



ID Card Doré

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Please note that discussions on the ID Cards are currently ongoing.
Should you need further information / detail, please contact info@epmf.be
The content of this ID Card may be adjusted as the Refinables Project develops.

Notes:

- This ID card is used to support the substance sameness discussions in SIEFs and to describe the substance/group to the best of the SIEF members' knowledge.
- It also aims at grouping communications relevant to the request of available data or information, the approval of the proposed Lead Registrant and the registration strategy with the SIEF.
- 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). The content provided in this document is given for the Purpose and as such, no guarantee or warranty whatsoever (expressed or implied) is given as to its accuracy, completeness, merchantability or fitness for any particular purpose which the receiving party may have. In any case, any use by the receiving party would be made at its sole risk and liability.

1. Identification of the group

Table 1. Identification of the group

	Proposed by EPMF Refiners Work Group	Original (in EC inventory)
Name	Doré	Doré
EC number	273-793-6	273-793-6
CAS number	69029-47-6	69029-47-6
Description	Metallic bars/ingots, grains or anodes and their residues (spent anodes) resulting from pyrometallurgy processes applied on primary and secondary feeds with high precious metal content. Doré mainly contains silver and/or gold and copper, lower quantities of platinum group metals (iridium, osmium, palladium, platinum, rhodium, and ruthenium) and other non-ferrous metals in varying concentrations.	Gold and silver bullion

N.B.: The description proposed above will be further detailed by EPMF for Registration purposes.

2. Synonyms and other identifiers of the group

- Doré bars
- Doré alloys
- Precious metal rich bullion



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

Table 2. Substances also falling under this group

Name	EC number	CAS number	Description (EC inventory)
Residues, silver-refining	308-309-5	97926-88-0	Product resulting from the smelting, refining and/or use of silver and its alloys obtained from primary and secondary sources and including recycled plant intermediates. It consists primarily of silver and may contain other residual non-ferrous metals and their compounds.
Black metal, copper electrolytic slime smelting	266-974-6	67711-97-1	Slimes from electrolytic cells are smelted in a cupel, producing 'black' metal and a slag. The 'black' metal contains silver as a major constituent with significant amounts of tellurium and selenium and minor amounts of copper, gold and other metals.

N.B.: No registration dossier will be prepared by the EPMF for the materials listed in the above table. EPMF Members are recommended to register their material using the identifiers provided in Table 1, for which a dossier will be prepared by the EPMF.

Because of its generic name, "Residues, silver refining" in Table 2 above has been used to pre-register many different materials under REACH. Only those materials that are of metallic nature and have a composition similar to the one described below can be considered to be the same as Doré.

4. Usual composition of the substance

Table 3. Usual composition

Type	Name of the element	Symbol	Species present	Typical concentration (%)	Concentration range (%)
Precious metals	Silver	Ag	Metallic	71,6	15-99
	Gold	Au	Metallic	8,5	0-83
	Iridium	Ir		0,8	0-12
	Palladium	Pd		0,90	0-5,1
	Platinum	Pt		0,63	0-2,6
	Rhodium	Rh		0,63	0-7,1
	Ruthenium	Ru		1,3	0-20
Other metals	Aluminium	Al	Al ₂ O ₃	0,03	0-0,4
	Antimony	Sb	Metallic	0,07	0-1,1
	Arsenic	As	Metallic	0,07	0-0,5
	Barium	Ba	Metallic?	0,02	0-0,4
	Bismuth	Bi		0,33	0-3,1
	Cadmium	Cd	Metallic?	0,003	0-0,05
	Copper	Cu	Metallic	6,4	0-50
	Chromium	Cr		0,09	0-1,5
	Lead	Pb	Metallic	0,72	0-5,0
	Iron	Fe	Metallic	1,5	0-25
	Magnesium	Mg	MgO	0,16	0-2,5
	Nickel	Ni	Metallic?	0,47	0-7,8
	Selenium	Se	Metallic?	0,36	0-2,5
	Tellurium	Te	Metallic	2,3	0-22
Tin	Sn	Metallic	0,07	0-1,1	
Zinc	Zn	Metallic	0,37	0-5,0	
Total				97,3	

N.B.: Classification drivers are indicated in red (see also Table 7).



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

According to the Outotec report for speciation analysis of Doré, metallic silver encloses copper selenium silver tellurides, copper oxides and tellurium-bearing copper lead oxides which also fill the interstices of metallic silver. Therefore these intermetallic species shall be considered as inclusion and not as available compounds. Furthermore the sample tested for speciation was prepared by drilling/sawing, which might have caused some oxidation.

The composition given above represents the usual elemental/compound content available to the Members of the EPMF by 9 February 2012. This usual content represents the majority of the Doré that is placed on the EEA market, which may also carry incorporated drosses and residues in the form of impurities.

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 elemental analysis.

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

Table 4. Appearance / physical state / properties of the substance

Physical state	Solid
Appearance	Grey to dark grey
Particle size*	Massive object

* 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.

6. 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 5. 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*#			
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.

7. Lead Registrant

Aurubis AG (Germany) volunteers to be 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.

8. REACH Strategy

The table below presents the overall Registration Strategy for Doré based on the information available to the EPMF by the date given above on the document.

The Registration Dossier will be prepared for the highest substance status (information requirements associated to a substance or Article 10 Registration being higher than an intermediate handled under strictly controlled conditions or Article 17 or 18 one) and associated tonnage band.

The recap below therefore reflects the scope of work of the EPMF for Doré and sets the minimum and maximum set of information that will be gathered and/or produced when preparing the Registration Dossier for Doré as described in this ID Card.

If higher information requirements are necessary, these can be included in the Registration dossier (if EPMF is made aware of these additional requirements in-time) as an update to the already submitted dossier.

