SAFETY DATA SHEET
BW 002 Solid Stainless steel wire electrodes and rods

BOC
A Member of The Linde Group

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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 STAINLESS STEEL 316LSi / 308LSi / 309LSi / 312 MIG AND 308L / 316L / 309L / 312 TIG SOLID WIRES

Article-no

Product / Article	Diameter(mm)	Packaging (kg)	Part Number
BOC MIG WIRE SS 316LSI	0.8	15	42938
	1.0	15	42939
	1.2	15	42940
	1.6	15	42941
	0.8	5	42942
	1.0	5	42943
	1.2	5	42944
BOC MIG WIRE SS 308LSI	0.8	15	42924
	1.0	15	42925
	1.2	15	42926
	1.6	15	42927
	0.8	5	42928
	1.0	5	42929
	1.2	5	42930
	0.8	15	42931
BOC MIG WIRE SS 309LSI	1.0	15	42932
	1.2	15	42933
	1.6	15	42934
BOC MIG WIRE SS 312	0.8	15	42935
	1.0	15	42936
	1.2	15	42937
BOC TIG WIRE SS 308L	1.6	5	42945
	2.4	5	42946
	3.2	5	42947
BOC TIG WIRE, SS 309L	1.6	5	42948
	2.4	5	42949
	3.2	5	42950
BOC TIG WIRE SS 316L	1.0	5	42954
	1.6	5	42955
	2.4	5	42956
	3.2	5	42957
BOC TIG WIRE SS 312	1.6	5	42951
,	2.4	5	42952
	3.2	5	42953
	1.0	5	61119

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 ISO 14343

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

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

ISO 14343	Fe %	C (max) %	Mn %	Si %	Cr %	Ni %	Mo %	Cu %
CAS Number	7439-89-6	7440-44-0	7439-96-5	7440-21-3	7440-47-3	7440-02-0	7439-98-7	7440-50-8
19 12 3 LSi	bal	0.03	1.0 to 2.5	0.65 to 1.2	18.0 to 20.0	11.0 to 14.0	2.5 to 3.0	0.5
19 9 LSi	bal	0.03	1.0 to 2.5	0.65 to 1.2	19.0 to 11.0	9.0 to 11.0	0.5	0.5
23 12 LSi	bal	0.03	1.0 to 2.5	0.65 to 1.2	22.0 to 25.0	11.0 to 14.0	0.5	0.5
29 9	bal.	0.15	1.0 to 2.5	1.0	28.0 to 32.0	8.0 to 12.0	0.5	0.5
19 12 3 L	bal	0.03	1.0 to 2.5	0.65	18.0 to 20.0	11.0 to 140	2.5 to 3.0	0.5
19 9 L	bal	0.03	1.0 to 2.5	0.65	19.0 to 21.0	9.0 to 11.0	0.5	0.5
23 12 L	bal	0.03	1.0 to 2.5	0.65	22.0 to 25.0	11.0 to 14.0	0.5	0.5

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.

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 (CO2), 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

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[1] 8hr TWA	STEL[2] 15min TWA
Iron oxide fume (as Fe)	1309-37-1	5	10
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 Water insoluble	7440-02-0	 0.1 0.5	
Copper Fume	7440-50-8	0.2	
Molybdenum compounds (as Mo) soluble insoluble	7439-98-7	 5 10	
Nitrogen dioxide	10102-44-0	0.5ppm[3]	0.95ppm[3]
Nitrogen monoxide	10102-43-9	0.5ppm[3]	0.63ppm[3]
Ozone	10028-15-6		0.2ppm[4]
Carbon dioxide	124-38-9	5000ppm	15000ppm
Carbon monoxide	630-08-0	30ppm	200ppm

[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 (2005) in the UK

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
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

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 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
Chromium VI compounds (as Cr)	1333-82-0	R45: May cause cancer R46: May cause heritable genetic damage R24/25Toxic 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
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	H314	Causes severe skin burns and eye

corrosion/irritation: Category 1A		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
Specific Target Organ Toxicity: Repeated exposure Category 2	H373	May cause damage to organs through prolonged or repeated exposure

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:
	Manganese: 0,55 mg/l
	Aluminiumoxide: >100 mg/l Selenastrum capricornatum (green algae)
Acute crustacean toxicity	EC50 Daphnia 48h:
	Manganese: 5,2 mg/l
	Aluminiumoxide: >100 mg/l Daphnia magna (Water flea)

12.2 Persistence and degradability

Not applicable

12.3 Bio accumulative potential

Bioconcentration factor (BCF):

Iron: 140000

Manganese: 59052

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

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. REGUATORY 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
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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