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THE NOMENCLATURE OF SILICA

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In its many forms, silica has been used in all stages of civilization, from the ancient flints of the Stone Age to the modern silica laboratory ware. Because of its many uses, and of the many varied forms in which it occurs, silica has been called by more names than any other mineral. Many of the older names of flint are now so obsolete that repetition is needless, but many of the present-day names for quartz gems are unknown save to a few jewellers. Then, too, the exact research of the modern laboratory has shown several distinct crystallographic varieties of silica; some of which are closely connected with the temperatures experienced in their life-history.

The many different names, and their different connotations, which are now in use for silica minerals, call for a classification and arrangement in a more ample, yet more concise manner than is to be found in the usual discussion of the varieties of silica. This article is written with the hope of making a scientific classification of these names, so that the use of the different terms will no longer be a cause for tedious searching for definitions.

I. CRYSTALLOGRAPHIC VARIETIES

These varieties are named in the order formed with descending temperatures.

Recrystallization changes occur at the temperatures noted when ample time is allowed for the action, often in the laboratory only in the presence of catalysts. Besides the changes at these critical temperatures, there are probably similar changes from unstable forms towards quartz at atmospheric temperatures, especially after long time intervals. With fairly rapid cooling or heating intermediate forms may not occur in their stable zone, but a direct change from one to another without the intermediate product may take place. Most of the recrystallization changes noted are found to occur at both ascending and descending temperatures.

(A) Silica Glass—amorphous, a true non-crystalline glass, stable below the melting point and above the "gc" temperature.

Quartz Glass, Fused Silica, Fused Quartz, are other names for this supercooled liquid. In most forms at atmospheric temperatures there are traces of cristobalite.

(B) Cristobalite—isometric, or pseudo-isometric, "gc" range is at 1710° where cristobalite changes to glass as temperatures rise, or glass to cristobalite as they fall.

Christobalite, an alternate spelling.

Beta Cristobalite, also called High Cristobalite, is the high temperature product, forming in the "gc" range in cooling. It is isometric, and in cooling recrystallizes to

Alpha Cristobalite, or Low Cristobalite, at 200–275°, providing cooling through the "ct" and "tq" ranges has been too rapid for recrystallization. It is tetragonal.

(C) Tridymite—hexagonal, bipyramidal. "ct" range is at 1470°, where cristobalite changes to tridymite on cooling. Glass may crystallize as tridymite at 1670° if the cooling was too rapid through the "gc" range.

Beta Second Tridymite, or Upper High Tridymite, is the high temperature product, forming in the "ct" range in cooling, and which recrystallizes to

Beta First Tridymite, also called Lower High Tridymite, at 163° if cooling was too rapid for the "tq" transformation. This in turn alters to

Alpha Tridymite, or Low Tridymite, at 117°, which is the usual tridymite of nature.

Asmanite—a meteoric tridymite, related to the above series.

Vestan—a doubtful silica mineral, probably to be ascribed to tridymite.

Granuline—a doubtful pulverescent mineral which seems allied to tridymite on optical grounds.

(D) Quartz—hexagonal, forms from tridymite in the "tq" range at 870° in cooling. Glass may change to crystalline quartz at about 1400° providing cooling was too rapid for the "gc", "gt" and "ct" transformations.

Beta Quartz, or High Quartz, is the high temperature product, forming at the "tq" point. It is hemihedral. On cooling it recrystallizes to

Alpha Quartz, also called Low Quartz, at 573°, yielding the stable low temperature mineral. It is tetartohedral, showing polarity along the *c* axis and is divisable into

Right Hand Quartz and

Left Hand Quartz

(E) Chalcedony—a cryptocrystalline, or very finely fibrous mineral, which has not been successfully located in the thermal equilibrium diagram. Heating to 725–850° usually results in an alteration to tridymite, which thereafter acts as normal tridymite. Chalcedony is usually found as a deposit from solutions, and may be a mixture of glass and quartz, or more probably an intermediate product in the dehydration of the opal colloid. Various subdivisions of chalcedony have been made on optical grounds.

Chalcedony—biaxial, positive, elongation positive.

Chalcedonite—biaxial, negative.

Lussatite—biaxial, positive, parallel elongation.

Quartzine—biaxial, positive, negative elongation.
Pseudochalcedonite.
Lutecite.
Jenzschite—differently soluble, but of same S. G. as chalcedony.
Melanophlogite—possibly impure chalcedony.
Sulfuricin—probably a chalcedony rich in sulphur.

