Pigments

1. Pigment name

ID and name: OP1 material_pigment_name
Provided by: data provider
Obligation: recommended
Occurrences: 0–n
Definition: Name(s) of the pigment.
Allowed values and other constraints: controlled vocabulary

2. Pigment form

ID and name: OP2 material_pigment_archaeological_context
Provided by: data provider
Obligation: mandatory
Occurrences: 1
Definition: In which shape/form was the pigment found in the archaeological context?
Allowed values and other constraints: free text
Example: pellets; as part of a fresco

3. Pigment type

ID and name: OP3 material_pigment_type
Provided by: data provider
Obligation: mandatory
Occurrences: 1–n
Definition: Information about the pigment type.

with the two subproperties:

3.1 Type

ID and name: OP3.1 material_pigment_type_chemistry
Provided by: data provider
Obligation: mandatory
Occurrences: 1
Definition: Is it an organic or inorganic pigment?
Allowed values and other constraints: controlled vocabulary

3.2 Occurrence

ID and name: OP3.2 material_pigment_type_production
Provided by: data provider
Obligation: recommended
Occurrences: 0–1
Definition: Is it a natural or synthetic pigment?
Allowed values and other constraints: controlled vocabulary

4. Pigment composition

ID and name: OP4 material_pigment_composition
Provided by: data provider
Obligation: mandatory
Occurrences: 1
Definition: The chemical and/or mineralogical composition of the pigment. At least one of its subproperties must be provided.

with the three subproperties:

4.1 Chemical composition

ID and name: OP4.1 material_pigment_composition_chemistry
Provided by: data provider
Obligation: recommended
Occurrences: 0–n
Definition: If it is an inorganic pigment, the chemical composition of the pigment.

with the eight subproperties:

4.1.1 Analytical method

ID and name: B4.1 chemistry_method
Provided by: data provider
Obligation: mandatory
Occurrences: 1
Definition: The method used to determine the chemical composition.
Allowed values and other constraints: controlled vocabulary

4.1.2 Analysed compound

ID and name: B4.2 chemistry_compound
Provided by: data provider
Obligation: mandatory
Occurrences: 1–n
Definition: The analysed chemical compound (chemical element or oxide).
Allowed values and other constraints: controlled vocabulary, not available if a mass spectrometric-method is recorded in `B4.1 Analytical method`.

4.1.3 Analysed isotope

ID and name: B4.3 chemistry_icp_isotope
Provided by: data provider
Obligation: recommended
Occurrences: 0–n
Definition: The isotope used for quantification of a chemical element.
Allowed values and other constraints: controlled vocabulary, only available if a mass spectrometric-method is recorded in `B4.1 Analytical method`.

4.1.4 Value

ID and name: B4.4 chemistry_value
Provided by: data provider
Obligation: mandatory
Occurrences: 1–n
Definition: The concentration of the analysed chemical compound.
Allowed values and other constraints: decimal number
Example: 15.3

4.1.5 Unit

ID and name: B4.5 chemistry_unit
Provided by: data provider
Obligation: mandatory
Occurrences: 1–n
Definition: The unit in which the concentration of the analysed chemical compound is given.
Allowed values and other constraints: controlled vocabulary

4.1.6 Uncertainty type

ID and name: B4.6 chemistry_uncertainty_type
Provided by: data provider
Obligation: recommended
Occurrences: 0–n
Definition: The type of analytical uncertainty.
Allowed values and other constraints: controlled vocabulary

4.1.7 Confidence level

ID and name: B4.7 chemistry_uncertainty_sigma
Provided by: data provider
Obligation: recommended
Occurrences: 0–n
Definition: Sigma value of the reported absolute analytical uncertainty.
Allowed values and other constraints: 1, 2, 3
Example: 2

4.1.8 Uncertainty value

ID and name: B4.8 chemistry_uncertainty_value
Provided by: data provider
Obligation: recommended
Occurrences: 0–n
Definition: Value of the absolute analytical uncertainty.
Allowed values and other constraints: decimal number
Example: 0.3

4.2 Organic compounds

ID and name: OP4.2 material_pigment_composition_compound
Provided by: data provider
Obligation: recommended
Occurrences: 0–n
Definition: The (main) organic compounds in the pigment.
Allowed values and other constraints: controlled vocabulary

4.3 Mineralogical composition

ID and name: OP4.3 material_pigment_composition_mineral
Provided by: data provider
Obligation: recommended
Occurrences: 0–n
Definition: If it is mineral pigment, which minerals are present?

with the two subproperties:

4.3.1 Mineral name

ID and name: OP4.3.1 material_pigment_composition_mineral_name
Provided by: data provider
Obligation: mandatory
Occurrences: 1
Definition: Name of the mineral approved by the International Mineralogical Association (IMA).
Allowed values and other constraints: controlled vocabulary (IMA list of minerals), retrieved from the Mindat API

4.3.2 Mineral ID

ID and name: OP4.3.2 material_pigment_composition_mineral_id
Provided by: Mindat API
Obligation: mandatory
Occurrences: 1
Definition: The Mindat ID of the mineral.
Allowed values and other constraints: Value in the `id` field of a Mindat mineral record.

5. Pigment production

ID and name: OP5 material_pigment_processing
Provided by: data provider
Obligation: mandatory
Occurrences: 1
Definition: Information about the production context and processing steps of the pigment.

with the three subproperties:

5.1 Production context

ID and name: OP5.1 material_pigment_production_context
Provided by: data provider
Obligation: mandatory
Occurrences: 1
Definition: The production context the object is related to.
Allowed values and other constraints: controlled vocabulary

5.2 Treatment

ID and name: OP5.2 material_pigment_production_treatment
Provided by: data provider
Obligation: recommended
Occurrences: 0–n
Definition: Which treatments were done to the raw material(s) to produce the pigment?
Allowed values and other constraints: controlled vocabulary

5.3 Details

ID and name: OP5.3 material_pigment_production_details
Provided by: data provider
Obligation: optional
Occurrences: 0–1
Definition: Additional information about the production context.
Allowed values and other constraints: free text
Example: t.b.d.

