

Safety data sheet
according to UK REACH

Printing date 19.11.2024

Version number 3

Revision: 14.11.2024

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

- **1.1 Product identifier**
- Trade name: **Copper welding rods**
- **1.2 Relevant identified uses of the substance or mixture and uses advised against**
- **Sector of Use** SU15 Manufacture of fabricated metal products, except machinery and equipment
- **Product category** PC38 Welding and soldering products, flux products
- **Application of the substance / the mixture** Welding
- **1.3 Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
MIGAL.CO GmbH
Wattstr. 2
94405 Landau/Isar
Germany
Tel.: +49(0)9951/69059-3110
Fax.: +49(0)9951/69059-3910
- Email: robert.lahnsteiner@migal.co
Internet: http://www.migal.co
- **Further information obtainable from:** Robert Lahnsteiner, Robert.lahnsteiner@migal.co
- **1.4 Emergency telephone number:** +49 9951 69059-3110

SECTION 2: Hazards identification

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**
The product is not classified, according to the GB CLP regulation.
- **2.2 Label elements**
- **Labelling according to Regulation (EC) No 1272/2008** Void
- **Hazard pictograms** Void
- **Signal word** Void
- **Hazard statements** Void
- **Precautionary statements**
P102 Keep out of reach of children.
P103 Read carefully and follow all instructions.
- **Additional information:**
Contains Nickel as an alloy component. May produce an allergic reaction.
Keep out of the reach of children
- **2.3 Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

SECTION 3: Composition/information on ingredients

- **3.2 Mixtures**
- **Description:**
Alloy of copper and other metals (Al, Fe, Mn, Ni, P, Pb, Si, Sn, Zn etc.) in varying proportions

MIGAL.CO	EN ISO 24373	Chemical analysis by weight %..				
		Cu	Al	Fe	Mn	Ni
	CAS	7440-50-8	7429-90-5	7439-89-6	7439-96-5	7440-02-0
ML CuAl8	Cu 6100	ad. 100	6,0-8,5	<0,4	0,5	<0,4

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ML CuAl9Fe	Cu 6180	ad. 100	8,5-11,0	1,5	-	-
ML CuSn	Cu 1898A	ad. 100	0,01	0,03	0,1-0,4	0,1
ML CuSn6	Cu 5180A	ad. 100	0,01	0,1	-	-
ML CuSi3	Cu 6560	ad. 100	0,02	0,5	0,5-1,5	-
ML CuMn13Al7	Cu 6338	ad. 100	7,0-8,5	2,0-4,0	11,0-14,0	1,5-3,0
ML CuAl8Ni2	Cu 6327	ad. 100	7-9,5	0,5-2,5	0,5-2,5	0,5-3,0
ML CuAl8Ni6	Cu 6328	ad. 100	8,5-9,5	3,0-5,0	0,6-3,5	4,0-5,5

MIGAL.CO	EN ISO 24373	CAS	Chemical analysis by weight %					Andere
			P	Pb	Si	Sn	Zn	
			7723-14-0	7439-92-1	7440-21-3	7440-31-5	7440-66-6	-
ML CuAl8	Cu 6100	-	-	0,02	0,2	<0,4	0,2	<0,4
ML CuAl9Fe	Cu 6180	-	-	0,02	0,1	-	0,02	0,5
ML CuSn	Cu 1898A	0,015	0,01	0,1-0,4	0,5-1,0	-	-	0,2
ML CuSn6	Cu 5180A	0,01-0,4	0,02	-	4,0-7,0	0,1	0,1	0,2
ML CuSi3	Cu 6560	0,05	0,02	2,8-4,0	0,2	0,4	0,4	0,5
ML CuMn13Al7	Cu 6338	-	0,02	0,1	-	0,15	0,15	0,5
ML CuAl8Ni2	Cu 6327	-	0,02	0,2	-	0,2	0,2	0,4
ML CuAl8Ni6	Cu 6328	-	0,02	0,1	-	0,1	0,1	0,5

Dangerous components:

