



Revised on 10/02/2022

## Safety Data Sheet

### 1 IDENTIFICATION

#### Product identifier

**Trade name (As Labelled):** E308LT, E309LT, E316LT, E308LT0, E308LT1, E309LT0, E309LT1, E310LT0, E312LT0, E316LT0, E316LT1, E317LT0, E410CbT0, E347T0

**Other means of identification:** Flux Cored Stainless Steel Wire  
SDS # 0085

#### Recommended use and restriction on use

**Recommended use:** Metal Welding

**Restrictions on use:** No further relevant information available.

#### Manufacturer/Importer/Supplier/Distributor information

##### Importer:

Harris Products Group  
14 Queensland Rd  
Darra, QLD, Australia 4076  
(07) 33753670

**Safety Data Sheet Questions:** [sales@hgea.com.au](mailto:sales@hgea.com.au)

**Website:** <http://www.harrisproductsgroup.com.au>

**Poisons Information Centre/Helpline (24 hours) Australia 13 11 26**

### 2 HAZARD(S) IDENTIFICATION

#### GHS classification of the substance/mixture.

Classified according to the Globally Harmonised System of Classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.

#### Classification of the substance or mixture

This product is not classified as hazardous according to applicable GHS hazard classification criteria. However; heat rays (infrared radiation) from flame or hot metal can injure eyes and overexposure to brazing fumes and gases can be hazardous.

**EMERGENCY OVERVIEW:** This product consists of odourless, steel wire that has flux in the centre. There are no immediate health hazards associated with the wire form of this product. The Nickel and Chromium components of these products are suspect carcinogens. This product is not flammable nor reactive. If involved in a fire, this product may generate irritating iron fumes and a variety of metal oxides. Emergency responders must wear personal protective equipment suitable for the situation to which they are responding.

#### GHS Classification(s)

Skin Sens. – 1, H317  
Carc. – 1B, H350  
STOT RE– 1, H372

#### Label elements



GHS07

GHS08

Signal word

Danger

**Hazard Statements:****H317** - May cause an allergic skin reaction**H350** – May cause cancer**H372** - Causes damage to organs through prolonged or repeated exposure**Precautionary Statements:****P201** – Obtain special instruction before use**P202** – Do not handle until all safety precautions have been read and understood**P260** - Do not breathe dust/fume/gas/mist/vapours/spray P261 - Avoid breathing dust/fume/gas/mist/vapours/spray**P261** – Avoid breathing dust/fume/gas/mist/vapours/spray**P264** - Wash thoroughly after handling**P270** - Do not eat, drink or smoke when using this product**P271** – Use only outdoors or in a well ventilated area**P302+P352** - IF ON SKIN: Wash with plenty of soap and water**P312** – Call a POISON CENTRE or doctor if you feel unwell**P308+P313** – If exposed or concerned: Get medical advice/attention**P333+P313** – if skin irritation or a rash occurs: Get medical advice/attention**P362+P364** – Take off contaminated clothing and wash before reuse**Storage Statement(s):****P403+P233** – Store in a well ventilated place. Keep container tightly closed**P405** - Store locked up**Disposal Statement(s):****P501** - Dispose of contents/container in accordance with regulations**Unknown Acute Toxicity** Not data available**Other Hazards** No information provided**3 Composition/information on ingredients****Chemical characterization: Mixtures****Description:** Mixture: consisting of the following components.

<b>Substances/Mixtures</b>		
<b>CAS #</b>	<b>Ingredient</b>	<b>Percentage</b>
7439-89-6	Iron = Fe	Balance
1344-28-1	Aluminium Oxide	3.0
7440-47-3	Chromium	15-30
1317-65-3	Calcium Carbonate	5.0
1309-48-4	Manganese Oxide	1.0-4.0
7439-96-5	Manganese	1.0-4.0
7439-98-7	Molybdenum = Mo	4.0
7440-02-0	Nickel	8.0-15.0
7440-03-1	Niobium	1.0
7440-09-7	Potassium	4.0
7631-86-9	Silica	5.0
7440-21-3	Silicon = Si	3.0
7440-23-5	Sodium	2.0
13463-67-7	Titanium Dioxide	1.0-15.0
7440-67-7	Zirconium = Zr	0.1
1314-23-4	Zirconium Dioxide	8.0

**Additional information:**

For the listed ingredient(s), the identity and exact percentage(s) are being withheld as a trade secret.

**SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE:** This product consists of odourless, steel wire that has flux in the centre. There are no immediate health hazards associated with the wire form of this product.

The Nickel and Chromium components of these products are suspect carcinogens. This product is not flammable nor reactive. If involved in a fire, this product may generate irritating iron fumes and a variety of metal oxides. Emergency responders must wear personal protective equipment suitable for the situation to which they are responding.

**SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE:** During welding operations, the most significant route of over-exposure is via inhalation of fumes.

**INHALATION:** Repeated over-exposures, via inhalation, to the dusts or fumes generated during welding operations by this product may have adverse effects on the lungs with possible pulmonary edema and emphysema (life-threatening lung injuries). Refer to Section 10 (Stability and Reactivity) for information on the specific composition of welding fumes and gases.

**CONTACT WITH SKIN or EYES:** Contact of the wire form of this product with the skin is not anticipated to be irritating. Contact with the wire form of this product can be physically damaging to the eye (i.e., foreign object). Fumes generated during welding operations can be irritating to the skin and eyes. Symptoms of skin over-exposure may include irritation and redness; prolonged or repeated skin over-exposures may lead to dermatitis. Contact with the molten core wire will burn contaminated skin or eyes.

**SKIN ABSORPTION:** Skin absorption is not known to be a significant route of over-exposure for any component of these products.

**INGESTION:** Ingestion is not anticipated to be a route of occupational exposure for these products.

**INJECTION:** Though not a likely route of occupational exposure for these products, injection (via punctures or lacerations in the skin) may cause local reddening, tissue swelling, and discomfort.

**HEALTH EFFECTS OR RISKS FROM EXPOSURE:** An Explanation in Lay Terms. Symptoms associated with over-exposure to these products and the fumes generated during welding operations are as follows:

**ACUTE:** The chief acute health hazard associated with these products would be the potential for irritation of contaminated skin and eyes when exposed to fumes during welding operations. Inhalation of large amounts of particulates generated by these products during metal processing operations can result in pneumoconiosis (a disease of the lungs). Contact with the molten material will burn contaminated skin or eyes.

