

# IDENTIFICATION KEY OF THE AMORPHOUS SILICAS

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Extracted from “A Southwestern Field Guide to the Agates, Jaspers, and Opals—Volume II”.

A compound classification by appearance features. Rocks with multiple features are described by their dominant feature or hyphenated from dominant to subordinate feature.

## Naming by Organic Structures Visible

- \* Bog (mixed plant, grass, leaf matter)
- \* Palm root
- \* Palm wood
- \* Petrified algae
- \* Petrified bone
- \* Petrified dung (coprolite)
- \* Petrified wood
- \* Shells
- \* Small conical shells (turritella)

It is interesting to note that while we have forests of fossil tree trunks, branches, and roots, we never have agatized leaves.

## Naming by Primary Mixed Rock Composition

- \* Jasper, agate (very common)  
Jasper-Agate
- \* Jasper, agate, and opal (rare)  
Jasper-Agate-Opal
- \* Agate and opal (rare)  
Agate-Opal

## Naming by Mixed Rock Composition

- \* Barite, agate, and jasper in a nodule  
Barite-Agate Nodule
- \* Basalt, silica (agate), calcite hash  
Basaltic-calcisilicate
- \* Bentonite clumps, stringers, clouds, or particles  
Bentonite-Agate
- \* Clay clumps in geode shells  
Clay
- \* Conglomerate, unsorted  
Conglomerate, Puddingstone
- \* Stones of various sizes, sorted by size in agate  
Differentiated
- \* Soil, mud, Agate, Opal Debris  
Earthy
- \* Host rock-agate fine particles, or shells intermixed  
Hash
- \* Host rock-agate fine particles, no shells, often in the center of vein agates  
Hash Filling
- \* Region of rock hash at the bottom of a vein, geode, or thunderegg  
Hash Floor
- \* Bands of travertine and red jasper  
Jasper-Travertine
- \* Agate streamers and pods in rhyolite  
Rhyolite-Agate

- \* Separated jasper and agate  
Separated
- \* Rhyolite and agate  
Stony Agate, Stony Opal
- \* Jasper stringers, layers in Volcanic Tuff  
Tuffaceous Jasper
- \* Areas of texture different than the rest of the specimen  
Zoned Texture

## Naming by Overall Structure of the Specimen

- \* Generally almond-shaped, tapered, elongated  
chalcedony in basalt, no lava shell  
Amygdule
- \* Geode shape, agate, and chalcedony in an open interior but no lava shell  
Agate Geode
- \* Long, tube shaped thunderegg  
Axiolite
- \* Flattened, oval nodule  
Biscuit
- \* Very nearly round nodule with a mix of agate and carbonate and perlite/rhyolite inside  
Coconut
- \* Generally round structure, concentric layers  
Concretion
- \* Flat bottom, rounded, domed top  
Domed
- \* Generally round structure, rhyolite shell, central vug  
>=30% of volume  
Geode
- \* Lensatic structure of silica in flow banded rhyolite  
Lensatic lithosilica
- \* Mix of rhyolite, silica (chalcedony and quartz), no shell, no structural shape  
Lithosilica
- \* Generally round structure, no concentric banding  
Nodule
- \* Sheets of merged nodules, fragments of nodules  
Nodular Mass
- \* Nodule of oolites and oolitic, round clasts  
Oolitic Nodule
- \* Thin sheets of jasper-agate  
Pancakes
- \* Infilling of agate or jasper in quartz crystal pockets  
Polyhedral agate, jasper
- \* Chalcedony casts of calcite on at least one major face of an amygdule  
Polyhedral amygdule
- \* Hard, sharp, makes sharp breaks, porcelain chime when tapped, a jasper  
Porcelain Jasper

- \* Layer in line with other strata above and below  
Seam
- \* Long, tubular, rough surfaced silica structures in some soils  
Spikes
- \* Generally round structure, rhyolite shell, central vug <30% of volume  
Thunderegg (perhaps with vugs)
- \* Generally round structure, rhyolite shell, central vug <30% of volume, very small, about an inch in size  
Thudernut (perhaps with vugs)
- \* Mix of rhyolite, silica (chalcedony and quartz), no shell, elongated oval structural shape, nodular  
Transitional
- \* Thin intrusion cutting across strata bedding planes  
Vein
- \* Many lithophysae, mostly unconnected and residing in a host rhyolite matrix  
Weathering Unit

