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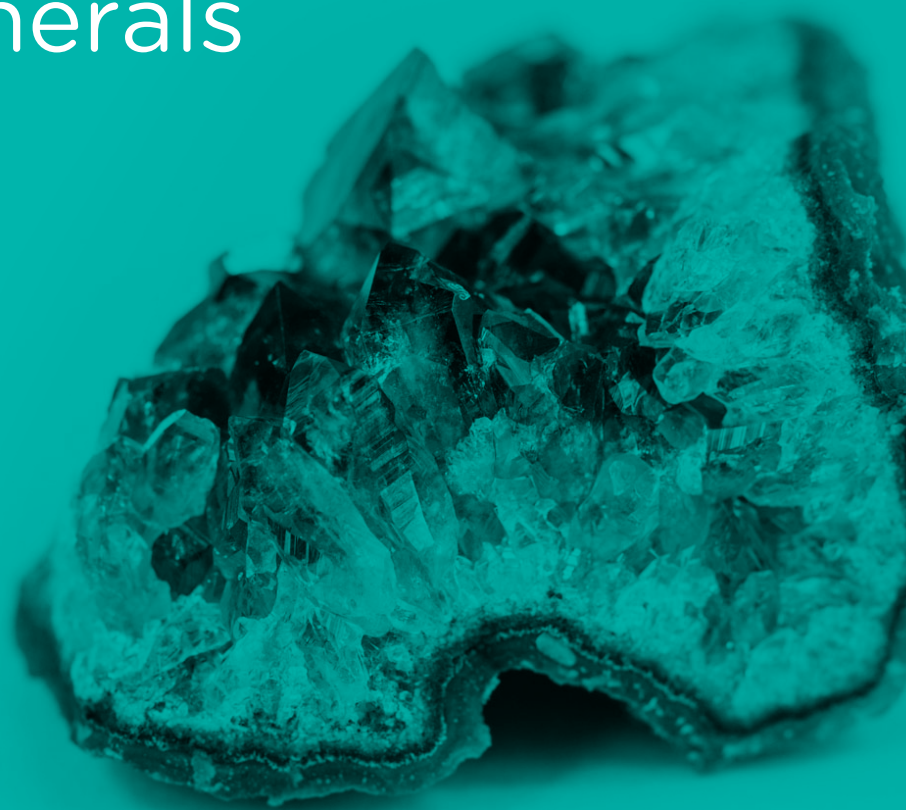
WJEC Eduqas GCE AS in
GEOLOGY

P3
Application of classification systems using distinguishing characteristics to identify unknown minerals

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Title: P3 Application of classification systems using distinguishing characteristics to identify unknown minerals

Specification reference: 1.1e

Aim: To apply a classification system using distinguishing characteristics to identify unknown minerals.

Apparatus:
Classification system/identification flow chart for minerals
Samples of unknown minerals

Method:
Following an identification flow chart perform diagnostic tests on minerals in order to identify them.

Teacher/Technician notes:
Learners should follow a classification system/identification flow chart, and perform tests in order to identify a range of minerals. An example of an identification flow chart is given below, but an alternative could be used.
Learners could also devise their own identification flow charts, with other learners trying them out to test how effective they are.

Mineral Identification Flow Chart

Australian Government
Geoscience Australia

Observable Properties

Lustre | Hardness | Streak | Hardness | Cleavage | Magnetic | Other distinctive features

START

Metallic

Hard (harder than a steel pin > 5.5)
- Red-brown → Hematite
- Black
  - Magnetic → Magnetite
  - Non-magnetic → Pyrite → Greenish black streak

Soft (softer than a steel pin < 5.5)
- Dull brown/white /pale yellow → Sphalerite
- Lead grey → Cubic cleavage → Galena

Non-metallic

Hard (harder than a steel pin > 5.5)
- Two good cleavage directions at right angles → Feldspar
- None, fractures like glass → Quartz

Soft (softer than a steel pin < 5.5)
- Blue → Azurite → Distinctive blue
- Green → Malachite → Distinctive green
- White
  - Not scratched by fingernail (>2.5)
    - Three excellent cleavage directions (rhombohedral) → Calcite → Fizzes in hydrochloric acid
    - Three excellent cleavage directions (cubic) → Halite → Tastes salty, dissolves in water
    - One excellent cleavage direction (flakes) → Mica
  - Scratched by fingernail (<2.5)
    - One good cleavage direction → Gypsum
    - Poor, makes flakes → Talc → Soapy feel

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