Copper wire rod Cu-ETP 1

Date of issue: 23.07.2012 **Revision No./Revision date: 3 / 27.12.2022**

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

1.1 Product identifier:
Trade name: Copper wire rod Cu-ETP 1
Name: copper
Synonyms: copper in massive form (the particle size >1mm)
IUPAC name: copper
REACH registration No.: 01-2119480154-42-0002
UN No.: -
CAS No.: 7440-50-8
WE No: 231-159-6
Index number: -

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified uses: cable industry, production of high-quality electrical cables.
Uses advised against: not known

1.3 Details of the supplier of the material safety data sheet:

KGHM Polska Miedź S.A.
"Cedynia" Copper Rolling Mill
59-305 Rudna

Person responsible for preparing the MSDS: phone No.: (+48 76) 747 82 21, e-mail: karty.charakterystki@kghm.com

1.4. Emergency telephone number
Manufacturer (Poland): (48 76) 747 16 15 – available 24/7
Fire Department: 998 – available 24/7
General Emergency: 112 – available 24/7
Telephone numbers for more information:
Head of Sales Department: +48 767471640 – available: Mon. – Fri. 7^{00} - 15^{00},
Head of Wire Rod Mill Department: +48 767471600 – available: Mon. – Fri. 7^{00} - 15^{00},
Head of Oxygen-free Copper Department: +48 767471440 – available: Mon. – Fri. 7^{00} - 15^{00}

SECTION 2. Hazards identification

2.1. Classification of the substance or mixture:
Not classified

2.2. Label elements:
None

2.3 Other hazards:
The substance does **not** meet classification criteria for PBT and vPvB.
The substance is **not** a substance identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

SECTION 3. Composition/information on ingredients

3.1. Substances

No.	Substance name	CAS No.	WE No.	Percentage content [mass fraction]	Hazard Class And Category Code(s)	H statements	Specific Conc. Limit, M-factor, ATE
1.	Copper: - in massive form (> 1mm)	7440-50-8	231-159-6	min. 99,90	-	-	-

3.2. Mixtures

n/a

SECTION 4. First Aid measures

4.1 Description of first aid measures:

Copper in massive form is not hazardous. During production and some uses, the following hazardous derivatives may occur/be formed: respirable copper-bearing particles and soluble copper compounds. This section also considers potential hazards of copper-bearing materials and copper compounds (referred to as "copper"), relevant to the production and use of copper massive.

Following inhalation:

Take the victim out of the place of exposure. Provide calmness in any position. Protect against loss of body heat. If the victim not breathing, provide artificial respiration using respirator (do not use mouth-to-mouth method). Necessary medical assistance.

Following skin contact:

Remove contaminated clothing. Immediately clean contaminated skin with a lot of running water at room temperature. In case of skin changes, seek dermatologist attention.

Following eye contact:

Immediately rinse with a lot of cool, running water, for about 15 minutes. Avoid intensive water jet because conjunctiva may become mechanically damaged. In the event of changes in the eye and / or if discomfort continues, consult a physician.

Following ingestion:

Give plenty of lukewarm water and induce vomiting. Get medical attention if any discomfort occurs.

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

Copper in massive form is not hazardous However, during production and some uses there may be risks associated with the presence of respirable particles of copper and its compounds. This section also considers potential hazards of copper-bearing materials and copper compounds (referred to as "copper"), relevant to the production and use of copper massive.

Acute intoxication symptoms:

Respiratory tract: copper dust and fumes cause irritation of eyes, nose and respiratory tract and so-called copper fever (flu-like symptoms); copper fever symptoms appear when a content of 0,1 mg of copper in 1 m^3 of the inhaled air.

Alimentary system: metallic taste in mouth, nausea, vomiting, diarrhea.

Eyes contact: lacrimation, irritation.

Long-term exposure:

Prolonged exposure of the eyes (dust, fumes) may cause discoloration of the cornea and lens. Long-term exposure to copper fumes by inhalation and prolonged consumption of copper more than the
recommended dose can cause metabolic changes, changes in the liver, kidney damage, brain, coronary and myocardial infarction.

