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 `OO2.1 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_orogensis
Provided by: data provider
Obligation: recommended
Occurrences: 0–1
Definition: The relative date expressed as an orogenic 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 `OO8.1 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.