

MATERIAL SAFETY DATA SHEET

Stainless steel covered electrodes

1. IDENTIFICATION PREPARATION AND COMPANY

Product identifier: Stainless steel welding electrodes
Manufacturer/Supplier: Avesta Welding, P O Box 501, SE-774 27 Avesta, SWEDEN. Telephone number: +46 226 857 00.
Application and use: Manual Metal Arc Welding

Trade names

Avesta Welding	Type, EN ISO 3581
308L/MVR, 308L/MVR-2D, 308L/MVR-PW, 308L/MVR-4D, 308L/MVR-VDX, 308/308H, 308L/MVR rutil, 308L, 308L/MVR-NF, 308L/MVR Cryo, 347/MVNB, 316L/SKR, 316L/SKR-2D, 316L/SKR-PW, 316L/SKR-4D, 316L/SKR-VDX, 316/316H, 316L/SKR rutil, 316L, 316L/SKR-NF, 316L/SKR Cryo, 318/SKNb, 317L/SNR, SLR	Austenitic
LDX 2101, 2304, 2205, 2205-2D, 2205-4D, 2507/P100-4D	Austenitic-Ferritic
254 SFER, 904L-PW, 383, 254 SFER	Fully Austenitic
307, 309L, 309L bas, 309L-4D, P5, P5-2D, P5-PW, P5-PWX, P5-4D, P5 bas, P7	Special types
309, 310, 253 MA	Heat resisting

2. HAZARDS IDENTIFICATION

These products are not considered to be hazardous during transport. Gloves should be worn to protect the hands from getting contaminated by dust from the product. The products contain nickel, which is classified as allergenic and suspected to be carcinogenic. When these products are used in a welding process the following hazards are the most important.

Heat: Spatter, melting metals 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: Chronic overexposure to welding fumes may affect pulmonary functions.

3. INFORMATION ON INGREDIENTS

This product is manufactured by extruding a coating onto a stainless steel core wire.

Core wire composition: Iron alloy with up to 20% Cr, up to 7% Ni and up to 3% Mo.

Coating Ingredients:

	% (max)	CAS-No.	R-phrase	IARC ⁽²⁾
Mn	17	7439-96-5	N.A	
Cr	20	7440-47-3	N.A	
Ni	32	7440-02-0	Canc3; R40 R43	2B
Mo	7	7439-98-7	N.A	
Nb	5	7440-03-1	N.A	
Fe	Bal.	7439-89-6	N.A	
Al ₂ O ₃	10	1344-28-1	N.A	
TiO ₂	40	13463-67-7	N.A	2B
Fluorides	33	7789-75-5	N.A	
Limestone	37	1317-65-3	N.A	
Quartz	25	14808-60-7	N.A	1

⁽¹⁾ R-phrase classification according to EU directive 67/548/EEG.

⁽²⁾ Classification according to Int. Agency for Research on Cancer, 1 – Carcinogenic to humans. 2B – Possibly carcinogenic to humans.

4. FIRST AID MEASURES

General: Move to fresh air and call for medical aid.

Inhalation: If breathing is difficult, provide fresh air and call physician.

Eye contact: For radiation burns due to arc flash, seek medical attention.

Skin contact: For skin burns from arc radiation, seek medical attention.

5. FIRE-FIGHTING MEASURES

No specific for welding consumables.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Chapter 8.

Environmental precaution: Chapters 12 and 13.

Methods for cleaning: Chapter 13.

7. HANDLING AND STORAGE

Handling: Do not ingest. Handle with care to avoid stings and cuts.

Storage: Store in original packaging. Keep separate from chemical substances like acids, which could cause chemical reactions.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering measures: Ensure sufficient ventilation and exhaust at the arc, to keep the welding fumes and gases away from welder's 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 in a confined space. Wear hand, head, eyes and body protection like welder's gloves, helmet or face shield with filter lens, safety boots, apron, arm and shoulder protection. Keep protective clothing clean and dry.

Limits for Sweden*

Substance	Hygiene threshold value**	
	Total	Respirable
Mn	0,2	0,1
Cr (som Cr ⁶⁺)	0,005	
Ni	0,5	
Mo	10	5
Fe (as iron oxide)		3,5
Al ₂ O ₃	5	2
TiO ₂	5	
Fluorides (as F)	2	
Quartz		0,1

*Contact Avesta Welding for other national limits

**According to AFS 2005:17. Level limits in mg/m³.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Solid, non-volatile.

Odour: Odourless.

Colour: Varying. Normally grey, green, or red coating.

Solubility in water: Insoluble.

Melting point: >1300°C.

10. STABILITY AND REACTIVITY

General: This product is intended for normal welding purposes.

Stability: Stable under normal conditions.

