

Health and Safety

Stainless wire electrodes, filler wire/rods and strip electrodes

Material Safety Data Sheets

This safety data sheet complies with European Commission directive 93/112/EC, (OJEC No. L 314) and ISO 11014:1 1994(E).



1. Product and company identification

Product Identifier: Sandvik stainless wire electrodes, filler wire/rods and strip electrodes
 Application and Use: Gas-metal arc welding (GMAW)
 Gas tungsten-arc welding (GTAW)
 Plasma-arc welding (PAW)
 Submerged-arc welding (SAW)
 Electroslag Welding (ESW)
 Manufacturer/Supplier: AB Sandvik Steel
 SE-811 81 Sandviken
 Telephone number: +46 26-26 30 00

2. Composition /classification/information of ingredients

The elements listed in the table overleaf are defined in accordance with paragraph 2 (a-c) of the Commission Directive 93/112/EC Annex (TLV - threshold limit values according to ACGIH, hazard classification according to OJEC No. L 314)

3. Hazards identification

Avoid eye contact or inhalation of dust from the product. Skin contact is normally no hazard but should be avoided to prevent possible allergic reactions. Occupational exposure limits of components are described in paragraph No. 2. When this product is used in a welding process the most important hazards are heat, radiation, electrical shock and fumes.

Heat:

Spatter, melting metal and arc rays can cause burn injuries and start fires. Radiation: Arc rays can severely damage eyes or skin.

Shock:

Electrical shock can kill

Fumes:

Overexposure to welding fumes may result in symptoms like dizziness, nausea, dryness or irritation of the nose, throat or eyes. Chronic overexposure to welding fumes may affect pulmonary function.

4. First-aid measures

Inhalation: If breathing is difficult, provide fresh air and call physician.
 Eye contact: For radiation burns due to arc flash, see physician
 Skin contact: For skin burns from arc radiation, see physician
 General: Move to fresh air and call for medical aid

5. Fire fighting measures

No specific for welding consumables.

6. accidental release measures

Personal precautions: Refer to section 8.
 Environmental precautions: Refer to section 13.
 Methods for cleaning up: Refer to section 13.

7. Handling and storage

Handling:

Avoid exposure to welding fumes, radiation, spatter, electrical shock, heated materials and dust. Do not ingest. Handle with care to avoid stings and cuts. Spooled wire and strip can spring.

Storage:

Keep separate from chemical substances like acids which could cause chemical reactions.

Chemical compositions, cont.

