

SAFETY DATA SHEET

BW 002 Solid Stainless steel wire electrodes and rods



Version number: 1

Replaces SDS: 2009-11-23

Issued: 2014-02-05

Not for sale in the USA

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

1.1 Product identifier

Trade name SOLID STAINLESS STEEL WIRE ELECTRODES AND RODS

(Afrox MIG 307Si, Afrox TIG 307Si, Afrox Exhaust F1 1,00mm, Afrox MIG/TIG 308LSi, Afrox MIG/TIG 308L, Afrox MIG/TIG 308H, Afrox MIG/TIG 309LSi, Afrox MIG/TIG 309L, Afrox MIG/TIG 310, Afrox MIG/TIG 316LSi, Afrox MIG/TIG 316L, Afrox TIG 316H, Afrox TIG 317L, Afrox TIG 318Si, Afrox MIG/TIG 347, Afrox MIG/TIG 904L, Afrox MIG/TIG 2209)

Article-no

Product Packaging Data	Diameter (mm)	Current		Pack Mass (kg)	Item Number
		Amps(A)	Volts(V)		
Afrox MIG 307Si	1,0	-	-	15 (spool)	W033244
	1,2	-	-	15 (spool)	W033242
	1,0	-	-	15 (spool)	W033003
	1,2	-	-	15 (spool)	W033004
	1,0	-	-	15 (spool)	W033457
	1,2	-	-	15 (spool)	W033110
	1,0	-	-	15 (spool)	W033467
Afrox TIG 307Si	1,6	100	12	5	W030405
	2,4	100	12	5	W030407
Afrox Exhaust F1 1,00mm	1,0	200	26	220	W033466
Afrox MIG 308LSi	0,8	120	19	15	W033013
	0,9	160	23	15	W033014
	1,0	200	26	15	W033015
	1,0	200	26	120	W033018
	1,0	200	26	220	W033465
	1,0	200	26	15	W033224
	1,2	260	26	15	W033222
Afrox TIG 308LSi	1,6	280	28	15	W033017
	1,6	100	12	5	W030413
	2,0	100	12	5	W033414
Afrox MIG 308L	2,4	100	12	5	W033415
	1,2	260	26	15	W033010
	1,0	260	26	15	W033447

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	1,2	260	26	15	W033448
Afrox TIG 308L	1,6	100	12	5	W030560
	2,0	100	12	5	W030562
	2,4	100	12	5	W030561
Afrox MIG 308H	1,2	260	28	15	W033026
Afrox TIG 308H	1,6	100	12	5	W030417
	2,0	100	12	5	W030418
	2,4	100	12	5	W030419
Afrox MIG 309LSi	0,8	120	19	15	W033035
	0,9	160	23	15	W033036
	1,0	200	26	15	W033227
	1,0	200	26	15	W033037
	1,0	200	26	220	W033043
	1,2	260	26	15	W033228
	1,6	280	28	15	W033039
Afrox TIG 309LSi	1,6	100	12	5	W030425
	2,0	100	12	5	W030426
	2,4	100	12	5	W030427
Afrox MIG 309L	1,0	200	26	15	W033455
	1,0	200	26	120	W033454
	1,0	200	26	220	W033456
	1,2	260	26	15	W033127
	1,2	260	26	120	W033108
	1,2	260	26	220	W033451
Afrox TIG 309L	1,6	100	12	5	W030571
	2,0	100	12	5	W030572
	2,4	100	12	5	W030571
Afrox MIG 310	0,8	120	19	15	W033051
	1,2	220	29	15	W033054
Afrox TIG 310	1,6	100	12	5	W030433
	2,0	100	12	5	W030434
	2,4	100	12	5	W030435
Afrox MIG 316LSi	0,8	120	26	15	W033069
	0,9	160	26	15	W033070
	1,0	200	26	15	W033234
	1,0	200	26	15	W033071
	1,2	260	26	15	W033072
	1,2	260	26	15	W033232
	1,6	280	26	15	W033073
Afrox TIG 316LSi	1,6	100	12	5	W030445
	2,0	100	12	5	W030446

