# ID Card
# Balsams, copaiba, sulfurized, mixed with turpentine, gold salts

***Version 4 July 2023***

*Notes:*

- *This ID card is used to support the substance sameness discussions in SIEFs and to describe the substance 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).*



## 1. Identification of the substance

**Table 1. Identification of the substance**

| | Proposed by EPMF | Original (in EC inventory) |
|---|---|---|
| **Name** | Balsams, copaiba, sulfurized, mixed with turpentine, gold salts | Balsams, copaiba, sulfurized, mixed with turpentine, gold salts |
| **EC number** | 273-589-7 | 273-589-7 |
| **CAS number** | 68990-27-2 | 68990-27-2 |
| **Description** | see below under "Remarks" | None |
| **Composition type** | UVCB | UVCB |

Remarks:

'Balsams, copaiba, sulfurized, mixed with turpentine, gold salts' is formed by a reaction of sulfurized copaiba-balsam with an aqueous solution of tetrachlorogold acid in the presence of turpentine. The resulting organic metal compound is separated from excess turpentine. 'Balsams, copaiba, sulfurized, mixed with turpentine, gold salts' is isolated from the reaction mass as a solid powder. From a chemical point of view 'Balsams, copaiba, sulfurized, mixed with turpentine, gold salts' is a goldsulforesinate.

'Balsams, copaiba, sulfurized, mixed with turpentine, gold salts' is used for decoration of glass, porcelain, ceramics and as conductive layer in electronics. Manufacture and use of the substance is limited to a very few number of specialized companies.

The annually produced amount of 'Balsams, copaiba, sulfurized, mixed with turpentine, gold salts' in Europe is estimated to be less than 10 tons.

'Balsams, copaiba, sulfurized, mixed with turpentine, gold salts' is considered to be a UVCB particularly due to the content of copaiba balsams. Copaiba balsams are natural resins with different composition depending on the origin.

The main components of 'Balsams, copaiba, sulfurized, mixed with turpentine, gold salts' are gold, sulfur, and organic constituents. In addition, several minor especially metallic constituents may be present.

Due to the variability of the organic constituent, the assignment of significant reference spectra is not possible. Consequently, the substance cannot clearly be identified by means of a structural analysis. Based on that, the performance of a structural analysis is waived.

To identify the substance on an elemental basis, some assumptions have to be made:

- The typical gold content is known to be about 53 %,
- The typical sulfur content is known to be about 11 %,
- The typical organic content of the substance is to be about 36 %.
- The typical content of minor constituents is to be equal or less than 0.1 %

The analytical methods to determine of gold, sulfur and minor constituents are described in Table 5.

Assuming that the organic component are unsaturated polycyclic hydrocarbons (empirical formula $C_nH_{2n}$) the carbon content of the organic component would be approximately 86 %. This would make the carbon content of the substance equal to approximately 39.5 %.

The carbon and hydrogen content is usually not analyzed, since ratio carbon to hydrogen of Copaiba balsams (raw material) can/will change from supply to supply, depending to region of origin and time of harvest. Up to now, no carbon/hydrogen analysis are available. A single analysis does not represent the composition of the organic content over time. Furthermoore, this information would not lead to additional knowledge for planed usage in decoration of glass, ceramics and for usage as conductive layer in electronics, because the organic constituent of the applied goldsulforesinate will disappear during sintering at temperatures higher than 500 °C.

'Balsams, copaiba, sulfurized, mixed with turpentine, gold salts' is a fine powder. The recommended methods for proving a particle size of 100 – 2.500 nm needs are also given in Table 5.

