



Safety Data Sheet

according to 1907/2006/EG, Article 31

Printing date: 12. März 2019

Revision: 12. März 2019

Trade name: TUNGSTEN ELECTRODE WTh10, WTh20, WTh30, WTh40

1 Identification of substance

Product details

- **Trade name:** TUNGSTEN ELECTRODE WTh10, WTh20, WTh30, WTh40
- **Application of the substance / the preparation:** Non-melting electrode for TIG welding process; electrode for light technology; electrode for Plasma cutting, Plasma welding, Plasma spraying (thermal spraying); Emission cathode for electronic tubes
- **Manufacturer / Supplier:** Weldstone GmbH
Dortmunder Strasse 21
57234 Wilnsdorf
Germany
Telephone: +49 (0) 2739 4032-0
Fax: +49 (0) 2739 4032-32
E-Mail: MSDS@weldstone-europe.com
- **Informing department:** Representative for hazardous substances
- **Emergency information:** Clinical toxicology of the
Johannes Gutenberg University Mainz
+49 (6131) 23 24 66

2 Hazardous identification

- Hazard designation:** void
- Information pertaining to particular dangers for man and environment:** The product does not have to be labelled due to the calculation procedure of the "General classification guideline for preparations of the EU" in the latest valid version.
- Classification system:** The classification complies with current EC lists. It is expanded, however, by information from technical literature and by information provided by supplier companies.
- GHS label elements:** void

3 Composition / Information on ingredients

Ingredients:			
CAS: 7440-33-7 EINECS: 231-143-9	Tungsten, W		50-100%
CAS: 1314-20-1 EINECS: 215-225-1	Thorium(IV)-oxide		0-10%

4 First aid measures

- General information:** No special measures required.



Instantly remove any clothing soiled by the product.

- After inhalation:** Supply fresh air; consult doctor in case of any symptoms. In case of irregular respiration or apnea, artificial respiration is required.
- After skin contact:** The product is not skin irritating.
- After eye contact:** Rinse opened eye for several minutes under running water. Then consult doctor.
- After swallowing:** Rinse out mouth and then drink plenty of water.
- Information for doctor:**
- **Treatment:** If swallowed or in case of vomiting, danger of entering the lungs. Subsequent observation for pneumonia and pulmonary oedema.



Safety Data Sheet

according to 1907/2006/EG, Article 31

Printing date: 12. März 2019

Revision: 12. März 2019

Trade name: TUNGSTEN ELECTRODE WTh10, WTh20, WTh30, WTh40

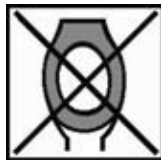
5 Fire fighting measures

General information:	The metal is in its solid form non-combustible.
Suitable extinguishing agents:	Water, water jet, ABC dry powder or Class D dry powder
For safety reasons unsuitable extinguishing agents:	-
Special hazards caused by the material, its products of combustion or flue gases:	
Main products of combustion:	Tungsten trioxide WO ₃ (CAS 1314-35-8)
Protective equipment:	Wear self-contained breathing apparatus
Additional information:	Cool endangered containers with water spray jet. Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

6 Accidental release measures

Person-related safety precautions:	Wear protective equipment. Keep unprotected persons away. Ensure adequate ventilation Keep away from ignition sources Use breathing protection against the effects of fumes/dust/aerosol. Wear protective clothing.
---	---

Measures for environmental protection:



Do not allow product to reach sewage system or water bodies.

Prevent emission to the environment, if at all possible. Dispose waste, dust collection filter and container in a secured manner and according to the valid national regulations. Retain and dispose impurified water from cleaning and grinding

Procedures for cleaning / collecting:	Dispose contaminated material according to chapter 13. Send for recovery or disposal in suitable containers. Dispose of the material collected according to regulations.
Additional information:	See chapter 13 for information on disposal.

