

Igneous Rocks

These are rocks that are formed by crystallization of a magma that is high in Si and O as well as Al, Ca, Na, Mg, Fe, and K.

Types of Igneous Rocks

They are two types of igneous rocks;

- Extrusive igneous rocks
- Intrusive igneous rocks

Extrusive Igneous rocks

- These rocks form from fast cooling of molten rock (lava) at the earth's surface, or Fragmentation and fast cooling of molten rock as it explosively erupts
- The fast cooling forms a small-sized crystal that is fine-grained (hard to see with the naked eye)
- Extrusive rocks are also called volcanic rocks

Intrusive Igneous rocks

- These rocks form from slow cooling of molten magma, and this occurs deep under the ground/earth
- Slow cooling creates a large-sized crystal growth that is coarse-grained

Due to the amount of silicate or silica (SiO₂) content of igneous rocks, they are divided into three subsegments:

Mafic rocks - very dark-colored rocks (low silicate/silica content), around 42-52 weight percent

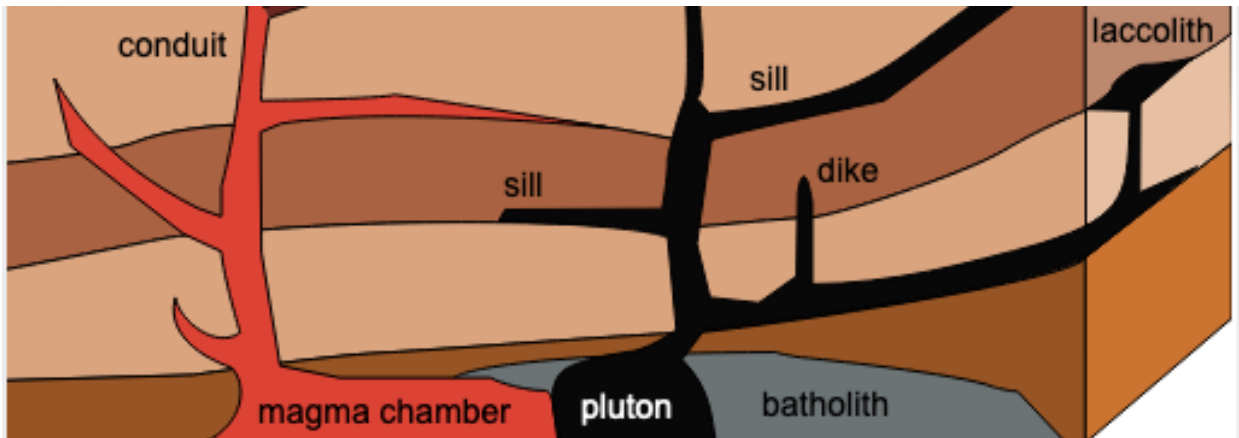
Intermediate rocks – intermediate, medium silicate content, approximately 52-65 weight percent

Felsic rocks – Light-colored rocks, very high silica content, more than 65 weight percent

Features of Intrusive Igneous rocks

Intrusive rocks form structures as they are formed deep in the earth, as shown in the diagram below.

- **Sill** – Thin layer that intrudes in between the layers or bedding of the rock (country rock) structure, it is mostly horizontal
- **Dyke** – Vertical intrusion of magma, it cuts through rock (country rock) layers or bedding
- **Laccolith** – Pool of magma that is dome-shaped that is running parallel to the bedding planes/layers of the rock (country rock)
- **Batholith** – A large irregular shaped formed by a pool of magma
- **Pluton** – A pool of magma that feeds other structures
- **Conduit** – A structure of hot magma pipe that feeds the extrusive igneous formations at the surface of the earth



The diagram above shows the structures formed when the magma cools and solidifies in below the earth's surface (source: Wikipedia).

Features of Extrusive Igneous rocks

The structures formed by extrusive igneous rocks depends and the volcanic activities vary on the environmental setting.

The most significant volume of extrusive rocks erupts from divergent boundaries, followed by convergent boundaries (subduction zones) and lastly, hotspots.

Extrusive rocks form volcanic mountains and lava flows in both land and oceans.

Note: There is more to learn from igneous rocks.