6. Colour

ID and name: OP6 material_pigment_colour
Provided by: data provider
Obligation: recommended
Occurrences: 0–1
Definition: The colour of the pigment.

with the two subproperties:

6.1 Name

ID and name: OP6.1 material_pigment_colour_name
Provided by: data provider
Obligation: mandatory
Occurrences: 1
Definition: General colour of the pigment.
Allowed values and other constraints: free text
Example: blue; 5P 5/10; L*56 a*26 b*3

6.2 Colour system

ID and name: OP6.2 material_pigment_colour_system
Provided by: data provider
Obligation: mandatory
Occurrences: 1
Definition: The colour system used to determine the colour.
Allowed values and other constraints: controlled vocabulary

7. Pigment alteration

ID and name: OP7 material_pigment_alteration
Provided by: data provider
Obligation: recommended
Occurrences: 0–1
Definition: Information about the alteration of the pigment.

with the two subproperties:

7.1 Alteration type

ID and name: OP7.1 material_pigment_alteration_type
Provided by: data provider
Obligation: recommended
Occurrences: 0–n
Definition: The type of the observed alteration process.
Allowed values and other constraints: controlled vocabulary

7.2 Details

ID and name: OP7.2 material_pigment_alteration_description
Provided by: data provider
Obligation: recommended
Occurrences: 0–n

Definition: Additional information about the observed alteration or its productions.
Allowed values and other constraints: free text
Example: t.b.d.

8. Pigment recycling

ID and name: OP8 material_pigment_recycling
Provided by: data provider
Obligation: mandatory
Occurrences: 1
Definition: Information about whether the pigment was recycled or reused.

with the two subproperties:

8.1 Indicators

ID and name: OP8.1 material_pigment_recycling_indicator
Provided by: data provider
Obligation: mandatory
Occurrences: 1
Definition: Does the pigment show indicators for recycling or reuse?
Allowed values and other constraints: controlled vocabulary

8.2 Reasoning

ID and name: OP8.2 material_pigment_recycling_reason
Provided by: data provider
Obligation: recommended
Occurrences: 0–1
Definition: Observed indicators for recycling or reuse.
Allowed values and other constraints: free text
Example: presence of Sn in trace element analysis

9. Lead source

ID and name: OP9 material_pigment_lead_source
Provided by: data provider
Obligation: recommended
Occurrences: 0–1
Definition: The source of lead in the pigment.
Allowed values and other constraints: controlled vocabulary

10. Provenance indicators

ID and name: OP10 material_pigment_raw_material_provenance
Provided by: data provider
Obligation: recommended
Occurrences: 0–1
Definition: Information about provenance, if known from other sources.
Allowed values and other constraints: free text
Example: t.b.d.

11. Sr isotopes

ID and name: OP11 material_pigment_isotopes_Sr
Provided by: data provider
Obligation: optional
Occurrences: 0–n
Definition: The $^{87}Sr/^{86}Sr$ ratio of the pigment.

with the two subproperties:

11.1 Value

ID and name: OP11.1 material_pigment_isotopes_Sr_value
Provided by: data provider
Obligation: mandatory
Occurrences: 1
Definition: Value of the $^{87}Sr/^{86}Sr$ ratio.
Allowed values and other constraints: decimal number
Example: 0.7856

11.2 Analytical precision

ID and name: OP11.2 material_pigment_isotopes_Sr_2SD
Provided by: data provider
Obligation: recommended
Occurrences: 0–1
Definition: Absolute analytical uncertainty of the $^{87}Sr/^{86}Sr$ ratio in double standard deviation (2SD).
Allowed values and other constraints: decimal number
Example: 0.0002

12. Nd isotopes

ID and name: OP12 material_pigment_isotopes_Nd
Provided by: data provider
Obligation: optional

Occurrences: 0–n
Definition: The εNd value of the pigment.

with the two subproperties:

12.1 Value

ID and name: OP12.1 material_pigment_isotopes_Nd_value
Provided by: data provider
Obligation: mandatory
Occurrences: 1
Definition: Value of εNd.
Allowed values and other constraints: decimal number
Example: t.b.d.

12.2 Analytical precision

ID and name: OP12.2 material_pigment_isotopes_Nd_2SD
Provided by: data provider
Obligation: recommended
Occurrences: 0–1
Definition: Absolute analytical uncertainty of the εNd value in double standard deviation (2SD).
Allowed values and other constraints: decimal number
Example: t.b.d.

13. Hf isotopes

ID and name: OP13 material_pigment_isotopes_Hf
Provided by: data provider
Obligation: optional
Occurrences: 0–n
Definition: The εHf value of the pigment.

with the two subproperties:

13.1 Value

ID and name: OP13.1 material_pigment_isotopes_Hf_value
Provided by: data provider
Obligation: mandatory
Occurrences: 1
Definition: Value of εHf.
Allowed values and other constraints: decimal number
Example: t.b.d.

13.2 Analytical precision

ID and name: OP13.2 material_pigment_isotopes_Hf_2SD
Provided by: data provider
Obligation: recommended
Occurrences: 0–1
Definition: Absolute analytical uncertainty of the εHf value in double standard deviation (2SD).
Allowed values and other constraints: decimal number
Example: t.b.d.