

# SAFETY DATA SHEET

## SW 001 Solid carbon steel submerged arc wire



Version number: 1  
Replaces SDS: 2009-11-23  
Issued: 2014-02-07

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 CARBON STEEL SUBMERGED ARC WIRE  
**Article-no** (Afrox Sub 70-1, Afrox Sub 70-2, Afrox Subarc S3Si)

<i>Product Packaging Data</i>	<i>Diameter (mm)</i>	<i>Item Number (25kg coil)</i>	<i>Item Number (27kg coil)</i>	<i>Item Number (68kg coils)</i>	<i>Item Number (450kg pay-off spools)</i>	<i>Item Number (300kg pay-off drums)</i>
<b>Afrox Sub 70-1</b>	2,0	W080011	-	-	-	-
	2,4	W080012	-	-	-	-
	3,15	W080013	-	-	-	-
	4,0	W080014	-	-	-	-
<b>Afrox Sub 70-2</b>	2,0	W080051	-	-	W080056	W080061
	2,5	W080052	-	-	W080057	W080062
	3,15	W080053	-	W080067	W080058	W080063
	4,0	W080054	-	W080068	W080059	W080064
	5,0	W080055	-	-	W080060	-
<b>Afrox Subarc S3Si</b>	2,4	W078116	W078116	-	-	-
	3,2	W078118	W078118	-	-	-
	4,0	W078120	W078120	-	-	-

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

**Article type** SAW Solid carbon steel submerged arc wire Classification: AWS SFA 5.23 (or other)  
**Use** Submerged Arc welding

#### 1.3 Details of the supplier of the safety data sheet

**Supplier** Afrox  
**Street address** 23 Webber Street, Selby  
Johannesburg, 2001  
South Africa  
**Telephone** +27 (0) 11 490 0400  
**Fax** +27 (0) 860 020201  
**Email** Customer.service@afrox.linde.com

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### 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](http://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

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 Clas's	Fe %	C %	Mn %	Si %	Cu <sup>1</sup> %	Ti %	Zr %	Al %
CAS Number	7439-89-6	7440-44-0	7439-96-5	7440-21-3	7440-50-8	7440-32-6	7440-67-7	7429-90-5
E112	>97	0.07	0.90 to 1.40	0.40 to 0.70	<0.5	0.05 to 0.15	0.02 to 0.12	0.05 to 0.15
EM12K	>97	0.06 to 0.15	0.90 to 1.40	0.45 to 0.70	<0.5			

## Section 4. FIRST AND MEASURES

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#### 4.1 Description of first aid measures

<b>Inhalation</b>	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.
<b>Skin contact</b>	Burns should be treated by a doctor.
<b>Eye contact</b>	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.
<b>Ingestion</b>	Contact a doctor if more than an insignificant amount has been swallowed.

#### 4.2 Most important symptoms and effects, both acute and delayed

<b>Inhalation</b>	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

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### Section 5. FIRE-FIGHTING MEASURES

#### 5.1 Extinguishing media

**Suitable extinguishing media** Carbon dioxide (CO<sub>2</sub>), powder or diffuse jet of water. In case of major fire: Extinguish fire with diffuse jet of water or foam.

#### 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

### 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

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.

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### 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.	ES-TWA	ES-STEL
Total welding fume (particulate)	-	5	
Iron oxide fume (as Fe)	1309-37-1	5	10
Manganese and its inorganic compounds (as Mn)	7439-96-5	1	3
Silica, amorphous (total inhalable dust) (respirable dust)	-	6 2.4	
Magnesium oxide (as Mg) (total inhalable dust) (fume and respirable dust)	1309-48-4	10 4	10
Titanium dioxide (total inhalable dust) (respirable dust)	13463-67-7	10 4	
Calcium Oxide	1305-78-8	2	
Calcium Silicate (total inhalable dust) (respirable dust)	1344-95-2	10 4	
Fluoride, inorganic (as F)	16984-48-8	2.5	
Nitrogen dioxide (NO <sub>2</sub> )	10102-44-0	3ppm	5ppm
Ozone (O <sub>3</sub> )	10028-15-6	0.2 ppm	
Nitrogen monoxide (NO)	10102-43-9	25ppm	35ppm

### 8.2 Exposure controls

*Environmental Exposure Control – 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.

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**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

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

#### 9.2 Other information

Not applicable

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Other

**Density** 7,98 g/cm<sup>3</sup>

### Section 10. STABILITY AND REACTIVITY

#### 10.1 Reactivity

Not applicable

#### 10.2 Chemical stability

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

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
Calcium (Ca)	1305-78-8	-	-	-	<0.1 to 0.2
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	<0.1
Copper oxide (Cu)	1317-38-0	-	-	-	0.3 to 1.1

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Iron oxide (Fe)	1332-37-2	-	-	-	45.8 to 61.4
Potassium (K)	7440-09-7	R34: Causes burns	Skin Corr. 1B	H314	<0.1
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	-	-	-	6.3 to 15.0
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
Sodium (Na)	7440-23-5	R34: Causes burns	Skin Corr. 1B	H314	<0.1
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	<0.1
Lead (Pb)	7439-92-1	-	-	-	<0.1
Silicon (Si)	7440-21-3	-	-	-	1.3 to 4.8
Titanium dioxide (Ti)	13463-67-7	-	-	-	<0.1
Vanadium (V)	7440-62-2	-	-	-	<0.1
Zinc (Zn)	7440-66-6	-	-	-	<0.1 to 0.7

The classification information above relates to the fume during use

Fume analysis: wt %

Al 0.1 max  
Ca 0.1 to 0.2  
Fe 45.8 to 61.4  
Mn 6.3 to 15  
Si 1.3 to 4.8



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Zn 0.1 to 0.7

### 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.

<b>Acute toxicology</b>	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.
<b>Irritation</b>	Not applicable
<b>Corrosive effects</b>	Not applicable
<b>Sensitisation</b>	May cause sensitisation by skin contact
<b>Mutagenicity</b>	Not applicable
<b>Carcinogenicity</b>	Welding fumes are possibly carcinogenic to humans
<b>Repeated dose toxicity</b>	Not applicable
<b>Reproductive toxicity</b>	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.

#### 12.2 Persistence and degradability

Not applicable

#### 12.3 Bio accumulative potential

#### 12.4 Mobility in Soil

Not applicable

#### 12.5 Results of PBT and vPvB assessment

Not applicable

#### 12.6 Other adverse effects

Not applicable

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### 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

#### 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*

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### National regulations

*national laws.*  
*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*  
*KIFS 2005:7*  
[www.prevent.se](http://www.prevent.se)  
*C&L Inventory database*

### Phrase meaning

Annex VI CLP Regulation (EC) 1272/2008  
H314 – Causes severe skin burns and eye damage  
H350 – May cause cancer.

Other

### Manufacturer's notes

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

End of document