



LICENSE

In order to use the tool a license is needed.

A short description of the MECLAS tool and the license costs can be found [here](#).

You must [register](#) and obtain a Login account in order to access the MeClas tool and all supporting information.

NEWS

The **MeCLAS** tool is officially released at Eurometaux (Metal Conference Centre) on 30th August 2010.

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LOGIN

Username:

Password:

[register](#) / [forgot password?](#)

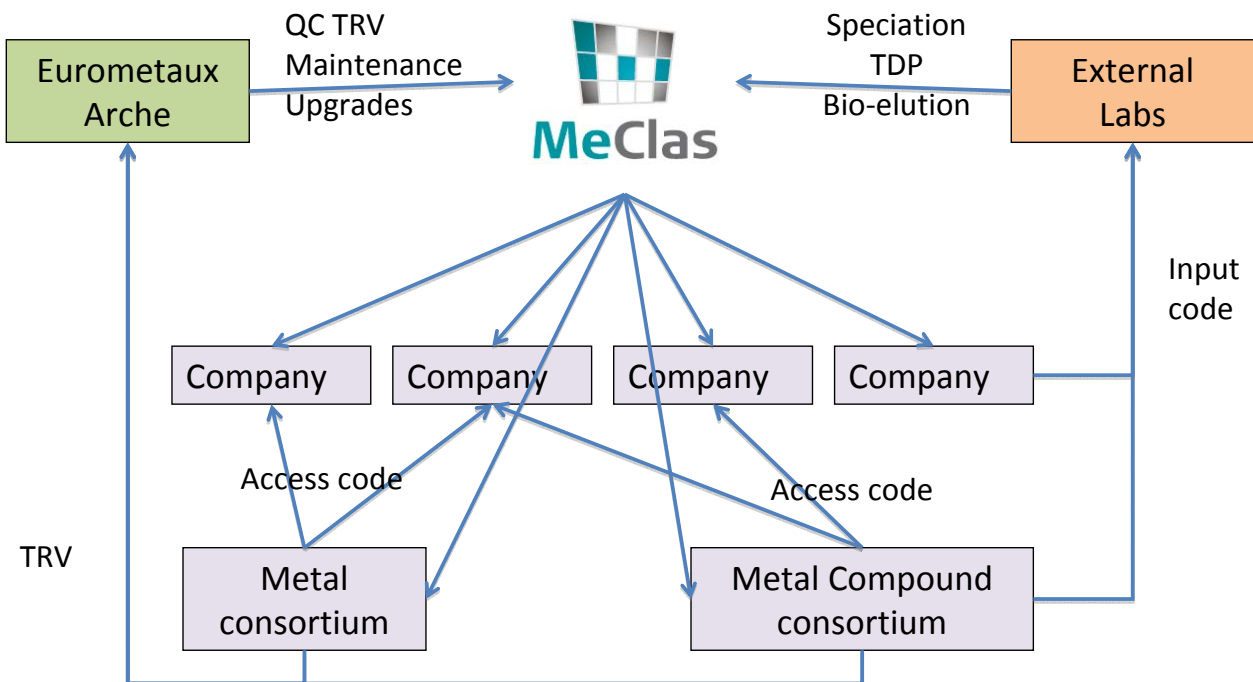
Welcome to the MeCLAS website

The smartest way of fulfilling your classification obligations

Most complex materials in the metals sector contain a spectrum of different metals (compounds) and minerals, which therefore requires extensive physico-chemical, toxicity and ecotoxicity reference data sets. The MeCLAS tool offers a unique web-enabled classification tool that is always updated to the latest classification rules. The tool comprises several tiers, aimed at the progressive refinement of classification through recognition of speciation, specific mineral content and the availability of test data on the complex material in question.