4.3 Indication of any immediate medical attention and special treatment needed:

If the victim is unconscious, make sure that the respiratory tract is not obstructed and place the victim in a recovery position. Provide medical assistance.

SECTION 5. Firefighting measures

5.1 Extinguishing media:

Suitable extinguishing media: Non-flammable substance. Use extinguishing media appropriate to the surrounding materials. Extinguishing media that can be used in the presence of molten copper: sand, sodium chlorite.

Unsuitable extinguishing media: Not known. Do not use water or halogenated extinguishing agents on molten metal.

5.2 Special hazards arising from the substance or mixture:

The substance is fire-dangerous only in the form of vapors and dust.

5.3 Advice for fire-fighters:

Personnel participating in extinguishing a fire should wear protective, gas-tight clothes and apparatus isolating respiratory ways.

Follow the nature and size of the adjacent objects fire.

Additional information: Notify those in the surroundings about the fire. Remove all personnel not participating in the breakdown liquidation procedure from the area of hazard. Call fire department or police department.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:

6.1.1 For non-emergency personnel: Do not inhale dusts. In case of choosing evacuation route consider the direction of the dust/fume movement.

6.1.2 For emergency responders: Do not inhale dusts. Personnel participating in rescue operation should wear protective, gas-tight clothes and apparatus isolating respiratory ways.

6.2 Environmental precautions:

Do not let the product penetrate the sewage system, ground and surface waters and soil. In case of accident, protect the substance against release to the environment.

6.3 Methods and material for containment and cleaning up:

Collect maximum quantity to proper containers in order to re-use it.

6.4 Reference to other sections

Personal protection equipment described in section 8.2.2
Disposal considerations in section 13.

SECTION 7. Handling and storage

7.1 Precautions for safe handling:

Wear protecting clothes and gloves. When handling the substance, do not drink, eat, smoke. Avoid generation and spreading of dust in the workplace. Avoid inhalation of dust and small particles, avoid contact with eyes. Avoid contact with molten material. Do not use water on molten material. Processes such as melting, burning, cutting, brazing, grinding and machining can generate fumes and dusts. Provide adequate ventilation. Obey the rules of safety and hygiene.

7.2 Conditions for safe storage, including any incompatibilities:

Do not store near: acetylene, acids and bases and their vapours and salts. Avoid contact with metals less precious, particularly when when there is an access of moisture.

7.3 Specific end use(s):

Identified uses are listed in section 1.2.

SECTION 8. Exposure control/personal protection

8.1 Control parameters:

The following current national occupational exposure limit values apply (Poland):

No.	Substance name	TLV-TWA [mg/m^3]	TLV-STEL [mg/m^3]
1.	Copper and its inorganic compounds – calculated as Cu:	0.2	-

Legal basis:

Regulation of the Minister of Family, Labour and Social Policy of June 12th, 2018 on the highest allowable concentrations and intensities of agents harmful for health at the workplace (Official Journal of 2018 item 1286);

Determination in workplace air:

PN-Z-04030-05:1991 Air purity protection – Dust content tests – Determination of total dust at workplaces according to filtration and gravimetric method;

PN-Z-04008-7:2002 Air purity protection - Sampling methods - Principles of air sampling in work place and interpretation of results. ;

PN-EN 689+AC:2019-06Workplace exposure - Measurement of exposure by inhalation to chemical agents - Strategy for testing compliance with occupational exposure limit values ;

PN-EN 482:2021-08 Workplace exposure - Procedures for the determination of the concentration of chemical agents - Basic performance requirements

PN-ISO 4225/Ak:1999 Air quality – General issues – Terminology (national paper)

Note:

The recipient of the product is obliged to control the concentrations and/or intensities of harmful substances in the work environment with the frequency and range necessary to determine the exposure level of workers in accordance with the applicable national legislation.

Derived NoDerived No Effect Levels (DNELs):

DNEL (Long-term – systemic effects) – 0,041 mg Cu/kg b.w./d (oral, dermal)

DNEL (Short-term – systemic effects) – 0,082 mg Cu/kg b.w./d (oral, dermal)

Predicted No Effect Concentrations (PNECs):

PNEC (Freshwater) – 7,8 µg/l

PNEC (Marine water) – 5,2 µg/l

PNEC (Sediment freshwater) – 87 mg/kg dry wt.