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	2,4	100	12	5	W030447
	3,2	100	12	5	W030448
Afrox MIG 316L	1,2	260	26	15	W033066
Afrox TIG 316L	1,6	100	12	5	W030550
	1,6	100	12	5	W030441
	2,0	100	12	5	W030553
	2,4	100	12	5	W030443
	2,4	100	12	5	W030551
	3,2	100	12	5	W030444
Afrox TIG 316H	1,6	100	12	5	W030449
	2,4	100	12	5	W030451
Afrox TIG 317L	1,6	100	12	5	W030453
	2,0	100	12	5	W030454
	2,4	100	12	5	W030455
Afrox TIG 318Si	1,6	100	12	5	W030457
	2,0	100	12	5	W030459
Afrox MIG 347	0,8	120	19	15	W033097
	1,2	180	28	15	W033100
Afrox TIG 347	1,6	100	12	5	W030461
	2,0	100	12	5	W030462
	2,4	100	12	5	W030463
Afrox MIG 904L	1,0	200	26	220	W033104
	1,2	230	30	15	W033106
Afrox TIG 904L	1,6	100	12	5	W030465
	2,0	100	12	5	W030466
	2,4	100	12	5	W030467
Afrox MIG 2209	1,2	180	28	15	W033445
Afrox TIG 2209	1,6	100	12	5	W030489
	2,0	100	12	5	W030490
	2,4	100	12	5	W030491

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

Article type	GMAW/GTAW : Solid stainless steel wire electrodes and rods AWS SFA 5.9 (or other)
Use	Gas shielded arc welding

1.3 Details of the supplier of the safety data sheet

Supplier	Afrox
Street address	23 Webber Street, Selby

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Johannesburg, 2001
South Africa
Telephone +27 (0) 11 490 0400
Fax +27 (0) 860 020201
Email Customer.service@afrox.linde.com

1.4 Emergency telephone number

Available outside office hours Yes
Emergency phone number 0860 02 02 02

Other

Additional product information Web site: www.afrox.co.za

Section 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

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

2.2 Label elements

Not applicable

2.3 Other hazards

This product contains: Nickel as classified as sensitising and limited evidence of carcinogenic effect. The form of this product does not contribute to a hazard classification of the product.

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

AWS Class	Fe %	C (max) %	Mn %	Si %	Cr %	Ni %	Mo %	Other
CAS Number	7439-89-6	7440-44-0	7439-96-5	7440-21-3	7440-47-3	7440-02-0	7439-98-7	
ER308	bal	0.08	1.0 to 2.5	0.3 to 0.65	19.5 to 22.0	9.0 to 11.0	0.75 max	
ER309	bal	0.12	1.0 to 2.5	0.3 to 0.65	23.0 to 25.0	12.0 to 14.0	0.75 max	
ER309Mo	bal	0.12	1.0 to 2.5	0.3 to 0.65	23.0 to 25.0	12.0 to 14.0	2.0 to 3.0	

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ER316	bal.	0.08	1.0 to 2.5	0.3 to 0.65	18.0 to 20.0	11.0 to 14.0	2.0 to 3.0	
ER321	bal	0.08	1.0 to 2.5	0.3 to 0.65	18.5 to 20.5	9.0 to 10.5	0.75 max	Ti 1.0 max CAS Number 7440-32-6
ER347	bal	0.08	1.0 to 2.5	0.3 to 0.65	19.0 to 21.5	9.0 to 11.0	0.75 max	Cb 1.0 max CAS Number 7440-03-1
ER410	bal	0.12	0.6 max	0.5 max	11.5 to 13.5	0.6 max	0.75 max	

Section 4. FIRST AND MEASURES

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

Not applicable

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

Not applicable

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.

6.2 Environmental precautions

Try to prevent the material from entering drains or water courses.

6.3 Methods and material for containment and cleaning up

Not applicable

6.4 Reference to other sections

Personal protection see section 8 and for disposal see section 13. Environmental precautions, paragraph 12. See also section 7 Precautions for safe handling.