### **Naming by Feature Shape**

- \* Hemispherical arches, joined  
Picture, Scenic—names commonly used  
Arcuate
- \* Vein agate split into v-shape  
Bifurcated Vein Agate
- \* Botryoidal  
Botryoidal, Hemis
- \* A distinct interior region in a nodule or thunderegg, as opposed to the appearance of its outer shell  
Core
- \* Jasper with earthy, decomposed pockets  
Decomposed Jasper
- \* Bulbous void impinging against the interior of a thunderegg or nodule often disrupting the wall-banding  
Dilation
- \* Many deep, sharply defined cavities and channels  
Dissolution Texture
- \* Fine quartz crystal coating  
Druzy
- \* Botryoidal structure coated with druzy quartz crystals  
Druzy-Botryoidal
- \* Lensatic structures from flattened silica grains  
Fiamme
- \* Many merged voids, glassy  
Frothy
- \* Melted wax, rounded look to jasper in fine structures  
Fused
- \* Porous, earthy, soft yellow interior  
Goethite Rot
- \* Almost complete, merged spheres  
Grape
- \* Hematite Blooms dissolved  
Hematite Rot
- \* Incised cuts on surface  
Incised

- \* Lineation along which a set of agate bands abruptly change direction at an acute angle  
Kink
- \* Porous, earthy, soft black interior  
Manganese Rot
- \* Moss structures apparently settled to the bottom of a specimen  
Moss Sedimentation
- \* Moss inclusions only along the outside surface  
Moss Shell
- \* Fine botryoidal druze on top of larger botryoidal structures  
Polybotryoidal, Hemi (crosscut)
- \* Inclusions that are all oriented in the same direction throughout the specimen  
Preferential Orientation
- \* Fracture in the primary banding chalcedony, connected to a dilation  
Rent
- \* A very thin outer layer of different color of composition to the interior agate, often orange from oxidation  
Rind
- \* A thick outer layer of different color of composition to the interior agate  
Shell
- \* Fine, pinpoint porosity, in layers  
Sinter
- \* Fine crazed skin, framboidal  
Snakeskin
- \* Spheroidal, can be internally lamellar  
Spheroidal
- \* Tube agate casts (not tubes encased in agate)  
Tube Agate Casts
- \* Vug within a vein agate, often lensatic or v-shaped  
Vein Pocket
- \* Generally round to oval voids  
Vesicular
- \* Flat, linear, stacked, white alternating with non-white colors, does not completely fill the central void  
Waterline Floor
- \* Arcuate segmented, or undulating waterlines  
Wavy Waterlines

### **Naming by Chalcedony Shape**

- \* Botryoidal structure (merged hemi shapes)  
Botryoidal, Reniform (if hemis are large)
- \* Half sphere, widely one on unattached end  
Chalcedony Bowl
- \* Sheet that is ridged, ropy  
Chalcedony Crust
- \* Tubular structures running down host rock walls, sometimes connecting protrusions  
Dripstone
- \* Chalcedony rose with quartz crystal druze on top  
Chalcedony-Quartz Rose
- \* Concentric rounded rings, one face flat  
Chalcedony Rose. Concha (Button)

- \* Complete, ropy, hollow sphere  
Chalcedony Sphere
- \* Conical, multiple stacked rings of decreasing diameter  
Chalcedony Stalagmite
- \* Conical, multiple stacked rings of decreasing diameter, central hole  
Chalcedony Vent Cone
- \* Crescent-shaped amygdule (rounded, flattened, one side is concave)  
Crescent Amygdule
- \* Elongated, rounded, exaggerated grapes  
Mammillary
- \* Long tubular chalcedony in basalt, no lava shell  
Pipe Amygdule
- \* Plumose structures that are standalone, i.e., are not surrounded by matrix, making them vuggy.  
Skeletal
- \* Short raised and incised surface lineations, occurring alternately  
Striations

Botryoidal Series:

