Earth’s structure

Formed around **4.5 billion years** ago, Earth is the only planet in our solar system known to support life.

As early as the 5th century BC the ancient Greeks documented the idea of its spherical structure. Since then, our understanding has developed and the current model is a **layered structure**. Each layer has unique chemical and physical properties.

Did you know...?

The Earth is not a perfect sphere. It is an oblate spheroid where the diameter at the equator is approximately 42 kilometres greater than the diameter at the poles.

The layers

Crust

The thin **outermost layer** of the Earth, where we live. It is divided into: **continental crust** (land), which is made mostly from granite and **oceanic crust** (beneath the ocean bed), which mainly consists of basalt.

Mantle

The mostly solid layer between the thin **outer crust** and the dense **core**. Made predominantly of **silicates** (rocks containing silicon and oxygen) but it also contains large amounts of oxides of magnesium and iron.

Outer core

Responsible for the Earth’s **magnetic field**, the **outer core** mostly consists of liquid iron and nickel with smaller amounts of sulfur and oxygen.

Inner core

Although at a temperature well above the melting point of iron, the **inner core** is solid owing to the intense pressure (nearly 3.6 million atmospheres) exerted on it.

Did you know...?

It is estimated that 90% of the sulfur on Earth is found in the core.

The layers’ properties

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Layer** | **Part of layer** | **State** | **Thickness (km)** | **Temperature range (°C)** | **Composition** |
| Crust | Oceanic crust  Continental crust | Solid | 5–10  10–70 | 0–70 | O 46.0%  Si 28.0%  Al 8.3%  Fe 5.6%  Ca 4.2% |
| Mantle |  | Solid | 2900 | 1400–3000 | O 44.0%  Mg 22.0%  Si 21.0%  Fe 6.3% |
| Core | Outer core  Inner core | Liquid  Solid | 2200  1200 | 4000–6000  5000–600 | Fe 89.0%  Ni 5.8%  S 4.5% |

Did you know...?

The hottest part of the core reaches 6000ºC – as hot as the surface of the Sun!