

## SAFETY DATA SHEET

*This Safety Data Sheet complies with Annex  
II of 830/2015 amending EC No.  
1907/2006, Commission Regulation (EU)  
2020/878 amending CLP directive  
1272/2008, also in accordance with ISO  
11014-1 and ANSI Z400.1*

Issued: 2023-05-30



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## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

#### Trade name

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### 1.2. Relevant identified uses of the substance or mixture and uses advised against

#### Relevant identified uses

Arc Welding

### 1.3. Details of the supplier of the safety data sheet

#### SDS created by

Product Stewardship & Sustainability Team

#### Supplier

ESAB Welding & Cutting Products

Street address

801 Wilson Ave.

Hanover, PA 17331

Hanover

USA

Telephone

1-717-637-8911

Email

us.technical.fillermetals@esab.com

Fax

1-717-630-3458

Web site

www.esabna.com

### 1.4. Emergency telephone number

+1 703-741-5970 & 1-800-424-9300

#### Available outside office hours

Yes

#### Poison center/Additional emergency number

1-800-222-1222; +56 2 2 247 3600 - American Association of Poison Control Centers

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### Other

Classification(s): EN ISO 14171-A: S2Si  
SFA/AWS A5.17: EM12K

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

#### Description

The product is not classified as hazardous according to applicable GHS hazard classification criteria.

### 2.2. Label elements

Labeling according to Regulation (US HCS) 29 CFR 1910.1200

### 2.3. Other hazards

This product contains nickel, which is classified as toxic by prolonged inhalation, a skin sensitizer and a suspect carcinogen. Skin contact is normally no hazard but should be avoided to prevent possible allergic reactions.

The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0.1 %

Persons with a pacemaker should not go near welding or cutting operations until they have consulted their doctor and obtained information from the manufacturer of the device.

When this product is used in a welding process, the most important hazards are welding fumes, heat, radiation and electric shock.

Fumes: Overexposure to welding fumes may result in symptoms like metal fume fever, dizziness, nausea, dryness or irritation of the nose, throat or eyes. Chronic overexposure to welding fumes may affect pulmonary function. Overexposure to manganese and manganese compounds above safe exposure limits can cause irreversible damage to the central nervous system, including the brain, symptoms of which may include slurred speech, lethargy, tremor, muscular weakness, psychological disturbances and spastic gait.

Heat: Spatter and melting metal can cause burn injuries and start fires.

Radiation: Arc rays can severely damage eyes or skin.

Electricity: ELECTRIC SHOCK can kill.

### Other

Emergency Overview: Metal wire or rods in varying colours. This product is normally not considered hazardous as shipped. Gloves should be worn when handling to prevent cuts and abrasions.

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## SECTION 3: Composition/information on ingredients

### 3.2. Mixtures

Chemical name	CAS No. EC No. REACH No. Index No.	Concentration	Classification	H-phrase M factor acute M factor chronic	Note
IRON(REACH Registered)	7439-89-6 231-096-4 - -	95 - 100%	-	- - -	-
MANGANESE	7439-96-5 231-105-1 - -	1 - 2%	-	- - -	-
SILICON.	7440-21-3 231-130-8 - -	0 - 0.5%	-	- - -	-
COPPER	7440-50-8 231-159-6 - -	0 - 0.3%	-	- - -	-
CHROMIUM	7440-47-3 231-157-5 - -	0 - 0.15%	-	- - -	-
NICKEL**	7440-02-0 231-111-4 - -	0 - 0.15%	Skin Sens. 1, Carc. 2, STOT RE 1	H317, H351, H372 - -	-

**Product based on**

This product is a continuous solid metal wire.

**Substance additional information**

For the complete text of H- / EUH-statements mentioned in this section, see section 16.

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## SECTION 4: First aid measures

### 4.1. Description of first aid measures

Electric shock: Disconnect and turn off the power. Use a nonconductive material to pull victim away from contact with live parts or wires. If not breathing, begin artificial respiration, preferably mouth-to-mouth. If no detectable pulse, begin Cardio Pulmonary Resuscitation (CPR). call emergency physician to the scene of the accident.