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The MeCLAS tool has been developed jointly by EUROMETAUX and ARCHE



Tool functionalities

- **Own compositions**

- Add/Edit composition
- My compositions
- Calculate classification



- **Use of reference sample**

- Import reference sample code
- Adapt reference sample
- Calculate classification



UPGRADE

Reached your maximum number of compositions?
Find out how to upgrade your account by contacting info@meclas.eu

NEWS

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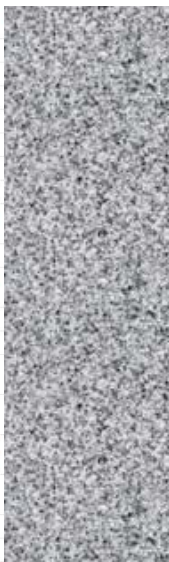
You must [register](#) and obtain a Login account in order to access the MeClas tool.

LOGIN

Logged in as **Caroline Braibant**
([view profile](#) / [logout](#))

My compositions

On this page you can **share** your compositions via a unique code, **view** subscribers to your compositions and **delete** compositions.

| Composition | Share-code | Subscribers # | Delete |
|--|--|---------------|---|
| PM: Residues from Copper Speiss Leaching * |  | 1 | delete Deleted by author! |
| PM: SLAGS phosphate type (3b) * | | 1 | delete |
| PM: SLAGS silicate type (3c) * | | 1 | delete |
| PM: SLAGS borate type (3d) * | | 1 | delete |
| PM: DORE Impure Doré * | | 3 | delete |
| PM: DORE Pure Doré * | | 2 | delete |
| PM: Matte (2) * | | 1 | delete |
| PM: Residues from copper speiss leaching (5.2) * | | 1 | delete |
| PM: Residues from copper-iron-lead-nickel matte leaching (5.1) * | | 1 | delete |
| PM: Slimes and sludges (4) * | | 1 | delete |
| PM: Spent electrolyte from silver electrolysis (6.1) * | | 1 | delete |
| PM: Spent electrolyte from gold electrolysis (6.2) * | | 1 | delete |
| PM: Flue dust (7) * | | 1 | delete |
| PM: Residues precious metal refining cementation (8) * | | 1 | delete |
| PM: Materials for reclaim - PM with or without supports (9.1) * | | 1 | delete |
| PM: Materials for reclaim - PM in bricks, crucibles, trays, etc. (9.2) * | | 1 | delete |
| PM: Materials for reclaim - PM production by-products (9.3) * | | 1 | delete |
| PM: Lead bullion precious metal rich (10) * | | 1 | delete |
| PM: SLAGS boro-silicate (3a) * | | 1 | delete |

* You are the author of this composition.



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LOGIN

Logged in as

[Katia Lacasse](#)

[\(view profile / logout\)](#)

Compositions (21/25)

A new **name** can be given to the composition by changing the name in the black box.

Fill out following fields: Tier 0: elemental % only, Tier 1: elemental % and distribution %, Tier 2: elemental % and distribution % and TDP % and bioelution %.

All percentages have to be filled out without mentioning the unit. E.g. when the element is present in a concentration of 5%, it has to be filled in as 5, not as 0.05 or 5%). This is also valid for the distribution, TDP and bio-elution percentages. The sum of the percentages of the elements should not exceed 100%. The distribution percentages should not relate to the total composition of the metal mixture but should relate to the element/metal. **The sum of the percentages of the distribution (relating to speciation) should not exceed 100% for each element.** Note that Tier 1 can only be calculated if the distribution percentages are filled out for each element.