**CHRONIC:** Chronic skin over-exposure to the fumes of this product during welding operations may produce dermatitis (red, inflamed skin). Repeated over-exposures to the fumes generated by this product via inhalation can have adverse effects on the lungs (e.g., pulmonary edema and emphysema). Chronic inhalation of fumes or dusts of the components of these products can result in conditions such as hypercalcemia, and manganese. Adverse effects or damage to the liver, lungs, pancreas, renal system and central nervous system can occur. Repeated or prolonged ingestion exposures to > 50-100 mg of Iron per day can result in deposition of iron in the body tissues, which can cause disease. Nickel (a component of this product) is a carcinogen. Hypersensitivity to Nickel can cause allergic contact dermatitis, asthma, conjunctivitis, and inflammatory reactions around nickel-containing medical implants and prostheses.

**TARGET ORGANS:** For fumes: ACUTE: Skin, eyes, respiratory system. CHRONIC: Skin, central nervous system, pancreas and liver.

#### **Composition comments:**

The term "Dangerous Components" should be interpreted as a term defined in Hazard Communication standards and does not necessarily imply the existence of a hazard. The product may contain additional nonhazardous ingredients or may form additional compounds under the condition of use. Refer to Sections 2 and 8 for more information.

### **First-aid measures**

**EMERGENCY OVERVIEW:** This product consists of odourless, steel wire that has flux in the centre. There are no immediate health hazards associated with the wire form of this product. The Nickel and Chromium components of these products are suspect carcinogens. This product is not flammable nor reactive. If involved in a fire, this product may generate irritating iron fumes and a variety of metal oxides. Emergency responders must wear personal protective equipment suitable for the situation to which they are responding.

#### **Description of first aid measures**

Victims of chemical exposure must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take a copy of label and SDS to health professional with victim.

**SKIN EXPOSURE:** If fumes generated by welding operations involving these products contaminate the skin, begin decontamination with running water. If molten material contaminates the skin, immediately begin

decontamination with cold, running water. Minimum flushing is for 15 minutes. Victim must seek medical attention if any adverse reaction occurs.

**EYE EXPOSURE:** If fumes generated by welding operations involving these products enter the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Victim must seek immediate medical attention.

**INHALATION:** If fumes generated by welding operations involving these products are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions.

**INGESTION:** Ingestion is not a likely route of exposure for this product. If swallowed call physician immediately! Do not induce vomiting unless directed by medical personnel. Rinse mouth with water if person is conscious. Never give fluids or induce vomiting if person is unconscious, having convulsions, or not breathing.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** Skin conditions, respiratory disorders, pancreas and liver disorders may be aggravated by prolonged over-exposures to the dusts or fumes generated by this product.

**RECOMMENDATIONS TO PHYSICIANS:** Treat symptoms and eliminate overexposure.

## 5 Fire-fighting measures

### Extinguishing media

Water spray, Halon, Dry Chemical, Carbon Dioxide, Foam or any ABC class.

### Special hazards arising from the substance or mixture

None – not flammable.

**Unusual fire and explosion hazards:** When involved in a fire, these products may decompose and produce iron fumes, a variety of nickel, iron and a variety of metal compounds and metal oxides. The hot material can present a significant thermal hazard to firefighters.

**FLASH POINT, °C (method):** Not flammable.

**AUTOIGNITION TEMPERATURE, °C:** Not flammable.

### Additional information:

Read and understand the Work Safe Australia Code of Practice on Welding Processes and "Standard for Fire Prevention During Welding, Cutting and Other Hot Work" before using this product. Section 274 of the Work Health and Safety Act (the WHS Act.)

## 6 Accidental release measures

### Personal precautions, protective equipment and emergency procedures

These products are solid metal rods, with no spill or leak hazards.

### Environmental precautions:

N/A

### Methods and material for containment and cleaning up:

Minimize dust generation. Use appropriate Personal Protective Equipment (PPE).

**Methods for cleaning up:** Scoop up material and place in a disposal container. Provide ventilation.

### Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

## 7 Handling and storage

### Handling:

#### Precautions for safe handling

As with all chemicals, avoid getting these products ON YOU or IN YOU. Wash hands after handling these products. Do not eat or drink while handling these products. Use ventilation and other engineering controls

to minimize potential exposure to these products. See the Australian Standard - AS 1674.1 – 1997 – Reconfirmed 2016. Safety in Welding and Allied Processes Australia.

**Conditions for safe storage, including any incompatibilities**

**Storage and Handling Practaced:**

All employees who handle these products should be trained to handle it safely. Use in a well-ventilated location. Avoid breathing fumes of these products during welding operations. Open containers on a stable surface. Packages of these products must be properly labelled. Store packages in a cool, dry location. Storage in an atmosphere that is wet, moist, or highly humid may lead to corrosion of these products. Store away from incompatible materials (see Section 10, Stability and Reactivity).

**Specific end use(s)** No further relevant information available.

## 8 Exposure controls/personal protection

**Control parameters**

**Exposure Guidelines:**

Refer to the Safe Environments risk management document – Welding Fume -

<http://www.safeenvironments.com.au/welding-fume/> The exposure standard refers to the publication by Work Safe Australia “Workplace Exposure Standard for Airborne Contaminants” with the Date of Effect being 22 December 2011. Work Safe Australia note that “exposure standards do not represent a fine dividing line between a healthy and unhealthy work environment. Natural biological variation and the range of individual susceptibilities mean that a small number of people might experience adverse health effects below the exposure standard.

Hazard Classification for Chemical Composition					
CAS #	Ingredient	TWA ppm	TWA mg/m <sup>3</sup>	STEL ppm	STEL mg/m <sup>3</sup>
7439-89-6	Iron = Fe		None Listed		
1344-28-1	Aluminium Oxide		10		
7440-47-3	Chromium Metal		0.5		
1317-65-3	Calcium Carbonate		2		
1309-48-4	Manganese Oxide		10		
7439-96-5	Manganese Dust		1		
	Manganese Fumes		1		3
7439-98-7	Molybdenum = Mo		10		
7440-02-0	Nickel		1		
7440-03-1	Niobium		None Listed		
7440-09-7	Potassium		None Listed		
7631-86-9	Silica		10		
7440-21-3	Silicon = Si		10		
7440-23-5	Sodium		None Listed		
13463-67-7	Titanium Dioxide		10		
7440-67-7	Zirconium = Zr		5		10
1314-23-4	Zirconium Dioxide		5		10

Reference: ACGIH Biological Exposure Indices

Refer to Worksafe Australia for standards:

[http://www.safeworkaustralia.gov.au/sites/SWA/about/Publications/Documents/639/Workplace\\_Exposure\\_Standards\\_for\\_Airborne\\_Contaminants.pdf](http://www.safeworkaustralia.gov.au/sites/SWA/about/Publications/Documents/639/Workplace_Exposure_Standards_for_Airborne_Contaminants.pdf)

**Exposure controls**

**Personal protective equipment:**

**General protective and hygienic measures:**

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Ensure that eyewash stations and safety showers are proximal to the work-station location.