CAS: 7440-50-8	copper	≥75-≤100%
EINECS: 231-159-6	Aquatic Acute 1, H400 (M=10); Aquatic Chronic 1, H410	
Reg.nr.: 01-2119480154-42-XXXX	(M=10); Acute Tox. 4, H302; Eye Irrit. 2, H319	
CAS: 7439-96-5	manganese	≥0-≤15%
EINECS: 231-105-1	substance with a Community workplace exposure limit	
CAS: 7429-90-5	aluminium	≥0-≤15%
EINECS: 231-072-3	substance with a Community workplace exposure limit	
CAS: 7440-02-0	Nickel as an alloy component	≥2.5-<10%
EINECS: 231-111-4	STOT RE 1, H372; Skin Sens. 1, H317; Aquatic Chronic 3, H412	
CAS: 7440-21-3	silicon	≥0-≤5%
EINECS: 231-130-8	substance with a Community workplace exposure limit	

Additional information: For the wording of the listed hazard phrases refer to section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General information: By continuous complaints consult a physician.

After inhalation:

(Smoke, Powder)

Supply fresh air; consult doctor in case of complaints.

The following measures relate to the effects caused by welding the product and not to the product as supplied. Machining, grinding, flame cutting or welding of these alloys will introduce foreign substances, mainly copper, into the atmosphere.

Aluminium, cobalt, manganese, nickel or zinc may be present depending on the alloy. As soon as copper dust and fumes are adequately disposed of, the other alloy elements do not pose a problem. Spot extraction is required for intensive machining, grinding and welding work. If this is not sufficient, personal protective equipment with appropriate filters or fresh air supply must be used.

After skin contact:

In case of burns from hot or molten metal, cool the wound and consult a doctor.

In case of a cut or injury, consult a doctor.

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· **After eye contact:**

Solid products: In case of eye injury, a doctor should be consulted

Powder, smoke, chips: In case of irritation, wash eyes with plenty of water. If irritation persists, a doctor should be consulted.

· **After swallowing:**

Seek medical treatment.

Do not induce vomiting.

Never give anything by mouth to an unconscious person.

· **4.2 Most important symptoms and effects, both acute and delayed**

Copper fumes or dusts can irritate the nose and throat. If too much smoke is inhaled, a metallic taste is triggered. High concentrations of smoke can lead to metal fume fever. The symptoms are similar to flu. Long-term inhalation of too much copper dust or smoke can cause anaemia. The dust can also cause skin or eye irritation after brief exposure.

Some forms of nickel led to cancer in animal experiments. Nickel subsulphide, which was used in earlier smelting processes, is held responsible for lung and nasal cancer in humans.

Since then, various studies have shown that the carcinogenicity of nickel and nickel oxides is low, if it exists at all.

Prolonged exposure to manganese dust or smoke can lead to a number of serious symptoms. On the other hand, manganese is an essential trace element for human metabolism. The average daily intake necessary for human health is 2 to 5 mg, mostly from food. This intake is about 20 to 50% of the daily intake resulting from the PEL and TLV of 1mg/m³ from air.

Excessive manganese intake has effects on the central nervous system, with the following symptoms after increasing exposure: apathy, loss of appetite, uncontrolled laughter, sleep disturbance followed by drowsiness, headache, leg cramps, speech disorders, mask-like face, awkward movements, difficulty walking, frequent falls, trembling, salivation, sweating, impaired consciousness.

Grinding work on uncleaned pieces of jewellery with embedded sand can produce considerable amounts of dust with silicon. This can cause silicosis. IARC has listed crystalline silicon as class 2A: it can probably cause lung cancer

· **4.3 Indication of any immediate medical attention and special treatment needed**

No further relevant information available.

SECTION 5: Firefighting measures

· **5.1 Extinguishing media**

· **Suitable extinguishing agents:**

The product is not combustible when delivered.

Fire caused by powder and chips:

Extinguishing agent class D

· **For safety reasons unsuitable extinguishing agents:** halogen-containing fire extinguishing agents

· **5.2 Special hazards arising from the substance or mixture**

Prevent particles from being whirled up when you want to extinguish a powder fire.

