



Interior Of The Earth

The earth is made up of three main layers-the crust, the mantle and the core.

Crust (Lithosphere): - The upper most layer over the earth's surface is called the crust. It is thinnest of all the layers. The crust is made up of two layers-upper crust and lower crust. The **upper crust** is made up the continents. It mainly consist of minerals silica and alumina. It is thus called sial (si-silica and al-alumina). The **lower crust** is a continuous layer of denser rock that makes up the ocean floor. The oceanic crust mainly consists of silica and magnesium; it is therefore called sima (si- silica and ma- magnesium).The crust varies in thickness from just around 5-7km under the oceans, to around 35-70km under the continents. To reach to the centre of the earth (which is not possible) you will have to dig a hole 6000 km deep on the ocean floor.

Mantle(Mesosphere): - Just beneath the crust is the mantle which extends up to depth of 2900 km below the crust. It is divided into the upper mantle and the lower mantle.

The **upper mantle** is a thin, stiff layer consisting mainly of the minerals silica, iron and magnesium. It extends from the bottom of the crust to a depth of around 300km.

The **lower mantle** extends from around 300 to 2900km. It is a zone of mixed minerals such as iron, magnesium, aluminium and silicon. The lower mantle is made up of molten material called magma, which flows out as lava during volcanic eruptions.

Core (Barysphere): - The innermost layer of earth is the core. The radius of core is about 3500 km. It is mainly made up of nickel and iron and is called nife (ni-nickel and fe-ferrous).The core is divided into **upper core** and **inner core**. The outer core is 2300 km thick and the inner core is 1200 km thick.

Rocks and Minerals

Rocks: Any natural mass of mineral matter that makes up the earth's crust is called a rock. Sandstone, gypsum, dolomite, marble and limestone are example of rocks.

Types of Rocks: Igneous Rocks, Sedimentary Rocks and Metamorphic Rocks.

Igneous rocks: - When the molten magma cools, it becomes solid. Rocks thus formed are called igneous rocks. They are also called primary rocks. The hot lava that flows out during volcanic eruptions cools down, solidifies over a period of time and forms igneous rocks. There are two types-

Intrusive igneous rocks: - When the molten magma cools down deep inside the earth's crust, solid rocks so formed are called intrusive igneous rocks. Example-Granite.

Extrusive igneous rocks: - When the molten lave comes on the earth's surface, it rapidly cools down and becomes solid; rocks formed in such a way on the crust are called extrusive igneous rocks. Example -basalt. The Deccan plateau is made up of basalt rocks.

Sediments: - Rocks roll down, crack and hit each other and are broken down into small fragments. These smaller particles are called sediments. These sediments are transported and deposited by wind, water, etc. these loose sediments are compressed and hardened to form layer of rocks. These types of rocks are called **sedimentary rocks**. For example, sandstone is made from grains of sand. These



rocks may also contain fossils of plants, animals and other micro- organisms that once lived on them. Generally sedimentary Rocks form in river beds, lake beds and ocean beds.

Metamorphic Rocks- Igneous and sedimentary rocks can change into metamorphic rocks under great heat and pressure. Example- clay changes into slate and limestone into marble.

Rock cycle: - One type of rock changes to another type under certain conditions in a cyclic manner. This process of transformation of the rock from one to another is known as the rock cycle.

When the molten magma cool; it solidifies to become igneous rock. These igneous rocks are broken down into small particles that are transported and deposited to form sedimentary rocks. When the igneous and sedimentary rocks are subjected to heat and pressure they change into metamorphic rocks. The metamorphic rocks which are still under great heat and pressure melt down to form to form molten magma. This molten magma again can cool down and solidify into igneous rocks.

Rocks are useful to us in following ways:-

1. Hard rocks are used for making roads, houses and buildings.
2. Stones are used in many games like seven stones (pitthoo), hop-scotch (stapu) etc.

Minerals: - Minerals are naturally occurring substances which have certain physical properties and definite chemical composition. They are usually solid and inorganic. Types of minerals-metallic and non-metallic.

Metallic minerals: These are minerals that contain one or more metallic elements. They are found in igneous and metamorphic rocks. Metals are usually hard with shiny surface. Iron, copper, bauxite, gold and manganese are some examples.

Non-Metallic Minerals: These minerals do not contain extractable metallic elements. They lack a metallic shine in their appearance. They are associated with sedimentary rocks. Clay, sulphur, coal, petroleum, salt etc. are examples.