Botryoidal – Grape – Mammillary – Tubular

#### **Naming by Pseudomorphs, Casts, Impressions**

- \* Pseudomorph after calcite angelwings  
Angelwing Agate Pseudomorph
- \* Hexagonal crystals, often radiating from a point, enlarged toward the tips  
Aragonite Pseudomorph
- \* Hexagonal indentations  
Aragonite Casts
- \* Randomly oriented blades in a hash  
Barite Pseudomorph, Lattice
- \* Half penny crystals, oriented linearly  
Calcite Pseudomorph
- \* Dagger, pointed crystal casts, often in triplets  
Calcite Impressions
- \* Rhombohedral indentations  
Calcite Rhombohedral Impressions
- \* Interconnecting plates making polygonal shapes  
Calcite Polyhedral Hash
- \* Stacked, v-shaped banding segments  
Chevrons
- \* Lensatic indentations in green jasper  
Chlorite Impressions
- \* Network of filaments, often mossy texture  
Chicken-Wire (anhydrite pseudomorph)
- \* Crystal face indentations in agate or jasper  
Crystal Impression
- \* Erionite  
Erionite Pseudomorph
- \* Fluorite coloration, banding  
Fluorite Pseudomorph
- \* Striated glauberite crystals replaced by opal  
Glauberite Pseudomorph
- \* Silica infilling in cracked gypsum sediments  
Gypsum Casts

- \* Replacement of the interior structure of a crystal with agate and inclusions as distinct from the crystal exterior  
Internal Crystal Replacement
- \* Lath crystals, sometimes wheat-sheaved, sometimes felted texture  
Laths (anhydrite pseudomorph)
- \* Irregularly textured, botryoidal to grape spheres, merged  
Marcasite Pseudomorph
- \* Small, orbicular pits on the rock surface  
Oolitic Pitting
- \* Phillipsite, identified by hexagonal, chisel-shaped crystals  
Phillipsite
- \* Fine pitting from impressions of crystallization  
Pitting
- \* Prehnite  
Prehnite Pseudomorph
- \* Fibrous, fan-shaped casts  
Sagenite Impressions
- \* Scolecite  
Scolecite Pseudomorph
- \* Sheets of thin, parallel lineations, perpendicular to vein  
Satin Spar Pseudomorph

#### **Naming by Fracture Patterns**

- \* Fracturing perpendicular to agate banding  
Axiolitic Fracturing
- \* Branching texture of rehealed “fractures”  
Branching Texture
- \* Breccias
  - a. Entire specimen  
Brecciated
  - b. With flower structures  
Breccia-Flower
  - c. Within fine lamellae  
Brecciated Lamellae
  - d. Layer of clasts  
Brecciated Layering
  - e. Areas of specimen  
Brecciated Zoning
  - f. Frayed breccia clast margins  
Frayed Breccia
  - g. Many sizes and colors of the clasts  
Terra Cotta
- \* Fracturing focused around the cockscomb quartz core of an agate  
Central Fracturing
- \* Breccia accumulation at the bottom of filled cavity  
Collapse Breccia
- \* Concentric circles of fractured matrix, filled with chalcedony, druzy quartz, and vugs  
Concentric Fractures
- \* Very fine network of fractures, not rehealed, in the surface of a glassy rock  
Crazing
- \* Crescent-shaped, agate-filled structures  
Crescent Fractures

- \* Small, cusp-shaped breaks (fractures) in an agate.  
Cusp Fractures
- \* Fractures  
Fractures
- \* Irregular breaks, minimal separation, rehealed  
Fractured Agate, Jasper
- \* Stains following fractures  
Fracture Stains
- \* Banding patterns, coloration bounded by fractures  
Fracture Zoned Coloration, Picasso
- \* Infilled, hexagonal (5-sided polygons) in agates  
Hexagonal Fractures
- \* Filamentous coating of agate or opal around a groundmass of rock or breccia  
Interstitial
- \* Regular fractures separating matrix, perpendicular to a vein, not reaching the vein walls  
Ladder Syneresis
- \* Lineations with mineral fills generally stacked parallel to each other for short segments  
Lamellar Syneresis
- \* Lensatic separation  
Lensatic Fractures
- \* Network of crisscrossing, polygonal fractures, minimal separation, rehealed  
Mosaic Agate
- \* Polygonal cracks, infilled  
Mud Cracks
- \* Fractures radiating outward from a point, usually the specimen center  
Radial Fractures
- \* Onion-like layered separations  
Onion Skin Fracturing
- \* Rehealed Fractures  
Rehealed
- \* Numerous sub-parallel fractures, perpendicular to the rock bedding  
Ruin
- \* Septarian separations, v-shaped, often curved separations  
Septarian
- \* Dense network of interconnected fractures  
Shattered
- \* Sheared and offset rock, especially offset banding  
Sheared Agate, Jasper
- \* Meandering, crisscrossing veinlets  
Sinuous Veining
- \* Cauliform, cracks, but not always connected  
Stefoinite, Siliceous Sinter
- \* Regular fractures separating matrix, often not continuing to the edges of the specimen  
Syneresis Cracks
- \* Wedge-shaped separation  
Wedged Separation
- \* A welded breccia, where the stones are fused together with angular interfaces  
Welded Breccia