Formation of toxic gases is possible during heating or in case of fire.

Molten metal alloys can be explosive on contact with water. They can also react strongly with water, rust and some metal oxides (e.g. copper, iron and lead oxides).

· **5.3 Advice for firefighters**

· **Protective equipment:** Wear self-contained respiratory protective device.

· **Additional information**

Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

SECTION 6: Accidental release measures

· **6.1 Personal precautions, protective equipment and emergency procedures**

Avoid contact with hot metal. Avoid inhaling vapours and fumes generated during metal working and processing.

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Keep people at a distance and stay on the windward side.

Refer to protective measures listed in sections 7 and 8.

Use the appropriate protective equipment when welding and use suitable eye protection for arc welding. Avoid inhalation of dust and eye or skin contact.

· **6.2 Environmental precautions:** Do not allow to penetrate the ground/soil.

· **6.3 Methods and material for containment and cleaning up:**

Pick up mechanically.

Dispose contaminated material as waste according to section 13.

· **6.4 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.

SECTION 7: Handling and storage

· **7.1 Precautions for safe handling** Open and handle receptacle with care.

· **Information about fire - and explosion protection:**

In the solid form (bars, pieces, wire rods, drawn wires), the product is not flammable and does not usually present a risk in terms of fire formation or explosion.

Use of appropriate dust removal techniques that reduce the amount of finely dispersed particles in the environment to non-critical concentrations.

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

· **Storage:**

· **Requirements to be met by storerooms and receptacles:**

Store the product in its original packaging in a dry area protected from atmospheric influences. Avoid thermal shock. Storage in unsuitable areas can result in surface oxidation, which can be detrimental to product quality.

· **Information about storage in one common storage facility:** Not required.

· **Further information about storage conditions:** Keep container tightly sealed.

· **Recommended storage temperature:** 5-30°C

· **VCI storage category -**

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

SECTION 8: Exposure controls/personal protection

· **8.1 Control parameters**

· **Ingredients with limit values that require monitoring at the workplace:**

7440-50-8 copper

WEL Short-term value: 2** mg/m³

Long-term value: 0.2* 1** mg/m³

*fume **dusts and mists (as Cu)

7439-96-5 manganese

WEL Long-term value: 0.2* 0.05** mg/m³

as Mn *inhalable fraction **respirable fraction

7429-90-5 aluminium

WEL Long-term value: 10* 4** mg/m³

*inhalable dust **respirable dust

7440-02-0 Nickel as an alloy component

WEL Long-term value: 0.5 mg/m³

as Ni; Sk; Carc

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7440-21-3 silicon

WEL Long-term value: 10* 4** mg/m³
*inhalable dust **respirable dust

· **DNELs**

7440-50-8 copper

Oral DNEL long term 0.041 mg/kg bw/day /systemisc (consumer)
Dermal DNEL long term 137 mg/kg bw/day /systemisch (consumer)
137 mg/kg bw/day /systemisch (worker)
DNEL short term 273 mg/kg bw/day /systemisch (consumer)
273 mg/kg bw/day /systemisch (worker)
Inhalative DNEL long term 1 mg/m³ /lokal (consumer)
20 mg/m³ /systemisch (worker)
DNEL short term 1 mg/m³ /lokal (consumer)

· **PNECs**

7440-50-8 copper

PNEC Fresh Water 0.0078 mg/l (fresh water)
PNEC Marine Water 0.0052 mg/l (marine water)
PNEC Soil 65 mg/kg (soil)
PNEC Sediment 87 mg/kg (fresh water)
676 mg/kg (marine water)
PNEC (Kläranlage) 0.23 mg/l (waste water treatment plant)

· **Additional information:** The lists valid during the making were used as basis.

· **8.2 Exposure controls**

· **Appropriate engineering controls** No further data; see section 7.

· **Individual protection measures, such as personal protective equipment**

· **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

Protect eyes and body from light and smoking while product is in use.

Respiratory protective equipment: depending on welding and environmental conditions, use suitable respiratory protective equipment during welding. Use suitable ventilation and/or fume extraction equipment.