(F) Colloidal Silica—is usually hydrous, and is commonly described under opal.

II. PHENOCRYSTALLINE VARIETIES

Both alpha and beta, right hand and left hand quartz are present in the varieties here considered. Rarely, perhaps, are included tridymites or cristobalites, but their occurrence is rare, and specimens are not often found under other than their type names.

(A) Clear large crystals, which may or may not have crystal faces, but are essentially large single individuals.

(1) Colorless, transparent, lustrous.

(a) Crystal—indicative of the clearness of ice.
Mountain Crystal.
Rock Crystal.

(b) "Diamond" indicative of the clearness of true diamond, and of the use as a substitute for diamond. Quartz "diamonds" are usually of local value only, though sometimes sold as imperfect diamonds. The locality of the specimen is shown in its name.

Alaska Diamond
Alencon Diamond
Arkansas Diamond
Baffa Diamond
Bohemian Diamond
Brazil or Brazilian Diamond
Briancon Diamond
Bristol Diamond
Buxtom Diamond
Cape May Diamond
Cornish Diamond
Dauphine Diamond
False Diamond
Fleurus Diamond
Herkimer Diamond
Horatio Diamond
Hot Springs Diamond
Irish Diamond
Isle of Wight Diamond
Lake George Diamond
Marmoros Diamond
Marmorosch Diamond
Mora Diamond
Occidental Diamond
Paphos Diamond
Pecos Diamond
Pseudo-diamond
Quebec Diamond
Schaumberg Diamond
Trenton Diamond
Unripe Diamond
Vallum Diamond
Wicklow Diamond

(c) "Pebble" or "Stone" indicative of the water-worn surface of crystal-clear quartz.
Pebble.
Brazilian Pebble.
Bristol Stone.
Coradgee Stone.

Rain Stone—a double meaning of a water-worn pebble supposed to represent petrified rain-drops.
Rhinestone.
Show Stone.
Vellum or Vallum Stone.

(d) Other clear quartzes:

Beryl—old name, applied particularly to engraved stones, only very rarely used with this meaning at the present time.
Dragonite, Dragon's Eye } Water-worn quartz with brilliant luster, supposed to be petrified eyes of the mythological dragon.
Jewel of Perfection—Japanese term for rock crystal.
Rock Quartz.
White Sapphire.
White Topaz.

(2) Colored crystals, color usually uniform, but may be zoned or irregular in a single individual.

(a) Violet, purple:

Amethyst—typical name for this color.
Occidental Amethyst-differentiates true amethyst (quartz) from other minerals of similar color.
Oriental Amethyst is applied to exceptionally beautiful specimens of amethyst.
Siberian Amethyst refers to a dark colored amethyst whose color by artificial light is fine red.
Bishop's Stone.
Lavendine.
Soldier's Stone.

(b) Blue, indigo:

Azure Quartz.
Sappharine.
Sapphire—usually applied to corundum gems, and when used in connection with quartz usually has that name added.
Sapphire Quartz.
Sapphirine.
Siderite.
Water Sapphire—usually applied to cordierite gems, but also to quartz, rarely.

(c) Yellow, golden:

Citrine is the typical name for this color, and includes all quartz of yellow cast.
Golden Quartz.
Yellow Quartz.
"Topaz"—much of the topaz of commerce is yellow quartz, or decolorized smoky quartz.
Bohemian Topaz.
Colorado Topaz.
False Topaz.
Golden Topaz.

Indian Topaz.
Maderia Topaz.
Occidental Topaz.
Saxon Topaz.
Schnecken Topaz.

(d) Smoky browns, smoky yellows:

Smoky Quartz is typical of any smoke-like color.

Cairngorm—the Scotch name for particularly pellucid smoky quartzes, which is now applied to most which are suited for gems.

Cairngorm Stone.

Cairngorum, Carngorn } alternate spellings adopted in different localities.

Scotch Pebble—this term is also applied to small agates freed from the lavas, and worn by water to rough polish.

Scotch Topaz.
Smoke Stone.
Smoky Topaz.

(e) Color red:

Arizona Ruby.
Bohemian Ruby.
Apricotine—yellowish red.
Hyacinth.
Jacinto—dark red.
Mont Blanc Ruby.