PNEC (Sediment marine) – 676 mg/kg dry wt.
PNEC (Soil) – 65,5 mg/kg dry wt.
PNEC (STP) – 230 mg/l Effect Levels (DNELs) and Predicted No Effect Concentrations (PNECs)

8.2 Exposure controls:

8.2.1 Appropriate engineering controls at industrial settings

During the production and processing of copper in massive form ensure adequate local exhaust ventilation with housing in the area of vapours/dust emission to aerial environment and general ventilation of the room. Processes such as melting, grinding, mechanical working or packaging may generate the formation of dust and fumes.
Any deposit of dust which cannot be avoided should be regularly removed preferably using appropriate industrial vacuum cleaners or central vacuum systems.
Waste air should be released into the atmosphere only after it has passed through suitable dust separators.
Waste water generated during the production process or cleaning operations should be collected and should preferably be treated in an on-site waste water treatment plant which ensures efficient removal of copper.

8.2.2 Individual protection measures, such as personal protective equipment

Eye/face protection: Not required. If there is a possibility of exposure to dust, wear goggles protect against fine dust. Do not wear contact lenses.
Hand protection: Working gloves.
Skin protection: Working clothes.
Respiratory protection: If there is a possibility of exposure to dust use half-mask with filter of appropriate class for the designated concentrations in the air.
Thermal hazards: Can occur during substance processing (e.g. remelting).
Hygiene measures: Remove contaminated clothing. Clean contaminated clothing before reuse. After handling the product wash hands and face. Do not eat or drink while handling the product.
Additional Information:
During the production and processing of copper use personal protection measures appropriate to the hazards in accordance with applicable law.

8.2.3. Environmental exposure controls:

Avoid release to the environment. Environmental exposure should be controlled in accordance with the national legislation on environmental protection.

SECTION 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties:

a) *Physical state*: solid;
b) *Colour:* copper colour;
c) *Odour*: odourless;
d) *Melting point/freezing point:* 1083 °C; freezing point not determined;
e) *Boiling point or initial boiling point and boiling range:* n/a to solids with melting point > 300 °C ;
f) *Flammability*: n/a inflammable product;
g) *Lower and upper explosion limit:* n/a;
h) *Flash point:* n/a;

i) *Auto-ignition temperature:* n/a;
j) *Decomposition temperature:* decomposition starts at 1083 °C;
k) *pH:* n/a;
l) *Kinematic viscosity:* n/a;
m) *Solubility: insoluble*;
n) *Partition coefficient n-octanol/water (log value):* n/a;
o) *Vapour pressure:* 0.013 Pa at 840 °C;
p) *Density at 20 °C: 8,93g/cm^3;*
q) *Relative vapour density:* n/a;
r) *Particle characteristics:* > 1mm.

9.2 Other information:
None

SECTION 10. Stability and reactivity

10.1. Reactivity: Non-reactive substance.
10.2. Chemical stability: The substance is stable.
10.3 Possibility of hazardous reactions: Dangerously reacts with acetylene forming explosive acetylides. With most acids forming soluble copper compounds.
10.4 Conditions to avoid: Avoid dust formation and contact with acids.
10.5 Incompatible materials: Acetylene, halogens, ammonia, oxidizing acids, sulfur, hydrogen sulfide. In the presence of air reacts with the hydrofluoric and hydrochloric acids. In moist air reacts with carbon dioxide which leads to covering the characteristic green patina and reacts with sulfur dioxide which leads to covering the black coating of copper sulfide.
10.6 Hazardous decomposition products: The elemental Cu^0 does not decompose but may be transformed into other metal forms (e.g. Cu^{2+}).

SECTION 11. Toxicological information

The toxicological information was obtained from Chemical Safety Report for copper, which was prepared for REACH registration purpose.