## 2. Synonyms and other identifiers of the substance

*Add / remove rows / identifiers as necessary. If no synonyms / other identifiers are available, replace below table by 'None'.*

**Table 2. Synonyms and other identifiers of the substance**

| | |
|---|---|
| **IUPAC name** | |
| **CAS name** | |
| **Abbreviations** | |
| **Other commercial, brand or international names** | Goldsulforesinate |
| **Other identity codes** | EINECS 273-589-7 |

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

None

# 4. Usual composition of the substance

**Table 3. Usual composition**

| Name | Other names | EC number | Abbreviation/ formula | Typical concentration (%) | Concentration range (%) |
|---|---|---|---|---|---|
| **Gold** | | | Au | 53 | 50 – 62 |
| **Sulfur** | | | S | 11 | 10 – 15 |
| **Chloride** | | | Cl | 0,7 | 0 – 1,9 |
| **Unsaturated polycyclic hydrocarbon** | | | $C_nH_{2n}$ | 35,25 | 21 – 40 |
| **Several minor, especially metallic constituents that may be present in the substance** | | | | 0,05 | 0 – 0,1 |
| | | | | | |
| **Total** | | | | | |

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

The composition given above represents the usual elemental/compound content available to the Members of the Consortium by the date given above on the document. This usual content represents the majority of the Balsams, copaiba, sulfurized, mixed with turpentine, gold salts 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 elemental analysis.

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

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

| | |
|---|---|
| **Physical state** | Solid |
| **Appearance** | dark brown to black powder |
| **Particle size**** | Fine powder / Coarse powder |

* Crystalline form: solid material whose constituent atoms, molecules, or ions are arranged in an ordered pattern extending in all three spatial dimensions. Amorphous form: solid material whose constituent atoms, molecules, or ions are randomly arranged.

** Nanoform: particles in the size range 1 - 100 nm (for definition of a nanomaterial, see http://ec.europa.eu/environment/chemicals/nanotech/faq/definition_en.htm). 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.

# ‘Bound water’: water molecules that are coordinated as bound ligands. ‘Crystallisation water’ or hydration water: water that occurs in crystals (necessary for the maintenance of crystalline properties) but which is not directly bound to the metal ion (a hydrate contains a definite % of crystallisation water e.g. CuSO4 x 5 H2O, an anhydride does not contain any water)

## Hydrolysis: decomposition (cleavage of chemical bonds) by the addition of water.

§ Hygroscopic substance: readily attracts moisture from its surroundings in open air, through either absorption or adsorption.

## 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.

*The table below lists analysis methods applicable to precious metal and / or rhenium substances. The Lead Registrant should indicate which methods they usually apply for identification of the substance by ticking the appropriate boxes in below table. EPMF should then complete with acceptable alternatives and / or additional requirements.*

*Comments on the applicability of the techniques are welcome, but should be added in a text paragraph under the table.*

**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 (Chloride, Sulfur) | | |
| Atomic absorption spectroscopy (AAS) | | | X |
| Glow discharge mass spectrometry (GDMS) | | | X |
| **Molecular analysis** | | | |
| Infrared (IR) spectroscopy | X | | |
| Raman spectroscopy | | X | |
| **Mineralogical analysis** | | | |
| X-Ray Fluorescence (XRF) | X (minor constituents) | | |
| X-Ray Diffraction (XRD) | | | X |
| **Morphology and particle sizing** | | | |
| Electron microscopy (SEM, TEM, REM)* # | ~~X~~ | | X |
| Laser diffraction* # | ~~X~~ | X | |
| Particle size by other means (e.g. sieve analysis)# | ~~X~~ | | X |
| Surface area by N-BET* # | | | X |
| **Other** | | | |
| Elemental analysis by gravimetry | X (Gold) | | |

* 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

Heraeus Deutschland GmbH & Co. KG (Germany) volunteers to be the Lead Registrant for Balsams, copaiba, sulfurized, mixed with turpentine, gold salts. The EPMF will provide support to the Lead Registrant as laid down in the EPMF Agreement.

## 8. Scope of the Registration Dossier

The uses included in this Registration Dossier are listed on the EPMF website .

## 9. Analytical reference information

Below two IR spectra of 'Balsams, copaiba, mixed with turpentine, gold salts' for comparison purposes
**'Balsams, copaiba, mixed with turpentine, gold salts' – Analytical Reference Information**

IR spectra of 'Balsams, copaiba, mixed with turpentine, gold salts' (KBr pellet)