#### Inhalation

If breathing has stopped, perform artificial respiration and obtain medical assistance immediately! If breathing is difficult, provide fresh air and call physician.

#### Skin contact

For skin burns from arc radiation, promptly flush with cold water. Get medical attention for burns or irritations that persist. To remove dust or particles wash with mild soap and water

#### Eye contact

For radiation burns due to arc flash, see physician. To remove dusts or fumes flush with water for at least fifteen minutes. If irritation persists, obtain medical assistance.

### 4.2. Most important symptoms and effects, both acute and delayed

No data available

### 4.3. Indication of any immediate medical attention and special treatment needed

No data available

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

#### Suitable extinguishing media

No specific recommendations for welding consumables. Welding arcs and sparks can ignite combustible and flammable materials. Use the extinguishing media recommended for the burning materials and fire situation.

### 5.2. Special hazards arising from the substance or mixture

No data available

### 5.3. Advice for firefighters

#### Special protective equipment for fire-fighters

Wear self-contained breathing apparatus as fumes or vapors may be harmful.

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## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

Wear hand, head, eyes, ear 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.

### 6.2. Environmental precautions

Refer to section 13.

### 6.3. Methods and material for containment and cleaning up

Solid objects may be picked up and placed into a container. Liquids or pastes should be scooped up and placed into a container. Wear proper protective equipment while handling these materials. Do not discard as refuse.

### 6.4. Reference to other sections

Refer to section 8/13

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

#### Preventive handling precautions

Handle with care to avoid stings and cuts. Wear gloves when handling welding consumables. Avoid exposure to dust. Do not ingest. Some individuals can develop an allergic reaction to certain materials. Retain all warning and identity labels.

### 7.2. Conditions for safe storage, including any incompatibilities

Keep separate from chemical substances like acids and strong bases, which could cause chemical reactions.

### 7.3. Specific end use(s)

Arc Welding

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### Exposure limits

Use industrial hygiene monitoring equipment to ensure that exposure does not exceed applicable national exposure limits. The following limits can be used as guidance. Unless noted, all values are for 8 hour time weighted averages (TWA).

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### National occupational exposure limits

Ingredient	CAS No. EC No.	Exposure limit ppm / mg/m <sup>3</sup>	Ceiling expos- ure limit ppm / mg/m <sup>3</sup>	Source	Remark	Year
COPPER	7440-50-8 231-159-6	- 1	- -	OSHA	as Cu(dust,mist)	2019
MANGANESE	7439-96-5 231-105-1	- -	- 5	OSHA	as Mn (metal and fume)	2019
COPPER	7440-50-8 231-159-6	- 0.1	- -	OSHA	as Cu(fume)	2019
IRON(REACh Registered)	7439-89-6 231-096-4	- -	- -	OSHA	No PEL	2019
MANGANESE	7439-96-5 231-105-1	- 0.02	- -	ACGIH	as Mn	2019
COPPER	7440-50-8 231-159-6	- 0.2	- -	ACGIH	Fume (as Cu)	2019
COPPER	7440-50-8 231-159-6	- 0.1	- -	ACGIH	Cotton dust	2019
IRON(REACh Registered)	7439-89-6 231-096-4	- -	- -	ACGIH	-	2019
MANGANESE	7439-96-5 231-105-1	- 0.1	- -	ACGIH	for elemental and inorganic com- pounds	2019
COPPER	7440-50-8 231-159-6	- 1	- -	ACGIH	Dusts and mists (as Cu)	2019
SILICON.	7440-21-3 231-130-8	- -	- -	ACGIH	-	2019
CHROMIUM	7440-47-3 231-157-5	- 0.0002	- -	ACGIH	Chromium (VI) com- pounds	2019
NICKEL**	7440-02-0 231-111-4	- 1.5	- -	ACGIH	elemental	2019
NICKEL**	7440-02-0 231-111-4	- 0.1	- -	ACGIH	soluble inorganic compounds	2019
SILICON	7440-21-3 231-130-8	- 5	- -	OSHA	Respirable Fraction	2019
CHROMIUM	7440-47-3 231-157-5	- 0.03	- -	ACGIH	Water Soluble, Chromium (III) com- pounds (as Cr)	2019
CHROMIUM	7440-47-3 231-157-5	- 0.0005	- -	ACGIH	Water Soluble, Chromium (VI) com-	2019