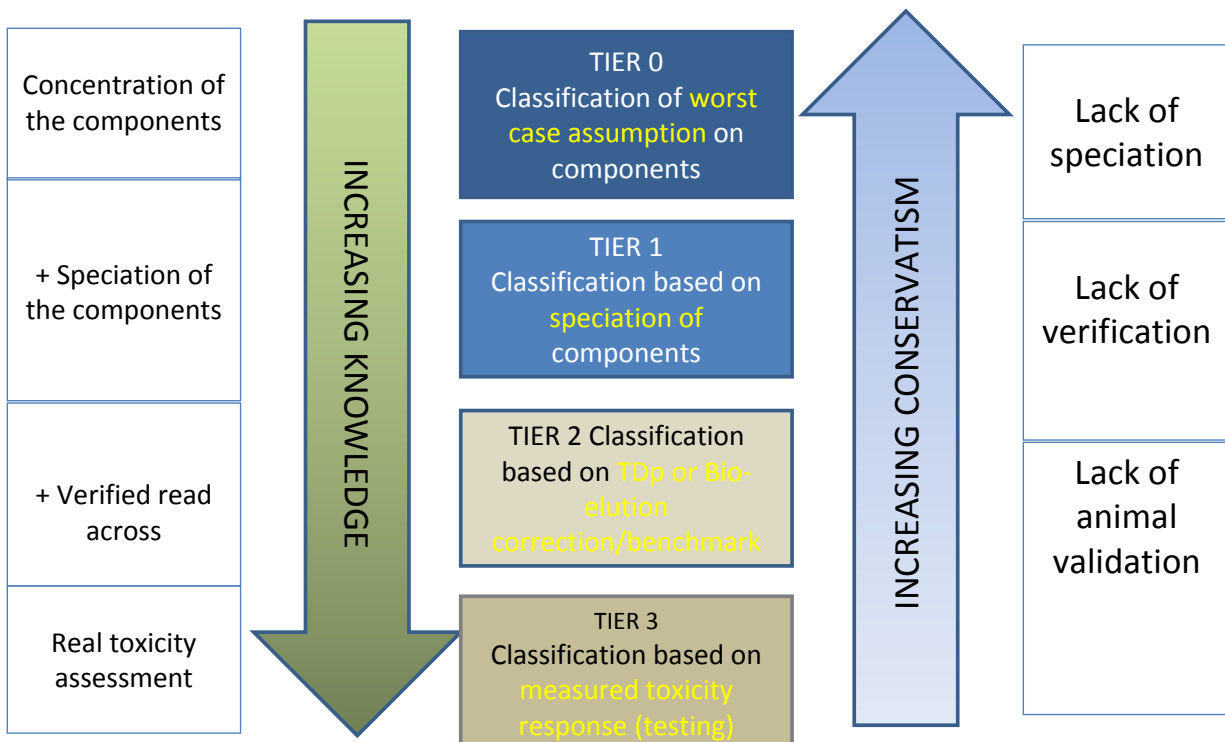
If an element or (self-)classification entry is missing, please send an email to info@meclas.eu. The new entry will be evaluated (quality control) by Eurometaux's selected quality control group for inclusion in MECLAS.

More guidance can be found in the [MeClas Technical Manual](#).

Show:

| Element | Conc. (%) | Classification Entry | Chemical Formula | In the form of | Distribution (%) | TDP (%) | Bio-elution (%) | new comp. |
|---------|----------------------|------------------------------------|------------------|---|----------------------|----------------------|----------------------|---------------------------|
| Ag | <input type="text"/> | Ag | Ag | Ag, AgPb, CuTeAgSe-alloy, AgSn, ZnAg, AgZn3, NiSbSnAg | 100.00000 | <input type="text"/> | <input type="text"/> | EDIT |
| | | Ag compounds (self classification) | Ag | AgCl | <input type="text"/> | <input type="text"/> | <input type="text"/> | EDIT |
| | | AgNO3 | AgNO3 | AgNO3 | <input type="text"/> | <input type="text"/> | <input type="text"/> | EDIT |
| Al | <input type="text"/> | Al | Al | Al, Al2O3 | <input type="text"/> | <input type="text"/> | <input type="text"/> | EDIT |
| | | Al powder (pyrophoric) | Al | Al powder (pyrophoric) | <input type="text"/> | <input type="text"/> | <input type="text"/> | EDIT |
| | | Al powder (stabilised) | Al | Al powder (stabilised) | <input type="text"/> | <input type="text"/> | <input type="text"/> | EDIT |
| | | Al silicate | Al2SiO5 | Al silicate | <input type="text"/> | <input type="text"/> | <input type="text"/> | EDIT |
| As | <input type="text"/> | arsenic acid and its salts | As | arsenic acid and its salts, Cu3AsO4(OH)3, As-acid | <input type="text"/> | <input type="text"/> | <input type="text"/> | EDIT |