### Engineering controls and Ventilation

Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain vapour levels below the recommended exposure standard.

### Breathing equipment:



Where an inhalation risk exists, wear a Class P2 (Metal fume) respirator. If using product in a confined area, wear an Air-line respirator.

### Protection of hands:



Wear welding gloves for routine industrial use.

### Eye protection:



Wear safety glasses with side shields (or goggles). When these products are used for welding, it is recommended that safety glasses, goggles, or face-shield with filter lens of appropriate shade number (per ANSI Z49.1-1988, "Safety in Welding and Cutting") be worn.

### Body protection: Protective work clothing



## 9 Physical and chemical properties

Information on basic physical and chemical properties:

### General Information

PRODUCT			
Appearance - Product	Steel Wire with flux in centre	Physical State - Product	Solid
Odour - Product	Odourless	Odour Threshold	Not Available
Flammability	Not Available	Flash Point	Not Available
pH	Not Applicable	Auto Igniting	Not Available
Melting point/range	Not Available	Solubility water	Insoluble
Vapour Pressure, mmHg@20°C	Not Applicable		
Vapour Density	Not applicable	Density at 20°C (68°F)	Not Applicable
Boiling Point & boiling range	3000°C	Evaporation Rate	Not Available
Freezing/Melting Point	1300°C	Specific Gravity (water = 1)	7.60-7.78

## 10 Stability and reactivity

**Stability:** Stable.

**Decomposition Products:** Iron fumes, a variety of iron compounds, carbon dioxide, carbon monoxide, metal oxides.

**NOTE:** The composition and quality of welding fumes and gases are dependent upon the metal being welded, the process, the procedure, and the electrodes used. Other conditions that could also influence the composition and quantity of fumes and gases to which workers may be exposed include the following: any coatings on metal being welded (e.g. paint, plating, or galvanizing), the number of welders and the volume of the work area, the quality of ventilation, the position of the welder's head with respect to the fume plume, and the presence of other contaminants in the atmosphere. When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 2 (Composition and Information on Ingredients). Fume and gas decomposition products, and not the ingredients in the electrode, are important. Concentration of the given fume or gas component may decrease or increase by many times the original concentration. New compounds in the electrode may form.

Decomposition products of normal operations include not only those originating from volatilization, reaction, or oxidation of the product's components but also those from base metals and any coating (as noted previously). The best method to determine the actual composition of generated fumes and gases is to take an air sample from inside the welder's helmet if worn or in breathing zone. For additional information, refer to the American Welding Society Publication, "Fumes and Gases in the Welding Environment".

**Materials with which substance is incompatible:** Strong acids, strong oxidizers, mineral acids, and some halogenated compounds.

**Conditions to avoid:** Avoid uncontrolled exposure to extreme temperatures and incompatible materials.

## 11 Toxicological information

### Information on toxicological effects:

**Toxicity data:** Presented below are toxicological data available for the components of these products present in concentration greater than 1%. Toxicological information for animal species.

CAS	Name	Oral Toxicity LD50	Intravenous Toxicity LD50	Inhalation Toxicity LD50
7439-89-6	Iron = Fe	30gm/kg Rat		
1344-28-1	Aluminium Oxide	Not Established		
7440-47-3	Chromium Metal	Not Established		
1317-65-3	Calcium Carbonate	6450 mg/kg Rat		
1309-48-4	Manganese Oxide	Not Established		
7439-96-5	Manganese	(rat) 9 mg/kg		
7439-98-7	Molybdenum = Mo	Not Established		
7440-02-0	Nickel	(rat) 5000 mg/kg		
7440-03-1	Niobium	Not Established		
7440-09-7	Potassium	Not Established		
7631-86-9	Silica	>10000 mg/kg Rat Dermal >5000 mg/kg Rabbit		
7440-21-3	Silicon = Si	Dermal (rabbit) >5000 mg/kg Oral (rat) 3160 mg/kg		
7440-23-5	Sodium	Not Established		
13463-67-7	Titanium Dioxide		0.1mg/kg Rat	
7440-67-7	Zirconium = Zr	Not Established		
1314-23-4	Zirconium Dioxide	Not Established		

**IRRITANCY OF PRODUCT:** Dusts or fumes of these products may be irritating to contaminated skin and eyes. Fumes may be irritating to the respiratory system.

**SENSITIZATION TO THE PRODUCT:** Hypersensitivity to Nickel (a component of this product) can cause allergic contact dermatitis, asthma, and conjunctivitis.

**Mutagenicity:** This product is not reported to produce mutagenic effects in humans. Animal mutation data are available for Calcium Fluoride, Molybdenum, and Nickel (components of this product); these data were obtained during clinical studies on specific animal tissues exposed to high doses of this compound.

**Embryo toxicity:** These products are not reported to produce embryo toxic effects in humans.

**Teratogenicity:** This product is not reported to cause teratogenic effects in humans. Clinical studies on test animals exposed to relatively high doses of Calcium Fluoride, Molybdenum, and Nickel (components of this product) indicate teratogenic effects.

**Reproductive Toxicity:** These products are not reported to cause reproductive effects in humans. Clinical studies on test animals exposed to relatively high doses of the Molybdenum components of these products indicate adverse reproductive effects.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** Skin, respiratory, pancreas, and liver disorders may be aggravated by prolonged over-exposures to the dusts or fumes generated by these products.

**RECOMMENDATIONS TO PHYSICIANS:** Treat symptoms and eliminate overexposure.

**BIOLOGICAL EXPOSURE INDICES:** Currently, there are no Biological Exposure Indices (BEIs) associated with components of these products.

## 12 Ecological information

**ENVIRONMENTAL STABILITY:** The components of these products occur naturally in the environment and are expected to persist in the environment for an extended period of time. Iron will react with water and air to form a variety of stable iron oxides.

