POPULAR NATURAL STONES - GEOLOGY

Marble

Marble - metamorphic rock composed wholly or in large part of calcite or dolomite crystals, the crystalline texture being the result of metamorphism of limestone by heat and pressure. The term marble is loosely applied to any limestone or dolomite that takes a good polish and is otherwise suitable as a building stone or ornamental stone. Marbles range in color from snow-white to gray and black, many varieties being some shade of red, yellow, pink, green, or buff; the colors, which are caused by the presence of impurities, are frequently arranged in bands or patches and add to the beauty of the stone when it is cut and polished. Marble is used as a material in statuary and monuments, as a facing stone in buildings and residences, and for pillars, colonnades, paneling, wainscoting, and floor tiles. Like all limestone, it is corroded by water and acid fumes and is thus ultimately an uneconomical material for use in exposed places and in large cities. The presence of certain impurities decreases its durability.

Granite

Granite - coarse-grained igneous rock of even texture and light color composed chiefly of quartz and feldspars. It usually contains small quantities of mica or hornblende, and minor accessory minerals may be present. Depending on the feldspar present, granite may be pink, dark gray, or light gray. It is commonly believed to have solidified from molten rock (called magma) under pressure. However, some granites show no contacts with surrounding wall rock, but instead gradually grade into metamorphic rock. Others show relic features found in sediments. This evidence suggests that some granites are not igneous in origin, but metamorphic. Some granites are the oldest known rocks on earth; others were formed during younger geologic periods. Crystallized at depth, granite masses are exposed at the earth's surface by crystal movement or by the erosion of overlying rocks. Very coarse-grained granite, called pegmatite, may contain minerals and gemstones of economic value.

Travertine

Travertine - form of massive calcium carbonate, $CaCO_3$, results from deposition by springs or rivers. It is often beautifully colored and banded as a result of the presence of iron compounds or other (e.g., organic) impurities. This material is variously known as calc-sinter and calcareous tuff and (when used for decorative purposes) as onyx marble, Mexican onyx, and Egyptian or Oriental alabaster. Travertine is generally less coarse-grained and takes a higher polish than stalactite and stalagmite, which are similar in chemical composition and origin.

Limestone

Limestone - sedimentary rock wholly or in large part composed of calcium carbonate. It is ordinarily white but may be colored by impurities, iron oxide making it brown, yellow, or red and carbon making it blue, black, or gray. The texture varies from coarse to fine. Most limestone's are formed by the deposition and consolidation of the skeletons of marine invertebrates; a few originate in chemical precipitation from solution. Limestone deposits are frequently of great thickness.

Slate

Slate - fine-grained rock formed when sedimentary rocks such as shale are metamorphosed by great pressure. Slate splits into perfectly cleaved, broad thin layers; this characteristically regular and planar cleavage is called slaty cleavage. In the formation of slate, pressure causes the flaky minerals within the sedimentary rock, such as mica, clay, and chlorite, to be reoriented; the flat faces of the minerals lie at right angles to the source of the pressure, and the planes of easy cleavage are also at right angles to the source of the pressure. The rock is not necessarily compressed in the same direction as the sedimentary layers were originally laid down, and because the compression crumples and deforms the original sedimentary layers, the planes of slaty cleavage usually cut through the old bedding planes.

Sandstone

Sandstone - sedimentary rock formed by the cementing together of grains of sand. The usual cementing material in sandstone is calcium carbonate, iron oxides, or silica, and the hardness of sandstone varies according to the character of the cementing material; quartz sandstones cemented with quartz are the hardest. Sandstones are commonly gray, buff, red, or brown although green and some other colors are also found. Green sandstones often contain, in addition to sand and glauconitic, fossil shells and iron oxides; those that break apart easily are known as greensands and are sometimes used to replenish depleted potash in soils. Sandstones are widely used in construction and industry. Varieties of sandstone include arkose, which contains feldspar and resembles granite, and greywacke, a gray or sometimes greenish or black rock composed of quartz and feldspar with numerous fragments of other rocks, such as shale, slate, quartzite, granite, and basalt.