European Copper Institute
Copper Alliance

Version 3
April 2018

1. Name and other identifiers of the substance

The substance **Black copper, copper smelting** is a UVCB (origin: inorganic) having the following characteristics and physical–chemical properties (see the IUCLID dataset for further details).

The following public name is used: black copper.

Table 1. Substance identity

EC number:	918-452-0
EC name:	Black copper, copper smelting
IUPAC name:	black copper, copper smelting
Description:	Metallic substance produced by melting and/or processing of metallic (scrap) and/or oxidic copper bearing materials (slag, oxides, ashes). Black copper is composed primarily of copper, contains other residual ferrous and non-ferrous metals and may contain metal oxides and metal sulphides. Black copper will gradually be transformed into “blister copper” or “anode copper” with higher copper content, during further metallurgical processes
Molecular formula:	Not applicable
Molecular weight range:	Not applicable

Structural formula: Not applicable

2. Composition of the substance

Name: Black Copper Generic Composition

Description: (elemental) composition applicable to generic composition. Typical, min and max values are derived from the average concentrations. Generic typical=average of the averages across industry, max=maximum of all averages across industry.

Degree of purity: 100.0 % (w/w)

Table 2. Constituents (elements)

Constituent	Typical concentration	Concentration range	Remarks
cobalt EC no.: 231-158-0	<= 0.52 % (w/w)	>= 0.0 — <= 2.0 % (w/w)	refers to % element. Co is mainly present in the form of Co metal
copper EC no.: 231-159-6	<= 79.0 % (w/w)	>= 47.0 — <= 96.0 % (w/w)	refers to % element. Cu is present mainly in the form of metal or Cu-alloy
iron EC no.: 231-096-4	<= 4.0 % (w/w)	>= 0.1 — <= 18.0 % (w/w)	refers to % element (in homogenized/bulk sample). Fe is mainly present in the form of oxide (eg magnetite). Amount in slag-type fraction can exceed 30%
nickel EC no.: 231-111-4	<= 3.0 % (w/w)	>= 0.0 — <= 13.0 % (w/w)	refers to % element. Ni is mainly present in the form of intermetallic compound

Constituent	Typical concentration	Concentration range	Remarks
			(alloy/metal-type)
lead EC no.: 231-100-4	>= 7.0 % (w/w)	>= 0.3 — <= 18.0 % (w/w)	refers to % element. Pb is mainly present in the form of Pb metal
zinc EC no.: 231-175-3	>= 2.0 % (w/w)	>= 0.01 — <= 5.0 % (w/w)	refers to % element. Zn is mainly present in the form of intermetallic Zn-compound
Silver EC no: 213-131-3	>= 0.05 % (w/w)	>= 0.01 % — <= 15 % (w/w)	refers to % element.
Arsenic EC no: 213-148-6	<= 0.07% (w/w)	>= 0.001 % - <= 0.2%	refers to %element. As is present in the metallic form.
Tin EC: 231-141-8	<= 3.1% (w/w)	>= 0.009 - <= 8.5 % (w/w)	refers to %element.
Oxides	<= 2.0 % (w/w)	>= 0.1 — <= 7.2 % (w/w)	refers to Total % oxides that are typical for metal intermediates (eg. SiO2, Al2O3, MgO, etc). Major form present is SiO2 (amount in slag-type fraction can achieve 40%)
Minor constituents		<= 5.0 % (w/w)	refers to Total % of minor elements, each typically <0,1%, all elements are taken into account in the hazardous profile

Name: Black Copper Generic Composition

Description: speciation composition applicable to generic composition.

Degree of purity: 100.0 % (w/w)

Table 3. Constituents (mineralogy/speciation)

Constituent	Typical concentration	Concentration range	Remarks
Metallic copper (as copper metal or copper intermetallic phase with other non-ferrous metals) EC no.: 231-159-6	<= 79.0 % (w/w)	>= 47.0 — <= 96.0 % (w/w)	Cu metal or Cu-alloy

3. Classification and labelling according to CLP / GHS

Name: Black Copper Generic Composition

Implementation: EU

State/form of the substance: solid

Related composition: Black Copper Generic Composition

Classification

The substance is classified as follows:

Classification and labelling according to CLP / GHS for physicochemical properties

Not classified for physico-chemical properties

Classification and labelling according to CLP / GHS for health hazards

Endpoint	Hazard category	Hazard statement
Respiration sensitization:	Resp. Sens. 1	H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin sensitation:	Skin Sens. 1	H317: May cause an allergic skin reaction.
Reproductive Toxicity:	Repr. 1A	H360DF May damage the unborn child. Suspect damaging fertility.
Reproductive Toxicity: Effects on or via lactation:	Effects on or via lactation	H362: May cause harm to breast-fed children
Carcinogenicity:	Carc. 1B	H350: May cause cancer
Specific target organ toxicity - repeated:	STOT Rep. Exp. 1 Affected organs: Central nervous system, blood and kidneys Routes: inhalation or ingestion	H372 Causes damage to central nervous system, blood and kidneys through prolonged or repeated exposure by inhalation or ingestion.

Classification and labelling according to CLP / GHS for environmental hazards

Endpoint	Hazard category	Hazard statement
Hazards to the aquatic environment (acute/short-term):	Aquatic Acute 1	H400: Very toxic to aquatic life.
Hazards to the aquatic environment (long-term):	Aquatic Chronic 2	H411: Toxic to aquatic life with long lasting effects.

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Labelling

Signal word: Danger

Hazard pictogram:

GHS08: health hazard

GHS09: environment

Hazard statements:

H317: May cause an allergic skin reaction.
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H350: May cause cancer.
H360: May damage fertility or the unborn child <state specific effect if known ><state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard>.
H362: May cause harm to breast-fed children
H372: Causes damage to organs <or state all organs affected, if known> through prolonged or repeated exposure <state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard>.
H400: Very toxic to aquatic life.
H411: Toxic to aquatic life with long lasting effects.

Precautionary statements:

P201: Obtain special instructions 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
P273: Avoid release to the environment.
P281: Use personal protective equipment as required.
P314: Get medical advice/attention if you feel unwell.
P308+P313: IF exposed or concerned: Get medical advice/attention.
P405: Store locked up.