CAS#	Ingredient	Result	Species	Exposure
7439-89-6	Iron = Fe	13.6 mg/L	Fish	96 Hours
1344-28-1	Aluminium Oxide	Not Established		
7440-47-3	Chromium Metal	14.3 mg/L	Carp	96 Hours
1317-65-3	Calcium Carbonate	Not Established		
1309-48-4	Manganese Oxide	Not Established		
7439-96-5	Manganese	>3.6mg/L > 1.6mg/L 2.8mg/L	Fish Crustacea Algae	96 Hours 48 Hours 48 Hours
7439-98-7	Molybdenum = Mo	Not Established		
7440-02-0	Nickel	0.000475mg/L	Fish	96 hr
7440-03-1	Niobium	Not Established		
7440-09-7	Potassium	Not Established		
7631-86-9	Silica	Not Established		
7440-21-3	Silicon = Si	Not Established		
7440-23-5	Sodium	Not Established		
13463-67-7	Titanium Dioxide	Not Established		
7440-67-7	Zirconium = Zr	Not Established		
1314-23-4	Zirconium Dioxide	Not Established		

**EFFECT OF MATERIAL ON PLANTS or ANIMALS:** The components of these products occur naturally in the environment and are essential for plant and animal life.

**EFFECT OF CHEMICAL ON AQUATIC LIFE:** These products may cause adverse effects on aquatic life, especially if large quantities are released into bodies of water. Low chronic aquatic limits indicate a high chronic hazard; it may be concentrated to toxic levels in food chain. The Nickel component of these products is toxic to aquatic life. Exposure of 0.095 ppm of Nickel for 3 weeks to Daphnis and Fathead minnows affected reproduction in these fish.



### 13 Disposal considerations

#### Waste treatment methods

##### Recommendation:

Waste disposal must be in accordance with appropriate Federal, State, and local regulations. These products, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority.

**Uncleaned packagings:** Empty containers should be taken to an approved waste handling site for recycling or disposal.

**Recommendation:** Disposal must be made according to official regulations.

### 14 Transport Information

This product is not classed as hazardous.

UN-Number DOT, ADR, ADN, IMDG, IATA	Not Regulated
UN proper shipping name DOT, ADR, ADN, IMDG, IATA	Not Regulated
Transport hazard class(es) DOT, ADR, ADN, IMDG, IATA Class	Not Regulated
Packing group DOT, ADR, IMDG, IATA	Not Regulated
Environmental hazards: Marine pollutant:	No
Special precautions for user	Not applicable.
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
UN "Model Regulation":	Not regulated.

### 15 Regulatory information

**Product Name:** E308LT, E309LT, E316LT, E308LT0, E308LT1, E309LT0, E309LT1, E310LT0, E312LT0, E316LT0, E316LT1, E317LT0, E410CbT0, E347T0

**Safety, health and environmental regulations/legislation specific for the substance or mixture:**

#### Poison Schedule:

Classified as a Schedule 6 (S6) Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

#### Classifications:

Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Refer to the Australian Inventory of Chemical Substances – AICS at <https://www.nicnas.gov.au/chemicals-on-AICS#main>

**Poison schedule:** Classified as a Schedule 6 (S6) Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP). <https://www.legislation.gov.au/Details/F2016L01638>

**Classifications:** Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

## 16 Other information

### References

Preparation of Safety Data Sheets for Hazardous Chemicals Code of Practice

Standard for the Uniform Scheduling of Medicines and Poisons

Australian Code for the Transport of Dangerous Goods by Road & Rail.

Model Work Health and Safety Regulations, Schedule 10: Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals.

Workplace exposure standards for airborne contaminants, Safe work, Australia

American Conference of Industrial Hygienists (ACGIH)

Globally Harmonised System of classification and labelling of chemicals.

**WELDING (1):** Due to the diversity of welding techniques, processes, materials used, nature of the surface being welded and the presence of contaminants, the fumes & gases associated with welding will vary in composition and quantity. When assessing a welding process, the toxic fumes generated may not only be associated with the parent metal, filler wire or electrode. The welding/cutting arc may generate nitrogen oxides, carbon monoxide & other gases, whilst UV radiation emitted from some arcs generates ozone. Ozone may irritate mucous membranes and cause pulmonary oedema & haemorrhage. Shielding gases (e.g. carbon dioxide and inert gases i.e. argon and helium) in high concentrations, in confined spaces, may reduce oxygen in the atmosphere to dangerous levels, resulting in possible asphyxiation.

**WELDING (2):** In addition to complying with individual exposure standards for specific contaminants, where current manual welding processes are used, the fume concentration inside the welder's helmet should not exceed 5 mg/m<sup>3</sup> ( unless otherwise classified) when collected in accordance with Australian Standard AS 3853.1: Fume from welding and allied processes - Guide to methods for the sampling and analysis of particulate matter and AS 3853.2: Fume from welding and allied processes - Guide to methods for the sampling and analysis of gases. Airway irritation and metal fume fever are the most common acute effects from welding fumes. Reported to cause reduced sperm quality in welders.

**WELDING (3):** Other gases and fumes associated with welding processes include: Inert shielding gases (e.g. argon, carbon dioxide, helium) which may reduce the atmospheric oxygen content in poorly ventilated areas. UV-radiation and Infra-Red radiation may decompose chlorinated degreasing agents to form highly toxic and irritating phosgene gas. This may occur if a metal has been degreased but inadequately dried or when vapours from a nearby degreasing bath enter the welding zone.

**WELDING (4):** Welding fumes may contain a wide variety of chemical contaminants, including oxides and salts of metals and other compounds which may be generated from electrodes, filler wire, flux materials and from the welded material (e.g. painted surfaces). Welding stainless-steel and its alloys generates nickel and chromium (VI) compounds. Welding fumes are retained in the lungs. Sparingly soluble compounds may be released slowly from the lungs. Welding fume is classified as possibly carcinogenic to humans (IARC Group 2B).

### PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

**Disclaimer:**

We urge each end user and recipient of this SDS to study it carefully. If necessary, consult an industrial hygienist or other expert to understand this information and safeguard the environment and protect workers from potential hazards associated with the handling or use of this product.

