

SAFETY DATA SHEET

TE002 Tungsten Electrodes (Thoriated)



Version number: 2
Replaces SDS: 2009-11-23
Issued: 2014-01-21

Not for sale in the USA
Ensure that this SDS is received by the appropriate person

Section 1. IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

1.1 Product identifier

Trade name BOC THORIATED 2% TUNGSTENS

Article-no

Product/Article	Diameter(mm)	Packaging (pk/ea)	Part Number
BOC TUNGSTENS 2% THORIATED Red	1.6	10	68616
	2.4	10	68617
	3.2	10	68618

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

Article type GTAW (TIG) Gas tungsten arc welding ISO 6848

Use Gas shielded Arc welding

1.3 Details of the supplier of the safety data sheet

Supplier BOC Limited

Street address Customer Service Centre, Priestley Road,
Worsley, Manchester, M28 2UT,
United Kingdom

Telephone +44 (0)800 111 333

Fax +44 (0)800 111 555

Email custserv@boc.com

1.4 Emergency telephone number

Available outside office hours Yes

Emergency phone number +44 (0)800 111 333

Other

Additional product information **Web site** www.BOConline.co.uk

Section 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) 1271/2008 [CLP] applicable

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2.2 Label elements

Not applicable

2.3 Other hazards

Note: When preparing (grinding) and using these electrodes as part of the welding process additional potential hazards are likely:
Grinding:

Toxic dusts. Ensure adequate dust extraction, ventilation and dust disposal

When the product is used in the welding process the most important hazards are:

Overexposure to fumes and gases from welding can be dangerous to health.

Watch out for splatter, hot metal and slag. It may cause skin burn and cause fire.

Arc rays can injure eyes and burn skin. Electric shock can kill. Avoid touching live electrical parts.

Section 3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances

This product is a mixture and please refer to Section 3.2

3.2 Mixtures

ISO 6848 Classification	W (min.) %	ThO ₂ %	Impurities mass %
CAS Number	7440-33-7	1314-20-1	
WTh 20(Red)	Balance	1.7-2.2	0.5 max

Substance name	CAS Number	EG number	REACH Reg Number	Concentration (%)	Classification		Remarks
					Hazard attribute	R-phrases	
Tungsten	744-33-7	231-143-9	01-2119488910-30-0003	>95.8		R11	R11 affects only powder/dust
Thorium oxide	1314-20-1	215-225-1		0.8 - 4.2	radioactive	R45-23/24/25-33	Substance affected by 96/29/Euratom.

Section 4. FIRST AND MEASURES

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4.1 Description of first aid measures

Inhalation	IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Call a physician if symptoms occur.
Skin contact	Burns should be treated by a doctor.
Eye contact	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Burns from radiation, see doctor.
Ingestion	Contact a doctor if more than an insignificant amount has been swallowed.

4.2 Most important symptoms and effects, both acute and delayed

Inhalation	Inhalation of vapours may cause irritation of the respiratory system in very susceptible persons.
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4.3 Indication of any immediate medical attention and special treatment needed

Pulmonary irritation.
In the case of lung irritation: Primary treatment by using Corticoide spray, e.g. Auxiloson spray, Pulmicort-dosage-spray (Auxiloson and Pulmicort are registered trademarks).

Section 5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media	Carbon dioxide (CO ₂), powder or diffuse jet of water. In case of major fire: Extinguish fire with diffuse jet of water or foam.
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5.2 Special hazards arising from the substance or mixture

Low radioactive product

5.3 Advice for fire fighters

Special protective equipment for fire fighters	Wear self contained breathing apparatus
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Section 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

General ventilation and local fume extraction must be adequate to keep fume concentrations within safe limits. Use respiratory equipment when welding in a confined space. Wear protective clothing and eye protection appropriate to arc welding. Skin contact should be avoided to prevent possible allergic reactions.

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6.2 Environmental precautions

Try to prevent the material from entering drains or water courses. Waste, dust filters and recipients are to be disposed of in a safe and secure way, according to respective national regulations in force. Grey washing or grinding water is to be captured and disposed of.

6.3 Methods and material for containment and cleaning up

Not applicable

6.4 Reference to other sections

For *Personal protection* see section 8. For *Disposal* see section 13. For *Environmental precautions* see section 12. For *Precautions for safe handling* see 7.1.