SCHEMATIC OVERVIEW of the TIERED CLASSIFICATION APPROACH FOR COMPLEX MATERIALS



Tier 0

Tier 1

Tier 2

| Element | Conc. (%) | Classification Entry | Chemical Formula | In the form of | Species Distribution (%) | TDP (%) | Bio-elution (%) |
|---------|-----------|----------------------|------------------|---|--------------------------|---------|-----------------|
| Ni | 0.90000 | Ni | Ni | CuNi, CuNiSbAsSn, CuSnSbNi, FeCrNi, FeNiSi, FeNiSn, Ni, Ni2As, NiAs, NiAsSnSb, NiCOFeAs, NiFeSi, NiMg silicate, NiSb, NiSbSn, NiSbSnAg, NiSi, NiSiAl, NiSn, SbNiAs, SbNiCoCA-alloy, SbSNNiCuFe, SnCuNiFe, SnNiSb-alloy | 100.00000 | 0.30000 | |
| | | Ni powder | Ni | CuNi, CuNiSbAsSn, CuSnSbNi, FeCrNi, FeNiSi, FeNiSn, Ni powder, Ni2As, NiAs, NiAsSnSb, NiCOFeAs, SnCuFeNi, NiFeSi, NiMg silicate, NiSb, NiSbSn, NiSbSnAg, NiSi, NiSiAl, NiSn, SbNiAs, SbNiCoCA-alloy, SbSNNiCuFe, SnCuNiFe, SnNiSb-alloy | | | |
| | | Ni2O3 | Ni2O3 | Ni2O3 | | | |
| | | Ni3S2 | Ni3S2 | Ni3S2 | | | |
| | | NiO | NiO | NiO, CuNiSbOx, FeNiO2, NiFe2O4, NiAs, NiFeSb oxide, CaMgNiSiO, FeZnNi-oxide | | | |
| | | NiO2 | NiO2 | NiO2 | | | |
| | | NiS | NiS | NiS, Pb2Ni3S2, Ni3S4 | | | |
| | | NiSO4 | NiSO4 | NiSO4, CoNiSbSO4 | | | |

Elemental Analysis

| | | | |
|-------|-----|---|--------|
| Cu | TOT | % | 0,60 |
| As | TOT | % | 0,00 |
| Fe | TOT | % | 12,20 |
| Ni | TOT | % | 0,03 |
| Pb | TOT | % | 0,28 |
| Co | TOT | % | 0,21 |
| Sb | TOT | % | <0,01 |
| Sn | TOT | % | <0,01 |
| Zn | TOT | % | 0,86 |
| Mo | TOT | % | |
| Ag | TOT | % | <0,002 |
| Se | TOT | % | |
| Sr | TOT | % | |
| Te | TOT | % | |
| Bi | TOT | % | |
| Cd | TOT | % | |
| SiO2 | KEM | % | 45,30 |
| Al2O3 | TOT | % | 13,20 |
| Cr2O3 | TOT | % | 0,19 |
| K2O | TOT | % | 3,70 |
| MgO | TOT | % | 6,80 |
| MnO | TOT | % | 0,30 |
| Na2O | TOT | % | 1,10 |
| CaO | TOT | % | 11,00 |

Speciation Analysis

% relative to total mixture

| | | |
|------------------|-----------------|-------|
| CuFeS | Chalcopyrite | 0,44 |
| FeCr2O4 | Chromite | 0,63 |
| CoFeS | Villamaninite | 0,08 |
| Cu | Copper | 0,26 |
| Fe2SiO4 | Fayalite | 16,40 |
| FeCo | Fe -alloy | 0,67 |
| KAlSiOx | K- Al -silicate | 32,11 |
| Si(Fe,Al,Ca)O2-3 | Glass | 9,65 |
| Pb | Lead | 0,11 |
| PbO | Litharge | 0,09 |
| PbS | Galena | 0,09 |
| CaSiOx | Ca -silicate | 37,61 |
| ZnFeS | Sphalerite | 1,33 |
| Fe3O4 | Magnetite | 0,54 |