Harris Products Group cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for use, handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

**WARNING: PRODUCT COMPONENTS PRESENT HEALTH AND SAFETY HAZARDS. READ AND UNDERSTAND THIS SAFETY DATA SHEET (S.D.S.). ALSO, FOLLOW YOUR EMPLOYER'S SAFETY PRACTICES.**

The information contained herein relates only to the specific product. If the product is combined with other materials, all component properties must be considered. **BE SURE TO CONSULT THE LATEST VERSION OF THE SDS. SAFETY DATA SHEETS ARE AVAILABLE FROM HARRIS PRODUCTS GROUP** Harris Products Group, HGE PTY LTD, Brisbane | Melbourne | Perth | New Zealand, 14 Queensland Rd, Darra, QLD 4076, Phone: (07) 3375 3670 | Fax: (07) 3375 3620, Email: sales@hgea.com.au, www.harrisproductsgroup.com.au,

**STATEMENT OF LIABILITY-DISCLAIMER**

To the best of the Harris Products Group knowledge, the information and recommendations contained in this publication are reliable and accurate as of the date prepared. However, accuracy, suitability, or completeness are not guaranteed, and no warranty, guarantee, or representation, expressed or implied, is made by Harris Products Group. as to the absolute correctness or sufficiency of any representation contained in this and other publications; Harris Products Group assumes no responsibility in connection therewith; nor can it be assumed that all acceptable safety measures are contained in this and other publications, or that other or additional measures may not be required under particular or exceptional conditions or circumstances. Data may be changed from time to time.

[ End of SDS ]



ISO 9001:2015 REGISTERED  
Certificate No.: 50040 & 50415

## ERNiCu-7 DATA SHEET

### Pinnacle Alloys ERNiCu-7 (60)

AWS CLASS ERNiCu-7

#### CODE AND SPECIFICATION DATA:

AWS A5.14 ASME SFA 5.14; UNS N04060

#### DESCRIPTION:

Pinnacle Alloys ERNiCu-7 has a nominal composition (wt.-%) of 65 Ni, 30 Cu, 3 Mn, and 2 Ti. Filler metal of this classification is used for welding nickel-copper alloy (ASTM B 127, B 163, B 164, and B 165 having UNS Number N04400) to itself using the GTAW, GMAW, SAW, and PAW processes. The filler metal contains sufficient titanium to control porosity with these welding processes. The wire's strength and corrosion-resistance makes Pinnacle Alloys ERNiCu-7 an excellent choice for welding in salt, seawater, and reducing acid environments.

**DIAMETERS:** .035", .045", 1/16", 3/32", 1/8", 5/32"

**WELDING POSITIONS:** GTAW & GMAW: All positions



#### TYPICAL DEPOSIT COMPOSITION:

	AWS Spec	Weld Metal Analysis (%)
Aluminum (Al)	1.25	0.104
Carbon (C)	0.15	0.008
Copper (Cu)	Balance	30.07
Iron (Fe)	2.50	0.73
Manganese (Mn)	4.00	3.39
Nickel (Ni)	62.0-69.0	63.6
Phosphorus (P)	0.02	0.002
Silicon (Si)	1.25	0.052
Sulfur (S)	0.015	0.002
Titanium (Ti)	1.5-3.0	1.79

NOTE: Single values are maximums.

[www.pinnaclealloys.com](http://www.pinnaclealloys.com)

9384 Wallisville Road • Houston, Texas 77013 • **1-800-856-9353** • (713) 688-9353 • Fax (713) 688-6985  
2602 S. 50th Avenue • Phoenix, Arizona 85043 • **1-866-442-9353** • (602) 442-9353 • Fax (602) 442-9354



ISO 9001:2015 REGISTERED  
Certificate No.: 50040 & 50415

#### TYPICAL MECHANICAL PROPERTIES:

	AWS Spec (min)	As Welded
Ultimate Tensile Strength	Not required	78,000 psi (540 MPa)
Percent Elongation in 2"	Not required	42%

#### TYPICAL WELDING PARAMETERS:

	Diameter	Amperage	Volts	Shielding Gas
GTAW	1/16"	90-130		100% Ar
	3/32"	120-175		
	1/8"	150-220		
GMAW	.035"	150-190	26-29	75% Ar/ 25% He
	.045"	180-220	28-32	
	1/16"	200-250	29-33	
SAW	3/32"	275-350	28-30	Suitable Flux
	1/8"	350-450	29-32	
	5/32"	400-550	30-33	

**NOTE:** Maintaining a proper welding procedure, including pre-heat and interpass temperatures, may be critical depending on the type and thickness of material being welded.

**NOTICE:** The results reported are based upon testing of the product under controlled laboratory conditions in accordance with American Welding Society Standards. Actual use of the product may produce different results due to varying conditions. An example of such conditions would be electrode size, plate chemistry, environment, weldment design, fabrication methods, welding procedure and service requirements. Thus the results are not guarantees for the use in the field. The manufacturer disclaims any warranty of merchantability of fitness for any particular purpose with respect to its products.

**CAUTION:** Consumers should be thoroughly familiar with the safety precautions on the warning label posted in each shipment and in the American National Standards A49.1, "Safety in Welding and Cutting," published by the American Welding Society, 8669 NW 36 Street, #130, Miami, FL 33126: OSHA Safety and Health Standards 29 CRF 1910 is available from the U.S. Department of Labor, Washington, D.C. 20210.

Pinnacle Alloys SDS sheets may be obtained on the website below.

[www.pinnaclealloys.com](http://www.pinnaclealloys.com)

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# LINCOLNWELD® L-61®

Mild Steel Solid Electrode ■ AWS EM12K



## KEY FEATURES

- Industry standard for submerged arc welding applications
- A low carbon, medium manganese, low silicon general purpose submerged arc electrode
- A good choice for a wide range of applications with single or multiple pass subarc welding
- Actual (Type 3.1) certificates for each lot of wire showing chemical composition are available in the certificate center of lincolnelectric.com

## CONFORMANCES

<b>AWS A5.17/A5.17M</b>	EM12K
<b>AWS A5.23:</b>	EM12K
<b>MIL-E-23765/4:</b>	MIL-EM12K
<b>EN 756:</b>	S2Si

## RECOMMENDED FLUXES

Lincolnweld® 760®, 761®, 780®, 781™, 860®, 865™, 882™, 888™, 761-Pipe™, P223™, 960®, 980™, WTX™, AXXX-10™, 995N™, SPX80™