Table 6. REACH strategy for the group (basis for REACH Registration preparation)

Item	Description	Comment
SIEF	As pre-registered	
REACH category	UVCB	The composition of doré is metallic, and can hence easily be fully determined by the applicable analytical technique. The variability of the composition of doré both intra- and inter-registrants is large as: The doré manufactured via a specific smelting process will be influenced by the variability of the feed material smelted to produce doré. Doré is truly a substance of variable composition.



Highest status	Non-SCC intermediate	At least one Member of the EPMF has declared this material as an intermediate not handled under strictly controlled conditions (SCC), meaning an Article 10 dossier is required for joint submission.
Intermediate status		Doré is <u>intentionally manufactured</u> to be <u>chemically transformed</u> into another substance. A specific smelting process is designed to produce doré, which is further refined to produce pure silver or gold metal. It is hence truly an in-process intermediate in the production of pure precious metals.
Highest tonnage band	> 1000 t/a	
Information requirements	Available / Existing + Annex VII – VIII – IX - X	
Existing classification	See Table 7	Classifications for Doré are proposed in Table 7 as grouped classifications based on composition profile. Compositions or triggers associated to each classification provide a non-exhaustive list of those constituents which can be present in the Refinable.
Registration deadline	2010	Doré was registered as an SCC intermediate in 2010 (Article 17/18 dossier) and will be updated to a full substance registration (Article 10 dossier) in 2014

for Doré are proposed in Table 7 as grouped classifications based on composition profile. Compositions or triggers associated to each classification provide a non-exhaustive list of those constituents which can be present in the Refinable.

Table 7. Classification for the group

	Classification CLP	Composition / classification drivers
1	No classification	Ni < 1%; Pb < 0,3%; Co < 1%; Cd < 0,1% $100 / ((As\% + Se\% + Te\%)/100 + (Sb\%)/500) > 2000 \text{ mg/kg}$ In case 28d TDP data or equivalent are available demonstrating no env classification (otherwise, Chronic 4 safety net classification applies)
2	Repro. 1A, ENV Ch 3	Ni < 1%; Pb: 0,3 - 1%; Co < 1%; Cd < 0,1% $100 / ((As\% + Se\% + Te\%)/100 + (Sb\%)/500) > 2000 \text{ mg/kg}$ $(\%Ag \times 0,000045 + \%Cu \times 0,00276) \times 100 > 1$
3	Repro. 1A, STOT Rep 2, ENV Ch 3	Ni < 1%; Pb: 1% - 10%; Co < 1%; Cd < 0,1% $100 / ((As\% + Se\% + Te\%)/100 + (Sb\%)/500) > 2000 \text{ mg/kg}$ $(\%Ag \times 0,000045 + \%Cu \times 0,00276) \times 100 > 1$
4	Carc. 2, Repro. 1A, STOT Rep 2, Skin sens. 1, ENV Ch 3	Ni \geq 1%; Pb < 10%; Co < 1%; Cd < 0,1% $100 / ((As\% + Se\% + Te\%)/100 + (Sb\%)/500) > 2000 \text{ mg/kg}$ $(\%Ag \times 0,000045 + \%Cu \times 0,00276) \times 100 > 1$
5	Carc. 2, Repro. 1A, STOT Rep 2, Skin sens. 1, Acute tox oral4, ENV Ch 2	Ni \geq 1%; Pb : <10%; Co < 1%; Cd < 0,1% $100 / ((As\% + Se\% + Te\%)/100 + (Sb\%)/500) \text{ between } 300 - 2000 \text{ mg/kg}$ $(\%Ag \times 0,000045 + \%Cu \times 0,00276) \times 10 \text{ between } 1 \text{ and } 10$

N.B.1: All constituents assumed to be in metallic form

N.B.2: Human health classification driven by several constituents including Ni and Pb

N.B.3: Classification drivers are (worst-case) assumptions and do not necessarily represent real species/mineralogical composition



N.B.4: Classification groups 2-5 have a CMR profile

9. Scope of the Registration Dossier

The uses included in this Registration Dossier are summarised in the table below and accompanied with the appropriate text.



Table 8. Reported uses of the substance

Description of use	Sector of Use (SU)	Process Category (PROC)	Environmental Release Category (ERC)
Manufacture of an intermediate	NA	<ul style="list-style-type: none">• PROC 1: Use in closed process, no likelihood of exposure• PROC 2: Use in closed, continuous process with occasional controlled exposure• PROC 3: Use in closed batch process (synthesis or formulation)• PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises• PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)• PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities• PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)• PROC 15: Use as laboratory reagent• PROC 21: Low energy manipulation of substances bound in materials and/or articles• PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting• PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature• PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles• PROC 26: Handling of solid inorganic substances at ambient temperature• PROC 27b: Production of metal powders (wet processes)	<ul style="list-style-type: none">• ERC 1: Manufacture of substances



Description of use	Sector of Use (SU)	Process Category (PROC)	Environmental Release Category (ERC)
Use as an intermediate in metal manufacturing	<ul style="list-style-type: none">• SU 14: Manufacture of basic metals, including alloys	<ul style="list-style-type: none">• PROC 1: Use in closed process, no likelihood of exposure• PROC 2: Use in closed, continuous process with occasional controlled exposure• PROC 3: Use in closed batch process (synthesis or formulation)• PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises• PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)• PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities• PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)• PROC 15: Use as laboratory reagent• PROC 21: Low energy manipulation of substances bound in materials and/or articles• PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting• PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature• PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles• PROC 26: Handling of solid inorganic substances at ambient temperature• PROC 27b: Production of metal powders (wet processes)	<ul style="list-style-type: none">• ERC 6a: Industrial use resulting in manufacture of another substance (use of intermediates)