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Standard Terminology Relating to Dimension Stone¹

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INTRODUCTION

Dimension stone, as used here, is natural stone that has been selected and fabricated to specific sizes or shapes, with or without one or more mechanically dressed or finished surfaces, for use as building facing, curbing, paving stone, monuments and memorials, and various industrial products. The term *dimension stone* is in contradistinction to crushed and broken stone, such as is used for aggregate, roadstone, fill, or chemical raw materials. Because all stone is a natural material, the definition excludes all manmade materials that simulate stone. In common practice, some dimension stones are reinforced, filled, or surface treated.

Terms used in definitions and nomenclature shall be interpreted in accordance with commonly accepted scientific and technical terms of the geological sciences except as otherwise specifically noted.

Examples of such exceptions are the broader commercial definitions of granite and marble, which have become well established in the dimension stone industry and trade. Definitions and terms included in these definitions have been formulated in accordance with common industrial usage *where this is not in conflict with current scientific usage*.

GENERAL TERMS

abrasive (or sand-rubbed)—a surface having a non-reflective, matte finish with a slight grain or stipple pattern visible on the surface.

anchor—in general, a metal shape inserted into a slot or hole in the stone that provides for the transfer of loads from the stone to the building structure, either directly or through an intermediate structure.

anchorage—the system consisting of stone, anchor and primary structure, secondary structure or back-up preventing lateral movement of the stone.

arris—the junction of two planes of the same stone forming an external corner.

ashlar—(1) a squared block of building stone; (2) a masonry of such stones; (3) a thin-dressed rectangle of stone for facing of walls (often called ashlar veneer).

building stone—natural rock of adequate quality to be quarried and cut as dimension stone as it exists in nature, as used in the construction industry.

chip—an irregularly-shaped piece of stone, usually with one convex surface, that has been dislodged from a snip.

cladding—nonload-bearing stone used as the facing material in wall construction that contains other materials.

coping—dimension stone used as the top course of a masonry wall, often sloped to shed water.

crack—a partial break in the stone (see fracture, microcrack, seam).

cut stone—stone fabricated to specific dimensions.

dimension stone—natural stone that has been selected and fabricated to specific sizes or shapes.

DISCUSSION—The term *dimension stone* is in contradistinction to crushed and broken stone, such as is used for aggregate, roadstone, fill, or chemical raw materials. In common practice, some dimension stones are reinforced, filled, or surface treated.

dressed stone—See **cut stone, finished stone**.

durability—the measure of the ability of dimension stone to endure and to maintain its essential and distinctive characteristics of strength, resistance to decay, and appearance. Durability is based on the length of time that a stone can maintain its innate characteristics in use. This time will vary depending on the environment, the use, and the finish of the stone in question (for example, outdoor versus indoor use).

fabrication—*when applied to dimension stone*, any of the processes involved in changing a raw stone piece to its final

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end use form. This includes, but is not limited to cutting, splitting, grinding, drilling, or face-finishing.

finished stone—dimension stone with one or more mechanically exposed surfaces.

bush-hammered—a rough uniformly patterned surface produced by an impact tool.

chat sawn—a rough finish produced by gangsawing with course chat sand.

diamond sawn—an even, relatively smooth sawn surface with fine striations on it from the diamond segments of the saw.

flamed—see *thermal*

honed—a superfine, smooth, satin-like, nonreflective finish.

polished—a smooth, reflective finish.

rock face—a rough nonuniform convex surface that projects from the plane of the wall (stone) (see Fig. 1).

sawn—see *chat sawn*, *diamond sawn*.

split face—a rough nonuniform cleft surface which may be slightly concave or convex.

thermal—a rough nonreflective finish (with a few reflections from cleavage planes) produced by applying a flame.

fading (slate)—a slate that has a significant color change within the first year of exposure to weather, often the result of chemical alteration of the iron minerals.

filling—the application of materials, often cements or synthetic resins, into natural voids in a stone during fabrication.

flooring—stone used as in interior pedestrian wearing surface.

fracture—a complete break in the stone (see crack, microcrack, seam).

grain—(1) a distinguishable rock constituent which itself has a distinct identity, for example, a mineral crystal, an oolith, a rock fragment (in sedimentary rocks), or clast.

(2) a direction in a rock body along which it is more easily broken, split, or cut. See rift.

granular—composed of particles visible to the unaided eye. For sedimentary stone, the predominant particle distribution is less than 4 mm. in size.

hysteresis—the residual strain in stone after the stress causing such strain is changed.

installation—the process of assembling dimension stone into a structure.

microcrack—a crack too small to be seen with the unaided eye (see crack, fracture, seam).