## DIAMETERS / PACKAGING

Diameter in. (mm)	60 lb (27.2 kg) Coil	250 lb (113 kg) Speed Feed® SlimReel™	300 lb (136 kg) Speed Feed® Reel	300 lb (136 kg) Speed Feed® Drum
1/16 (1.6)	ED011803			
5/64 (2.0)	ED011825, ED030756*			
3/32 (2.4)	ED011815, ED033875*	ED033074		
1/8 (3.2)	ED011807, ED033876*	ED033075		
5/32 (4.0)	ED011821, ED033877*, ED032097**	ED033076	ED030412	ED030628
3/16 (4.8)	ED011812, ED034055*			
Diameter in. (mm)	600 lb (272 kg) Speed Feed® Drum	750 lb (340 kg) Speed Feed® Reel	1000 lb (453 kg) Speed Feed® Drum	2200 lb (998 kg) Speed Feed® Stem
1/16 (1.6)				
5/64 (2.0)	EDS11823	ED011826	ED011824	
3/32 (2.4)	EDS11813	EDS11817	ED011814, ED034043*	
1/8 (3.2)	EDS11805	EDS11809	ED011806, ED034044*	ED032973
5/32 (4.0)	EDS11819	ED030012	ED011820, ED034045*, ED030703**	ED032972
3/16 (4.8)			ED011811	ED032994

\*Buy America Product \*\*Tested Material

## WIRE COMPOSITION<sup>(1)</sup> - As Required per AWS A5.17/A5.17M

	%C	%Mn	%Si	%S	%P	%Cu
Lincolnweld® L-61®	0.05-0.15	0.80-1.25	0.10-0.35	0.030	0.030	0.35

<sup>(1)</sup>Single values are maximums.

*Material Safety Data Sheets (MSDS) and Certificates of Conformance are available on our website at [www.lincolnelectric.com](http://www.lincolnelectric.com)*

#### TEST RESULTS

Test results for mechanical properties, deposit or electrode composition and diffusible hydrogen levels were obtained from a weld produced and tested according to prescribed standards, and should not be assumed to be the expected results in a particular application or weldment. Actual results will vary depending on many factors, including, but not limited to, weld procedure, plate chemistry and temperature, weldment design and fabrication methods. Users are cautioned to confirm by qualification testing, or other appropriate means, the suitability of any welding consumable and procedure before use in the intended application.

#### CUSTOMER ASSISTANCE POLICY

The Lincoln Electric Company is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for information or advice about their use of our products. Our employees respond to inquiries to the best of their ability based on information provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or advice. Moreover, the provision of such information or advice does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or advice, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose is specifically disclaimed.

Lincoln Electric is a responsive manufacturer, but the selection and use of specific products sold by Lincoln Electric is solely within the control of, and remains the sole responsibility of the customer. Many variables beyond the control of Lincoln Electric affect the results obtained in applying these types of fabrication methods and service requirements.

Subject to Change – This information is accurate to the best of our knowledge at the time of printing. Please refer to [www.lincolnelectric.com](http://www.lincolnelectric.com) for any updated information.

# SAFETY DATA SHEET

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1907/2006, Commission Regulation (EU) 2019/521  
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Issued: 2022-01-06



## Arcaloy 410-16

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

#### 1.1. Product identifier

**Trade name** Arcaloy 410-16

#### 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** TDS Team

**Supplier** ESAB AB

**Street address** Box 8004  
402 77 Göteborg  
Sweden

**Telephone** +46 31 509000

**Email** sdsrequest@esab.com

**Web site** www.esab.com

#### 1.4. Emergency telephone number

**Emergency phone number** +1 703-741-5970 & 1-800-424-9300

**Available outside office hours** Yes

#### Other

**Other** Classification: AWS A5.4 E410-16

### 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

The product does not require labelling in accordance with CLP Regulation (EC) No 1272/2008.



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## Arcaloy 410-16

### 2.3. Other hazards

#### Other hazards

This product contains nickel, which is classified as toxic by prolonged inhalation, a skin sensitizer and a suspect carcinogen. Nickel powder is harmful for the environment. This product contains titanium dioxide which is possibly carcinogenic. This product contains quartz, but normally not in an inhalable fraction. Quartz can cause silicosis and may cause cancer.

Avoid eye contact or inhalation of dust from this product. Skin contact is normally no hazard but should be avoided to prevent possible allergic reactions.

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. Prolonged inhalation of nickel and chromium compounds above safe exposure limits can cause cancer. 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

#### 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.

## 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 - -	70 - 80%	-	- - -	-
TITANIUM OXIDE**	13463-67-7 236-675-5 - -	5 - 10%	-	- - -	-
CHROMIUM	7440-47-3 231-157-5 - -	7 - 9%	-	- - -	-
QUARTZ*	14808-60-7 238-878-4 - -	1 - 5%	STOT RE 1	H372 - -	-
SILICATE BINDER	1312-76-1	1 - 5%	-	-	-

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Chemical name	CAS No. EC No. REACH No. Index No.	Concentration	Classification	H-phrase M factor acute M factor chronic	Note
(POTASSIUM SILICATE)	215-199-1 - -			- -	
Calcium carbonate	1317-65-3 215-279-6 - -	1 - 5%	-	- - -	-
Calcium fluoride	7789-75-5 232-188-7 - -	1 - 5%	-	- - -	-
Bentonite	1302-78-9 215-108-5 - -	1 - 5%	-	- - -	-
SILICATE BINDER (SODIUM SILICATE)	1344-09-8 215-687-4 - -	1 - 5%	-	- - -	-
MANGANESE	7439-96-5 231-105-1 - -	1 - 2%	-	- - -	-
Nickel powder**	7440-02-0 231-111-4 - -	0 - 1%	Skin Sens. 1, STOT RE 1, Aquatic Chronic 3, Carc. 2	H317, H351, H372, H412 - -	-
Silicon	7440-21-3 231-130-8 - -	0 - 0.5%	-	- - -	-

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

#### 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

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## Arcaloy 410-16

### 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

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

Not applicable

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

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

Not applicable

## 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

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

Not applicable

### 5.3. Advice for firefighters

#### Special protective equipment for fire-fighters

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

## SECTION 6: Accidental release measures

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

#### 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

#### Environmental precautions

Refer to Section 13.

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

#### 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

#### Reference to other sections

Refer to Section 8 and Section 13.