% relative to metal

| | |
|----------------------|-------|
| Distribution of iron | |
| CuFeS | 0,42 |
| FeCr2O4 | 1,03 |
| CoFeS | 0,19 |
| Cu | 0,04 |
| Fe2SiO4 | 37,89 |
| FeCo | 4,91 |
| KAlSiOx | 2,09 |
| Si(Fe,Al,Ca)O2-3 | 11,87 |
| CaSiOx | 32,78 |
| ZnFeS | 4,22 |
| Fe3O4 | 4,54 |
| Distribution of zinc | |
| FeCr2O4 | 2,56 |
| ZnFeS | 53,93 |
| Fe2SiO4 | 17,88 |
| KAlSiOx | 2,26 |
| CaSiOx | 14,30 |
| Si(Fe,Al,Ca)O2-3 | 9,07 |
| Distribution of lead | |
| Pb | 42,78 |
| PbO | 31,85 |
| PbS | 25,37 |

| | |
|------------------------|-------|
| Distribution of copper | |
| CuFeS | 49,61 |
| FeCr2O4 | 0,09 |
| Cu | 42,17 |
| FeCo | 6,35 |
| KAlSiOx | 0,94 |
| Si(Fe,Al,Ca)O2-3 | 0,84 |

If representative sample, can be used as translator for other samples

Calculate classification

Metal mixture:

Version:

Output:

Tier 0

Tier 1

Tier 2

Output Tier 0



CLP



| Endpoint | Classification | Major driver |
|--|-----------------------------------|--|
| Acute toxicity-oral | Cat. 3; H301 | / |
| Acute toxicity-dermal | Not classified | / |
| Acute toxicity-inhalation | Not classified | / |
| Skin corrosion/irritation | Cat. 2; H315 | As2O3 / AsO3 |
| Serious eye damage/eye irritation | Cat. 1; H318 | CuSO4, CuSO4 |
| Respiratory or skin sensitisation | Resp./Skin Sens. Cat.1; H334/H317 | NiSO4 |
| Germ cell mutagenicity | Cat. 2; H341 | NiSO4 |
| Carcinogenicity | Cat. 1A; H350 | As2O3 / AsO3 |
| Reproductive toxicity | Cat. 1A; H360 | lead compounds with the exception of those specified elsewhere in this Annex |
| Specific target organ toxicity - single exposure | Not classified | / |
| Specific target organ toxicity - repeated exposure | Cat. 1; H372 | NiSO4 |
| Aspiration hazard | Not classified | / |
| Hazardous to aquatic environment | Chronic Cat. 1; H410 | As2O3 / AsO3, NiSO4, lead compounds with the exception of those specified elsewhere in this Annex, CuSO4 |

Directive 1999/45/EC



| Endpoint | Classification | Major driver |
|-----------------------------------|----------------------|--|
| Acute toxicity | Xn; R20/22 | One or more |
| Corrosion | Not classified | / |
| Irritation | Xi; R41 | One or more |
| Respiratory or skin sensitisation | R42/43 | NiSO4 |
| Germ cell mutagenicity | Muta. Cat. 3; R68 | NiSO4 |
| Carcinogenicity | Carc. Cat. 1; R49 | As2O3 / AsO3 |
| Reproductive toxicity | Repr. Cat. 1; R60/61 | lead compounds with the exception of those specified elsewhere in this Annex |
| Hazardous to aquatic environment | N; R50-53 | As2O3 / AsO3, NiSO4, lead compounds with the exception of those specified elsewhere in this Annex, CuSO4 |

Calculate classification

Metal mixture:

Version:

Output:

