SAFETY DATA SHEET (SDS)
Tungsten tips WT20

Please ensure that this SDS is received by the appropriate persons

Review Date: 20/08/2023 v01 **Emergency: 0860 02 02 02** **Document Number: AFX-SDS-0121**

1. PRODUCT AND COMPANY IDENTIFICATION

Product Synonym	Tungsten tips WT20
Product Specification	AWS/ASME SFA 5.4
Product Classification and Brands	The following Afrox electrodes are covered by this SDS: Transarc 2% Thoriated 1,6mm Transarc 2% Thoriated 2,4mm Transarc 2% Thoriated 3,2mm
Recommended use:	Gas Tungsten Arc electrodes
Product Code	W031016 W031024 W031032
Company Identification	African Oxygen Limited Grayston Office Park, Building 7 128 Peter Road Sandown, Sandton, 2196 Tel. No: (011) 490-0400 Fax No: (011) 490-0530 Email: customer.service@afrox.linde.com www.afrox.com
Emergency Numbers	**0860 02 02 02 (Afrox)**

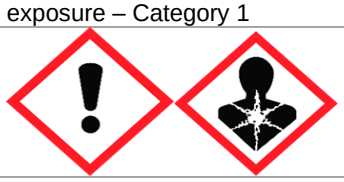
2. HAZARD IDENTIFICATION

Classification	Classification under South African Hazardous Chemical Substances Regulations subsequently amended. (HCS) Classification under the Globally Harmonized System of classification and labelling of chemicals (GHS)

There are no recognised hazards associated directly with unused welding consumables prior to welding.
Packaged consumables may be heavy and should be handled and stored with care. Follow manual handling regulations.
Wear gloves and eye protection
When using these consumables as part of the welding process additional potential hazards are likely:
Electric shock from the welding equipment or electrode. This can be fatal. Hot metal spatter and heat from the electric arc and the welding flame, which can cause burns to the hand and body, and may cause fire if in contact with combustible materials.
UV, IR and light radiation from the arc, which can produce 'arc eye' and possible eye damage to unprotected eyes. Wear suitable protective equipment.
Fumes produced from the welding consumable, material being welded, the arc radiation and the welding flame:

- Particulate fume such as complex metal oxides and silicates from the weld materials.
- Gaseous fume such as ozone and nitrogen oxides from the action of arc radiation on the atmosphere, and carbon monoxide and dioxide from oxidation of carbon in the components, and from the flame combustion products.
- Short term inhalation of these fumes and gases may lead to irritation of the nose, throat and eyes.
- Long term overexposure or inhalation of high levels of fumes may result in harmful effects to the respiratory system, central nervous system and lungs.
- Local extraction and /or ventilation should be used to ensure that all hazardous ingredients in the fume are kept below their individual occupational exposure standards in the welder's and other workers' breathing zones.

NOTE: If welding is performed on plated or coated materials such as galvanised steel, excessive fume may be produced which contains additional hazardous components and may result in metal fume fever and other health effects.

Emergency Overview	Colour: silver metal, red tip Odour: None Taste: None Physical State: metal solid Form: wire
Adverse Health Effects	Welding fumes will cause irritation
Chemical Hazards	Minor radioactivity due to the additive of natural Thorium
Biological Hazards	None
Vapour Inhalation	Welding fumes will cause irritation
GHS Classification	**Welding fumes:** Sensitization- Respiratory Acute toxicity - Inhalation – Category 4 Specific target organ toxicity — Single exposure – Category 3 Specific target organ toxicity — Repeated exposure – Category 1
GHS Pictogram	
GHS Signal Words	Danger
GHS Hazard Statements	**H334**: May cause allergy or asthma symptoms or breathing difficulties if inhaled **H332**: Harmful if inhaled **H335:** May cause respiratory irritation **H372:** Causes damage to organs, nervous system and lungs through prolonged or repeated exposure
GHS Precautionary Statements	**Prevention:** **P260:** Do not breathe dust/fume/gas/mist/vapors/spray **P271**: Use only outdoors or in a well-ventilated area **P284:** In case of inadequate ventilation, wear respiratory protection **P264:** Wash thoroughly after handling **P270**: Do not eat, drink or smoke when using this product **P280**: Wear protective gloves/protective clothing/eye protection/face protection

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	P201: Obtain special instructions before use **P202**: Do not handle until all safety precautions have been read and understood. **Response:** **P304+P340:** IF INHALED: Remove person to fresh air and keep comfortable for breathing **P342+P311:** If experiencing respiratory symptoms: Call a poison centre/doctor **P312:** Call a poison centre/doctor if you feel unwell **Storage:** None **Disposal:** **P501:** Dispose of contents/container in accordance with local/regional/national/international regulations
Other Hazards that do not result in classification	Minor radioactivity due to the additive of natural Thorium

3. COMPOSITION OF INGREDIENTS

These tips are made from solid Tungsten alloys, The composition of the alloys varies depending on the classification.
Details of the contents of the wire and rod consumables covered by this data sheet are given below.

