

Ore

1. Ore mineralogy

ID and name: OO1 material_ore_mineralogy

Provided by: data provider

Obligation: recommended

Occurrences: 0–n

Definition: The mineralogical composition of the ore.

with the two subproperties:

1.1 Minerals

ID and name: OO1.1 material_ore_mineralogy_mineral

Provided by: data provider

Obligation: mandatory

Occurrences: 1–n

Definition: The minerals included in the specimen.

with the two subproperties:

1.1.1 Mineral name

ID and name: OO1.1.1 material_ore_mineralogy_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

1.1.2 Mineral ID

ID and name: OO1.1.2 material_ore_mineralogy_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.

1.2 Mineral–hosting ore part

ID and name: OO1.2 material_ore_mineral_part

Provided by: data provider

Obligation: mandatory

Occurrences: 1–n

Definition: The part of the ore to which the mineral belongs to.

Allowed values and other constraints: controlled vocabulary

2. Commodity

ID and name: OO2 material_ore_commodity

Provided by: data provider

Obligation: recommended

Occurrences: 0–n

Definition: Information about the targeted metal(s) by mining activities through time.

with the two subproperties:

2.1 Targeted metals

ID and name: OO2.1 material_ore_commodity_metal

Provided by: data provider

Obligation: mandatory

Occurrences: 1–n

Definition: The target metal(s) of the mining activities.

Allowed values and other constraints: controlled vocabulary

2.2 Period of extraction

ID and name: OO2.2 material_ore_commodity_period

Provided by: data provider

Obligation: recommended

Occurrences: 0–n

Definition: Period when the mine was exploited for the metals listed in [002.1 Targeted metals](#).

with the eight subproperties:

2.2.1 Persistent identifier

ID and name: B3.1 date_pid

Provided by: data provider

Obligation: recommended

Occurrences: 0–n

with the two subproperties:

2.2.1.1 VALUE

ID and name: B3.1.1 date_pid_value

Provided by: data provider

Obligation: mandatory

Occurrences: 1

Definition: The value of the persistent identifier.

Allowed values and other constraints: The period's persistent identifier in one or more of the data infrastructures listed in `B3.1.2 Type`.

Example: 99152/p0qhb66vvth

2.2.1.2 TYPE

ID and name: B3.1.2 date_pid_type

Provided by: data provider

Obligation: mandatory

Occurrences: 1

Definition: The name of the data infrastructure.

Allowed values and other constraints: controlled vocabulary

2.2.2 Date type

ID and name: B3.2 date_type

Provided by: data provider

Obligation: mandatory

Occurrences: 1–n

Definition: Is this an archaeological or geological age? Archaeological dates must be given in calendar years, with BCE dates as negative values. Geological dates must be given in million years.

Allowed values and other constraints: geological, archaeological

Example: archaeological

2.2.3 Absolute Date

ID and name: B3.3 date_absolute

Provided by: data provider, API

Obligation: recommended

Occurrences: 0–1

Definition: The absolute date of a point in time or period in years before or after common era. Values in BCE are reported as negative values. If the absolute date is given with an uncertainty such as 450 +/- 50 BC, start and end date mark the lower and upper limit of the date range, i.e. -500 and -400.

with the four subproperties:

2.2.3.1 START

ID and name: B3.3.1 date_absolute_start

Provided by: data provider, API

Obligation: mandatory

Occurrences: 1

Definition: The oldest possible date of the period.

Allowed values and other constraints: integer

Example: -15

2.2.3.2 END

ID and name: B3.3.2 date_absolute_end

Provided by: data provider, API

Obligation: recommended

Occurrences: 0–1

Definition: The youngest possible date of the period.

Allowed values and other constraints: integer

Example: 15

2.2.3.3 DATING METHOD

ID and name: B3.3.3 date_absolute_method

Provided by: data provider

Obligation: mandatory

Occurrences: 1–n

Definition: The method used to determine the absolute date.

Allowed values and other constraints: controlled vocabulary

2.2.3.4 UNIT OF DATE

ID and name: B3.3.4 date_absolute_unit

Provided by: TerraLID system

Obligation: mandatory

Occurrences: 1

Definition: The unit of the date.

Allowed values and other constraints: a, Ma

Example: a

2.2.4 Relative Date

ID and name: B3.4 date_relative

Provided by: data provider, API

Obligation: recommended

Occurrences: 0–1

Definition: The relative date of a point in time or period.

with the two subproperties:

2.2.4.1 CHRONOLOGICAL UNIT

ID and name: B3.4.1 date_relative_period

Provided by: data provider, API

Obligation: mandatory

Occurrences: 1

Definition: The relative date expressed as a chronological unit.

Allowed values and other constraints: controlled vocabulary

2.2.4.2 DATING METHOD

ID and name: B3.4.2 date_relative_method

Provided by: data provider

Obligation: mandatory

Occurrences: 1–n

Definition: The method used to determine the relative date.

Allowed values and other constraints: controlled vocabulary

2.2.5 Cultural unit

ID and name: B3.5 date_archaeo_cultural

Provided by: data provider

Obligation: optional

Occurrences: 0–n

Definition: Relevant cultural and user created labels for the relative date of the item.

Allowed values and other constraints: free text, only available if B3.2 Date type = "archaeological".

Example: Roman

2.2.6 Orogenesis

ID and name: B3.6 date_geol_orogenesis

Provided by: data provider

Obligation: recommended

Occurrences: 0–1

Definition: The relative date expressed as anorogenic event.