Trade name Corresponds to Chemical composition (nominal), %

Sandvik	AWS ER	EN 12072 1996	C	Si	Mn	Pmax	Smax	Cr	Ni	Mo	Others
AUSTENITIC STAINLESS STEELS											
19.9.L	308L	19 9 L	<0.025	0.4	1.8	0.025	0.015	20	10	-	-
19.9.LSi	308LSi	19 9 Si	<0.025	0.9	1.8	0.025	0.015	20	10.5	-	-
19.9.Nb	347	19 9 Nb	0.03	0.4	1.3	0.025	0.015	19.5	9.5	-	Nb>12xC
19.9.NbSi	347Si	19 9 Nb Si	0.04	0.9	1.2	0.025	0.015	19.5	10	-	Nb>12xC
19.12.3.L	316L	19 12 3 L	<0.020	0.4	1.8	0.025	0.015	18.5	12.5	2.6	-
19.12.3.LSi	316LSi	19 12 3 L Si	<0.025	0.9	1.8	0.025	0.015	18.5	12.5	2.6	-
19.13.4.L	317L	19 13 4 L	<0.020	0.4	1.8	0.015	0.015	19	13.5	3.6	-
19.12.3.Nb	318	19 12 3 Nb	0.04	0.4	1.5	0.025	0.015	18.5	11.5	2.6	Nb>12xC
19.12.3.NbSi	"318Si"	19 12 3 Nb Si	0.04	0.9	1.2	0.025	0.015	18.5	12.5	2.6	Nb>12xC
18.8.Mn	(307)	18 8 Mn	0.08	0.9	7.0	0.025	0.015	18	8	-	-
18.8.CMn	"307C"	18 8 Mn	0.15	0.4	7.0	0.015	0.015	18	8	-	-
24.13.L	309L	23 12 L	<0.020	0.4	1.8	0.020	0.015	23.5	13.5	-	-
24.13.LNb	309LNb ¹⁾	1.4556	<0.020	0.3	2.1	0.015	0.015	24	12.5	-	Nb=0.8
24.13.LSi	309LSi	23 12 L Si	<0.025	0.9	1.8	0.025	0.015	23.5	13.5	-	-
24.13.LHF	309L	23 12 L	<0.015	0.3	1.8	0.015	0.015	24	13	-	-
24.13.Si	309Si	23 12 Si	0.09	0.9	1.8	0.025	0.015	23.5	13	-	-
22.15.3.L	(309LMo)	(23 12 2 L)	<0.025	0.4	1.5	0.025	0.015	21.5	15	2.7	-
25.20.C	310	25 20	0.12	0.3	1.8	0.015	0.015	26	21	-	-
29.9	312	29 9	0.10	0.4	1.8	0.025	0.015	30.5	9	-	-
SPECIAL PURPOSE GRADES											
22.8.3.L	2209	22 9 3 N L	<0.020	0.5	1.6	0.020	0.015	23	9	3.2	N=0.16
25.10.4.L	-	22 9 4 N L	<0.020	0.3	0.4	0.020	0.015	25	9.5	4.0	N=0.25
22.12.HT	-	(22 12 H)	<0.10	1.7	0.5	0.025	0.015	21	10	-	N=0.17, R.E.1)
28.34.HT	-	-	0.02	0.6	1.7	0.025	0.015	27.5	35	-	N=0.15 R.E. ²⁾
25.20.L	-	-	<0.020	0.2	1.8	0.015	0.015	24.5	20.5	<0.30	-
25.22.2.LMn	"310LMo"	25 22 2 N L	<0.020	<0.2	4.5	0.015	0.015	25	22	2.1	N=0.13
20.25.5.LCu	385	20 25 5 Cu L	<0.020	0.4	1.8	0.015	0.015	20	25	4.5	Cu=1.5
27.31.4.LCu	383	27 31 5 Cu L-	<0.020	<0.2	1.8	0.015	0.010	27	31	3.5	Cu=1.0
Sanicro 72HP	NiCr-3	-	<0.030	0.1	3.0	0.010	0.010	20	72.5	-	Ti=0.4, Nb=2.6, Fe<1.0
Sanicro 60	NiCrMo-3	-	<0.030	0.2	0.2	0.015	0.010	22	>60	9	Nb=3.5, Ti=0.2, Fe<1.0
STAINLESS CHROMIUM STEEL											
13HC	420 ¹⁾	-	0.32	0.1	0.3	0.015	0.015	14	-	-	-

¹⁾ AWS EQ

²⁾ Rare earth metals (lanthanides)

Ingredient: nickel

CAS No. 7440-02-01

TLV, mg/m³ 1

Hazard classification N.a.

R-phrases R40/R43

Warning symbol Xn

8. Exposure controls/personal protection

Engineering measures:

Ensure sufficient ventilation and exhaust at the arc, to keep the welding fumes and gases away from welders breathing zone. Keep working place and protective clothing clean and dry. Train welder to avoid contact with live electrical parts and insulate conductive parts. Check condition of protective clothing and equipment on a regular basis.

Personal protective equipment:

Use respirator or air supplied respirator when welding – brazing in a confined space. Wear hand, head, eyes and body protection like welders gloves, helmet or face shield with filter lens, safety boots, apron, arm and shoulder protection. Keep protective clothing clean and dry.

9. Physical and chemical properties

Appearance: Solid, non-volatile
 Odour: Odourless
 Colour: Metallic lustre
 Form: Wire diameter 0.6-5.0mm

10. Stability and reactivity

General:

This product is intended only for normal welding purposes.

Stability:

This product is stable under normal conditions.