"Ruby" applied as is diamond to quartz of the color of true ruby, but always with a qualifying name to show origin. This use of ruby and diamond is quite distinct from that of topaz, which is adopted by jewellers as a name for yellow quartz.

(f) Color black:

Morion—deep black, often almost opaque, but more usually will transmit light fairly well, and almost totally reflect angular light.

(B) Varieties Named From Peculiarities of Crystallization or Shape.

Most are of the rock-crystal variety, but the other types occur both colored and sagenitic varieties.

(1) Parallel groupings and intergrowths of large individuals.

Babel or Babbel Quartz—rock-crystal with flat pyramidal growths on the large pyramidal faces, the tiers of which have a fanciful resemblance to the tower of Babel.

Cavernous Quartz—with deep etched cavities parallel to the faces.

Sceptre Quartz—parallel grouping of small knob-shaped crystal atop a slender prism.

(2) Fibrous groupings.

Barrel Quartz—corrugated veinlets, whose sheaves of fibres are barrel-shaped.

Cross-course Spar—radiated vein-quartz.

Fibrous Quartz.

Radiated Quartz.

(3) Other groups.

Drusy Quartz—small crystals in parallel growth, as crusts, or lining geodes, or in central part of veins.

Globular Quartz—porphyritic quartz phenocrysts in spherical outline, may be twins showing as spherical sectors or round individuals.

Mineral Blossom—drusy quartz.

Potato Stone—quartz geode.

Twisted Quartz—simple quartz prism warped as through pressure and now made up of spirally arranged individuals.

(C) Varieties Named from Inclusions of Foreign Minerals. Sometimes in definite crystals, irregularly dispersed or arranged in adherence to crystallographic lines or planes; also inclusions of liquid or gas.

(1) Crystalline inclusions.

(a) Spangles:

Aventurine is the common type name, and includes all spangled quartzes.

Avanturine is an alternate spelling.

Avanturine Quartz.

Aventurine Quartz.

Gold Quartz contains native gold in visible spangles.

Gold Stone, yellow iron oxides, simulate gold.

Hyacinth of Compostella, red hematite inclusions.

Imperial Jade, green aventurine.

Imperial Yu Stone, green actinolite (?) inclusions.

Lizote, blue inclusions of silver ore.

Rusty Quartz, discolored by iron oxides.

Rubasse or Rubace—red hematite inclusions.

This name is also applied to quartz stained red by artificial means.

Sinople or Sinopal—red hematite spangles.

Sunstone, very rare variety with yellow spangles.

(b) Needles:

Sagenite is the type name, and rutile is the most common acicular mineral in sagenites.

Byssolite, fine greenish actinolite or asbestus needles.

Crispite.

Cupid's Darts—goethite inclusions.

Fleches d' Amour—rutile needles.

Hair Stone—crowded full of a matted mass of acicular crystals.

Hedgehog Stone—radiated needles of geothite.

Love Arrows—rutile needles.

Needle Stone.

Onegite—goethite inclusions.

Reticulated Quartz—rutile needles in rectangular patterns.

Rutilated Quartz—rutile needles.

Sagenitic Quartz.

Thetis Hair Stone—green acicular actinolite inclusions.

Venus Hair Stone.

(c) Fibres, usually parallel and yielding a cat's eye effect when cut across fibres; also sometimes showing asterism.

Cat's eye is the type name.

Asteria shows asterism.
Asteriated Quartz.
Cat's Quartz.
"Crocidolite" applied to a replacement of the original crocidolite by quartz which retains enough of the silicate to color the replacement and often to give cat's eye effects.
Crocidolite Quartz.
Hawk Eye or Hawk's Eye, applied to crocidolite replacement.
Hungarian Cat's Eye.
Occidental Cat's Eye.
Quartz Cat's Eye.
Sapphire Quartz, blue because of crocidolite, often only faintly chatoyant, indicating an almost complete replacement of the fibrous crocidolite.
Schiller Quartz.
South African Cat's Eye—crocidolite replacement.
Starolite, Star Quartz, Star Stone } asteriated quartz.
Tiger's Eye, brownish to yellow crocidolite replacement, showing alteration previous to the introduction of silica.
Wolf's Eye Stone.

