



# ID Card

## Residues, copper-iron-lead-nickel matte, sulfuric acid-insol.

Version 4 July 2023

### Notes:

- This ID card is used to support the substance sameness discussions and to describe the substance/group to the best of the members' knowledge.
- It also aims at grouping communications relevant to the request of available data or information and the registration strategy
- It is the responsibility of each individual registrant to identify their substance and to report company-specific identity in their Registration Dossier (section 1 of IUCLID).

### **DISCLAIMER**

The proper identification and characterisation of a substance or intermediate is the responsibility of each registering legal entity.

All data and information contained in this document shall be treated by the receiving party (i) in full confidence with the adequate respect of any confidential and/or proprietary nature of such information and (ii) only in the framework of the purpose of agreeing on substance sameness, Lead Registrant and overall REACH Strategy for the concerned Substance under REACH (the 'Purpose').

The receiving party (and any representative) shall not be allowed to use or circulate any or all parts of this document for any other purpose than the Purpose, without the prior written consent of the European Precious Metals Federation (EPMF).

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## 1. Identification of the group

**Table 1. Identification of the group**

	<b>Original (in EC inventory)</b>
<b>Name</b>	Residues, copper-iron-lead-nickel matte, sulfuric acid-insol.
<b>EC number</b>	310-050-8
<b>CAS number</b>	102110-49-6
<b>* EPMF Description</b>	Dry or wet insoluble residues resulting from successive sulfuric acid-based leaching applied on primary and secondary streams resulting from the refining of copper, nickel and other base metals-containing ores and concentrates. Residues from copper-iron-lead-nickel matte leaching mainly contain precious and base metals such as copper, nickel and iron in metallic and sulphate or sulfide forms in varying concentrations.
<b>Composition type</b>	UVCB

\* The description has been further detailed by EPMF in the registration dossier IUCLID Reference substance record (Description field) and in the CSR.

## 2. Synonyms and other identifiers of the group

None



### 3. Substances (with core identifiers) also falling under this group (with justification)

None

### 4. Boundary composition of the substance

**Table 2. Typical composition**

Element	Typical concentration (%)	Minimum concentration (%)	Maximum concentration (%)	Species
Silver	3.09	0.05	15.00	metallic
Gold	0.21	0.00	1.00	metallic
Iridium	3.62	0.00	14.36	metallic
Palladium	3.08	0.00	15.00	metallic
Platinum	3.69	0.00	18.00	metallic
Rhodium	1.37	0.00	5.00	metallic
Ruthenium	3.00	0.00	5.00	metallic
Aluminium	1.02	0.00	3.00	
Antimony	0.13	0.00	0.50	
Arsenic	0.39	0.00	1.50	
Barium	0.28	0.00	0.52	
Bismuth	0.15	0.00	0.50	
Calcium	7.18	3.00	8.65	sulfates and oxides
Carbon	0.10	0.00	0.30	
Chromium	0.06	0.00	0.30	Cr <sub>2</sub> O <sub>3</sub>
Cobalt	0.09	0.00	0.20	
Copper	22.57	5.00	40.64	sulfides and sulfates
Iron	3.62	0.29	12.36	sulfides and oxides
Lead	0.81	0.00	3.00	sulfides and sulfates
Magnesium	0.15	0.00	0.22	
Manganese	0.06	0.00	0.14	
Nickel	1.96	0.00	6.80	oxide, sulfate, sulfide
Oxygen	16.67	5.00	21.00	
Potassium	0.10	0.00	0.50	
Selenium	1.07	0.00	4.00	
Silicon	1.09	0.00	2.00	
Sodium	0.93	0.00	1.62	
Sulfur	20.42	17.30	25.15	metal sulfides and sulfates
Tellurium	1.28	0.00	5.00	



Tin	0.33	0.00	1.00	
<b>Elemental composition total: 98.5%</b>				
<b>Species</b>	<b>Typical concentration (%)</b>	<b>Minimum concentration (%)</b>	<b>Maximum concentration (%)</b>	
base metals (Cu, Ni, Pb, Fe) sulfides and sulfates	50.00	30.00	90.00	
precious metals metallic	18.10	0.05	56.10	
<b>Mineralogical composition total: 68.1%</b>				

Species were determined based on mineralogical analysis (by means of XRD analysis) and/or information available to registrants.

The composition given above represents the usual elemental/compound content available to the Members of the EPMF by July 2023. This usual content represents the majority of the Residues, copper-iron-lead-nickel matte, sulfuric acid-insol. that is placed on the EEA market.

In a UVCB substance, the number of constituents is relatively large and/or; the composition is, to a significant part, unknown and/or; the variability of composition is relatively large or poorly predictable. Hence, concentration ranges outside the ones given above do not exclude sameness and are usually referred to as unusual or exceptional situations. Each potential registrant is responsible for performing its own composition analysis.