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

Welding fume component	CAS No.	WEL 8hr TWA	STEL 15min TWA
Iron oxide fume (as Fe)	1309-37-1	5	10

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Manganese and its inorganic compounds (as Mn)	7439-96-5	0.5	
Chromium VI compounds (as Cr)	133-82-0	0.05	
Chromium III compounds (as Cr)	24613-89-6	0.5	
Nickel and its inorganic compounds			
Water soluble	7440-02-0	0.1	
Water insoluble		0.5	
Copper Fume	7440-50-8	0.2	
Molybdenum compounds (as Mo)			
soluble	7439-98-7	5	
insoluble		10	
Nitrogen dioxide	10102-44-0	0.5ppm	0.95ppm
Nitrogen monoxide	10102-43-9	0.5ppm	0.63ppm
Ozone	10028-15-6		0.2ppm
Carbon dioxide	124-38-9	5000ppm	15000ppm
Carbon monoxide	630-08-0	30ppm	200ppm

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
Auto-ignition temperature	Not applicable
Auto-inflammability	Not auto-flammable
Decomposition temperature	Not applicable
Evaporation rate	Not applicable

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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	7.98 g/cm ³
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Section 10. STABILITY AND REACTIVITY

10.1 Reactivity

Not applicable

10.2 Chemical stability

Stable at normal conditions.

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10.3 Possibility of hazardous reactions

Not applicable

10.4 Conditions to avoid

None under normal conditions

10.5 Incompatible materials

Not applicable

10.6 Hazardous decomposition products

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
Aluminium oxide (Al)	1344-28-1	-	-	-	<0.1
Barium (Ba)	7440-39-3	-	-	-	0.1
Bismuth oxide (Bi)	12640-40-3	-	-	-	0.1 to 0.4
Calcium (Ca)	1305-78-8	-	-	-	0.1
Cobalt oxide (Co)	1307-96-6	R22: Harmful if swallowed R43: May cause sensitisation by contact	Acute tox 4 (oral) Skin sens. 1	H302 H317	0.1
Chromium III compounds (as Cr)	24613-89-6	R45: May cause cancer R35: Causes severe burns R43: May cause sensitisation by skin contact	Carc. 1B Skin Corr. 1A Skin Sens. 1	H350 H314 H317	6.0 to 17.8

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Chromium VI compounds (as Cr)	1333-82-0	R45: May cause cancer R46: May cause heritable genetic damage R24/25 Toxic in contact with skin and if swallowed R26: Very Toxic by inhalation R35: Causes severe burns R42/43: May cause sensitisation by inhalation and skin contact R48/23: Toxic danger of serious damage to health by prolonged exposure through inhalation R62 Possible risk of impaired fertility	Carc 1A Muta 1B Repr. 2 Acute tox 2 (inhal) Acute tox 3 (oral/dermal) STOT RE 1 Skin corr 1A Resp sens 1 Skin Sens 1 STOT SE 3 (C≥1%)	H350 H340 H361f H330 H311 H301 H372 H314 H334 H317 H335	0.07 to 0.61
Copper oxide (Cu)	1317-38-0	-	-	-	0.1 to 0.6
Iron oxide (Fe)	1332-37-2	-	-	-	12.3 to 57.0
Potassium (K)	7440-09-7	R34: Causes burns	Skin Corr. 1B	H314	0.1 to 0.3
Lithium (Li)	7439-93-2	R34: Causes burns	Skin Corr. 1B	H314	0.1
Magnesium oxide (Mg)	1309-48-4	-	-	-	0.1
Manganese (Mn)	7439-96-5	-	-	-	0.9 to 46.1
Molybdenum (Mo)	7439-98-7	Molybdenum trioxide R36/37: Irritating to eyes and respiratory system R40: Limited evidence of carcinogenic effect	Molybdenum trioxide Carc. 2 Eye Irrit. 2 STOT SE 3	H351 H319 H335	0.1 to 0.6
Sodium (Na)	7440-23-5	R34: Causes burns	Skin Corr. 1B	H314	0.1 to 0.6