Tier 0

Tier 1

Tier 2

Output Tier 1



CLP



| Endpoint | Classification | Major driver |
|--|----------------------|--|
| Acute toxicity-oral | Not classified | / |
| Acute toxicity-dermal | Not classified | / |
| Acute toxicity-inhalation | Not classified | / |
| Skin corrosion/irritation | Not Classified | / |
| Serious eye damage/eye irritation | Not classified | / |
| Respiratory or skin sensitisation | Not classified | / |
| Germ cell mutagenicity | Not classified | / |
| Carcinogenicity | Not classified | / |
| Reproductive toxicity | Cat. 1A; H360 | lead compounds with the exception of those specified elsewhere in this Annex |
| Specific target organ toxicity - single exposure | Not classified | / |
| Specific target organ toxicity - repeated exposure | Cat. 2; H373 | lead compounds with the exception of those specified elsewhere in this Annex |
| Aspiration hazard | Not classified | / |
| Hazardous to aquatic environment | Chronic Cat. 1; H410 | Arsenic compounds, with the exception of those specified elsewhere in this Annex, lead compounds with the exception of those specified elsewhere in this Annex, Copper (I) oxide |

Directive 1999/45/EC



| Endpoint | Classification | Major driver |
|-----------------------------------|----------------------|--|
| Acute toxicity | Not classified | / |
| Corrosion | Not classified | / |
| Irritation | Not classified | / |
| Respiratory or skin sensitisation | Not classified | / |
| Germ cell mutagenicity | Not classified | / |
| Carcinogenicity | Not classified | / |
| Reproductive toxicity | Repr. Cat. 1; R60/61 | lead compounds with the exception of those specified elsewhere in this Annex |
| Hazardous to aquatic environment | N; R50-53 | Copper (I) oxide |

Calculate classification

Metal mixture:
Version:
Output:
Tier 0
Tier 1
Tier 2

Output Tier 2

CLP



| Endpoint | Classification | Major driver |
|--|----------------|--|
| Acute toxicity-oral | Not classified | / |
| Acute toxicity-dermal | Not classified | / |
| Acute toxicity-inhalation | Not classified | / |
| Skin corrosion/irritation | Not Classified | / |
| Serious eye damage/eye irritation | Not classified | / |
| Respiratory or skin sensitisation | Not classified | / |
| Germ cell mutagenicity | Not classified | / |
| Carcinogenicity | Not classified | / |
| Reproductive toxicity | Cat. 1A; H360 | lead compounds with the exception of those specified elsewhere in this Annex |
| Specific target organ toxicity - single exposure | Not classified | / |
| Specific target organ toxicity - repeated exposure | Cat. 2; H373 | lead compounds with the exception of those specified elsewhere in this Annex |
| Aspiration hazard | Not classified | / |
| Hazardous to aquatic environment | Not classified | / |

Directive 1999/45/EC



| Endpoint | Classification | Major driver |
|-----------------------------------|----------------------|--|
| Acute toxicity | Not classified | / |
| Corrosion | Not classified | / |
| Irritation | Not classified | / |
| Respiratory or skin sensitisation | Not classified | / |
| Germ cell mutagenicity | Not classified | / |
| Carcinogenicity | Not classified | / |
| Reproductive toxicity | Repr. Cat. 1; R60/61 | lead compounds with the exception of those specified elsewhere in this Annex |
| Hazardous to aquatic environment | Not classified | / |