## 5. Substance identity profile (SIP) of the substance

Substance Name <b>Residues, copper-iron-lead-nickel matte, sulfuric acid-insol.</b>		Substance Information Page <a href="http://echa.europa.eu/brief-profile/-/briefprofile/100.099.979">http://echa.europa.eu/brief-profile/-/briefprofile/100.099.979</a>			<b>Legend</b> Decisive substance sameness criterion Indicative substance sameness criterion No substance sameness criterion
Substance description: Dry or wet insoluble residues resulting from successive sulfuric acid-based leaching applied on primary and secondary streams resulting from the refining of copper, nickel and other base metals-containing ores and concentrates. Residues from copper-iron-lead-nickel matte leaching mainly contain precious and base metals such as copper, nickel and iron in metallic and sulphate or sulfide forms in varying concentrations.					
SIEF description:					
<b>Substance Identity</b>	EC/list name:	Residues, copper-iron-lead-nickel matte, sulfuric acid-insol.	SMILES:	not applicable	
	IUPAC name:		InChI:	not applicable	
	Other names	Matte leaching residue	Type of substance:	UVCB	
	EC/List no.:	310-050-8	origin:	Inorganic	
	CAS no.:	102110-49-6			
	Molecular formula:	not applicable	Substance listed		
<b>SID parameters</b>		<b>Sameness criteria</b>			<b>Indication of variability (fixed, low or high variation)</b>
<b>Sources (input materials)</b>	Primary and secondary streams resulting from the refining of copper, nickel and other base metals-containing ores and concentrates. (Primarily Cu, Ni, Pb or other mattes rich in precious metals. These are not necessarily pre-selected and can be processed together depending on their availability.)			medium variability	
<b>Process</b>	Sulfuric acid-based leaching (leaching = intended dissolution and removal of at least one part or component from a material, leaving at least one other part of the material undissolved).			low variability	
<b>Elemental composition</b>	<b>Core</b>	<b>min (% w/w)</b>	<b>max (% w/w)</b>	<b>Typical (%w/w)</b>	
	Precious Metals (PM)	0.1	56.1	18.1	high variability
	Nickel	0.0	6.8	2.0	low variability
	Copper	5.0	40.6	22.6	high variability
	Lead	0.0	3.0	0.8	low variability
	Iron	0.3	12.4	3.6	medium variability
	Sulphur	17.3	25.2	20.4	low variability
	Oxygen	5.0	21.0	16.7	medium variability
	<b>Sum=</b>			84.2	
<b>Mineralogical composition</b>	base metals (Cu, Ni, Pb, Fe) sulfides and sulfates	30.0	90.0	50.0	high variability
	precious metals metallic	0.1	56.1	18.1	high variability
	<b>Sum=</b>			68.1	
<b>Physical characteristics</b>	<b>physical state (at 20°C, 1013 hPa)</b>	black powder			fixed
<b>Conclusion</b>	Residues, copper-iron-lead-nickel matte, sulfuric acid-insol. are <b>solid residues</b> left after <b>sulfuric acid-based leaching</b> of primary and secondary streams resulting from the refining of copper, nickel and other base metals-containing ores and concentrates.				

The substance identity profile (SIP) outlines the main substance identifier/qualifiers relevant for substance identity. It reports sameness information on physical state (solid, liquid, gas), physical form (massive, powder), source, process descriptions and composition. Parameters are given a color code depicting importance for substance sameness. Dark green for decisive/fixed/low variability identity criteria, light green for indicative parameters that support the substance identity but are less well defined and/or characterized by medium variability, and white for parameters not relevant for substance identity.

## 6. Information on appearance, physical state and properties of the substance

**Table 3. Appearance / physical state / properties of the substance**

<b>Physical state</b>	Solid
<b>Appearance</b>	Dark grey - black
<b>Particle size*</b>	Coarse powder

\* Nanoform: particles in the size range 1 - 100 nm (for full definition of a nanomaterial, see <http://ec.europa.eu/environment/chemicals/nanotech/index.htm#definition>). Fine powder: particles in the size range 100 – 2.500 nm. Coarse powder: particles in the size range 2.500 nm – 1 mm. Massive object: particles in the size range > 1 mm.

## 7. Analytical data

Annex VI of REACH requires the registrant to describe the analytical methods and/or to provide the bibliographical references for the methods used for identification of the substance and, where appropriate, for the identification of impurities and additives. This information should be sufficient to allow the methods to be reproduced.

In addition to analytical data, all registrants should use expert judgment and process knowledge to characterize their substance.

**Table 4. Analytical methods for identification of the substance**

Parameter / Method	Recommended for substance identification and sameness check	Applicable	Not applicable or not recommended
<b>Elemental analysis</b>			
ICP (ICP-MS or ICP-OES)	X		
Atomic absorption spectroscopy (AAS)			
Glow discharge mass spectrometry (GDMS)			
<b>Molecular analysis</b>			
Infrared (IR) spectroscopy			
Raman spectroscopy			
<b>Mineralogical analysis</b>			
X-Ray Fluorescence (XRF)			
X-Ray Diffraction (XRD)	X		
<b>Morphology and particle sizing</b>			
Optical microscopy and electron microscopy (SEM, TEM, REM)* #	X		
Laser diffraction* #	X		
Particle size by other means (e.g. sieve analysis)#			
Surface area by N-BET* #			
<b>Other</b>			



Magnetite analyser		X	
S/C analyzer		X	
Separation technique: ion exchange chromatography		X	

\* Analytical techniques particularly (but not exclusively) relevant for nanomaterials.

# The choice of the technique for particle size depends on the size of the material as manufactured/imported/placed on the market/used.

## 8. Lead Registrant

Umicore PMR (Belgium) is the Lead Registrant for this intermediate. The European Precious Metals Federation (EPMF) will provide support to the Lead Registrant as laid down in the EPMF Agreement.

## 9. Scope of the Registration Dossier

All UVCB precious metal Refinables have only uses as an intermediate. Moreover, UVCB exposure scenarios are developed on a company / site-specific basis.