(d) Layers of clay or scaly mineral deposited on former crystal planes, which were covered by later deposits of the same orientation on the quartz crystal.
Capped Quartz, in which the shells of quartz are separable.
Cap Quartz.
Ghost Quartz, in which the outline of the smaller crystal is visible.
Phantom Quartz, in which chlorite grains show the smaller crystal.
Skeletal Quartz, in which the smaller crystal is not of the same form as the outer one.

(e) Densely distributed inclusions, usually this type is found in rocks of which silica is the major part, and the inclusions represent the residual of other minerals included in the original sediments.
Ferruginous Quartz.
Actinolitic Quartz.
Arenaceous Quartz.
Chloritic Quartz.
Micaceous Quartz, etc.

(2) Liquid inclusions, usually of water, also carbon dioxide, or hydrocarbons, visible through the presence of a bubble of air or other gas which moves as the specimen is turned.
Hydrolite.
Water Stone.

(3) Gaseous inclusions, often in films in cracks yielding an iridescent stone or more rarely in larger masses, showing when opened as pungent odors
Cotterite—has a metallic pearly luster and probably belongs here.
Eldoradoite—an iridescent quartz.
Iridescent Quartz.
Iris—often natural, but may also be artifically produced.

Rainbow Quartz.

Stink Quartz, yields odor of sulphur dioxide when struck a sharp blow with the hammer.

(D) Artifically Altered Quartz, especially changed in color by gem craftsmen to provide a more profitable sale for off-colored stones. While such stones are not natural minerals, they are sold often as such, and their classification here is permissable.

Brazilian Topaz—smoky quartz altered to yellow by heat.

Burnt Amethyst—purple amethyst changed to brownish yellow by heat; much cairngorm and citrine are also so altered.

Harlequin Stone—artifically colored crocidolite.

Orange Topaz—smoky quartz changed to yellow by heat.

Rubasse—quartz stained red; this name is also applied to a red aventurine.

Spanish-Topaz—smoky quartz altered to yellow by heat.

Note also that much "Topaz" is quartz which has been made of an acceptable yellow hue by heat treatment.

III. MASSIVE AND MICROCYSTALLINE QUARTZ

It can be definitely resolved by the microscope into quartz, sometimes in heterogeneous macroscopic crystals, often very finely fibrous.

(A) Massive Quartz, small individuals with no systematic orientation.

Amethystine Quartz—of amethyst color.

Citrine Quartz—color of citrine.

Ancona Ruby—red massive quartz.

Brazilian Ruby—rose colored.

Ferruginous Quartz—red, brown or yellow massive quartz, colors due to hematite or limonite.

Rose Quartz—massive rose-red to pink, may have an opalescent luster.

Greasy Quartz—milky white, with greasy luster.

Hyaline—opalescent white quartz.

Milk Quartz.

Milky Quartz—milky white, vitreous luster.

(B) Microcrystalline, usually fibrous, not resolvable into its components except with the microscope.

Jasper—is the type name, and varieties are named from color or structure.

Jasperite.

Basanite—velvety black.

Lydian Stone, Lydite, Test Stone, Touch Stone } black, compact and close-grained.

Aztec Stone—usually refers to green calamine, but also applied to green jasper.

Chalchihuitl = Aztec Stone.

Mother-of-Emerald = Prase.

Prase—translucent green quartz, usually spotted.
Banded Jasper.
Blood Stone
Heliotrope
Blood Jasper } massive dark green jasper with red spots often translucent.
Girasol
Oriental Jasper
Ezteri—similar to bloodstone, but with red veinings instead of spots.
Creolite—banded or mottled in shades of brown.
Egyptian Jasper
Egyptian Pebble } banded in yellow, red, brown, and black.
Iolanthite.
Jasperine—a banded jasper.
Morlop—mottled jasper.
Moss Jasper—opaque to translucent, with dendrites.
Riband Jasper.
Ribbon Jasper.
Ruin Jasper—irregular bands resembling ruins.
Striped Jasper—broad bands of color.
Zonite.

(C) QUARTZ ROCKS. Most quartz rocks can be ascribed to (A) or (B) of this class but are separated on account of their geological importance. The size of individuals is usually dependent on origin.

(1) Clastic Rocks:
Sand.
Silex—a trade name for quartz sand.
Glass Sand—an especially pure quartz sand.
Silver Sand.
Quartz Rock:
Burrstone
Buhrstone
Novaculite
Arkansas Stone
Quartzite
Sandstone
Ganister
Ouachita Stone
Granular Quartz

(2) Organic Siliceous Rocks:
Diatomite.
Diatomaceous Earth.
Passyite.
Tripolite.
Infusorial Earth.
Tripoli.

