SNS COLLEGE OF TECHNOLOGY

(AN AUTONOMOUS INSTITUTION)
COIMBATORE-35

II BE / III SEMESTER

UNIT III

19CET201-ENGINEERING GEOLOGY

SYLLABUS

Classification of rocks, distinction between Igneous, Sedimentary and Metamorphic rocks. Engineering properties of rocks. Description, occurrence, engineering properties, distribution and uses of Granite, Dolerite, Sandstone, Limestone, Shale, Quartzite

GRANITE

Granite is a coarse-grained igneous rock composed mostly of quartz, alkali feldspar, and plagioclase. It forms from magma with a high content of silica and alkali metal oxides that slowly cools and solidifies underground. It is common in the continental crust of Earth, where it is found in igneous intrusions. These range in size from dikes only a few inches across to batholiths exposed over hundreds of square kilometers."

INTRUSION

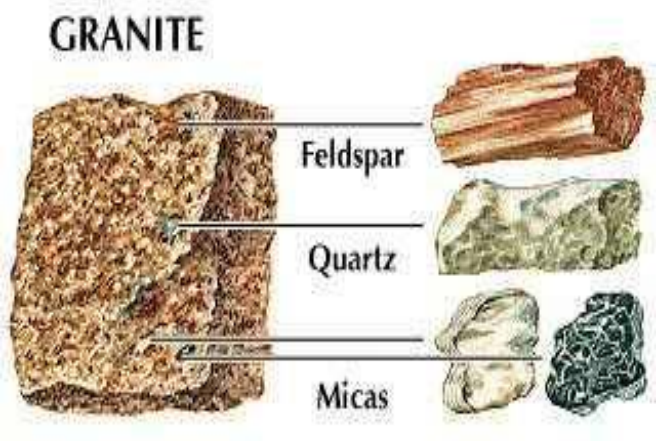
Volcanic Neck

Batholith

Dikes

DESCRIPTION

- The word "granite" comes from the Latin *granum*, a grain, in reference to the coarse-grained structure of such a completely crystalline rock.
- Granitic rocks mainly consist of feldspar, quartz, mica, and amphibole minerals, which form an interlocking, somewhat equigranular matrix of feldspar and quartz with scattered darker biotite mica and amphibole (often hornblende) peppering the lighter color minerals.



DESCRIPTION

Equigranular matrix

Amphibole

phenocrysts

DESCRIPTION

- Occasionally some individual crystals (phenocrysts) are larger than the groundmass, in which case the texture is known as porphyritic.
- A granitic rock with a porphyritic texture is known as a granite porphyry.
- Granitoid is a general, descriptive field term for lighter-colored, coarse-grained igneous rocks.
- Petrographic examination is required for identification of specific types of granitoids. Granites can be predominantly white, pink, or gray in color, depending on their mineralogy.

OCCURRENCE

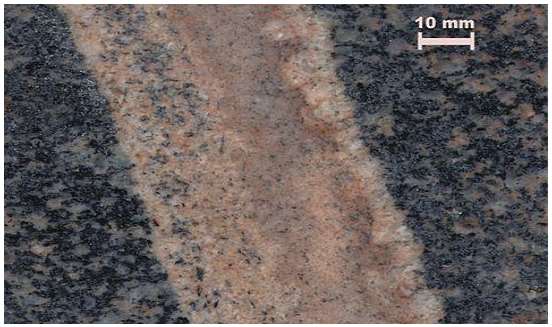
- Granitic rock is widely distributed throughout the continental crust. Much of it was intruded during the Precambrian age; it is the most abundant basement rock that underlies the relatively thin sedimentary veneer of the continents.
- Outcrops of granite tend to form tors, domes or bornhardts, and rounded massifs.
- Granites sometimes occur in circular depressions surrounded by a range of hills, formed by the metamorphic aureole or hornfels.
- Granite often occurs as relatively small, less than 100 km^2 stock masses (stocks) and in batholiths that are often associated with orogenic mountain ranges.
- Small dikes of granitic composition called aplites are often associated with the margins of granitic intrusions. In some locations, very coarse-grained pegmatite masses occur with granite

Outcrop

Bornhardt

Hornfels

Batholith



Aplites

Dikes

Pegmatite

Stocks

PHYSICAL PROPERTIES

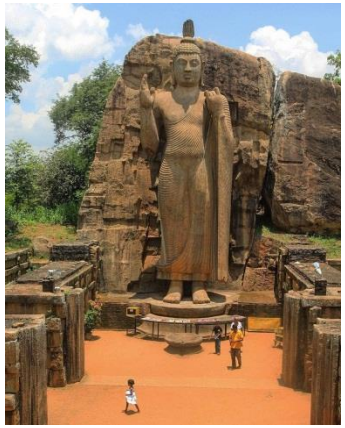
- The average density of granite is between 2.65 and 2.75 g/cm^3 (165 and 172 lb/cu ft), its compressive strength usually lies above 200 MPa, and its viscosity near STP is 3–6·10^{20} Pa·s.
- The melting temperature of dry granite at ambient pressure is 1215–1260 °C (2219–2300 °F); it is strongly reduced in the presence of water, down to 650 °C at a few kBar pressure.
- Granite has poor primary permeability overall, but strong secondary permeability through cracks and fractures if they are present.

DISTRIBUTION

- ✓ India is known to have a rich abundance of granite deposits and other natural stones.
- ✓ In fact, it is consider one of the leading granite exporters in the world.
- ✓ Experts claim that there are over 100 different varieties of granites found in the country that vary distinctively in their color and texture.

USES

- These stones are largely used to build monuments, buildings, tiles, and surface plates etc.
- Due to the innate beauty and toughness, Indian granite stones outperform their counterparts against a wide range parameters.
- Granite is the most prominent material in this sector, for the export sectors like monuments, flooring slab, kitchen countertops, sculptures and exports.



5 FAMOUS MONUMENTS MADE FROM GRANITE

Here are some of the most famous monuments made from granite.

MOUNT RUSHMORE
IN SOUTH DAKOTA

BRIHADEESWARAR TEMPLE
IN INDIA

AVUKANA BUDDHA STATUE
IN SRI LANKA

DIANA, PRINCESS OF WALES MEMORIAL FOUNTAIN
IN LONDON

VIETNAM VETERANS MEMORIAL
IN WASHINGTON, DC

HGH Granite is a granite company that supplies granite for monuments, landmarks, and architectural use. Contact us today!

HGH GRANITE

THANK YOU..