



ID Card

Materials for reclaim, precious metals in bricks, pots, crucibles and trays, etc.

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').

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1. Identification of the group

Table 1. Identification of the group

	Original (in EC inventory)
Name	Materials for reclaim, precious metals in bricks, pots, crucibles and trays, etc.
EC / List number	931-674-2
CAS number	-
Description	None
* EPMF Description	Materials resulting from mechanical treatment of spent artifacts used in the processing of precious metal streams that have retained fractions of precious metals from/during processing and that are reclaimed as secondary sources of precious metals. These materials may be silicate or refractory based and contain low and varying concentrations of precious metals in metallic, oxide, and other forms.
Composition type	UVCB

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

N.B.: Pre-registered as EC number: 308-526-5.



2. Synonyms and other identifiers of the group

- Bricks
- Crucibles
- Trays
- Molds

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	0.48	0.00	2.00	metallic, oxide
Gold	2.91	0.00	16.80	metallic
Iridium	0.05	0.00	0.50	metallic
Palladium	0.40	0.00	2.50	metallic
Platinum	0.87	0.00	5.00	metallic
Rhodium	0.10	0.00	1.00	metallic
Ruthenium	0.32	0.00	2.00	metallic
Aluminium	9.49	2.00	50.00	compound (oxide, silicate)
Arsenic	0.17	0.00	1.10	
Barium	0.10	0.00	0.20	
Carbon	8.99	0.00	50.00	graphite, SiC
Calcium	1.78	0.50	5.00	<i>compound</i>
Cadmium	0.06	0.00	0.20	
Chlorine	1.46	0.00	8.00	
Cobalt	0.02	0.00	0.10	
Chromium	2.15	0.00	8.00	Cr ₂ O ₃
Copper	1.23	0.00	5.10	oxide
Iron	5.26	0.50	20.00	oxide or FeSi ₂
Potassium	0.28	0.00	0.50	
Magnesium	6.18	0.00	20.00	oxide
Manganese	0.08	0.00	0.30	
Sodium	0.93	0.00	5.00	
Nickel	0.11	0.00	0.80	
Oxygen	31.70	25.00	40.00	



Lead	4.33	0.00	20.00	oxide
Sulfur	0.49	0.00	3.00	
Antimony	0.42	0.00	2.00	
Selenium	0.13	0.00	0.50	
Silicon	15.33	5.00	50.00	SiO ₂ non-crystalline, silicon
Tin	0.07	0.00	0.20	
Tellurium	0.10	0.00	0.40	
Titanium	0.20	0.00	0.50	
Zinc	0.77	0.00	5.00	oxide, silicate
Zirconium	6.90	0.00	20.00	oxide
Elemental composition total: 103.9%				
Species	Typical concentration (%)	Minimum concentration (%)	Maximum concentration (%)	
Metallic PMs	5.13	0.35	20.00	
Oxides (mainly Al, Fe, Si)	52.10	14.60	81.90	
Carbon	8.99	0.00	50.00	
Silicon	10.00	0.00	35.00	
Mineralogical composition total: 96.7%				

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 Materials for reclaim, precious metals in bricks, pots, crucibles and trays, etc 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		Substance Information Page			Legend
Materials for reclaim, Precious Metals in Bricks, Pots, Crucibles and trays, etc.					
http://echa.europa.eu/brief-profile/-/briefprofile/100.166.346					Indicative substance sameness criterion
Substance description:		Materials resulting from mechanical treatment of spent artifacts used in the processing of precious metal streams that have retained fractions of precious metals from/during processing and that are reclaimed as secondary sources of precious metals. These materials may be silicate or refractory based and contain low and varying concentrations of precious metals in metallic, oxide, and other forms.			No substance sameness criterion
SIEF description:					
Substance Identity	EC/list name:	Materials for reclaim, Precious Metals in Bricks, Pots, Crucibles and trays, etc.	SMILES:	not applicable	
	IUPAC name:		InChI:	not applicable	
	Other names	Carbon crucibles, Silica trays, Silica ware, TBRC bricks	Type of substance:	UVCB	
	EC/List no.:	931-674-2	origin:	Inorganic	
	CAS no.:		Substance listed		
	Molecular formula:	not applicable			
SID parameters		Sameness criteria			Indication of variability (fixed, low or high variation)
Sources (input materials)	Spent artifacts (silicate or refractory based) used in the processing of precious metal streams that have retained fractions of precious metal from/during processing and that are reclaimed as secondary sources of precious metals: bricks, pots, crucibles, trays, molds, ...			medium variability	
Process	Input materials are crushed to varying degrees. The resulting powder is sent to smelting furnaces both as flux and as secondary source of precious metals.			low variability	
According to the "Guidance on waste and recovered substances; Version: 2; May 2010" all forms of recovery, including mechanical processing, are considered as manufacturing process. Mechanical processing includes procedures such as crushing, cutting, shredding, granulating, and grinding materials, as well as sorting, separation, homogenization, but also re-melting without chemical modification.					
Elemental composition	Mechanical processing in min (% w/w)		max (% w/w)	Typical (%w/w)	
	PMs	0.4	20.0	5.1	
	Aluminum	2.0	50.0	9.5	
	Iron	0.5	20.0	5.3	
	Carbon	0.0	50.0	9.0	
	Silicon	5.0	50.0	15.3	
	Oxygen	25.0	40.0	31.7	
Sum=				75.9	
Mineralogical	Metallic PMs	0.4	20.0	5.1	
	Oxides (mainly Al, Fe, Si)	14.6	81.9	52.1	
	Carbon	0.0	50.0	9.0	
	Silicon	0.0	35.0	10.0	
	Sum=				76.2
Physical characteristics	physical state (at 20°C, 1013 hPa)	Dark grey solid (powder) with light grey lumps			
Conclusion	Materials for reclaim, Precious Metals in Bricks, Pots, Crucibles and trays, etc. are <u>mechanical processed spent artifacts from PM processing streams</u> with retained fractions of precious metals. They contain low concentrations of precious metals as well as silicate or refractory based material.				

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

Physical state	Solid
Appearance	Dark grey with light grey lumps
Particle size*	Massive object (lumps)

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
Elemental analysis			
ICP (ICP-MS or ICP-OES)	X		
Atomic absorption spectroscopy (AAS)			
Glow discharge mass spectrometry (GDMS)			
Molecular analysis			
Infrared (IR) spectroscopy			
Raman spectroscopy			
Mineralogical analysis			
X-Ray Fluorescence (XRF)			
X-Ray Diffraction (XRD)	X		
Morphology and particle sizing			
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*#			
Other			
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

Heraeus (Germany) 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.