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## Arcaloy 410-16

### 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

##### 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)

##### 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).

##### National occupational exposure limits

Ingredient	CAS No. EC No.	Exposure limit ppm / mg/m <sup>3</sup>	Short-term exposure limit ppm / mg/m <sup>3</sup>	Source	Remark	Year
IRON(REACH Registered) (English-Canada) / Fer(REACH Registered) (French- Canada)	7439-89-6 231-096-4	- -	- -	ALBERTA REGULATIO N 87/2009	-	2020
Bentonite (English- Canada) / bentonite (French- Canada)	1302-78-9 215-108-5	- -	- -	ALBERTA REGULATIO N 87/2009	-	2020
CHROMIUM (English- Canada) / CHROME (French- Canada)	7440-47-3 231-157-5	- 0.5	- -	ALBERTA REGULATIO N 87/2009	Metal and Cr III Compounds/ Composés métalliques et Cr III	2020
Silicate Binder (Potassium Silicate)(English- Canada) / Liant Silicate (silicate de potassium)(French- Canada)	1312-76-1 215-199-1	- -	- -	ALBERTA REGULATIO N 87/2009	-	2020
Nickel powder** (English- Canada) / Poudre de Nickel** (French- Canada)	7440-02-0 231-111-4	- 0.2	- -	ALBERTA REGULATIO N 87/2009	Insoluble compounds / Composés insolubles	2020
Titanium oxide** (English- Canada) / Oxyde de titane** (French- Canada)	13463-67-7 236-675-5	- 10	- -	ALBERTA REGULATIO N 87/2009	-	2020
QUARTZ* (English- Canada) / QUARTZ* (French- Canada)	14808-60-7 238-878-4	- 0.025	- -	ALBERTA REGULATIO	-	2020

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## Arcaloy 410-16

Ingredient	CAS No. EC No.	Exposure limit ppm / mg/m <sup>3</sup>	Short-term exposure limit ppm / mg/m <sup>3</sup>	Source	Remark	Year
				N 87/2009		
CHROMIUM (English- Canada) / CHROME (French- Canada)	7440-47-3 231-157-5	- 0.05	- -	ALBERTA REGULATIO N 87/2009	Water-soluble Cr VI Compounds/ Composés de Cr VI hydrosolubles	2020
Limestone (English- Canada) / Calcaire (French- Canada)	1317-65-3 215-279-6	- 10	- -	ALBERTA REGULATIO N 87/2009	-	2020
Nickel powder** (English- Canada) / Poudre de Nickel** (French- Canada)	7440-02-0 231-111-4	- 0.1	- -	ALBERTA REGULATIO N 87/2009	Soluble compounds / Composés solubles	2020
Silicon (English- Canada) / Silicium (French- Canada)	7440-21-3 231-130-8	- -	- -	ALBERTA REGULATIO N 87/2009	-	2020
Silicate Binder (Sodium Silicate) (English- Canada) / Liant Silicate (Silicate de Sodium) (French- Canada)	1344-09-8 215-687-4	- -	- -	ALBERTA REGULATIO N 87/2009	-	2020
MANGANESE (English- Canada) / Manganèse (French- Canada)	7439-96-5 231-105-1	- 0.2	- -	ALBERTA REGULATIO N 87/2009	as Mn / comme Mn	2020
FLUORIDES (English- Canada) / Fluorures (French- Canada)	7789-75-5 232-188-7	- -	- -	ALBERTA REGULATIO N 87/2009	-	2020
CHROMIUM (English- Canada) / CHROME (French- Canada)	7440-47-3 231-157-5	- 0.01	- -	ALBERTA REGULATIO N 87/2009	Insoluble Cr VI Compounds/ Composés de Cr VI insolubles	2020

### 8.2. Exposure controls

#### Hand protection

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 (°C) is 100 and the threshold time (seconds) >15. 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))

#### Other

#### 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.

#### Ventilation

Use respirator or air supplied respirator when welding or brazing in a confined space, or where local exhaust or ventilation is not sufficient to keep exposure values within safe limits. Use special care when welding painted or coated steels since hazardous substances from the coating may be emitted. Ensure sufficient ventilation, local exhaust, or both, to keep welding fumes and gases from breathing zone and general area.

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## Arcaloy 410-16

### SECTION 9: Physical and chemical properties

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

<b>Physical state</b>	Solid
<b>Colour</b>	Varying color
<b>Odour</b>	Not applicable
<b>Odour threshold</b>	Not applicable
<b>Melting point / freezing point</b>	Not applicable
<b>Boiling point or initial boiling point and boiling range</b>	No data available
<b>Flammability</b>	Not applicable
<b>Lower and upper explosion limit</b>	No data available
<b>Flash point</b>	Not applicable
<b>Auto-ignition temperature</b>	Not applicable
<b>Decomposition temperature</b>	No data available
<b>pH</b>	Not applicable
<b>Kinematic viscosity</b>	No data available
<b>Solubility</b>	No data available
<b>Partition coefficient n-octanol/water</b>	Not applicable
<b>Vapour pressure</b>	Not applicable
<b>Density and/or relative density</b>	No data available
<b>Relative density</b>	No data available
<b>Relative vapour density</b>	Not applicable
<b>Explosive properties</b>	Not applicable
<b>Oxidising properties</b>	Not applicable

#### 9.2. Other information

No data available

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## Arcaloy 410-16

### SECTION 10: Stability and reactivity

#### 10.1. Reactivity

**Reactivity**

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

#### 10.2. Chemical stability

**Chemical stability**

This product is stable under normal conditions.

#### 10.3. Possibility of hazardous reactions

No data available

#### 10.4. Conditions to avoid

**Conditions to avoid**

This product is only intended for normal welding purposes.

#### 10.5. Incompatible materials

No data available

#### 10.6. Hazardous decomposition products

**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

**Other**

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

A significant amount of the chromium in the fumes can be hexavalent chromium, which has a very low exposure limit in some countries. Manganese and nickel have low exposure limits, 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.

### SECTION 11: Toxicological information

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

**Information on toxicological effects**

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**

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

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## Arcaloy 410-16

**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**

Product / Substance name CAS / EC no.	Other
NICKEL POWDER** 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 Powder 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> .
QUARTZ* 14808-60-7 / 238-878-4	*This product contains substance(s) that may cause cancer, which is/are classified as Carcinogenic to humans as per IARC.
TITANIUM OXIDE** 13463-67-7 / 236-675-5	**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 Titanium dioxide 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

**STOT-single exposure** No data available

**STOT-repeated exposure** No data available

**Aspiration hazard** No data available

**LD50 Oral** No data available

**LD50 Dermal** No data available

**LC50 Inhalation** No data available

**Routes of exposure** No data available

**Symptoms related to the physical, chemical and toxicological characteristics** No data available

**Mixture versus substance information** No data available

**Delayed and immediate effects as well as chronic effects from short and long-term exposure** No data available

**Interactive effects** No data available



# SAFETY DATA SHEET

This Safety Data Sheet complies with Annex II of 830/2015 amending EC No. 1907/2006, Commission Regulation (EU) 2019/521 amending CLP directive 1272/2008, also in accordance with ISO 11014-1 and ANSI Z400.1

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**Toxicity in case of skin contact** No data available

**Absence of specific data** No data available

**Toxicity in case of eye contact** No data available

**Mixtures** No data available

**Toxicity in case of ingestion** No data available

### 11.2. Information on other hazards

No data available

#### Other

**Other** No data available

**Long term effect** Chronic toxicity: Overexposure to welding fumes may affect pulmonary function. Prolonged inhalation of nickel and chromium compounds above safe exposure limits can cause cancer. 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. Prolonged inhalation of titanium dioxide above safe exposure limits can cause cancer. Inhalable quartz is a respiratory carcinogen; however, the process of welding converts crystalline quartz to the amorphous form which is not considered to be a carcinogen.