Hand protection: use suitable UV, IR and heat protective gloves.

Eye protection: use suitable goggles or helmets with UV, IR and light protection filters.

Skin protection: use suitable body, hand and head clothing. Please use protective footwear against radiation, sparks and electric current. Avoid wearing dirty, greasy or oily clothing that can catch fire during welding.

· **Respiratory protection:**

Use suitable respiratory protective device and local exhaust ventilation when aerosol or mist is formed.

· **Hand protection**

Wear gloves for the protection against mechanical hazards according to EN 388.

Heat resistant gloves



Protective gloves

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

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· **Penetration time of glove material**

The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Body protection:**

Welding work and in particular the handling of liquid metal require appropriate safety clothing.

SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**

· **General Information**

· Physical state	Solid
· Colour:	Copper coloured
· Odour:	Odourless
· Odour threshold:	Not determined.
· Melting point/freezing point:	910-1090 °C
· Boiling point or initial boiling point and boiling range	2,300 °C
· Lower and upper explosion limit	
· Lower:	Not determined.
· Upper:	Not determined.
· Flash point:	Not applicable.
· Decomposition temperature:	Not determined.
· pH	Not applicable.
· Viscosity:	
· Kinematic viscosity	Not applicable.
· Dynamic:	Not applicable.
· Solubility	
· water:	Insoluble.
· Partition coefficient n-octanol/water (log value)	Not determined.
· Vapour pressure:	Not applicable.
· Density and/or relative density	
· Density at 20 °C:	7.4-8.9 g/cm ³
· Relative density	Not determined.
· Vapour density	Not applicable.

· **9.2 Other information**

· **Appearance:**

· Form:	Solid material Wires / rods
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· **Important information on protection of health and environment, and on safety.**

· Ignition temperature:	Product is not selfigniting
· Explosive properties:	Product does not present an explosion hazard
· Change in condition	
· Evaporation rate	Not applicable.

· **Information with regard to physical hazard classes**

· Explosives	Void
· Flammable gases	Void
· Aerosols	Void
· Oxidising gases	Void
· Gases under pressure	Void
· Flammable liquids	Void
· Flammable solids	Void

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· Self-reactive substances and mixtures	Void
· Pyrophoric liquids	Void
· Pyrophoric solids	Void
· Self-heating substances and mixtures	Void
· Substances and mixtures, which emit flammable gases in contact with water	Void
· Oxidising liquids	Void
· Oxidising solids	Void
· Organic peroxides	Void
· Corrosive to metals	Void
· Desensitised explosives	Void

SECTION 10: Stability and reactivity

- **10.1 Reactivity** No further relevant information available.
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **10.3 Possibility of hazardous reactions**
No hazardous reactions when stored and handled according to prescribed instructions.
- **10.4 Conditions to avoid** No further relevant information available.
- **10.5 Incompatible materials:**
Acids
Humidity
Reactions with strong alkalies.
Reactions with strong oxidising agents.
- **10.6 Hazardous decomposition products:**
Welding, cutting, sawing, grinding or surface treatment can generate dust or fumes from metal oxides. Lead oxide fumes can form at very high temperatures.

SECTION 11: Toxicological information

- **11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**
 - **Acute toxicity** Based on available data, the classification criteria are not met.
 - **LD/LC50 values relevant for classification:**
- 7439-96-5 manganese**
Oral LD-50 9,000 mg/kg (Rat)
- 7439-89-6 iron**
Oral LD-50 30 mg/kg (Rat)
- 7440-21-3 silicon**
Oral LD-50 3,160 mg/kg (Rat)
- **Primary irritant effect:**
 - **Skin corrosion/irritation** Based on available data, the classification criteria are not met.
 - **Serious eye damage/irritation**
Due to the product composition slight irritations of the eyes cannot be excluded.
Based on available data, the classification criteria are not met.
 - **Respiratory or skin sensitisation**
Contains sensitizing agents in small amounts.
Based on available data, the classification criteria are not met.
The actual product has no toxicity. During welding, cutting and machining, fumes and dust are produced, the composition of which depends on many influences, e.g. base material, welding processes, etc. Other conditions that can influence the fume composition are Substances on the base material surface, number of welders and room volume of the environment, quality and size of ventilation. According to these factors, the fume components can be copper, aluminium, silicon, nickel, manganese and tin in basic or group form (e.g.