- \* Fine shards of welded, glassy particles in a chert-like matrix  
Welded Pyroclastic Sediment
- \* Very vuggy, lamellar breccia intruded with druzy quartz. Tan matrix.  
Youngite

Fracture Pattern Series:

Irregular – Breccia – Conglomerate

In terms of degree of fracturing the Series is:

Fractured -- Shattered

#### **Naming by Inclusion Structures (not metals)**

- \* Agate
- \* Basalt
- \* Opal
- \* Chalcedony
- \* Quartz
- \* Rhyolite
  
- \* Air bubbles  
Air bubbles
- \* Tapering strands, curved in a dominant direction at the ends  
Angelwing
- \* Dense mats in small patches, often radial, not connected to walls  
Blooms
- \* Blooms not strongly connected to strands, many colors  
Bouquets
- \* Calcite, in outer banding layers, they can be black  
Calcite
- \* Green lensatic blades, voids  
Celadonite Blades
- \* Clear rims around included stones, tubes, plumes, ooids  
Coronas
- \* Curved, warped, folded, wavy, structural, filamentous sheets  
Curtains
- \* Branching, dendritic structures, often planar  
Dendrites
- \* Water in voids  
Enhydro
- \* Strands with secondary growth and curvature at the ends  
Feathers
- \* Dendritic patterns, connected by filaments, in the stone  
Filamentous Dendrites
- \* Tiny, repetitive dendritic patterns, in the stone  
Fine Dendrites
- \* Small, disconnected particles, sometimes porous  
Flocules
- \* Blooms not strongly connected to strands, one dominant color  
Flowers
- \* Dendrites, formed along fractures  
Fracture Dendrites

- \* Opaque white coating on agate and chalcedony, often localized to the tips of structures  
Frosting
- \* Halos of microsphere minerals in caps above the source mineral that is attached to the host rock  
Halo Caps
- \* White or other colored rims around included stones, tubes, ooids  
Halos
- \* Halos of stained mineralization in caps above the source mineral that is attached to the host rock.  
Halo Stains
- \* Thin, linear, often stacked and banded, may be offset or brecciated  
Lamellae
- \* Linear moss texture  
Lamellar Moss
- \* Distinct bluish-white, cauliflower textured Larimar in Thunderegg  
Larimar Thunderegg
- \* Structures of the same type formed along linear trends  
Lineations
- \* Moss so dense it takes a hand lens to see it is not solid and has interstitial agate  
Moss Jasper
- \* Orbits in a dense linear sequence (lamellar)  
Orbicular Lamellae
- \* One pattern or texture on top of another where one formed then the second formed, a general term  
Overprinting
- \* Blooms at the end of strands  
Plumes
- \* Torn, rounded, white tufts  
Popcorn
- \* Streamers and filaments that start at a point and become more diffuse with distance from a seed point  
Streamers
- \* Tapering, filamentous strands, apparently hollow  
Stalk Aggregates, Diapirs
- \* For vein agates, mineralization on each facing wall that is symmetric  
Symmetric Pattern
- \* Inclusions attached to agate walls, or included stones  
Wall-anchored

#### **Naming by Mineralization Infiltrations**

- \* Microscopic tufts of green, siliceous mineral, sometimes black cores, esp. in rosettes  
Actinolite
- \* Anhydrite, seen as snow-white fans and haystacks  
Anhydrite
- \* Antigorite, a green serpentine  
Antigorite
- \* Apatite, has to be crystalline to be field identified  
Apatite
- \* Microscopy grains of biotite  
Biotite Mica
- \* Calcite center in veins and amygdules  
Calcite center