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Ingredient	CAS No. EC No.	Exposure limit ppm / mg/m <sup>3</sup>	Ceiling exposure limit ppm / mg/m <sup>3</sup>	Source	Remark	Year
					pounds	
NICKEL**	7440-02-0 231-111-4	- 0.2	- -	ACGIH	insoluble inorganic compounds	2019
SILICON	7440-21-3 231-130-8	- 15	- -	OSHA	Total dust	2019
CHROMIUM	7440-47-3 231-157-5	- 1	- -	OSHA	as Metal	2019
NICKEL**	7440-02-0 231-111-4	- 1	- -	OSHA	as Ni	2019
CHROMIUM	7440-47-3 231-157-5	- 0.5	- -	OSHA	as Cr(Cr(II) and Cr(III) inorganic compds)	2019

## 8.2. Exposure controls

### Hand protection

Abrasion (Cycles):(Type A-2 (500));(Type B-1 (100)); Cut (Factor):(Type A-1 (1.2));(Type B-1 (1.2)); Tear (Newton):(Type A-2 (25));(Type B-1 (10)); Puncture (Newton):(Type A-2 (60));(Type B-1 (20)); Burning Behaviour:(Type A-3);(Type B-2); Contact Heat:(Type A-1);(Type B-1); Convective Heat:(Type A-2);(Type B-); Small Splashes:(Type A-3);(Type B-2); Dexterity:(Type A-1 (11));(Type B-4 (6.5))

Type B gloves are recommended when high dexterity is required as for TIG welding, while type A gloves are recommended for other welding processes. The contact temp (oC) is 100 and the threshold time (seconds) >15.

### **Other**

Avoid exposure to welding fumes, radiation, spatter, electric shock, heated materials and dust. Train welders to avoid contact with live electrical parts and insulate conductive parts.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

#### Physical state

Solid, non-volatile with varying color.

#### Colour

No data available

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### **Odour**

No data available

### **Melting point / freezing point**

>1000°C / >1800°F

### **Boiling point or initial boiling point and boiling range**

No data available

### **Flammability**

No data available

### **Lower and upper explosion limit**

No data available

### **Flash point**

No data available

### **Auto-ignition temperature**

No data available

### **Decomposition temperature**

No data available

### **pH**

No data available

### **Kinematic viscosity**

No data available

### **Solubility**

No data available

### **Partition coefficient n-octanol/water**

No data available

### **Vapour pressure**

No data available

### **Density and/or relative density**

No data available

### **Relative vapour density**

No data available

### **Particle characteristics**

No data available



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## 9.2. Other information

No data available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Non Reactive unless gets in contact with chemical substances like acids or strong bases could cause generation of gas

### 10.2. Chemical stability

Stable at normal conditions

### 10.3. Possibility of hazardous reactions

No data available

### 10.4. Conditions to avoid

This product is only intended for normal welding purposes.

### 10.5. Incompatible materials

No data available

### 10.6. Hazardous decomposition products

When this product is used in a welding process, hazardous decomposition products would include those from the volatilization, reaction or oxidation of the materials listed in Section 3 and those from the base metal / Coated wire / Coated rod / Bare wire / Bare rod.

### Other

Refer to applicable national exposure limits for fume compounds, including those exposure limits for fume compounds found in Section 8.

Manganese has a low exposure limit, in some countries, that may be easily exceeded.