TABLE 1: APPROXIMATE COMPOSITION OF CONSUMABLES (WT %)

1.8%-2.2% Thorium oxide balance Tungsten

Chemical name **Chemical family**	Tungsten
CAS No	Not available
UN No	Not available
ERG No	Not available
Hazard class	Not applicable
Hazchem Warning	Not applicable

4. FIRST AID MEASURES

Eye contact	For eye effects such as arc eye and dusts. Irrigate eye with sterile water, cover with damp dressing and refer for immediate medical attention if irritation persists
Skin Contact	No hazard known
Ingestion	Ingestion is considered unlikely due to product form.
Inhalation	Welding fumes-If breathing is difficult, bring the patient in fresh air; breathe in fresh air deeply. Submerge affected area in cold water until burning sensation ceases and refer for immediate medical attention.
Electric shock	If necessary resuscitate and seek immediate medical attention

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	Material will not burn. In case of fire in the surroundings: use appropriate extinguishing agent
Unsuitable extinguishing media	None
Specific Hazards	None
Special fire fighting procedures	None
Special protective equipment for firefighters:	Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces a self-contained breathing apparatus

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:	No specific measures required for the welding consumable prior to welding. Welding should not be carried out in the presence of flammable materials, vapours, tanks, cisterns and pipes and other containers which have held flammable substances unless these have been checked and certified safe
Measures in case of unintentional release	No specific actions for welding consumable prior to use. Welding in proximity to stored or used halogenated solvents may produce toxic and irritant gases. Prohibit welding in areas where these solvents are used
Environmental Precautions	No environmental hazard known
Methods and material for containment and cleaning up:	If spilled it may be picked-up by hand if safe to do so and removed to a licenced waste site

7. HANDLING AND STORAGE

Safe Handling	No special precautions are required for these welding consumables. Welding wires and rods are dense materials and can give rise to a handling hazard when reels, spools, bulk packs and multiple packages are lifted or handled incorrectly or with poor lifting posture

	Good practice for handling and storage should be adopted to prevent physical injuries
Conditions for safe storage, including any incompatibilities	Keep dry

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Occupational Exposure Hazards (HCS)	OEL eight- hour TWA 5 mg/m3 (R) Tungsten and compounds, in the absence of cobalt
General	Welders should not touch live electrical parts, and should insulate themselves from the work and the ground. Welders should not touch hot parts of the consumable, the torch assembly or the components being welded, and should avoid contact with the welding flame. Manufacturer's guidelines for the use of electrical welding machines, gas cylinders, gas control equipment and gas welding equipment should be observed at all times. Welders and co-workers should be educated about the health hazards associated with welding fume, and trained to keep their heads out of the fume plume. During welding, fumes and gases will be produced and emitted from the welding process. The content of the fume is dependent on the wire or rod type, shielding gas (if used) and base material being welded. The amount and concentration of fume generated is dependent on factors such as current, voltage (when electric arc welding), gas flow settings, flame size and type (when gas welding), welding practices and number of welders in a given area. By following recommended welding practices, fume production can sometimes be minimised. For the solid stainless steel wires and rods covered by this data sheet, the main constituents of the fume will be Iron, manganese, magnesium and copper oxides and silicates, mainly in the form of complex compounds. There will also be smaller amounts of other complex metal oxides and silicates. Gaseous ozone and nitrous oxides are also formed by arc radiation, and carbon monoxide and carbon dioxide can also be present due to oxidation of carbon in the components, and from the flame combustion products. In some cases ozone levels can be high, and additional controls may be needed. Fume Composition data for the main solid stainless steel wires and rods are given below. Fume exposure should be controlled to below the recognised exposure limit for each of the individual constituents, and to below 5 mg/m3 for the total particulate fume.
Engineering Control Measures	Engineering control measures are preferred to reduce exposures. General methods include mechanical ventilation, process or personal enclosure, and control of process conditions. Administrative controls and personal protective equipment may also be required **A Risk assessment should be conducted to evaluate the suitability of PPE to the task being performed**
Personal Protection	Welders and co-workers in the vicinity should wear protective clothing and eye protection appropriate to the welding process being used, as specified by local standards.
Eyes	As appropriate for the welding process being used, welders should wear a welding helmet or welding goggles fitted with the correct optical welding filter for the operation. Suitable protective welding screens and goggles should be provided, and used by others working in the same area.
Hands	Welders should wear suitable hand protection such a welding gloves or gauntlets of a suitable standard. Co-workers should also wear suitable hand protection against hot metal, sparks and spatter.
Body protection:	Suitable clothes for welding should be worn such as non-light reflective fireproof overalls, leather apron, welding helmet (for arc welding), suitable head protection and welding goggles (for gas welding), leather boots spats and gloves.
Feet	Wear safety shoes while handling containers