Reactivity: May react in contact with strong acids to release gaseous acid decomposition products. Fume is produced during welding. Expected fume constituents include oxides of metal as iron, manganese, nickel and chromium. Expected gaseous products would include carbon oxides, nitrogen oxides and ozone. Contamination, dirt, surface protections, paint or primer on the base material can affect the composition of the fumes. The amount of welding fumes developed in manual metal arc welding is depending on the welding parameters and the electrode diameter. Normally, the amount of fumes will not exceed 5–15 g/kg electrode.

Fume composition, %

Mn	Fe	Cr	Ni	Cu	F	Pb
< 11	< 20	< 13	< 4	< 0,6	< 20	< 0,1

11. TOXICOLOGICAL INFORMATION

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

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

Chronic toxicity: Overexposure to welding fumes and dust may affect pulmonary function. Welding fumes and dust may contain chromium and nickel compounds, e.g. Cr⁶⁺, which are suspected of being cancer causing agents.

Dermatological toxicity: Nickel is classified as a skin sensitizer. Can cause skin sensitisation in susceptible individuals through prolonged contact with the skin.

12. ECOLOGICAL INFORMATION

Welding consumables and materials could degrade into components originating from the consumables or from the materials used in the welding process.

13. DISPOSAL CONSIDERATIONS

Surplus and scrap (waste) are valuable commodities that can be reused. Products, surplus and packaging should, if possible, be recycled or discarded in full compliance with federal and local regulations.

14. TRANSPORT INFORMATION

No international regulations or restrictions are applicable.

15. REGULATORY INFORMATION

Classification of Nickel

Risk phrases R40. Limited evidence of a carcinogenic effect.
R43. May cause sensitisation by skin contacts.

Safety phrases S23. Do not breathe fumes.
S36/37/38. Wear protective clothing.
S51. Use only well ventilated areas.

Warning text on label:



WARNING: Fumes and gases can be hazardous to your health. Arc rays can injure your eyes and burn skin. Electric shock can kill. Read and understand the manufacturer's instructions and your employer's safety practices. 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.

This product contains or produces a chemical known to the State of California to cause cancer and/or birth defects (or other reproductive harm). (California Health and Safety Code § 25249.5 et seq.)

WARNUNG: Schützen Sie sich und andere. Lesen und beachten Sie diese Einweise. Rauch und Gase können Ihre Gesundheit gefährden. Lichtbogenstrahlung kann Ihre Augen verletzen und Ihre Haut verbrennen. Lesen und beachten Sie die Hinweise des Herstellers und die Sicherheitsanweisungen Ihres Arbeitgebers. Sorgen Sie für ausreichende Belüftung und Absaugung an der Schweißstelle, um Rauch und Gase von Ihrem Atem- und Arbeitsbereich fernzuhalten. Tragen Sie einen ausreichenden Augen-, Ohren- und Körperschutz. Berühren Sie keine aktiven elektrischen Teile. Beachten Sie verfügbare nationale Veröffentlichungen mit Sicherheitsempfehlungen.

WARNING: Iakttag försiktighet vid svetsning. Observera arbetsgivarens säkerhetsföreskrifter, vilka ska överensstämma med svensk lag och vara baserade på uppgifter från leverantören.

VÄLTÄ HITSAUSSAVUJEN SISÄÄNHENGITTÄMISTÄ: Pitkää aikainen altistus voi olla haitallista. Huolehdi tuuletuksesta. Katso hitsauslisäaineen turvaohjelehtiä.

WAARSCHUWING: Neem uw voorzorgen bij het lassen, ventileer de gebruikruimte. Raadpleeg de veiligheidsvoorschriften van uw werkgever die moeten overeenstemmen met de nationale wetten/reglementen en die moeten gebaseerd zijn op de gegevens beschikbaar bij uwleverancier.

ADVERTENCIA: Utilizar sistemas de extracción de aire. Los humos y los gases pueden ser peligrosos para la salud. Leer con atención las instrucciones y utilizar los elementos de protección adecuados.

AVERTISSEMENT: Utiliser une ventilation. Les fumées et les gaz peuvent être dangereux pour votre santé. Lire et suivre les instructions du fabricant et les règles de sécurité de votre employeur.

ATTENZIONE: Durante l'impiego assicurarsi che la zona di lavoro, sia sufficientemente aerata. Fumi e gas possono essere nocivi per la salute. Leggere attentamente le istruzioni del produttore e attenersi alle disposizioni di sicurezza del vostro datore di lavoro.

16. OTHER INFORMATION

We 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 of 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".

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

Avesta Welding requests the users of this product to study this Safety Data Sheet and become aware of product hazards and safety information. The information given in this safety data sheet is based on the present level of our knowledge and experience. The data sheet describes the products with respect to safety requirements. The data given is not intended as a confirmation of product properties and does not constitute a legal contractual relationship, nor should it be used as basis for ordering these products.