Section 7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Preventive handling precautions

Ensure adequate ventilation for the welder and others. Use respiratory equipment when welding in a confined space. Wear protective clothing and eye protection appropriate to arc welding. Remove all flammable materials and liquids before welding.

General hygiene

Wash hands before breaks and immediately after handling the product.

7.2 Conditions for safe storage, including any incompatibilities

Store welding consumables inside a room without humidity. Do not store welding consumables directly on the ground or beside walls. Store away from chemical substances like acids which could cause chemical reactions.

7.3 Specific end use(s)

Welding process.

Section 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

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Welding fume component	CAS No.	WEL ¹ 8hr TWA	STEL ² 15min TWA
Tungsten and compounds (as W)			
Soluble	7440-33-7	1	
Insoluble		5	
Thorium compounds (as Th)			
	7440-29-1		
Nitrogen dioxide (NO ₂)	10102-44-0	0.5 ppm ³	0.95ppm ³
Ozone (O ₃)	10028-15-6	0.2 ppm ⁴	
Nitrogen monoxide (NO)	10102-43-9	0.5ppm ³	0.63ppm ³

¹ WEL Workplace exposure Limits
² STEL Short term exposure limit
³ As recommended by MAK Commission based on scientific experience and is not established law
⁴ As recommended by EH40 (2004) in the UK

8.1.1 Exposure limit values

Germany

Dust exposures TRGS 900

Radiation exposure: Product not listed in TRGS 905. The following dose limits apply for effective dose in calendar year:

No person at "work", who are not exposed to radiation work 6mSv

For persons, who are exposed to radiation during work 20mSv

For the complete dose as a consequence of the profession 400mSv

For persons under 18 years of age 6mSv

8.2 Exposure controls

Environmental Exposure Controls – Refer to Section 6 of this SDS

Technical precaution measures	General ventilation and local fume extraction must be adequate to keep fume concentrations within safe limits.
Eye / face protection	Wear eye protection appropriate for welding.
Safety gloves	Skin contact should be avoided to prevent possible allergic reactions.
Other skin protection	Wear body protection which helps to prevent injury from radiation, sparks and electric shock.
Respiratory protection	Use respiratory equipment when welding in a confined space. Wear protective clothing and eye protection appropriate to arc welding.

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance, colour	Grey
Appearance, physical state	Rod

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Auto-ignition temperature	Not applicable
Auto-inflammability	Not auto-flammable
Decomposition temperature	Not applicable
Evaporation rate	Not applicable
Explosive properties	Not explosive
Flammability (solid gas)	Not applicable
Flash point	Not applicable
Form	Fast
Initial boiling point and boiling range	Not applicable
Melting point / Freezing point	Not applicable
Odour	Odourless
Odour threshold	Not applicable
Oxidising properties	Not applicable
Partition coefficient: n-octanol / water	Not applicable
pH value	Not applicable
Relative density	Not applicable
Solubility	Not applicable
Solubility in water	Insoluble
Upper / lower flammability or explosive limits	Not applicable
Vapour density	Not applicable
Vapour pressure	Not applicable
Viscosity	Not applicable

9.2 Other information

Not applicable

Other

Density	18.5 to 19.0 g/cm ³
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Section 10. STABILITY AND REACTIVITY

10.1 Reactivity

Not applicable

10.2 Chemical stability

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Stable at normal conditions.

10.3 Possibility of hazardous reactions

Not applicable

10.4 Conditions to avoid

None under normal conditions

10.5 Incompatible materials

Contact with strong acids and/or bases; or with halogens (fluorine, chlorine, bromine, iodine and their compounds); or with oxidising agents (e.g. Perchlorate, peroxide, permanganate, chlorates, nitrates, nitrites, chromates); or with alkali/earth alkali metals (e.g. lithium, sodium, potassium, magnesium, calcium) can cause strong reactions (danger of strong exothermal reactions, danger of formation of flammable gases, danger of formation of insalubrious/poisonous substances/gases) must be avoided.

10.6 Hazardous decomposition products

Emerge through oxidation oxids of the product which can evaporate (tungsten trioxide WO_3 CAS 1314-35-8) or be released (thorium oxide ThO_2 CAS 1314-20-1)

Welding fumes and gases. Additional fume may arise from coatings and contaminants on the base material.

