

## 1. Name and other identifiers of the substance

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

**Table 1. Substance identity**

<b>EC number:</b>	918-168-7
<b>EC name:</b>	
<b>CAS number (EC inventory):</b>	
<b>IUPAC name:</b>	anode, copper
<b>Description:</b>	Substance resulting from metallurgic processing of primary sources (copper matte obtained from copper ore/concentrate) and/or secondary sources (copper scrap and/or black copper) and including recycled intermediates (i.e. spent anodes and removal cathodes). Composed primarily of copper metal and copper oxides (> 80%) and containing other residual metals and their compounds.
<b>Synonyms:</b>	EC 923-243-2 (Copper blister) EC-922-713-4 (Copper Granules) EC 273-720-8 (waste solids, purification cathode) - common name: removal cathodes EC 273-719-2 (Waste solids, copper refinery anodes); common name : spent anodes

Other identifiers:

trade name Blister, copper

trade name Anode, copper

trade name Waste solids, purified cathode

trade name Waste solids, copper refinery anodes

trade name Granules, copper

## 2. Composition of the substance

### Name: anode, copper - classification grade 1 - elemental

Description: (elemental) composition applicable to classification grade 1 (Ni<1 %w/w, Pb<0.19%w/w). 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**

Constituent	Typical concentration	Concentration range	Remarks
copper equivalent EC no.: 231-159-6	>=97.8 % (w/w)	>=82 - <=99.9 % (w/w)	The copper content refers to the elemental composition. Copper is mainly present in its metallic form (Cu <sup>0</sup> ). Small amounts (<2%) of CuO or

			CuS forms ( $\leq 0.8\%$ of Cu in Cu <sub>2</sub> O)
arsenic equivalent EC no.: 231-148-6	$\leq 0.15\%$ (w/w)	$>0 - \leq 0.9\%$ (w/w)	The arsenic content refers to the elemental composition. Arsenic is present in the form of Novakite (AgAs) or Paulmooreite (PbAsO)
nickel equivalent EC no.: 231-111-4	$\leq 0.4\%$ (w/w)	$\geq 0.002 - \leq 0.9\%$ (w/w)	The nickel content refers to the elemental composition. Nickel is present in alloying forms (eg FeNiSn) or as inclusions in the copper matrix
lead equivalent EC no.: 231-100-4	$< 0.19\%$ (w/w)	$\geq 0.001 - < 0.19\%$ (w/w)	The lead content refers to the elemental composition. Pb is present in the form PbO
iron equivalent EC no.: 231-096-4	$\leq 0.3\%$ (w/w)	$\geq 0.3 - < 5.8\%$ (w/w)	Refers to Total % of element. Fe is present as Fe and FeO, and/or as constituent or inclusion in alloys
Oxides/Oxide forms present in minerals EC no.:	$\leq 1\%$ (w/w)	$>0 - \leq 5\%$ (w/w)	refers to Total % of (metal specific) oxides from mainly Si, Major forms present are silicate-minerals
Minor constituent EC no.:	$\leq 1.01\%$ (w/w)	$>0 - \leq 6.52\%$ (w/w)	refers to Total % of minor elements, each typically $< 1\%$ , all elements are taken into account in the hazardous profile

**Name: anode, copper - classification grade 2 - elemental**

Description: (elemental) composition applicable to classification grade 1 ( $Ni > 1\%$  w/w,  $Pb \geq 0.19\%$  w/w). 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 3. Constituents**

Constituent	Typical concentration	Concentration range	Remarks
copper equivalent EC no.: 231-159-6	$\geq 97.8\%$ (w/w)	$\geq 82 - \leq 99.9\%$ (w/w)	The copper content refers to the elemental composition. Copper is mainly present in its metallic form (Cu <sup>0</sup> ). Small amounts ( $< 2\%$ ) of Cu <sub>2</sub> O, CuO or CuS forms occur