7 Handling and storage

Handling:	Prevent incorporation of particulates during processing by using suitable extractions resp. inhalation protection with particulate collector P2 or P3, P3 is recommended, identification colour: white. nt dust formation	Preve
Information for safe handling:	-	
Information about protection against explosions and fires:	see chapter 15	
Storage:	see chapter 15	
Requirements to be met by storerooms and containers:	No special requirements	
Information about storage in one common storage facility:	Store away from foodstuffs.	
Further information about storage conditions:	see chapter 15	
Recommended storage temperature:	+5°C / +30 °C	
Certain application	This product is designed to be used as a non-melting electrode for TIG welding process. Dusts and vapour which are created during the process are to be extracted by corresponding devices by using filters or gas washers. Valid national regulations (e.g. StrlSchV, regulation 96/29/EAEC of the council) are to be met.	

Safety Data Sheet

according to 1907/2006/EG, Article 31

Printing date: 12. März 2019

Revision: 12. März 2019

Trade name: TUNGSTEN ELECTRODE WTh10, WTh20, WTh30, WTh40

8 Exposure controls and personal protection

Additional information about design of Technical systems:

No further data, see chapter 7.

Components with critical values that require monitoring at the workplace:	
7440-33-7 Tungsten	
MAK (TRGS900 - Germany)	Short term exposure limit: 10 mg/m ³ Long term exposure limit: 5 mg/m ³ See chapter IIb
1314-20-1 Thorium(IV)-oxide	
MAK (TRGS900 - Germany)	Short term exposure limit: n/a mg/m ³ Long term exposure limit: n/a mg/m ³ See chapter IIb

- Additional information:

The lists that were valid during the compilation were used as basis.

- Personal protective equipment

- General protective and hygienic measures:

Do not eat, drink, smoke or snuff while working; hygienic working conditions, e. g. washing your hands. Use skin protection cream for preventive skin protection.

- Breathing protection

Extraction, particulate filtering mask (protection class P2) recommended at occurrence of dusts/aerosols. Protection class and type of mask are to be adapted to the actual dust loading, especially for cleaning and maintenance works

- Protection of hands:

The protective gloves to be used have to comply with the specifications of the EU regulation 89/686/EWG. For full-contact and arc welding, protective gloves from KCL part no. 590 are suitable for example. These protective gloves comply with class 2 of EN 61482-1-1 "Live working - Protective clothing against the thermal hazards of an electric arc" and class 00 of EN 60903. This recommendation only applies for this product, delivered by us and for the use indicated by us. Please contact the supplier of CE-approved gloves in case of fragmentation or mixing with other substances (for example contact: KCL GmbH, D-36124 Eichenzell, phone ++49 (0) 6659 87300, fax ++49 (0) 6659 87155, e-mail vertrieb@kcl.de)



Protective gloves.

- Eye protection:



Tightly sealed safety glasses
Gauze goggles recommended

- Body protection:

Protective work clothing (long trousers, long-sleeved shirt); avoid uncovered skin.

- Exposure values:

Germany

Dust loading acc. to TRGS900

Substance Description	EG-no. CAS-no.	Critical value Mg/m ³	Notes
Tungsten	231-143-9 7440-33-7	5 E	DK, 25
Thorium oxide	215-225-1 1314-20-1	n/a	n/a



Safety Data Sheet

according to 1907/2006/EG, Article 31

Printing date: 12. März 2019

Revision: 12. März 2019

Trade name: TUNGSTEN ELECTRODE WTh10, WTh20, WTh30, WTh40

Exposure to radiation. Product not listed in TRGS 905. The following critical values for effective doses in one calendar year:

For persons not occupationally exposed to radiation during "works": 6 mSv
 For persons occupationally exposed to radiation: 20 mSv
 For the complete job-induced dose: 400 mSv
 For persons younger than 18 years: 6 mSv

Exposure environment:

Residual substrates, deposits and contaminated filters are to be deposited according to the valid national regulations (e.g. radiation protection regulation).