(3) Chemically deposited, concretionary, etc.
Flint
Hag Stone
Iron Flint
Night Mare Stone
Witch Riding Stone
Ephialtes Stone
Holy Stone
Milk Stone, white flint pebble
Sycite, fig-shaped flint pebble

Chert
Hornstone
Sinter — Siliceous Sinter
Sil-sinter — Quartz Sinter
Geyserite, usually opaline, rarely anhydrous.

(4) Vein Quartz, usually of igneous origin.
Bastard Quartz — Buck Quartz
Buck Stone — Dead Quartz
Flint Stone — Mice-eaten Quartz.
Spar — Sucked Stone
Sugar Spar — Sugary Quartz

IV. CRYPTOCRYSTALLINE VARIETIES OF SILICA

Chalcedony is the type name, but this has been divided into several optically distinct types, as noted above. Usually very finely fibrous and sub-microscopic. Surface usually botryoidal, fracture hackly, luster waxy, translucent to opaque.

(A) Varieties Named From Color.

(1) Color uniform:

Cacholong—whitish cloudy.
Chalcedony is usually whitish, and is often used to refer to any uniformly colored specimen.
Calcedony — Chalcedon
California Moonstone—white to gray.
Moonstone—usually applied to feldspar, also to white chalcedony.
Mother Stone—whitish chalcedony.
Occidental Chalcedony—somewhat opaque, whitish.
Oriental Chalcedony—very translucent white chalcedony.
Rainbow Chalcedony—structurally in thin concentric layers, but of uniform color, may exhibit iridescence when cut across layers.
White Agate—uniform white chalcedony.
Mohava Moonstone—translucent lilac-hued chalcedony.
Violite—purple.
Blue Chrysoprase—blue.
Blue Moonstone—blue.
Keystoneite—blue.
Sapphirine—blue chalcedony, note also that this is a silicate mineral, and is also applied to blue quartz.
Zafirina—blue chalcedony.
Chrysoprase—green translucent chalcedony.
Jade—true jade is a silicate, but the term is often wrongly applied to green chalcedony.
Plasma—green translucent chalcedony.
Canary Stone—rare yellow carnelian.
Cambay (or Camboy) Stone—carnelian.
Carnelian—translucent red chalcedony.

Cornelian — Sardine
Sardine Stone — Sardius
Sard—rich brown translucent chalcedony.
Sardoine

(2) Banded, color and structure, Agate is the type name, and refers to any banded chalcedony.

(a) Straight bands:

Onyx—is typical of straight bands one of whose colors is white.
Carnelonyx—white and red bands.
Carnelian Onyx—white with red bands.
Chalcedony Onyx—white and pale colored bands.
Chalcedonyx—bands of gray and white.
Nicolo—black or brown base, with bluish white top band.
Onicolo — Onychite
Onyx Stone — Oriental Onyx
Oriental Sardonyx—black base, white intermediate band and brown or red top layer.
Sardagate—white and orange-red bands, may be semi-transparent.
Sardian Onyx — Sardian Stone
Sardony — Sard Onyx
Sardonyx—white and brown bands.
Saturnine Onyx—with very dark lower band, giving the stone a dark appearance throughout.
Amber Agate—yellowish, translucent.
Amberine—yellowish green.
Banded Agate.
Blood Agate—red to pink.
Carnelian Agate—with predominating bands of carnelian.
Cer Agate—chrome-yellow.
Occidental Agate.
Oriental Agate—finely marked and very translucent.
Riband Agate—parallel bands.
Ribbon Agate.
Sardachate—with predominating bands of red carnelian.
Semi-carnelian—yellow agate.
Striped Agate—wide parallel stripes.

(b) Curving bands, often concentric, probably formed by successive layers deposited in spheroidal cavities, as in lavas.

Eye Agate—concentric rings, usually showing a dark center.
Aleppo Stone — Eye Stone
Cyclops—a single large eye.
Ring Agate—concentric differently colored bands, often with pale chalcedonic center, or a druse.
Rainbow Agate—shows iridescence when cut across the concentric structure.

(c) Broken bands, zigzag, or otherwise discontinuous.

Brecciated Agate—angular fragments of agate cemented by amethystine quartz.