arsenic equivalent EC no.: 231-148-6	$\leq 0.15$ % (w/w)	$>0 - \leq 0.9$ % (w/w)	The arsenic content refers to the elemental composition. Arsenic is present in the form of Novakite (AgAs) or Paulmooreite (PbAsO)
nickel equivalent EC no.: 231-111-4	$\leq 2.5$ % (w/w)	$>0.99 - \leq 3.7$ % (w/w)	The nickel content refers to the elemental composition. Nickel is present in alloying forms (eg FeNiSn) or as inclusions in the copper matrix
lead equivalent EC no.: 231-100-4	$\leq 0.7$ % (w/w)	$\geq 0.001 - \leq 1.4$ % (w/w)	The lead content refers to the elemental composition. Pb is present in the form PbO
iron equivalent EC no.: 231-096-4	$\leq 0.3$ % (w/w)	$>0 - \leq 5.8$ % (w/w)	Refers to Total % of element. Fe is present as Fe and FeO, and/or as constituent or inclusion in alloys
Oxides/Oxide forms present in minerals EC no.:	$\leq 1$ % (w/w)	$>0 - \leq 5$ % (w/w)	refers to Total % of (metal specific) oxides from mainly Si, Major forms present are silicate-minerals
Minor constituent EC no.:	$\leq 1.01$ % (w/w)	$>0 - \leq 6.52$ % (w/w)	refers to Total % of minor elements, each typically $<0,15\%$ , all elements are taken into account in the hazardous profile

**Name: anode, copper - mineralogical**

Description: mineralogical composition applicable to both classification grades.

State/form: solid: bulk

Degree of purity: 100 % (w/w)

Description: mineralogical composition applicable to both classification grades, see attached document

**Table 1.6. Constituents (anode, copper)**

Constituent	Typical concentration	Concentration range	Remarks
copper EC no.: 231-159-6	$\geq 97.8$ % (w/w)	$\geq 82 - \leq 99.9$ % (w/w)	Mineralogical concentration range uncertain. Elemental concentration more accurate.

### 3. Classification and labelling according to CLP / GHS

#### Name: Anode, copper - classification grade 1

Implementation: EU

State/form of the substance: solid

Related composition: anode, copper - classification grade 1

Remarks: Applicable to anode characterized by max Pb <0.19% and Ni <1%

#### **Classification**

The substance is not classified.

#### **Labelling**

Signal word: No signal word

#### Name: anode, copper - classification grade 2

Implementation: EU

State/form of the substance: solid

Related composition: anode, copper - classification grade 2

Remarks: Applicable to anode characterized by max Pb  $\geq$  0.19% and Ni >1%

#### **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
Acute toxicity - oral:	Acute Tox 4	H302: Harmful if swallowed.
Serious damage / eye irritation:	Eye irr. 2	H319: Causes serious eye irritation
Skin sensitisation:	Skin Sens. 1	H317: May cause an allergic skin reaction.
Carcinogenicity:	Carc. 2	H351: Suspecting of causing cancer
Specific target organ toxicity - repeated:	STOT Rep. Exp. 2 Affected organs: Central nervous system and system for reproduction Route of exposure: inhalation or ingestion	H373: May cause damage to organs through prolonged or repeated exposure

## Classification and labelling according to CLP / GHS for environmental hazards

Not classified for environmental hazards.

### Labelling

Signal word: Warning

#### Hazard pictogram:

GHS08: health hazard



GHS07: exclamation mark



#### Hazard statements:

H317: May cause an allergic skin reaction.  
H302: Harmful if swallowed.  
H351: Suspected of causing cancer.  
H373: May cause damage to organs through prolonged or repeated exposure.  
H319: Causes serious eye irritation

#### Precautionary statements:

P264: Wash... thoroughly after handling.  
P270: Do not eat, drink or smoke when using this product.  
P312: Call a POISON CENTER or doctor/physician if you feel unwell.  
P330: Rinse mouth.  
P501: Dispose of contents/container to... (hazardous waste)  
P261: Avoid breathing dust/fume/gas/mist/vapours/spray.  
P285: In case of inadequate ventilation wear respiratory protection.  
P341: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.  
P311: Call a POISON CENTER or doctor/physician. (If respiratory symptoms)  
P201: Obtain special instructions before use.  
P202: Do not handle until all safety precautions have been read and understood.  
P281: Use personal protective equipment as required.  
P405: Store locked up.  
P260: Do not breathe dust/fume/gas/mist/vapours/spray.  
P340: Remove victim to fresh air and keep at rest in a position comfortable for breathing. (If unwell,)  
P313: Get medical advice/attention. (If skin irritation or rash occurs)  
P314: Get medical advice/attention if you feel unwell. (or if concerned)