## 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**

Product / Substance name CAS / EC no.	Remark
NICKEL POWDER** 7440-02-0 / 231-111-4	This product contains Nickel powder which is classified as harmful to aquatic organisms by 1272/2008 CLP Directive and may cause long-term adverse effects in the aquatic environment.

### 12.2. Persistence and degradability

**Persistence and degradability** No data available

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**Decay/transformation** No data available

### 12.3. Bioaccumulative potential

**Bioaccumulative potential** No data available

### 12.4. Mobility in soil

**Mobility** No data available

### 12.5. Results of PBT and vPvB assessment

**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

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

## SECTION 14: Transport information

### 14.1. UN number

No data available

### 14.2. UN proper shipping name

No data available

### 14.3. Transport hazard class(es)

No data available

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#### 14.4. Packing group

No data available

#### 14.5. Environmental hazards

No data available

#### 14.6. Special precautions for user

No data available

#### 14.7. Maritime transport in bulk according to IMO instruments

No data available

## 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.

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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

Nickel Powder: 0.1% de minimis concentration

Manganese: 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 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

#### Chemical safety assessment

Not Available

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Other

### 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 modifications to Sections 1-16. Latest Revision of SDS as per Regulation and exposure limits – October 2021.

### References to key literature and data sources

Refer to ESAB "Welding and Cutting - Risks and Measures", F52-529 "Precautions and Safe Practices for Electric Welding and Cutting" and F2035 "Precautions and Safe Practices for Gas Welding, Cutting and Heating" available from ESAB, and to: [www.esab.com](http://www.esab.com)

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.

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.

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## Arcaloy 410-16

### Phrase meaning

H317 May cause an allergic skin reaction.  
H320 Causes eye irritation.  
H351 Suspected of causing cancer.  
H372 Causes damage to the lungs through prolonged or repeated exposure by inhalation.  
STOT RE 1 - Specific Target Organ Toxicity — Repeated exposure, hazard category 1  
Skin Sens. 1 - Skin sensitisation, hazard category 1  
Aquatic Chronic 3 - Hazardous to the aquatic environment — Chronic hazard category 3  
Carc. 2 - Carcinogenicity, hazard category 2  
H317 May cause an allergic skin reaction.  
H351 Suspected of causing cancer.  
H372 Causes damage to organs through prolonged or repeated exposure .  
H412 Harmful to aquatic life with long lasting effects.

### Other

### Additional information

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 this product.  
-request such customers to notify employees and customers for the same product hazards and safety information.

The information herein is given in good faith and based on technical data that ESAB believes to be reliable. Since the conditions of use is outside our control, we assume no liability in connection with any use of this information and no warranty, expressed or implied is given.  
Contact ESAB for more information.



## ECoCr-A Electrode

**ECoCR-A Welding Electrodes, ECoCR-A Welding Electrodes Stockist, ECoCR-A Welding Electrodes Suppliers, ECoCR-A Welding Exporters, Cobalt base Alloys ECoCr-A, Bare Rods ECoCR-A, AWS A5.13 E CoCR-A Welding Electrode, Exporter of Welding Electrodes, Welding Electrode Stockist, Supplier, Exporter, Trader, Dealer, Mumbai, India.**

### Description

#### DESCRIPTION

#### **Cobalt Base Alloys ECoCr-A Welding Electrode**

ECoCr-A Hardfacing **Electrode** with a rustile-basic coating. Cobalt Base Deposit of CO-CrW. The Deposit is highly resistant to metal-metal wear and to corrosion up to 800 Degree C. High Resistance to thermal and mechanical Shocks. Good Aptitude to Polishing and to Machining. Soft arc, easy to remove slags, regular and smooth weld profile.

**Cobalt Base Alloy** Covered electrode produce a medium hardness cobalt-chromium deposit for high temperature applications with good abrasive wear and good impact resistance. It is the most versatile and widely used cobalt alloy with a good balance of abrasion and impact resistance. Chromium carbides contained in the deposit, have excellent resistance to many forms of chemical and mechanical degradation, including galling and cavitations erosion. It bonds well with all weldable steels, including stainless.

ECoCr-A provides resistance to many forms of chemical and mechanical degradation over a wide temperature range. The most generally used cobalt alloy, ECoCr-A attributes include outstanding self-mated anti-galling properties, high temperature hardness, and high resistance to cavitations erosion. Certification to AWS specification – A5.21 ERCoCr-A for bare rod; A5.13 ECoCr-A for coated electrode.

**AWS Specification:**

- AWS A5.13 ECoCr-A
- A5E A5.13 ECoCr-A

**Applications:**

- Hard surfacing of valve seats
- Forging Dies
- Crushers
- Hammer
- Edges
- Sealing Surfaces
- Hot Shear Blades
- Hot Pressing Tools
- Cutting Knives
- Blowers

**Chemical Composition of Cobalt Base Alloy ECoCr-A Welding Electrodes :**

Grade	C	Si	Mn	Cr	W	Co
ECoCr-A	0.84	0.57	0.97	30.46	4.53	Balance

**Cobalt base Alloys ECoCr-A Welding Electrode Hardness of all weld metal HRC(Hv)**

<b>ECoCr-A</b>	<b>:</b>	<b>38-44 (370-440)</b>
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**Dimensions & Weight Specification of Welding Electrodes :**

<b>Diameter in mm</b>	5.00	4.00	3.15
<b>Length in mm</b>	450	450	450
<b>Wt. per Box Kgs.</b>	4.00	4.00	4.00
<b>Wt. per Carton Kgs.</b>	16.00	16.00	16.00
<b>Welding Current (Amps)</b>	180 – 200	140 – 180	100 – 120