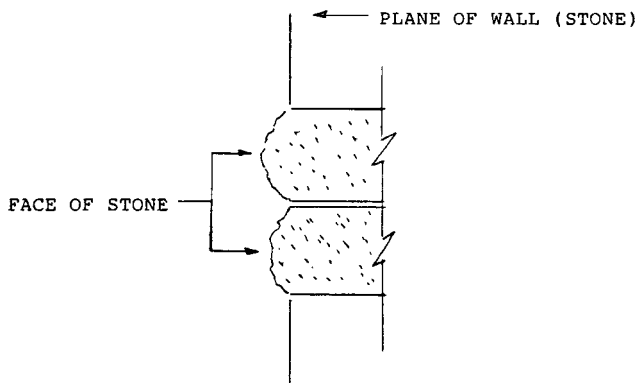


FIG. 1 Rock Face Diagram

monumental stone—rock of adequate quality to be quarried and cut as dimension stone as it exists in nature, as used in the monument and memorial industry.

open seams—unfilled fissures or naturally occurring cracks in stone.

panel—cut stone with face dimensions large in relation to its thickness, for placement in a building structure or frame assembly.

paving—stone used in an interior pedestrian wearing surface as in patios, walkways, driveways, and the like. (See *flooring*)

pits—small depressions, voids or pinholes in stone, especially on a finished surface.

polished finish—a surface that has high luster and strong reflection of incident light.

processing—the work involved in transforming quarry blocks into dimension stone, including sawing, drilling, grinding, honing, polishing, carving, and all other operations necessary for installation.

ribbon—in some slate, narrow bands of contrasting color or appearance differing in some degree in chemical composition from the main body.

rift—(1) a consistent direction or trend in a rock body along which the rock is most easily split or broken.

(2) The grain orientation in stone, particularly in sedimentary stones, showing more or less clearly how the stone was originally bedded, and with or without color or grain-size changes, or voids and hollow.

rock—a naturally occurring, consolidated aggregation of one or more minerals constituting the crust of the Earth.

seam—a naturally filled or bonded crack which does not adversely affect the strength of a stone (see crack, fracture, microcrack).

serpentine marble—a rock consisting mostly or entirely of serpentine (hydrated magnesium silicate), commonly greenish but can be black, red, or other colors; commonly veined with calcite, dolomite, or magnesite (magnesium carbonate), or a combination. (Not to be confused with green-colored carbonate marble.)

shaped stone—dimension stone processed by carving, grinding, sawing, or other means into specific nonplanar configurations.

shop drawings—when applied to dimension stone, a highly detailed drawing that shows the net dimensions, joint dimensions, anchor locations and orientations, of the dimension stone and the relationship with the other building materials being used.

slab—a piece of stone produced by shaving or splitting in the first milling or quarrying operation. A slab has two parallel surfaces.

snip—the concave surface from which a chip has been dislodged.

sound stone—stone which is free of cracks, fissures, or other physical defects.

spalls—(1) fragments or chips from a piece of dimension stone. (2) waste stone usually of small size from the quarrying and milling of dimension limestone.

texture—(1) a modified appearance of dimension stone resulting from one or several mechanical surface treatments. Untreated stone surfaces have textural characteristics described under (2).

(2) that aspect of the physical appearance of a rock that is determined by size, shape, and mutual relations of the component grains or crystals. Textures related to dimension stone include *equigranular* (grains of approximately the same size); *inequigranular* (grains of markedly unequal sizes); *porphyritic* (see Note 2 under Granite Group); *interlocking* (in which grains with irregular boundaries interlock by mutual penetration); interlocking and porphyritic textures are characteristic of granites and marbles; *clastic* (naturally cemented fragmental grains but without mosaic or interlocking relations; this texture is typical of sandstones and some limestones); *mosaic* (closely packed grains with smooth to moderately irregular, noninterlocking mutual boundaries); *granoblastic* (a megascopically granular mosaic texture in which the grains are tightly compacted and the minerals are dominantly equidimensional and present irregular mutual boundaries; mosaic and granoblastic textures are characteristic of metamorphic rocks).

thin stone/thin veneer—a cladding under 2-in. thick.

tile—a thin modular stone unit.

unfading (slate)—a slate that shows no significant color change within the first year of exposure.

veneer—a nonload-bearing facing of stone attached to a backing for the purpose of ornamentation, protection, or insulation.

DISCUSSION—Veneer shall support no vertical load other than its own weight and possibly the vertical dead load of veneer above.

walls, veneered—See *veneer*.

wear—the removal of material or impairment of surface finish through friction or impact.

DISCUSSION—Wear is an artificial process. The rate of wear may be affected by chemical action.

weathering—natural alteration by either chemical or mechanical processes due to the action of constituents of the atmosphere, surface water or ground water, or to temperature change.