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oxides).

- **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
- **Carcinogenicity** Based on available data, the classification criteria are not met.
- **Reproductive toxicity** Based on available data, the classification criteria are not met.
- **STOT-single exposure** Based on available data, the classification criteria are not met.
- **STOT-repeated exposure** Based on available data, the classification criteria are not met.
- **Aspiration hazard** Based on available data, the classification criteria are not met.

· **Additional toxicological information:**

It is the responsibility of the user to comply with the laws on health protection and accident prevention in the workplace.

The assessment of the welder's potential exposure must be carried out by a competent person. This can carry out air concentration measurements.

· **Information on likely routes of exposure**

Inhalation: minor overexposure to welding fumes may cause metal fume fever, dizziness, illness, dehydration and nose/throat/eye irritation; it can also exacerbate pre-existing respiratory conditions such as asthma and emphysema. Copper welding and arc soldering can produce ozone.

Overexposure to ozone could be an irritant to the mucous membrane, and could also be the cause of irritation, congestion and oedema. Soldering on galvanised sheet metal can form zinc oxide and copper oxide.

· **11.2 Information on other hazards**

· **Endocrine disrupting properties**

None of the ingredients is listed.

SECTION 12: Ecological information

- **12.1 Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **12.2 Persistence and degradability** No further relevant information available.
- **12.3 Bioaccumulative potential** No further relevant information available.
- **12.4 Mobility in soil** No further relevant information available.
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **12.6 Endocrine disrupting properties**
- The product does not contain substances with endocrine disrupting properties.
- **12.7 Other adverse effects** No further relevant information available.
- **Additional ecological information:**
- **COD-value:** not available
- **BOD5-value:** not available
- **General notes:** Not hazardous for water.

SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**
- **Recommendation**
- Must not be disposed together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packaging:**
- **Recommendation:** Disposal must be made according to official regulations.

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SECTION 14: Transport information

- **14.1 UN number or ID number**
- **ADR, IMDG, IATA** Void
- **14.2 UN proper shipping name**
- **ADR, IMDG, IATA** Void
- **14.3 Transport hazard class(es)**
- **ADR, IATA**
- **Class** Void
- **14.4 Packing group**
- **ADR, IMDG, IATA** Void
- **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.
- **Transport/Additional information:** Not dangerous according to the above specifications.
- **UN "Model Regulation":** Void

SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Poisons Act**
- **Regulated explosives precursors**
None of the ingredients is listed.
- **Regulated poisons**
None of the ingredients is listed.
- **Reportable explosives precursors**
7429-90-5 aluminium: Listed
- **Reportable poisons**
None of the ingredients is listed.
- **Labelling according to Regulation (EC) No 1272/2008** Void
- **Hazard pictograms** Void
- **Signal word** Void
- **Hazard statements** Void
- **Precautionary statements**
P102 Keep out of reach of children.
P103 Read carefully and follow all instructions.
- **Directive 2012/18/EU**
- **Named dangerous substances - ANNEX I** None of the ingredients is listed.
- **National regulations:**
- **Waterhazard class:** Not hazardous for water.
- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Relevant phrases**
H302 Harmful if swallowed.

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H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H372 Causes damage to organs through prolonged or repeated exposure.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.
H412 Harmful to aquatic life with long lasting effects.

Contact:

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Abbreviations and acronyms:

ADR: Accord relatif au transport international des marchandises dangereuses par route (Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
DNEL: Derived No-Effect Level (UK REACH)
PNEC: Predicted No-Effect Concentration (UK REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
Acute Tox. 4: Acute toxicity – Category 4
Eye Irrit. 2: Serious eye damage/eye irritation – Category 2
Skin Sens. 1: Skin sensitisation – Category 1
STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1
Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1
Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1
Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3