

Earth

1. Earth structure

CONCEPT 2

ROCK TYPES

NOTES

Types of Rocks – There are 3 types of rocks: **Igneous**, **Sedimentary** and **Metamorphic**.

Igneous rocks – form when hot molten rock from the Earth's mantle cools down and hardens. **Features:**

- Have no layers
- May be dark or light in colour
- Usually have crystals
- Rarely react with acids
- Contain no fossils

There are 2 main types: **extrusive** (form when magma flows onto the Earth's surface) and **intrusive** (form from magma below the Earth's surface in the crust).

Examples

granite, pumice, basalt, gabbro

Sedimentary Rocks – formed over thousands / millions of years when sediments, rocks and pebbles are dropped on the seabed and buried. There are 4 main steps:

1. **Weathering and erosion** – pieces break off rocks and are transported by wind or water.
2. **Deposition** – when river or sea currents slow sediments drop to the riverbed or seabed.
3. **Compaction** – over millions of years these sediments are covered with more sediments and the weight of the upper layers **compacts** (presses together).
4. **Cementation** - the weight of the upper layers also stick together the lower layers of sediments to form sedimentary rocks.

Features:

- Usually crumbly
- Found in layers called **strata**
- May contain **fossils**

Examples

sandstone (made of sand particles)

limestone (made of tiny shells and skeletons of marine organisms)

shale & mudstone (made of silt and clay particles too small to see)

conglomerate (made of rounded pebbles)

Fossils – a fossil is the preserved remains of a dead organism. There are 3 main ways that a fossil can form:

1. Hard body parts (shells or bones) can be covered by sediments and then **replaced by minerals**.
2. softer parts of plants and animals can form casts or impressions.
3. dead plants and animals can be preserved in amber (a sticky tree resin), tar pits or glaciers.

Metamorphic Rocks- the word metamorphic comes from the Greek for 'change of form'.

Existing rocks that are subjected to extreme **heat and/or pressure** can change into metamorphic rocks. They are found deep inside the Earth's crust.

Features:

- Hard wearing
- Shiny
- Dense / heavy
- Resistant to weathering and erosion
- No fossils

Examples

marble (made from limestone) and used for building stone, statues & work surfaces.

slate (made from clay) splits in to flat sheets so is used for roofing and facing for buildings.

quartzite (made from sandstone) and used for building stone.

schists (made from sandstone or shale) used for decorative rock walls and jewellery.

Formation of metamorphic rocks varies depending on the temperature and pressure applied. Different conditions produce different rocks. The conditions destroy information contained in rocks, eg.fossils. The most intense metamorphism is often associated with the collision of tectonic plates and formation of new mountains and this produces Gneiss (pronounced 'nice').