Tool functionalities

- **Own compositions**

- Add/Edit composition
- My compositions
- Calculate classification



- **Use of reference sample**

- Import reference sample code
- Adapt reference sample
- Calculate classification



save changes show all

| Element | Concentration% (user input) | Concentration% (ref sample) | In the form of | Species Distribution (user input) | Distribution (ref sample) | Species / Classification entry | Formulae | TDP | Bio-elution |
|---------|-----------------------------|-----------------------------|--|-----------------------------------|---------------------------|--|----------|-----|-------------|
| Ag | <input type="text"/> | 0.10000 | Ag, AgPb, CuTeAgS-alloy, AgSn, ZnAg, AgZn3, NiSbSnAg | <input type="text"/> | 100.00000 | Ag | Ag | | |
| | | | AgCl | <input type="text"/> | | Ag compounds (self classification) | Ag | | |
| | | | AgNO3 | <input type="text"/> | | AgNO3 | AgNO3 | | |
| Al | <input type="text"/> | | Al, Al2O3 | <input type="text"/> | 100.00000 | Al | Al | | |
| As | <input type="text"/> | 0.10000 | arsenic acid and its salts, Cu3AsO4(OH)3, As-acid | <input type="text"/> | | arsenic acid and its salts | As | | |
| | | | Arsenic compounds with the exception of those specified elsewhere in this Annex, PbAsOx, SbAsOx, PbAsO, CuAsOx, Cu3AsS4, PbCaAsx, NiAs, PbSbAs oxide | <input type="text"/> | | Arsenic compounds, with the exception of those specified elsewhere in this Annex | As | | |
| | | | As, AgAs, AgSb, Cu3As, NiCoFeAs, FeAs, Cu5As2, Ni2As, SbSnAs-alloy, CuAs, NiAs, SbNiAs | <input type="text"/> | 100.00000 | As | As | | |
| | | | As2O3 / AsO3, SbAs-oxide, PbAs oxide | <input type="text"/> | | As2O3 / AsO3 | As2O3 | | |
| | | | As2O5 / AsO5 / AsO, PbSbAsO | <input type="text"/> | | As2O5 / AsO5 / AsO | As2O5 | | |
| | | | Au2S3, Sulfide form | <input type="text"/> | 100.00000 | Au2S3 | Au2S3 | | |
| Co | <input type="text"/> | 1.00000 | Co, FeCo, NiCoFeAl | <input type="text"/> | 31.73000 | Co | Co | | |
| | | | CoO, oxide form | <input type="text"/> | | CoO | CoO | | |
| | | | CoS, CoFeS2 | <input type="text"/> | 68.27000 | CoS | CoS | | |
| | | | CoSo4, CoNiSbSO4 sulphate form | <input type="text"/> | | CoSO4 | CoSO4 | | |
| Cu | <input type="text"/> | 55.00000 | Copper (I) oxide, Cu2O, CuFeO2, CuNiSbOx, CuAsOx (Cu,Cr)O2-3, Cu3AsO4(OH)3, NaCuSiO, TeCuPb-oxide | <input type="text"/> | | Copper (I) oxide | Cu2O | | |

