



## PRODUCT HEALTH AND SAFETY DATA SHEET

Date of issue: June 1997 (Issue 1: Rev 1)  
In accordance with: Commission Directive 93/112/EEC and  
Statutory Instrument 1994 No 3247  
Document: Avesta Welding MSDS 2:4 Inf. nr. 9750

### NICKEL BASE WELDING WIRE

#### 1. PRODUCT AND COMPANY IDENTIFICATION

Product identifier: Avesta Stainless Welding Wire  
Application and use: Arc Welding  
Trade name/ synonyms:

Avesta	Classification:
	EN not released      AWS A5.14
P10	-      ENiCrFe-3
P12	-      ENiCrMo-12
P12-0 <sup>Nb</sup>	-      -
P16	-      -

Manufacturer / Supplier: Avesta Welding AB  
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SWEDEN  
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#### 2. COMPOSITION/INFORMATION ON INGREDIENTS

Nickel alloy with      up to 24% Cr  
                                 up to 84% Ni  
                                 up to 18% Mo  
                                 up to 4% Nb  
                                 up to 8% Fe.

Other elements may be present, such as Si, Cu, Nb. These are not classified as hazardous, or are below the concentration levels for classification of these alloys as hazardous, and are not subject to recognised exposure limits.

Details of classified substances contained:  
CAS no. (index no.): 7440-02-01 (028-002-00-7).  
Material name: Nickel.  
Proportion value unit: Up to 84%.  
Danger symbol: Xn.  
R-phrases: R40 / R43.

#### 3. HAZARDS IDENTIFICATION

Avoid eye contact or inhalation of dust from the product. Skin contact is normally not a hazard but should be avoided to prevent possible allergic reactions. Occupational exposure limits of components are described in paragraph no.15. 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: Chronic over exposure 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

Not specific for welding consumables.

#### 6. ACCIDENTAL RELEASE MEASURES

Not applicable.

#### 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 sticking and cuts. Spooled wire can spring.

Storage:  
Keep separate from chemical substances - e.g. 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 the welders breathing zone. Keep working place clean and dry. Train welders to avoid contact with live electrical parts. 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. These involve welders gloves, helmet or face shield with filter lens, safety boots, apron, arm and shoulder protection. Keep protective clothing clean and dry.

#### Current Swedish Occupational Exposure Limits, AFS 1993:9

	Exposure Limits (NGV)
Iron oxide, (as Fe)	0,05 mg/m <sup>3</sup>
Manganese and inorganic compounds, (as Mn), total dust	1 mg/m <sup>3</sup>
Manganese and inorganic compounds, (as Mn), breathable dust	0,5 mg/m <sup>3</sup>
Chromium metal and inorganic compounds except chromate and chromic acid, (as Cr)	0,5 mg/m <sup>3</sup>
Chromates, (as Cr)	0,02 mg/m <sup>3</sup>
Chromic acid, (as Cr)	0,02 mg/m <sup>3</sup> (1)
Nickel, metal	0,5 mg/m <sup>3</sup>
Nickel compounds, oxide, carbonate and soluble compounds, (as Ni)	0,1 mg/m <sup>3</sup>
Molybdenum, metal and insoluble compounds, total dust	10 mg/m <sup>3</sup>
Molybdenum, metal and insoluble compounds, breathable dust	5 mg/m <sup>3</sup>
Molybdenum, soluble compounds	5 mg/m <sup>3</sup>
Vanadium oxide, (as V), total dust	0,2 mg/m <sup>3</sup>
Vanadium oxide, (as V), breathable dust	- (2)

(1) = Short term value (KTV): 0,06 mg/m<sup>3</sup>; (2) = Upper exposure limit (TGV): 0,05 mg/m<sup>3</sup>.

#### 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Solid, non-volatile. Wire or rod ranging in diameter 0,8 to 4,0 mm.  
Odour: Odourless  
Colour: Greyish.  
Melting: 1400-1520°C.  
Solubility in water: Insoluble.

## 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 materials listed in section 2 and those from the base metal and coating.

Reasonably expected fume constituents of this product would include oxides of metals as iron, manganese and chromium. Reasonably expected gaseous products would include carbon oxides, 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 contamination's and processes.

**Acute toxicity:** Overexposure to welding fumes may result in symptoms of 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<sup>VI</sup> are suspected of being cancer causing agents. Overexposure of manganese may affect the nervous system.

## 12. ECOLOGICAL INFORMATION

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

## 13. DISPOSAL CONSIDERATIONS

Discard any product, residue, disposable container or liner in an environmentally acceptable manner. This must be done in full compliance with federal and local regulations.

## 14. TRANSPORT INFORMATION

No international regulations or restrictions are applicable.

## 15. REGULATORY INFORMATION

Products with a specified nickel content less than 1% are not classified "as dangerous for supply" under the Chemicals (Hazard Information and Packaging) Regulations 1993 or EEC Directive 67/548/EEC.

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.

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 eyes 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.

## Exposure Limits

There are no exposure limits for stainless steels. Limits are applicable for some constituent element and their compounds (see section 8) ; these elements may be contained in dust and fume during welding.

## Regulations

**NICKEL:**

Index No: 028-002-00-7

Classification: Carc. Cat. 3; R40 possible risk of irreversible effects x; R43 may cause sensitisation by skin contact.

Hazard Detail: Xn; R40-43

Safety Phrases: S-22 Do not breathe dust

S-36 Wear suitable protective clothing

## 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 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", available from the manufacturer.

**Germany:** Unfallverhütungsvorschrift "Schweissen, Schneiden und verwandte Verfahren" (VBG 15)

We also refer to Avesta Sheffield's Product Health and Safety Data Sheet.

Avesta Welding request 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 or availability and does not constitute a legal contractual relationship, nor should it be used as basis for ordering these products.



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