Reasonably expected gaseous products would include carbon oxides, nitrogen oxides and ozone. Air contaminants around the welding area can be affected by the welding process and influence the composition and quantity of fumes and gases produced.

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## SECTION 11: Toxicological information

### 11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

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 and processes. The International Agency for Research on Cancer has classified welding fumes as carcinogenic to humans (Group 1).

#### **Acute toxicity**

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

#### **Skin corrosion/irritation**

No data available.

#### **Serious eye damage/irritation**

No data available.

#### **Respiratory or skin sensitisation**

No data available.

#### **Germ cell mutagenicity**

No data available.

#### **Genotoxicity**

No data available.

#### **Carcinogenicity**

No data available.

Product / Substance name CAS / EC no.	Other
NICKEL ** 7440-02-0 / 231-111-4	**This product contains substance(s) that may cause cancer, which is/are classified as Possibly carcinogenic to humans as per IARC. This product can expose you to Nickel which is known to the State of California to cause cancer. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a> .

#### **Repeated dose toxicity**

No data available.

#### **Reproductive toxicity**

No data available.

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### STOT-single exposure

No data available.

### STOT-repeated exposure

No data available.

### Aspiration hazard

No data available.

## 11.2. Information on other hazards

No data available

## SECTION 12: Ecological information

### 12.1. Toxicity

#### Acute toxicity

No data available.

#### Toxicity

No data available.

#### Aquatic

No data available.

#### Soil

No data available.

#### Acute fish toxicity

No data available.

#### Acute algae toxicity

No data available.

#### Acute crustacean toxicity

No data available.

#### Chronical toxicity

No data available.

### 12.2. Persistence and degradability

No data available.

#### Decay/transformation

No data available.

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### 12.3. Bioaccumulative potential

No data available.

### 12.4. Mobility in soil

#### Mobility

No data available.

### 12.5. Results of PBT and vPvB assessment

No data available.

### 12.6. Endocrine disrupting properties

No data available

### 12.7. Other adverse effects

#### Other adverse effects

No data available.

### Other

Welding consumables and materials could degrade/weather into components originating from the consumables or from the materials used in the welding process. Avoid exposure to conditions that could lead to accumulation in soils or groundwater.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

#### Disposal considerations

Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal and local regulations. Use recycling procedures if available.

USA RCRA: Unused products or product residue containing chromium is considered hazardous waste if discarded, RCRA ID Characteristic Toxic Hazardous Waste D007.  
(<https://rcrapublic.epa.gov/rcrainfoweb/action/main-menu/view>)

Residues from welding consumables and processes could degrade and accumulate in soils and groundwater.

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## 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. Maritime transport in bulk according to IMO instruments

Not applicable

## SECTION 15: Regulatory information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

#### EU regulations

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.

Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006

Commission Regulation (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

DIRECTIVE 2008/98/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL. of 19 November 2008. on waste and repealing certain Directives.

European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste.

#### National regulations

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No data available

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### Other regulations, limitations and legal regulations

Poland Regulations:

ACT of 25 February 2011 on the chemical substances and their mixtures (OJ # 63, poz. 322).

Regulation of the Minister of Family, Labour and Social Policy of 12th June 2018 on the Maximum Admissible Concentrations and Intensities of Harmful to Health Agents in the Working Environment (Dz. U. No 1286)

The Act on Waste of 14 December 2012, Journal of Laws of 2013, item 21 with amendments

Act of 13th June 2013 on packaging management and packaging waste (Journal of Laws of 2013, item 888).

Regulation of the Minister of the Environment of 9 December 2014 on waste catalogue (Journal of Laws of 2014, item 1923).

Regulation of the Minister of Economy of 21 December 2005. Concerning essential requirements for personal protective equipment (Journal. Laws No. 259, item. 2173).

Regulation of the Minister of Health of 2 February 2011 on tests and measurements of factors harmful to health in the working environment (the Journal of Laws 2011, no. 33, item 166).