Welding fume component	CAS No.	Classification (67/548EEC)	CLP (1272/2008)		Concentration of classified fume components
Tungsten and its compounds (W)	7440-33-7	-	-	-	>95.8
Thorium oxide (ThO_2)	1314-20-1	R23/24/25: Toxic by inhalation, in contact with skin & if swallowed R45: May cause cancer R33: Danger of cumulative effect	Acute Tox 3 Carc. 1B STOT RE 2	H331 H311 H301 H350 H373	0.8 to 4.2

Classification	H phrase	Text
Acute Tox.: Category 4	H302 H312 H332	Harmful if swallowed Harmful in contact with skin Harmful if inhaled
Carcinogenicity: Category 1B	H350	May cause cancer

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The classification information above relates to the fume during use.

Section 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Conditions to avoid: none in the form supplied

When welding, fumes and gases generated can be dangerous to health.

Acute toxicology	This product does not feature an acute oral, dermal toxicity or toxicity through inhalation
Irritation	Not applicable
Corrosive effects	Not applicable
Sensitisation	May cause sensitisation by skin contact
Mutagenicity	Not applicable
Carcinogenicity	Welding fumes are possibly carcinogenic to humans
Repeated dose toxicity	Finding after intratracheal application of 50mg tungsten dust per week during 3 weeks on guinea pigs lead to the conclusion that the substance is relatively inert. Still an effect on the pulmonary tissue could be proved which must not be neglected.
Reproductive toxicity	Not applicable

Section 12. ECOLOGICAL INFORMATION

12.1 Toxicity

The welding process can effect the environment if fume is released directly into the atmosphere.

LC₅₀ Fish 96h:

15.6mg/L (rainbow trout, oncorhynchus mykiss, 28d)

Aluminiumoxide: >100 mg/l Salmo trutta

IC₅₀ Amphibians 72h:

2.9mg/L (toad, gastrophryne carolinensis, 7d)

12.2 Persistence and degradability

Tungsten forms a series of oxohalogenides (e.g. WOCl₄)

12.3 Bio accumulative potential

No data available

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12.4 Mobility in Soil

Not applicable

12.5 Results of PBT and vPvB assessment

Not applicable

12.6 Other adverse effects

Not applicable

Section 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Disposal considerations Dispose of any product, residue or packing material according to national and local regulations. Spent fume extraction filters shall be disposed of as dangerous waste.

Other

Waste code (EWC) 12 01 13 – welding waste
12 01 04 – non-ferrous metal dust and particles

Section 14. TRANSPORT INFORMATION

14.1 UN number

Land transport (ADR/RID/GGVSEB) UN 2909: radioactive substances, released package, products made of natural thorium; class 7; LQ not possible

Sea transport (IMDG-Code/GGVSee)

UN 2909: radioactive substances, released package, products made of natural thorium; class 7; LQ not possible; EmS: F-I, S-S: pack up category A

Air transport (ICAO-TI/IATA-DGR)

UN 2909: radioactive substances, released package, products made of natural thorium; class 7; LQ not possible

Section 15. REGULATORY INFORMATION

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

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EU regulations	67/548/EWF idgF (Dangerous Substances) 99/45/EG idgF (Dangerous Preparations regulations) 96/29/Euratom (only affecting thorium oxide)
Labelling	215-225-1
National regulations	<i>EH40/2005 Workplace exposure limits</i> <i>The Waste Regulations 2011 No. 988</i> <i>Local laws and regulations should be carefully observed.</i>

15.2 Chemical safety assessment

No data available

Section 16. OTHER INFORMATION

References to key literature and data sources Regulation (EC) No 1907/2006 of the European Parliament and of the Council, (REACH).
Regulation (EC) No 1272/2008 of the European Parliament and of the Council.
EH40/2005 Workplace exposure limits.
The Waste regulations 2011 No.988
C&L Inventory database
Annex VI CLP Regulation (EC) 1272/2008

Phrase meaning

H302	Harmful if swallowed
H312	Harmful in contact with skin
H332	Harmful if inhaled
H350	May cause cancer.

Other

Manufacturer's notes *Read this Safety Data Sheet carefully and become aware of hazards implied and the safety information.*

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