



ID Card

Materials for reclaim, precious metal production by-products

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 metal production by-products
EC / List number	931-663-2
CAS number	-
Description	None
* EPMF Description	Materials that are non-intentional products of the production and refining of precious metals, which contain precious metals as well as other metals and their compounds (oxides and others) in varying concentrations. One example of such refining by-products are so-called production "sweeps" and dusts. These materials will either undergo hydrometallurgical processes to leach the precious metal content or be smelted to recover the precious metals.
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

- Precious Metal Sweeps



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	0.50	0.00	5.00	metallic
Gold	0.50	0.00	2.00	metallic
Iridium	0.20	0.00	1.00	metallic
Palladium	1.50	0.00	5.00	metallic
Platinum	1.00	0.00	5.00	metallic
Rhodium	0.30	0.00	1.00	metallic
Ruthenium	1.00	0.00	5.00	metallic
Aluminium	30.00	5.00	50.00	compound (oxide, silicate)
Arsenic	0.17	0.00	0.50	
Barium	0.54	0.00	1.95	
Carbon	4.60	0.00	12.00	
Calcium	2.31	0.00	6.00	
Cadmium	0.63	0.00	2.00	
Cerium	0.50	0.00	1.40	
Chlorine	1.34	0.00	3.00	
Cobalt	0.92	0.00	3.95	
Chromium	3.60	0.00	13.65	
Copper	3.00	0.00	15.00	
Iron	4.94	0.50	10.00	oxide
Potassium	0.30	0.00	0.60	
Magnesium	0.41	0.00	1.00	
Manganese	0.15	0.00	0.50	
Sodium	3.74	0.00	11.50	
Nickel	1.60	0.25	5.00	
Oxygen	25.00	10.00	45.00	
Lead	1.07	0.00	5.00	
Sulfur	0.69	0.00	1.00	
Antimony	0.28	0.00	1.00	
Selenium	0.15	0.00	0.50	



Silicon	10.00	0.10	25.00	SiO ₂ non-crystalline
Tin	0.15	0.00	0.30	
Tellurium	0.13	0.00	0.31	
Titanium	2.31	0.00	7.55	oxide
Zinc	1.41	0.00	5.00	
Zirconium	0.69	0.00	1.40	
Elemental composition total: 105.6%				
Species	Typical concentration (%)	Minimum concentration (%)	Maximum concentration (%)	
PMs in metal and/or alloy form	6	2.5	20	PMs in metal and/or alloy form
alumina / silica / aluminosilicates	60	10	95	alumina / silica / aluminosilicates
Mineralogical composition total: 66.0%				

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 metal production by-products 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 Materials for reclaim, precious metal production by-products		Substance Information Page http://echa.europa.eu/brief-profile/-/briefprofile/100.166.346			Legend Decisive substance sameness criterion Indicative substance sameness criterion No substance sameness criterion
Substance description: Materials for reclaim, precious metal production by-products are recovered by mechanical cleaning of precious metals processing installations. SIEF description:					
Substance Identity	EC/list name:	Materials for reclaim, precious metal production by-products	SMILES:	not applicable	
	IUPAC name:		InChI:	not applicable	
	Other names		Type of substance:	UVCB	
	EC/List no.:	931-663-2	origin:	Inorganic	
	CAS no.:				
	Molecular formula:	not applicable	Substance listed		
SID parameters		Sameness criteria			Indication of variability (fixed, low or high variation)
Sources (input materials)	Installations containing leftover precious metals (PMs) resulting from the application of PMs in various production processes (such as coating, deposition, ...)			medium variability	
Process	Mechanical cleaning after various precious metal refining processes: it is common practice in precious metal (PM) processing and refining industry to clean the facilities in order to retain leftover PMs for recycling purpose. For example, materials can be obtained from sandblasting the walls of coating installations.			low variability	
Elemental composition	Core	min (% w/w)	max (% w/w)	Typical (%w/w)	
	Precious metals (Ag, Au, platinum group metals)	2.5	15.0	5.0	medium variability
	Aluminium	5.0	50.0	30.0	medium to high variability
	Oxygen	10.0	45.0	30.0	medium to high variability
	Silicon	0.1	25.0	10.0	medium to high variability
	Sum=			75.0	
Mineralogical composition	Precious metals (Ag, Au, platinum group metals) in metal and/or alloy form	2.5	20.0	6.0	medium variability
	alumina / silica / aluminosilicates	10.0	95.0	60.0	high variability
	Sum=			66.0	
Physical characteristics	physical state (at 20°C, 1013 hPa)	solid powder			
Conclusion	Materials for reclaim, precious metal production by-products are by-products of the production and refining of precious metals which are recovered by mechanical cleaning (such as sand blasting) and physically collected in a centralised manner from various sources and processes, and are used as a mixture input material in precious metal refining. They contain low concentrations of precious metals (but still worth recovering) as well as other metals and their compounds (oxides and others) in varying concentrations.				

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	Beige - grey
Particle size*	Fine to 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
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

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.