9 Physical and chemical properties:

General information	
Form:	solid
Colour:	metallic grey
Odour:	odourless
Change in condition	
Melting point / Melting range:	3.680 K
Boiling point / Boiling range	5.828 K
Flash point:	not applicable
Self-in flammability:	Product is not self igniting
Danger of explosion:	Product is not explosive
Oxidizing properties:	not applicable
Vapour pressure at 20°C (mm Hg):	0 hPa
Density at 20°C:	WTh10 19,00 g/cm ³ WTh20 18,80 g/cm ³ WTh30 18,60 g/cm ³ WTh40 18,50 g/cm ³
Electrical conductivity	18,20 m/Ωmm ²
Change of state	
Solubility in / Miscibility with Water:	insoluble
Organic solvents:	0,0 % insoluble in grease high resistant against acids; slowly soluble in HNO ₃ + HF soluble in alkaline oxidation melts
Solids content:	100 %
Specific activity:	WTh10 29 – 43 Bq/g (Thorium 232) in the average 35,7 Bq/g WTh20 61 – 78 Bq/g (Thorium 232) in the average 71,3 Bq/g WTh30 100 – 114 Bq/g (Thorium 232) in the average 107,0 Bq/g WTh40 136 – 150 Bq/g (Thorium 232) in the average 142,6 Bq/g

10 Stability and reactivity

Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications

Stability: Product is stable under standard conditions. No decomposition if used according to specifications.

Conditions to be avoided: Oxidation at the presence of oxygen and increased temperatures (> 600°C), sublimation (tungsten trioxide WO₃, CAS 1314-35-8) and emission of thorium oxide ThO₂ (CAS 1314-20-1) from 977°C and up.

Substances to be avoided: Contact with strong acids and/or base; or with halogens (fluorine, chlorine, bromine, iodine and their compounds); or with oxidizing agents (e.g. perchlorates, peroxides, permanganates, chlorates, nitrates, nitrites, chromates); or with alkaline/alkaline earth metals (e.g. lithium, sodium, potassium, magnesium, calcium) can cause extreme reactions (danger of exothermic reaction, danger of inflammable gas formation, formation of noxious / toxic materials / gases) and is to be prevented.

Dangerous products of composition: Oxidation produces oxides of the product which can evaporate (tungsten trioxide WO₃, CAS 1314-35-8) or are released (thorium oxide CAS 1314-20-1).



Safety Data Sheet

according to 1907/2006/EG, Article 31

Printing date: 12. März 2019

Revision: 12. März 2019

Trade name: TUNGSTEN ELECTRODE WTh10, WTh20, WTh30, WTh40

11 Toxicological information

Acute toxicity:

The product does not show any acute oral, dermal or respiratory toxicity.

W LD_{50} oral, rat: >2000 mg/kg
 LD_{50} dermal, rat: >2000 mg/kg
 LC_{50} respiratory, rat: >5,4 mg/l, 4h exposition
 ThO₂ LD_{50} parenteral mammal: 8 mg/kg
 LD_{50} intratracheal, rat.: >1,140 mg/kg

Chronic toxicity:

Findings after intratracheal application of 50 mg T.-dust/week for three weeks to guinea pigs led to the estimation that the material is relatively inert. Nevertheless, a minor effect to the lung tissue (interstitial cellular proliferation) was detectable. T.-dust was added to the diet of very young rats in concentrations of 2; 5 or 10 % for 70 days. It caused a 15% reduction of the body weight gain for the female rats but not for the male rats.
 Thorium oxide: not available

Primary irritant effect

on the skin:
on the eye:

No irritant effect for making a classification.
 No irritant effect for making a classification

Sensitization:

No sensitizing effect known

Additional toxicological information:

Thorium is a feebly radioactive element. Potential danger mainly is based on its α -rays especially at incorporation. Possible carcinogenic impact cannot be ruled out. If correctly handled no negative effects on health are known.

12 Ecological information

General information:

Water hazard class: 2 (D) hazardous for water

Ecotoxicity:

Amphibians: LC_{50} : 2.9 mg/L (toad, *Gastrophryne carolinensis*, 7d) fishes: LC_{50} : 15.6 mg/L (rainbow trout, *Oncorhynchus mykiss*, 28d).
 Microbial degradation: Not applicable.

Mobility:

Tungsten compounds are found in soil resp. waters as wolframate (e.g. WO_4^{2-}) and other polyanions. There are no existing reports about organic tungsten complexes. Absorption coefficient for tungsten increases according to declining pH-value (pH=5: 100-50,000; pH=6.5: 10-6,000; pH=8-9: 5-90). According to these values there is little up to no mobility of tungsten compounds in soil and waters. In the natural environment tungsten compounds in form of ions or insoluble solid substances are found and therefore volatilization of soils and waters does not mean any significant environmental impact. Most tungsten compounds excel by low steam pressures at 25°C.