TABLE 2: FUME COMPOSITION DATA (WT%)

Classification	Al	Fe	Mn	Cr	Cu	Mg	Zn
	1.8	11.9-54.9	8.2	0.1	0.1	5.3	3.5

9. PHYSICAL AND CHEMICAL PROPERTIES

Chemical Name	Tungsten ,Thorium oxide
Chemical Symbol	W , ThO_2

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Physical state	Solid
Form:	Metal rods
Colour:	Generally white metallic or light grey
Odour:	Odourless
Odour Threshold:	None
pH:	Not available
Melting Point:	~3400ºC
Boiling Point:	Not relevant
Sublimation Point:	Not relevant
Critical Temp. (°C):	Not applicable
Flash Point:	Not applicable
Evaporation Rate:	5.900°C
Flammability (gas):	Non-Flammable
Flammability limit - upper (%):	None
Flammability limit - lower(%):	None
Vapour pressure:	Not relevant
Vapour density (air=1)	Not relevant
Relative density:	Not relevant
Solubility in Water:	Insoluble
Partition coefficient (n-octanol/water):	Not relevant
Autoignition Temperature:	Not applicable
Decomposition Temperature:	Not applicable
Viscosity	
Kinematic viscosity:	No data available
Dynamic viscosity:	Not applicable
Explosive properties:	Non-flammable. No fire or explosion hazard exists
Oxidising Properties:	Not applicable
Density:	18,95 – 18,86 g/cm3
Molecular weight	Not available

10. STABILITY AND REACTIVITY

Reactivity & Stability	There are no stability or reactivity hazards from welding wires or rods as supplied
Chemical stability	Stable under normal conditions.
Possibility of hazardous reactions	None
Conditions to avoid	None
Incompatible Materials	None
Hazardous Decomposition of Products	None

11. TOXOLOGICAL INFORMATION

Acute Toxicity	No data available
Skin & eye contact	No data available
Chronic Toxicity	No data available
Carcinogenicity	No data available
Mutagenicity	No data available
Reproductive Hazards	No data available

12. ECOLOGICAL INFORMATION

Toxicity	The welding process produces particulate fumes and gases which may cause long term adverse effects in the environment if released directly into the atmosphere. Welding fumes from the normal use of the stainless steel wires and rods covered by this data sheet can produce oxides of nitrogen gas, which is dangerous to the ozone layer
Persistence and degradability	No information available
Bioaccumulative Potential Product	No information available
Mobility in soil	No information available
Results of PBT and vPvB assessment	No information available
Other adverse effects	None
Effect on ozone layer	None
Effect on the global warming (CO2=1)	0

13. DISPOSAL CONSIDERATIONS

Disposal Methods	Thorium alloyed tungsten electrodes must not be disposed together with conventional or household waste. Left over pieces and grinding dust must be disposed in accordance with local Radiation Protection Laws
Disposal of Packaging	The packaging is plastic and can be disposed of in normal waste

14. TRANSPORT INFORMATION

Road Transportation	
UN No.	Not available
Shipping Name	Tungsten tips W20
ERG No.	Not specified
Class	Not specified
Subsidiary Risk	Not available
Hazchem Warning	Not available
Sea Transportation	
IMDG	Not available
Shipping Name	Teal Tungsten tips W20
ERG No.	Not specified
Class	Not specified
Subsidiary Risk	Not specified
Label	Not specified
Air Transportation	
ICAO/IATA Code	Not available
Class	Not specified
Packing Group:	Not specified
Packaging instructions	Cargo: not specified Passenger: not specified

15. REGULATORY INFORMATION

National legislation OHSact and Regulations 85 of 1993.

SANS 11014:2010 Edition 1	Safety data sheet for chemical products Content and order of sections
SANS 10228:2012 Edition 6	The identification and classification of dangerous goods for transport by road and rail modes
SANS 10234:2019 Edition 2	Globally Harmonized System of classification and labelling of chemicals (GHS)
SUPPLEMENT TO SANS 10234 Edition 1	List of classification and labelling of chemicals in accordance with the Globally Harmonized System (GHS)
SABS 0238 (SANS 1238)	Welding and Thermal Cutting Process

16. OTHER INFORMATION

- Ensure all national/local regulations are observed.
- Ensure users and relevant persons understand the asphyxiation hazard
- Regularly check supplier's information sources for updated versions of SDS's

Revision Date	20/08/2023 v01

Bibliography

Compressed Gas Association, Arlington, Virginia
Handbook of Compressed Gases - 3rd Edition
Matheson Gas Data Book - 6th Edition
SANS 11014 - Safety data sheet for chemical products: Content and order of sections
SANS 10234 - List of classification and labelling of chemicals in accordance with the Globally Harmonized System (GHS)
SANS 10265 – Classification and Labelling of Dangerous Substances

EXCLUSION OF LIABILITY