Fortification Agate—parallel zigzag lines, as though an agate broken and cemented by very narrow bands of chalcedonic silica.

Ruin Agate—zigzag bands resembling ruins.

(3) Colors mottled, perhaps due at times to inclusions but more often there is no disconuity of the silica, merely a changing of pigment.

Catalinite—green, red, and brown mottlings.

Catalina Sardonyx.

Cloudy (or Clouded) Agate.

Cloudy (or Clouded) Chalcedony.

Frost Stone—gray ground, with scattered patches of white.

Prismatic Moonstone—cloudy chalcedony.

Rice Stone—a ground color spotted with white spots resembling rice grains.

Sandy Sard—brown chalcedony spotted with darker browns.

St. Stephen Stone—with round blood-red spots.

White Carnelian—cloudy white or very pale reddish.

(B) Varieties Due to Luster.

Wax Agate—yellow agate with pronounced waxy luster.

(C) Varieties Named Because of Mechanical Inclusions. Some of the uniformly colored chalcedonies belong here because their color is due to some definite mineral, as the blues are often due to chrysocolla, but their name is applied to the color and not the impurity. Many impurities are dendritic.

(1) Dendritic inclusions:

Moss Agate is the type name for dendritic chalcedony.

Dendritic Agate.

Fancy Agate—with particularly delicate markings.

Flower Stone—when the dendrites are flower-like.

Indian Agate
Mocha Agate
Montana Agate
Mocha Pebble
Mocha Stone
River Agate

Scenic Agate—when the dendrites suggest landscapes.

Tree Agate—dendrites resemble trees.

Tree Stone.

(2) Other solid inclusions:

Myrickite—bright red cinnabar inclusions.

Opal Agate—alternating layers of opal and chalcedony.

(3) Other inclusions of liquid or gas. Perhaps the iridescence of Rainbow Chalcedony and Agate are due to thin air films between the concentric layers.

Enhydros—hollow nodules of chalcedony partly filled with water.

Water Agate—shell of chalcedony containing a bubble of water.

(D) Artifically Altered Chalcedony and Agate. This mineral is porous enough to absorb dyes, and agate is often differentially porous so that different layers will absorb different dyes, yielding a varicolored product. Colors are, like quartz, altered by heat.

Burnt Carnelian
Burnt Stone
} color made red by heating.

Emeraldine—stained green.

False Lapis, Swiss Lapis } stained blue.

V. MIXTURES AND INTERGROWTHS OF QUARTZ, JASPER AND CHALCEDONY

Some of these close associations of the varieties of silica suggest that quartz is an ultimate product of recrystallization which may take place after very long periods of time.

Agate Jasper—intermediate between jasper and chalcedony, a close mixture, often banded or veined.
Hemachate—light colored chalcedony spotted with red jasper.
Hyaline Quartz—quartz with bluish opalescent cast due to the presence of chalcedony.
Jaspagate—opaque jasper with chalcedonic inclusions.
Jasponyx—onyx, part of whose layers are jasper and part chalcedony.
Kinradite—jasper with spherulites of quartz.
Texas Agate—agate jasper.

VI. PSEUDOMORPHOUS SILICA

(A) Organic Pseudomorphs. Many fossils are preserved by silicification of their softs parts, or of their calcareous shells and bones. Particular names are given to:

Fossil Coral
Beckite
Coral Agate
Petoskey Agate
Silicified Wood
Agatized Wood
Jasperized Wood
Shinarump
Wood Stone
Beekite
Orbicular Silica
Petrified Honeycomb
Chinarump
Petrified Wood
Wood Agate

(B) Silica Replacing Other Minerals, as fluorite, barite, etc., but definite names for such replacements are limited to Haytorite—chalcedonic replacement of datolite.

VII. ROCKS, AND OTHER MIXTURES PREDOMINATELY SILICEOUS

The rocks listed in III-(C) often contain appreciable impurities and also may consist wholly of silica. Many other rocks contain large proportions of silica, particularly the acid igneous rocks, of which possibly vein quartz is an extreme. Most sedimentary rocks, except limestones and coal, contain large amounts of detrital quartz. Most metamorphics also carry large percentages of free silica, both as recrystallized material from the sediments, and as material added by the metamorphic agencies. Furthermore, quartz is an important part of many weathering products, alluviums, gossans, etc.