Persistence and degradability:

- Biodegradability:

Not applicable.

- A biotic degradability:

Tungsten has various oxidation states (0, 2+, 3+, 4+, 5+, 6+), of which 6+ is the most stable one, the others are rather instable. In combination with one or several elements, like for example oxygen, tungsten appears as ion. Tungsten compounds are found in waters in form of tungstate (e.g. WO_4^{2-}) and other polyanions. There are no existing reports about organic tungsten complexes. Divalent tungsten only exists as halogen compound. Tungsten has a strong tendency to form a complex (e.g. creating heteropoly acids with oxides of phosphor, arsenic, vanadium, silicium and others). Tungsten forms a series of oxohalogenides (e.g. $WOCl_4$).

Bioaccumulation potential:

No data available

Additional information:

Water hazard class: 2 (D) hazardous for water (WHC according to VwVwS dated May 17, 1999)



Safety Data Sheet

according to 1907/2006/EG, Article 31

Printing date: 12. März 2019

Revision: 12. März 2019

Trade name: TUNGSTEN ELECTRODE WTh10, WTh20, WTh30, WTh40

13 Disposal considerations

Waste disposal according to international, national and regional regulations. Please contact the corresponding institution.

- Product:** -
- Recommendation:** Adhere to the national regulations for disposal of radioactive waste (radiation protection regulation).
- Waste disposal key number:** Please refer to EAK European Waste Catalogue (12 01 13 – welding wastes)
- Uncleaned packagings:** Can be treated as non-hazardous disposal.
- Recommendation:** Disposal must be carried out according to official regulations

14 Transport information

- Land transportation ADR / IMDG	Class 7 – excepted package – UN2909 Radioactive material, excepted package – articles manufactured from natural thorium
- Sea transportation IMDG and GGVSea	Class 7 – excepted package – UN2909 Radioactive material, excepted package – articles manufactured from natural thorium
- Air transportation IATA-DGR	Class 7 – excepted package – UN2909 Radioactive material, excepted package – articles manufactured from natural thorium

- UN "Model Regulation":** UN 2909
- Transport/additional information:** Land transportation: Indicate UN number, shipper and receiver in the delivery note / bill of lading (B/L).
Sea transportation: Indicate UN number, shipper and receiver in the delivery note / bill of lading (B/L). Add Material Safety Data Sheet.
Air transportation: Provide information regarding the packages and the quantity in the Airway Bill; Labeling "Radioactive Material - Excepted Package" Cargo IMP Code: RRE-100.
- EU-regulations** According to § 17 clause 1 no.4 of the radiation protection regulation transports of this product are permit-free. No.9 (E, S) line 6 GGAV excepted (exemption of small quantities of certain goods), these products are not subject to the GGVSEB-regulations.

15 Regulatory information

- Designation according to EC guidelines:** Observe the normal safety regulations when handling chemicals.
- Risk phrases:** void
- National regulations:**
- Information about limitation of use:** Employment restrictions concerning young persons must be observed (§22 Employment Protection Act)
- Classification according to VbF:** no longer valid – refer to PUWER
- Classification according to Provision and Use of Work Equipment Regulations (PUWER):** -
- Class share in %** -
- Water hazard class:** Water hazard class: 2 (D) hazardous for water.
- Other regulations, limitations and prohibitive regulations**
- Storage** Store away from foodstuffs.
- EU regulations:** RL 67/548/EWG idgF (material regulation)
RL 99/45/EG idgF (preparation regulation)
- German regulations:** Professional associations: BGI 7468
Technical instruction air: TRGS 900
- Other countries:** Adhere to national regulations.

16 Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship. The new safety data sheet replaces the previous version which becomes invalid.

- Department issuing data specification sheet:** Technical department



Safety Data Sheet

according to 1907/2006/EG, Article 31

Printing date: 12. März 2019

Revision: 12. März 2019

Trade name: TUNGSTEN ELECTRODE WTh10, WTh20, WTh30, WTh40**- Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association (IATA)"
ICAO: International Civil Aviation Organization
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization (ICAO)"
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
VbF: Verordnung über brennbare Flüssigkeiten, Österreich (Ordinance on the storage of combustible liquids, Austria)