------------|------------|-------|
| Tantalum | Tantalum (Ta) | EU | 5 mg/m ³ | 10 mg/m ³ | | |

8.2 Exposure controls

Control procedures: Avoid creating or accumulating dust or fine particles
Wash hands before breaks and at the end of the work
Maintain appropriate working environment

Personal protection: Protective work clothing

Inhalation: Use suitable respirator when high concentrations are present

Hands and skin: Hand protection is not required

Eyes: Wear safety goggles with side protection or full-face protection

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Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|--------------------------------|--------------------------------|
| Appearance/physical state: | Solid in various forms |
| Colour: | grey |
| Odour: | None |
| pH | Not applicable |
| Melting point/range: | 2996°C |
| Boiling point/range: | 5429°C |
| Flammability: | Not combustible |
| Flash point: | Not determined |
| Evaporation rate: | Not available |
| Explosion limits: upper limit: | Not determined |
| lower limit: | Not determined |
| Vapour pressure: | No data available |
| Relative density: | 16.69 g/cm ³ @ 20°C |
| Solubility in water: | Practically insoluble in water |
| Auto-ignition: | Not determined |
| Viscosity: | Not applicable |

9.2 Other information

None

Section 10: Stability and reactivity

10.1. Reactivity

This material is not reactive under normal ambient conditions.

10.2 Chemical stability

Stable under recommended storage conditions

10.3 Possibility of hazardous reactions

Violent reaction with strong oxidizer, Acids

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10.4 Conditions to avoid

There are no specific conditions known which have to be avoided

10.5 Incompatible materials

Acids, Oxidising agent

10.6 Hazardous decomposition products

Tantalum oxide

Section 11: Toxicological information

11.1. Information on toxicological effects

Information hazard classes as defined in Regulation (EC) Nr. 1272/2008

- Inhalation:** Shall not be classified as presenting an aspiration hazard
- Skin contact:** Shall not be classified as a respiratory or skin sensitiser
- Eye contact:** Shall not be classified as seriously damaging to the eye or eye irritant
- Sensitisation:** Shall not be classified as a respiratory or skin sensitiser
- Germ cell mutagenicity:** Shall not be classified as germ cell mutagenic
- Carcinogenicity:** Shall not be classified as carcinogenic
- Reproductive toxicity:** Shall not be classified as a reproductive toxicant
- Specific target organ toxicity – single exposure:** Shall not be classified as a specific target organ toxicant
- Specific target organ toxicity – repeated exposure:** Shall not be classified as a specific target organ toxicant

Toxicological data:

No toxicological data available

Symptoms related to the physical, chemical and toxicological characteristics

- If swallowed:** Data are not available
- If in eyes:** Data are not available
- If inhaled:** Data are not available
- If on skin:** Data are not available
- Other information:** Health effects are not known

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11.2. Endocrine disrupting properties

Not listed

11.3. Information on other hazards

There is no additional information

Section 12: Ecological information

12.1. Aquatic toxicity

May have long-term adverse effects in the environment. Do not allow materials to contaminate ground water system.

12.2 Persistence and degradability

Product contains heavy metals. Discharge to the environment must be avoided

12.3 Bio-accumulative potential

May have some potential to bioaccumulate. High potential to bioconcentrate

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

No data available

12.6 Endocrine disrupting properties

Not listed

12.7 Hazardous decomposition products

No information available

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Section 13: Disposal considerations

13.1. Waste treatment methods

Product: This material and its container must be disposed of in a safe way. Do not discharge into drains or the environment, dispose to an authorised waste collection point.

National regulations: Disposal should be in accordance with local, state or national legislation.

Section 14: Transport information

14.1. UN number

UN-number: N/A

14.2 UN proper shipping name

Proper shipping name: N/A

14.3 Transport hazard class(es)

Class: N/A
ADR/RID-Classification code: N/A

14.4 Packing group

Packing: N/A

14.5 Incompatible materials

ADR/RID- Environmentally hazardous: N/A
IMDG-Marine pollutant: N/A
IATA/ICAO-Environmentally hazardous: N/A

14.6 Special precautions for user

ADR/RID-Tunnel code: N/A

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| | | |
|----------------|-----|--------------------|
| IMDG-Ems: | N/A | (Contd. of page 8) |
| IATA/ICAO-PAX: | N/A | |
| IATA/ICAO-CAO: | N/A | |

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC code

Not applicable

Section 15: Regulatory information

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

Regulation 649/2023/EA concerning the export/import of hazardous chemicals (PIC): Not listed

Regulation 1005/2009/EC on substances that deplete the ozone layer (ODS): Not listed

Regulation 850/2004/EC on persistent organic pollutants: Not listed

Restrictions according to REACH, Annex XVII: Not listed

Restrictions according to REACH, Title VIII: None

List of substances subject to authorization (REACH, Annex XIV)/SVHC – candidate list: Not listed

15.2 Chemical safety assessment

No information available

Section 16: Other information

RoHS Directive Compliant

This product is fully compliant with the directive 2100/65/EU Annex II (RoHS). It does not contain any lead, cadmium, mercury, hexavalent chromium, PBB's or PBDE's.

WEEE

This product is not a piece of electrical or electronic equipment, and it therefore not governed by Directive 2002/96/EC on waste electrical and electronic equipment (WEEE)

Abbreviations:

| | |
|----------|-------------------|
| Asp. Tox | Aspiration hazard |
| Carc. | Carcinogenicity |
| Exp. | Exposure |

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Safety Data Sheet

Regulation EC Nr. 1907/2006 Art.31

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| | |
|--------|---|
| Flam. | Flammable |
| GHS | Global Harmonised System of Classification of Labelling Chemicals |
| Irrit. | Irritant |
| N/A | Not applicable |
| N/E | Not estimated |
| NOEC | No observed effect concentration |
| LC50 | Lethal dose single exposure to causing 50% lethality |
| LD50 | Lethal dose 50% corresponds to causing 50% lethality during a specific time |
| PBT | Persistent Bio-accumulative and Toxic |
| WEL | Workplace Exposure Limit |
| Repr. | Reproductive toxicant |
| RoHS | Restriction of Hazardous Substance |
| vPvB | very Persistent and very Bio-accumulative |
| WEEE | Waste Electrical and Electronic Equipment |

This product should be stored, handled and used in accordance with good industrial hygiene practices and in accordance with any legal regulation.

The information contained herewith is based on the present state of our knowledge and is intended to describe the product from the point of view of safety requirements. It does not guarantee any specific properties.

It is the responsibility of the user to query and verify any information seeming suspect or where doubt on the validity may exist. The buyer assumes all responsibility of using and handling the product in accordance with local, state, federal and international regulations.

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