Allowed values and other constraints: controlled vocabulary, only available if B3.2 Date type = "geological".

2.2.7 Definition of chronological unit

ID and name: B3.7 date_relative_reference

Provided by: data provider

Obligation: recommended

Occurrences: 0–n

Definition: The reference defining the relative date or period.

with the five subproperties:

2.2.7.1 Persistent Identifier

ID and name: B5.1 relation_pid

Provided by: data provider

Obligation: recommended

Occurrences: 0–n

Definition: The persistent identifier or TerraLID ID associated with a resource or related research output. If referring to another entity in the TerraLID database, the TerraLID identifier must be used.

with the two subproperties:

2.2.7.1.1 Value

ID and name: B5.1.1 relation_pid_value

Provided by: data provider

Obligation: mandatory

Occurrences: 1

Definition: Value of the persistent identifier or TerraLID ID.

Allowed values and other constraints: valid persistent identifier according to the options listed in [B5.1.2 Type](#).

Example: 10.60510/ICDP5054ESYI201

2.2.7.1.2 Type

ID and name: B5.1.2 relation_pid_type

Provided by: data provider

Obligation: mandatory

Occurrences: 1

Definition: The type of the identifier.

Allowed values and other constraints: controlled vocabulary

2.2.7.2 Full reference

ID and name: B5.2 relation_text

Provided by: data provider, API (DOI)

Obligation: recommended

Occurrences: 0–1

Definition: The full reference of a publication.

Allowed values and other constraints: free text

Example: Palinkaš, L. A., 1985, Lead isotope patterns in galenas from some selected ore deposits in Croatia and NW Bosnia, Geološki Vjesnik, 38, 175–89.

2.2.7.3 Kind of relation

ID and name: B5.3 relation_kind

Provided by: data provider

Obligation: mandatory

Occurrences: 1–n

Definition: Relationship between item and the research output.

Allowed values and other constraints: controlled vocabulary

2.2.7.4 Type of resource

ID and name: B5.4 relation_resource

Provided by: data provider

Obligation: mandatory

Occurrences: 1–n

Definition: Type of resource or research output.

Allowed values and other constraints: controlled vocabulary

2.2.7.5 Additional details

ID and name: B5.5 relation_detail

Provided by: data provider

Obligation: optional

Occurrences: 0–n

Definition: Additional information about the relation, e.g., if the related work addresses a specific aspect of the item

(e.g., the geological setting).

Allowed values and other constraints: free text

Example: Information about the dating of the site.

3. Mineralisation

ID and name: OO3 material_ore_mineralisation

Provided by: data provider

Obligation: recommended

Occurrences: 0–1

Definition: Information about the mineralisation of the ore.

with the two subproperties:

3.1 Mineralisation type

ID and name: OO3.1 material_ore_mineralisation_type

Provided by: data provider

Obligation: recommended

Occurrences: 0–n

Definition: The texture of the ore mineral.

Allowed values and other constraints: controlled vocabulary

3.2 Mineralisation phase

ID and name: OO3.2 material_ore_mineralisation_phase

Provided by: data provider

Obligation: optional

Occurrences: 0–1

Definition: The relative position in the sequence of events forming the ore deposit with 1 being the earliest mineralisation event.

Allowed values and other constraints: integer

Example: 2

4. Ore chemistry

ID and name: OO4 material_ore_chemistry

Provided by: data provider

Obligation: recommended

Occurrences: 0–n

Definition: Information about the chemical composition of the ore.

with the two subproperties:

4.1 Chemical composition

ID and name: OO4.1 material_ore_chemistry_element

Provided by: data provider

Obligation: mandatory

Occurrences: 1–n

Definition: The chemical composition of the ore.

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 Abundance category

ID and name: OO4.2 material_ore_chemistry_category

Provided by: TerraLID system

Obligation: mandatory

Occurrences: 1–n

Definition: The abundance category of each element inferred from the chemical composition.

Allowed values and other constraints: controlled vocabulary

5. Alteration

ID and name: OO5 material_ore_alteration

Provided by: data provider

Obligation: recommended

Occurrences: 1

Definition: The extent of alteration.

Allowed values and other constraints: controlled vocabulary

6. Deposit type

ID and name: OO6 material_ore_deposit

Provided by: data provider

Obligation: recommended

Occurrences: 0–1

Definition: The type of the ore deposit.

Allowed values and other constraints: controlled vocabulary

7. Ore district

ID and name: OO7 material_ore_district

Provided by: data provider

Obligation: mandatory

Occurrences: 1

Definition: The mining district the ore deposit belongs to.

Allowed values and other constraints: free text

Example: Mitterberg; Laurion; African Copper Belt

8. Access to targeted metal

ID and name: OO8 material_ore_accessibility

Provided by: data provider

Obligation: recommended

Occurrences: 0–1

Definition: Information about whether the ore was accessible with pre–industrial mining and/or smelting technology?

with the two subproperties:

8.1 Accessibility

ID and name: OO8.1 material_ore_accessibility

Provided by: data provider

Obligation: recommended

Occurrences: 0–1

Definition: Was the ore accessible for pre–industrial societies?

Allowed values and other constraints: yes, no

Example: yes

8.2 Details

ID and name: OO8.2 material_ore_accessibility_detail

Provided by: data provider

Obligation: mandatory

Occurrences: 1

Definition: If [008.1 Accessibility](#) is provided, short explanation for choice.

Allowed values and other constraints: free text

Example: The ore is part of the gossan and can be smelted in prehistoric furnaces.