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

a) Acute toxicity:

Based on available data, the classification criteria are not met.
Toxic doses (after ingestion):
LD50 rat > 2000 mg/kg body weight
NOAEL 4 mg Cu/l
Toxic doses (inhalation):
LD50 rat 1-5 g/m3 air
Toxic doses (dermal):
LD50 > 2000 mg/kg body weight

b) Skin corrosion/irritation:

Based on available data, the classification criteria are not met.

c) Serious eye damage/ eye irritating:

Based on available data, the classification criteria are not met.

Animal studies with coated copper flakes and CuO induced slight reversible eye irritation effects.

d) Respiratory tract or skin sensitization:

Based on available data, the classification criteria are not met.

e) Germ cell mutagenicity:

Based on available data, the classification criteria are not met.

Public domain data indicate that copper sulphate is negative in vitro in bacterial cell reverse mutation assays, and in several other bacterial cell assays up to and including cytotoxic doses (1000-~3000 µg/plate). Similar negative findings have also been reported for copper chloride. Results from in vitro mammalian cell tests show that copper sulphate is genotoxic only at high, cytotoxic concentrations (up to 250 mg/l).

Two in vivo genotoxicity studies performed on a soluble copper compound (copper sulphate), in accordance to respectively OECD 486 and EU B.12 were negative.

f) Carcinogenicity:

Based on available data, the classification criteria are not met.

All available studies on the carcinogenicity of copper are public domain studies but study qualities are limited due to shorter exposure periods (<2 years) and small group sizes. However, using these studies in a weight of evidence approach, it was concluded that copper compounds do not raise concerns with respect to carcinogenic activity.

g) Reproductive toxicity:

Based on available data, the classification criteria are not met.

A study (Mylchreest, 2005) indicates that the no-observed-adverse-effect level (NOAEL) for reproductive toxicity of a soluble copper compound (copper sulphate pent hydrate) in rats is > 1500 mg/kg food or >24 mg Cu/kg bw/d, the highest dose tested. At the highest dose, slight non-reproductive toxicity effects (transient effect on spleen weight) were observed.

h) Specific target organ toxicity — Single exposure:

Based on available data, the classification criteria are not met.

i) Specific target organ toxicity — Repeated exposure:

Based on available data, the classification criteria are not met.

j) Aspiration hazard

Based on available data, the classification criteria are not met.

11.2. Information on other hazards:

None.

SECTION 12. Ecological information

12.1. Toxicity:

According to information from the Chemical Safety Report for copper prepared for registration under REACH, copper in solid form does not meet the classification criteria for acute toxicity and chronic toxicity to aquatic organisms.

12.2. Persistence and degradability:

Copper cannot be degraded, but may be transformed between different phases, chemical species, and oxidation states. In aquatic environment the copper ions form with present in the water sulfide ions and carbonate ions sparingly soluble salts that settle into the benthic deposit.

12.3. Bioaccumulative potential:

In accordance with Chemical Safety Report copper has not bioaccumulative potential.

12.4. Mobility in soil:

Copper ions are strongly bonded by a matrix of the soil. The binding depends on the properties of the soil.

12.5. Results of PBT and vPvB assessment:

The substance **is not** classified as PBT or vPvB.

12.6. Endocrine disrupting properties:

Not applicable. The substance **is not** a substance identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

12.7. Other adverse effects:

Copper is not expected to contribute to ozone depletion, ozone formation, global warming or acidification.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Proceedings in the case of waste arising: Do not dispose of to the sewage system. Do not let the substance to contamination of surface and ground water or soil. Do not dispose of at municipal landfills. Consider re-use. Recovery or disposal carried out in accordance with applicable regulations.

Waste management according to the Directive of the European Parliament and Council 2008/98/EC of November 19th, 2008 on waste (Official Journal EC L 312 of 22.11.2008, with subsequent amendments).

SECTION 14: Transport information

The substance is not subject to regulations concerning the transport of dangerous goods.

14.1. UN number or ID number:: n/a

14.2. UN proper shipping name: n/a

14.3. Transport hazard class(es): n/a

14.4. Packing group: n/a

14.5. Environmental hazards: n/a

14.6. Special precautions for user: covered transport is recommended; protect packages from displacement during transport.