| ELEMENTAL ANALYSIS | | | | | | | | | | | | | | | |
|--------------------|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Element | Molecular weight | Concentration % | Concentration % | Concentration % | Concentration % | Concentration % | Concentration % | Concentration % | Concentration % | Concentration % | Concentration % | Concentration % | Concentration % | Concentration % | Concentration % |
| Ag | 107,868 | 87,00 | 35,00 | 80,00 | 44,89 | 86,00 | 52,00 | 55,00 | 99,18 | 40,00 | 15,00 | 94,85 | 94,85 | 94,85 | 94,85 |
| Al | 26,982 | | | | | | | | 0,04 | | | | | | |
| As | 74,922 | | | | | | | | 0,50 | | | | | | |
| Au | 196,967 | 6,55 | | | 1,97 | 9,50 | 2,00 | 1,65 | 0,30 | 1,75 | 2,53 | 2,75 | 2,75 | 2,75 | 2,75 |
| B | 10,811 | | | | | | | | | | | | | | |
| Ba | 137,327 | | | | | | | | | | | | | | |
| Bi | 208,98 | 0,04 | #DIV/0! | | 0,01 | | | | 3,05 | 0,01 | | | | 0,10 | |
| Br | 79,904 | | | | | | | | | | | | | | |
| C | 12,011 | | | | | | | | | | | | | | |
| Ca | 40,078 | | | | | | | | | | | | | | |
| Cd | 112,41 | | | | | | | | | | | | | | |
| Ce | 140,116 | | | | | | | | | | | | | | |
| Cl | 35,453 | | | | | | | | | | | | | | |
| Cr | 51,996 | | | | | | | | | | | | | | |
| Cs | 132,905 | | | | | | | | | | | | | | |
| Cu | 63,546 | 4,30 | 4,15 | | 1,50 | 1,00 | | 20,00 | 0,55 | 45,00 | 62,50 | 0,25 | 0,25 | 0,25 | 0,25 |
| | | | | | | | | | | | | | | | |
| F | 18,998 | | | | | | | | | | | | | | |
| Fe | 55,845 | | | | | | | 25,05 | | | | | | | |
| H2O | 33,008 | | | | | | | | | | | | | | |
| Ir | 192,217 | | | | | | | 1,01 | | | | | | | |
| K | 39,098 | | | | | | | | | | | | | | |
| KCl | 74,551 | | | | | | | | | | | | | | |
| Li | 6,941 | | | | | | | | | | | | | | |
| Mg | 24,305 | | | | | | | 2,50 | | | | | | | |
| Mn | 54,938 | | | | | | | | | | | | | | |
| Mo | 95,94 | | | | | | | | | | | | | | |
| Na | 22,99 | | | | | | | | | | | | | | |
| Nb | 92,906 | | | | | | | | | | | | | | |
| NH3 | 17,031 | | | | | | | | | | | | | | |
| Ni | 58,693 | | | | | | | 0,07 | 7,75 | | | | | | |
| | | | | | | | | | | | | | | | |
| O | 16 | | | | | | | | | | | | | | |
| Os | 190,23 | | | | | | | | | | | | | | |
| Pb | 207,2 | 0,09 | 5,00 | | 0,01 | | 2,25 | 2,75 | 0,02 | | | 0,10 | 0,10 | 0,10 | 0,10 |
| Pd | 106,42 | 0,84 | | | 0,25 | 0,60 | | 2,55 | | 0,30 | 0,30 | 1,55 | 1,55 | 1,55 | 1,55 |
| Pt | 195,078 | 0,40 | | | 0,07 | 0,40 | | 2,60 | | 0,30 | 0,30 | 1,35 | 1,35 | 1,35 | 1,35 |
| Rb | 85,468 | | | | | | | | | | | | | | |
| Rh | 102,906 | 0,05 | | | 0,01 | | | 1,00 | | | | 0,05 | 0,05 | 0,05 | 0,05 |
| Ru | 101,07 | | | | 0,00 | | | 2,55 | | | | | | | |
| S | 32,065 | | | | | | | | | | | | | | |
| Sb | 121,76 | 0,03 | | | 0,01 | | | 1,05 | 0,03 | | | | | | |
| Se | 78,96 | 2,50 | | | 0,26 | | 1,27 | 0,55 | 0,01 | | | | | | |
| SiO2 | 60,084 | | | | | | | | | | | | | | |
| Sn | 118,71 | | | | | | | 1,05 | | | | | | | |
| Sr | 87,62 | | | | | | | | | | | | | | |
| Te | 127,6 | 1,77 | | | 0,85 | | 5,00 | 1,05 | 0,02 | | | | | | |
| Ti | 47,867 | | | | | | | | | | | | | | |
| V | 50,942 | | | | | | | | | | | | | | |
| W | 183,84 | | | | | | | | | | | | | | |
| Zn | 65,38 | | 5,00 | | | | | 1,55 | | | | | | | |
| Zr | 91,224 | | | | | | | | | | | | | | |
| Co | 58,933 | | | | | | | | | | | | | | |
| N | 63,005 | | | | | | | | | | | | | | |
| TOTAL | | 103,56 | 49,15 | 80,00 | 49,79 | 97,50 | 62,59 | 133,21 | 100,13 | 87,35 | 80,63 | 100,90 | 100,90 | 101,00 | 100,90 |