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Nickel (Ni)	7440-02-0	R40: Limited evidence of carcinogenic effect R43: May cause sensitisation by skin contact R48/23: Toxic danger of serious damage to health by prolonged exposure through inhalation R52/53: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment	Carc. 2 Skin sens 1 STOT RE 1	H351 H317 H372	0.6 to 8.0
Lead (Pb)	7439-92-1	-	-	-	0.1
Silicon (Si)	7440-21-3	-	-	-	0.3 to 1.3
Titanium dioxide (Ti)	13463-67-7	-	-	-	0.1
Vanadium (V)	7440-62-2	-	-	-	0.1
Zinc (Zn)	7440-66-6	-	-	-	0.1 to 1.1

	H phrase	Text
Acute Toxicity (Inhal): Category 4	H332	Harmful if inhaled
Skin corrosion/irritation: Category 1A	H314	Causes severe skin burns and eye damage
Skin sensitisation: Category 1	H317	May cause an allergic skin reaction
Carcinogenicity: Category 1A	H350	May cause cancer
Mutagen: Category 1B	H340	May cause genetic defects
Specific Target Organ Toxicity: Single exposure Category 3	H335	May cause respiratory irritation

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Specific Target Organ Toxicity: Repeated exposure Category 2	H373	May cause damage to organs through prolonged or repeated exposure
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The Classification information above refers to the fume during use

Fume analysis: wt %	Fume analysis: wt %
Cr 6 to 17.8	Ni 0.6 to 8
Ca < 0.1	Cr (VI) 0.07 to 0.61
Fe 12.3 to 57	Si 0.3 to 1.3
Mn 1.9 to 46.1	Mo 0.1 to 0.6

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	Excessive exposures may affect human health, as follows: Aspiration may cause pulmonary oedema and pneumonitis Short-term overexposure can cause dizziness, nausea and irritation of the nose, throat or eyes.
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	Not applicable
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. Residues from welding consumables could degrade and accumulate into soils and ground water.

Acute fish toxicity	LC50 Fish 96h: Manganese: 2,91 mg/l Aluminiumoxide: >100 mg/l Salmo trutta
Acute algae toxicity	IC50 Algae 72h:

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Acute crustacean toxicity	Manganese: 0,55 mg/l Aluminiumoxide: >100 mg/l Selenastrum capricornatum (green algae) EC50 Daphnia 48h: Manganese: 5,2 mg/l Aluminiumoxide: >100 mg/l Daphnia magna (Water flea)
<i>12.2 Persistence and degradability</i>	Not applicable
<i>12.3 Bio accumulative potential</i>	
Bioconcentration factor (BCF):	
Iron: 140000	
Manganese: 59052	
<i>12.4 Mobility in Soil</i>	Not applicable
<i>12.5 Results of PBT and vPvB assessment</i>	Not applicable
<i>12.6 Other adverse effects</i>	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

Section 14. TRANSPORT INFORMATION

14.1 UN number

Not applicable

14.2 UN proper shipping name

Not applicable

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14.3 Transport hazard class(es)

Not applicable

14.4 Packing group

Not applicable

14.5 Environmental hazards

Not applicable

14.6 Special precautions for user

Not applicable

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

Other

Dangerous goods No

Section 15. REGULATORY INFORMATION

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

EU regulations *The product does not need to be labelled in accordance with EC directives or respective national laws.*

National regulations *EH40/2005 Workplace exposure limits
 The Waste Regulations 2011 No. 988
 Local laws and regulations should be carefully observed.*

15.2 Chemical safety assessment

Not applicable

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

H332

Harmful if inhaled

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	H314	Causes severe skin burns and eye damage
	H317	May cause an allergic skin reaction
	H350	May cause cancer
	H340	May cause genetic defects
	H335	May cause respiratory irritation
	H373	May cause damage to organs through prolonged or repeated exposure

Other

Manufacturer's notes

Read this Safety Data Sheet carefully and become aware of hazards implied and the safety information.

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