DISCUSSION—Changes by weathering are not necessarily undesirable or harmful; rather they may enhance the texture and color of the stone.

GRANITE GROUP

granite (commercial definition)—a visibly granular, igneous rock generally ranging in color from pink to light or dark gray and consisting mostly of quartz and feldspars (Note 1), accompanied by one or more dark minerals. The texture is typically homogeneous but may be gneissic or porphyritic (Note 2). Some dark granular igneous rocks, though not geologically granite, are included in the definition (Note 3).

DISCUSSION—*Granite (scientific definition)*—A visibly granular, crystalline rock with equigranular or inequigranular texture, normally having an essential composition of two feldspars (alkali feldspar plus sodic plagioclase or two alkali feldspars (see second paragraph)) and quartz; certain granites contain only one feldspar. Quartz may amount to 10 to 60 % of the felsic (light-colored) constituents, while alkali feldspars may constitute about 35 to 100 % of total feldspars. Feldspars

may be present as individual grains, or may be mutually intergrown on a megascopic to submicroscopic scale. Besides quartz and feldspars, granite typically also contains varietal minerals, commonly micas or hornblende, or both, more rarely pyroxene.

Alkali feldspar refers to a range of composition between KAlSi_3O_8 (potassic feldspar end member) and $\text{NaAlSi}_3\text{O}_8$ (albite end member), with 0 to 10 % of $\text{CaAl}_2\text{Si}_2\text{O}_8$ (anorthite end member). Potassic feldspar, which in granites is typically orthoclase or microcline, forms a nearly complete isomorphous series with the albite end member. The albite-anorthite compositional range, which may include as much as 10 % of KAlSi_3O_8 in solid solution, represents a continuous isomorphous series known as plagioclase feldspars; these have been arbitrarily subdivided according to the ration of anorthite (An) to albite (Ab) at 10, 30, 50, 70, and 90 % An. The plagioclase of granite *sensu stricto* commonly is oligoclase (An_{10-30}), less commonly albite (An_{0-10}).

DISCUSSION—*Gneiss*—A foliated crystalline rock composed essentially of silicate minerals with interlocking and visibly granular texture in which the foliation is due primarily to alternating layers, regular or irregular, of contrasting mineralogic composition. In general, a gneiss is characterized by relatively thick layers as compared with a schist. According to their mineralogic compositions gneisses may correspond to other crystalline rocks with visibly granular, interlocking texture, such as those included under the definition of commercial granite, and then may be known as *granite gneiss*, *granodiorite gneiss*, etc., if strongly foliated, and *gneissic granite*, etc., if weakly foliated. This distinction is subjective and not critical.

DISCUSSION—*Porphyritic Texture*—A texture defined by relatively large grains (phenocrysts), typically of feldspar, that are distributed in a distinctly finer-grained matrix. The phenocrysts of porphyritic granites generally are rectangular or partly rounded in outline, and may be as much as several centimetres in maximum dimension.

DISCUSSION—*Black Granites*—Dark-colored igneous rocks defined by geologists as *basalt*, *diabase*, *gabbro*, *diorite*, and *anorthosite* are quarried as building stone, building facings, monuments, and speciality purposes and sold as *black granite*. The chemical and mineralogical compositions of such rocks are quite different from those of true granites, but black granites nevertheless may be satisfactorily used for some of the same purposes as commercial granite. They possess an interlocking crystalline texture but, unlike granites, they contain little or no quartz or alkali feldspar. Instead, black granites are composed dominantly of intermediate to calcic plagioclase accompanied by one or more common dark rock-forming minerals such as pyroxenes, hornblende, and biotite. Such rocks, because of their relatively high content of iron and magnesium, are designated as *ferromagnesian* or *mafic*. An exception is *anorthosite* which, though commonly dark, consists mostly or entirely of calcic plagioclase.

DISCUSSION—*Iridescent Granite*—A labradoritic granite characterized by a play of colors, ranging from clearly visible to brilliant. The play of colors is caused by the intergrowth of unmixed sodium and calcium plagioclase into very fine lamellae. It is commonly referred to by names such as black pearl, blue pearl, and emerald pearl.

LIMESTONE GROUP

limestone—a rock of sedimentary origin composed principally of calcium carbonate (the mineral calcite), or the double carbonate of calcium and magnesium (the mineral dolomite), or some combination of these two minerals.

DISCUSSION—Recrystallized limestone, compact microcrystalline limestone, and travertine that are capable of taking a polish are also included in the category *commercial marble* and may be sold as either limestone or marble.

Special varieties of commercial limestone

calcarenite—a limestone composed predominantly of clastic