USA Regulations :

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

CERCLA/SARA Title III Reportable Quantities (RQs) and/or Threshold Planning Quantities (TPQs): Product is a solid solution in the form of a solid article. Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center and to your Local Emergency Planning Committee.

EPCRA/SARA Title III 313 Toxic Chemicals: The following metallic components are listed as SARA 313 "Toxic Chemicals" and potential subject to annual SARA 313 reporting. See Section 3 for weight percent.

Chromium: 1.0% de minimis concentration

Manganese: 1.0% de minimis concentration

Nickel: 0.1% de minimis concentration

Copper: 1.0% de minimis concentration

International Inventories:

Australia: The substance(s) in this product is/are in compliance with the inventory requirements of Australia- Inventory of Industrial Chemicals (AIIC)

United States EPA Toxic Substance Control Act: All constituents of this product are on the TSCA

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inventory list under active substances

Canadian Environmental Protection Act (CEPA): All constituent(s) of this product is/are on the Domestic Substance List (DSL).

### 15.2. Chemical safety assessment

Not Available

### Other

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.

WARNING: Welding fumes and gases are hazardous to your health and may damage lungs and other organs. Use adequate ventilation. ELECTRIC SHOCK can kill.

ARC RAYS and SPARKS can injure eyes and burn skin.

## SECTION 16: Other information

### Changes to previous revision

This Safety Data Sheet has been revised due to modification(s) to section(s) 1-16 Latest Revision of SDS as per Regulation and exposure limits – January 2023

### References to key literature and data sources

www.esab.com Refer to ESAB "Welding & Cutting - Risks and Measures", F52-529 "Precautions and Safe Practices for ARC WELDING, CUTTING & GOUGING" and F2035 "Precautions and Safe Practices for Gas Welding, Cutting and Heating" available from ESAB Website.

### Phrase meaning

Skin Sens. 1 - Skin sensitisation, hazard category 1

Carc. 2 - Carcinogenicity, hazard category 2

STOT RE 1 - Specific Target Organ Toxicity — Repeated exposure, hazard category 1

H317 May cause an allergic skin reaction.

H351 Suspected of causing cancer.

H372 Causes damage to organs through prolonged or repeated exposure .?.



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## Other

### Additional information

USA: Contact ESAB at [www.esabna.com](http://www.esabna.com) or 1-800 ESAB-123 if you have any questions about this SDS. American National Standard Z49.1 "Safety in Welding and Cutting", ANSI/AWS F1.5 "Methods for Sampling and Analyzing Gases from Welding and Allied Processes", ANSI/AWS F1.1 "Method for Sampling Airborne Particles Generated by Welding and Allied Processes", AWSF3.2M/F3.2 "Ventilation Guide for Weld Fume", American Welding Society, 550 North Le Jeune Road, Miami Florida 33135. Safety and Health Fact Sheets available from AWS at [www.aws.org](http://www.aws.org).

OSHA Publication 2206 (29 C.F.R. 1910), U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954

American Conference of Governmental Hygienists (ACGIH), Threshold Limit Values and Biological Exposure Indices, 6500 Glenway Ave., Cincinnati, Ohio 45211, USA. American Conference of Governmental Hygienists (ACGIH), Threshold Limit Values and Biological Exposure Indices, 6500 Glenway Ave., Cincinnati, Ohio 45211, USA.

NFPA 51B "Standard for Fire Prevention During Welding, Cutting, and Other Hot Work" published by the National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169.

UK: WMA Publication 236 and 237, "Hazards from Welding Fume", "The arc welder at work, some general aspects of health and safety".

Germany: Accident prevention regulation BGV D1, "Welding, cutting and related procedures".

Canada: CSA Standard CAN/CSA-W117.2-01 "Safety in Welding, Cutting, and Allied Processes". This product has been classified according to the hazard criteria of the CPR and the SDS contains all the information required by the CPR.

ESAB requests the users of this product to study this Safety Data Sheet (SDS) 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 SDS 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 for the same product hazards and safety information.

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