14.7. Maritime transport in bulk according to IMO instruments: n/a

SECTION 15: Regulatory information

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

Commission Regulation (EU) 2020/878 of 18 June 2020 amending Annex II to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

Act of February 25th, 2011 on chemical substances and their mixtures (Official Journal 11.63.322); Regulation (EC) No. 1907/2006 of the European Parliament and Council of December 18th, 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 of the European Parliament and Council (EC) No. 1272/2008 dated December 16th, 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; Regulation of the European Parliament and Council (EC) No 1336/2008 of 16 December 2008 amending Regulation (EC) No 648/2004 in order to adapt it to Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures (Official Journal L 354 from 31.12.2008); Regulation of the Minister of Labour and Social Policy of June 6th, 2014 on the highest allowable concentrations and intensities of substances harmful for health in the work environment (Official Journal No. 817); Act of August 19th, 2011 on transportation of hazardous goods (Official Journal 227.1367); Act of December 14th, 2012, on waste (Official Journal 0.21.2013).

15.2. Chemical safety assessment

Chemical safety assessment of the substance has been carried out. The Chemical Safety Report is available at KGHM Polska Miedź S.A. Head Office.

SECTION 16: Other information

MSDS has been updated in accordance with Commission Regulation (EU) 2020/878 of 18 June 2020 amending Annex II to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH).

Explanations of abbreviations and acronyms used in the MSDS:

CAS number – means numerical identification assigned to chemical substance by the American organization named Chemical Abstract Service (CAS), enabling substance identification.

Index number – it is an identification code given in part 3 of the annex VI to the Regulation of the European Parliament and Council (EC) No. 1272/2008 dated December 16th, 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;

WE number – the number assigned to chemical substance in EINECS -. European Inventory of Existing Chemical Substances, or the number assigned to chemical substance in ELINCS – European List of Notified Chemical Substances or the number in chemical substances inventory included in "No-longer polymers" document.

Registration number – number given by ECHA after substance/intermediate registration by the manufacturer/importer according to REACH Regulation.

UN number – unequivocal marking of hazardous substances and goods assigned by United Nations Central Committee to provide international recognition and use.

Name according to IUPAC – name of a substance given by IUPAC - International Union of Pure and Applied ChemistryCommittee

TLV-TWA – the highest admissible concentration/threshold limit value – weighted average value – concentration of toxic chemical whose impact on a worker during 8-hour daily shift and average weekly time of work provided in the Labour Code during the period of his occupational activity should not cause negative changes of his health condition and of health condition of his next generations.

TLV-STEL – the highest admissible short term concentration/short term exposure limit – weighted average of concentration of the specified, toxic chemical compound which should not cause negative changes of a worker's health if present in the work environment for not longer than 15 minutes and not more often than twice per shift with occurrences separated by more than 1 hour. and not more often than twice per shift with occurrences separated by more than 1 hour.
LD_{50} – lethal dose - dose of toxic substance expressed in milligrams per kilogram of body mass necessary to kill 50% of the examined population within specified time.
LC_{50} – lethal concentration - concentration of a substance in the inhaled air, expressed in milligrams per litre, which causes death of 50% of the examined population after specified period of exposure.
EC_{10} – effect concentration - substance concentration expressed in milligrams per litre causing the given pharmacological effect (e.g. inhibition of growth) at 10% of the examined population within specified time.
NOEC – no effect concentration - concentration of the substance expressed in milligrams per litre, at which no toxic effects can be observed.
Sources of information used during preparation of the MSDS:

- Own results of qualitative and quantitative analyses of the substance;
- Copper Chemical Safety Report,
- ECHA: https://echa.europa.eu/pl/information-on-chemicals/registered-substances;
- TOXNET: http://toxnet.nlm.nih.gov/.

Necessary training: Post-related training within the scope of safe use of a substance considering its hazardous properties for human and the environment.
Information contained in the material safety data sheet is to describe the product within the scope of safety requirements. User is responsible for taking any steps in order to meet the provisions of the national law and to create safe conditions for use of the product. User is held responsible for effects resulting from improper application of this product.
Further information can be obtained under the telephone numbers given in section 1.