Reactivity:

Contact with chemical substances like acids could cause generation of gas. Hazardous decomposition products includes those from the volatilisation, reaction or oxidation of the materials listed in section 2 and those from the base metal. Reasonably expected fume constituents of this product would include oxides of metals as iron, manganese, nickel and chromium. Reasonably expected gaseous products would include nitrogen oxides and ozone.

▼ **11. Toxicological information**

Inhalation of welding fumes and gases can be dangerous to your health. Classification of welding fumes is difficult because of varying base materials, coatings, air contaminations and processes.

Acute toxicity:

Overexposure to welding fumes may result in symptoms like dizziness, nausea, dryness or irritation of the nose, throat or eyes.

Chronic toxicity:

Overexposure to welding fumes may effect pulmonary function. Certain chromium and nickel compounds, like Cr 6+ are suspected of being cancer causing agents. Overexposure to manganese may affect the nervous system.

▼ **12. Ecological information**

No known harmful effects. No precautions are required. The preparation is normally inert in aqueous solutions.

▼ **13. Disposal considerations**

The preparation should be recycled to as large extent as possible since it is a valuable raw material in production of stainless steels. Information can be given by the supplier.

▼ **14. Transport information**

No international regulations or restrictions are applicable.

▼ **15. Regulatory information**

Read and understand the manufacturer's instructions, your employer's safety practices and the health and safety instructions on the label. Observe any federal and local regulations. Take precautions when welding and protect yourself and others. FUMES AND GASES can be dangerous to your health. ARC RAYS can injure eyes and burn skin. ELECTRIC SHOCK can kill. Keep your head out of the fumes. Use enough ventilation, exhaust at the arc, or both, to keep fumes and gases from your breathing zone, and the general area. Wear correct eye, ear and body protection. Do not touch live electrical parts.

WARNING:

Welding fumes and gases may be dangerous to your health. Avoid breathing the fumes and gases. Use adequate ventilation. Arc rays may injure eyes and burn skin. Use adequate protective equipment.

ADVERTISSEMENTE

Les gaz et les vapeurs de soudage peuvent présenter des risques pour la santé. Éviter de les respirer. Assurer une ventilation adéquate. Les arcs peuvent causer des blessures aux yeux ou des brûlures de la peau. Utiliser un équipement de protection adéquat.

WARNUNG:

Der Rauch dieses Schweißzusatzes enthält Chrom, Nickel und/oder Kobaltverbindungen. Schweißbrauche absaugen!

VARNING FÖR INANDNING AV SVETSRÖK

Medelhög akut giftighet. Risk för skador vid långvarig eller ofta upprepad inandning. Se till att ventilationen är god.

ADVARSEL MOT INNÅNDING AV SVEI SERÖYK OG GAS-SER

Fare ved innånding. Fare for langtidseffekter. Sørg for god ventilasjon.

VÄLTÄ HITSAUSSAVUJEN SISÄÄHENGGITÄMIS

Pitkäaikainen altistus voi olla haitallista. Huolehdi tuuletuksesta. Katso hitsauspuikon turvaohjelehte.

▼ **16. Other information**

Refer to:

USA

American National Standard Z49.1 "Safety in Welding and Cutting", American Welding Society, 550 North Le Jeune Road, Miami, Florida, 33135; OSHA Safety and Health Standards, 29CFR 1910, U.S. Gov. Printing Office, Washington, D.C. 20402; American Conference and Governmental Hygienists (ACGIH), Threshold Limit Values and Biological Exposure Indices, 6500 Glenway Ave., Cincinnati, Ohio 45211, USA.

UK

WMA Publication 236 and 237, "Hazards from Welding fume", "The arc welder at work some general aspects of health and safety", available from the manufacturer.

Germany

Unfallverhütungsvorschrift "Schweißen, Schneiden und verwandte Verfahren" (VBG 15).

Sandvik request the users of this product to study this SafetyData sheet (S.D.S.) and become aware of product hazards and safety information. To promote safe use of this product a user should:

- notify its employees, agents and contractors of the information on this S.D.S and any product hazards/safety information.
- furnish this same information to each of its customers for the product.
- request such customers to notify employees and customers from the same product hazards and safety information.

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