

Date of issue: June 2005 (Issue 2: Rev 4)
 In accordance with: Commission Directive 93/112/EEC and Statutory Instrument 1994 No 3247
 Document: Avesta Welding MSDS LR116-02

1. IDENTIFICATION OF PREPARATION AND COMPANY

Product identifier: Avesta Stainless Steel Flux Core Wire
Manufacturer/Supplier: Avesta Welding AB, P O Box 501, SE-774 27 AVESTA, SWEDEN
 Telephone number: +46 226 81500
Application and use: Flux Cored Arc Welding

Trade names:

| Avesta Welding | Type, EN 12073 |
|--|---------------------|
| FCW 308L, FCW-2D 308L/MVR, FCW-3D 308L/MVR, FCW 308L-PW, FCW 308H, FCW 347, FCW 316L, FCW-2D 316L/SKR, FCW-3D 316L/SKR, FCW 316L-PW, FCW-3D 317L/SNR, FCW 317L | Austenitic |
| FCW-2D LDX 2101, FCW-2D 2304, FCW 2205, FCW 2205-H, FCW 2205-PW, FCW-2D 2205 | Austenitic-Ferritic |
| FCW-2D 307, FCW 309L, FCW 309L-PW, FCW-2D 309L, FCW-3D 309L, FCW P5, FCW-2D P5, FCW-3D P5 | Special types |

2. INFORMATION OF INGREDIENTS

This product is manufactured by forming a stainless steel strip to a tube subsequently filled with a core of flux and metals.

Stainless strip: Iron alloy with up to 20% Cr, up to 12% Ni and up to 3% Mo.

Core Ingredients:

| | Weight, % (max) | Cas No. | Danger symbol | R-phrase | TLV (mg/m) |
|--------------------------------|-----------------|------------|----------------|----------|------------|
| Mn | 10 | 7439-96-5 | - | N.A. | 5 |
| Cr | 40 | 7440-47-3 | - | N.A. | 0.5 |
| Ni | 20 | 7440-02-0 | X _n | R40/R43 | 1 |
| Mo | 15 | 7439-98-7 | - | N.A. | 5 |
| Nb | 5 | 7440-03-1 | - | N.A. | - |
| Fe | Bal | 7439-89-6 | - | N.A. | 5 |
| Al ₂ O ₃ | 10 | 1344-28-1 | - | N.A. | 10 |
| TiO ₂ | 30 | 13463-67-7 | - | N.A. | 10 |
| Fluorides | 5 | 7789-75-5 | - | N.A. | 2.5 |
| Limestone | 37 | 1317-65-3 | - | N.A. | 10 |
| Quartz | 10 | 14808-60-7 | - | N.A. | 0.1 |

*) Threshold Limit Values acc. to ACGIH "hazard classification OJEC L314".

3. HAZARDS IDENTIFICATION

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.

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. Spooled wire can spring.

Storage: Stored 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 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 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: Greyish.

Solubility in water: Insoluble.

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.

Fume composition (wt %):

| 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 sensitiser. 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. REGULARITY INFORMATION

Products with nickel equal to or exceeding 1% are classified, but are not required to be labelled by virtue of their massive non-hazardous form - preventing inhalation, ingestion and prolonged, continuous contact.

Classification of Nickel

| | |
|-----------------|---|
| Risk phrases: | R40 Limited evidence of a carcinogenic effect |
| | R43 May cause sensitisation by skin contacts |
| Safety phrases: | S22 Do not breathe dust |
| | S36 Wear protective clothing |



Warning text on label:

WARNING: Protect yourself and others. Read and understand this label. FUMES AND GASES can be dangerous to your health. ARC RAYS can injure and burn skin. ELECTRIC SHOCK can kill.

Read and understand the manufacturer's instructions and 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 away from 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 (and other states if applicable) to cause cancer.

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 INNÅNDNING AV SVEISERØYK OG GASSER: Fare ved innåndning. Fare for langtidseffekter. Sørg for god ventilasjon.

VÄLTÄ HITSAUSSAVUJEN SISÄÄNHENGITTÄMISTÄ: Pitkäaikainen altistus voi olla haitallista. Huolehdi tuuletuksesta. katso hitsauspuikon turvaohjelehteä.

SCHWEISSRAUCH: Wir empfehlen bei dauerndem Schweißbetrieb Punktabsaug einzusetzen. Für gute Belüftung in geschlossenen Räumen sollte gesorgt werden.

ADVERTISSEMENT: Prenez des précaution lorsque soudez. Observez les instructions de sécurité de votre employeur qui doivent être conformes aux lois et règlements nationaux et basées sur les données disponibles chez votre fournisseur.

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)

We also refer to Outokumpu Stainless' Product Health and Safety Data Sheet.

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.