- \* Green coating in vein agates and jaspers  
Celadonization
- \* Carnelian exterior and fracture infiltration  
Carnelization
- \* Olive-green, forming dense mats of fine, mossy texture.  
Chloritoid
- \* Green, vitreous epidote, short, acicular crystals, translucent, pointed ends  
Epidote
- \* Chrysocolla, malachite in agate  
Gem Silica
- \* Goethite in center  
Goethite Center
- \* Broad horizontal zones of any color overprinted on other textures  
Horizontal Zoned Coloration
- \* Magnesite, in serpentine silica rocks  
Magnesite
- \* Manganese in center  
Manganese Center
- \* Intense yellow coloration indicating orpiment  
Orpiment
- \* Pyrophyllite seen as minute, acicular, white needles and clumps  
Pyrophyllite
- \* Non-expansive clay intrusion, often alternating bands of clay/druzy quartz or within agate banding  
Sericite
- \* Rhodochrosite (bright pink, associated with olivine)  
Rhodochrosite
- \* Non-expansive clay intrusion, often alternating bands of clay/druzy quartz or within agate banding  
Sericite
- \* Serpentine, green, silicates in serpentine rocks, Antigorite identified by waxy look and striations  
Serpentine, Serpentinized, Antigorite
- \* Dendrites coating outside rock surface via rock fractures  
Surface Dendrites
- \* Crystal mineralization coating the inside wall of an agate center  
Wall-crystallized
- \* Mineralization coating the inside wall of an agate center, often goethite. Initial layer of chalcedony on the interior wall of lithophysae.  
Wall-lining
- \* Regions or zones of any color overprinted on other textures  
Zoned Coloration
- \* Structures that absorb oil and water while the matrix repels them  
Zoned Dehydration

#### **Naming by Clay Mineralization Infiltrations**

- \* Transparent spheres usually on the inner linings of geodes  
Allophane

- \* Transparent lineations spheres, separate or merged usually on the inner linings of geodes  
Allophane-Imogolite
- \* Micaceous lining of amygdules, orange-red color  
Beidellite
- \* Plumose structures, white  
Bentonite
- \* Yellow-green, with vermicular, stacked hexagonal plates, or cusp-shapes, fishnets, or botryoidal masses.  
Chlorite
- \* Large-scale, hollow, white tubes, often concentric clay layers, very precise, smooth structures  
Halloysite
- \* White layers around chlorite filaments and curls  
Halloysite
- \* Dense accumulations of branching, minute tubes  
Illite
- \* Chicken-wire structures in banding  
Illite
- \* Very fine, white “snowflakes” in agate  
Illite
- \* Tapered points along banding lines (Tee-pees)  
Illite, can also be boiling structures
- \* Transparent tubes, usually on the inner lining of geodes  
Imogolite
- \* Large-scale, hollow, white tubes, very knobby, irregular surface  
Kaolinite
- \* Amorphous lime-green coloration, rarely microscopic plumes  
Nontronite
- \* Fine, acicular accumulations and sprays, white  
Pyrophyllite
- \* Cross-hachured, structure, brown  
Sepiolite (Palygorskite, attapulgite, meerschaum)

#### **Naming by Acicular Inclusions (not metals)**

- \* Individual fine needles  
Acicular
- \* Radial needle crystallization  
Pom-poms
- \* Fans of fine, plumose crystallization  
Radial Plumes (Seaweed)
- \* Spherulites of calcite rosettes (spikes)  
Rosette Spherulites
- \* Fans of needle crystallization  
Sagenite
- \* Fans of needle crystallization with flower blooms  
Sagenite-Flowers

#### **Naming by Tubular Inclusions (not metals)**

- \* Large tubular, multiple zoning in cross section  
Pipes
- \* Large tubular, branching mineralization  
Tube
- \* Thin tubular branching mineralization  
Tendrils

- \* Lineaments, branching mineralization  
Filaments
- \* Silica tubes on top of and at an angle to other tube or plate structures, the tubes not encased in silica  
Hangers
- \* Mats and clumps of fine strands, interconnected and branching  
Moss
- \* Tapered round structures attached to walls  
Icicles
- \* Long round structures attached to walls  
Stalactites
- \* Thin tubular branching mineralization, twisting, curved common  
Vermicular

#### **Naming by Round Inclusions (not metals)**

- \* Extensive, merged, rounded patches against matrix  
Cauliform
- \* Colloidal (rounded) shapes, like translucent fish eggs  
Colloidal
- \* One to a few very large, sometimes concentrically banded orbits, often in amygdules  
Eyes
- \* Microscopic spheres of clays, sometimes with colors from iron and manganese  
Ooids, Ooid Agate, Ooid Jasper
- \* Microscopic spheres of clays, describing their uniform dispersion in an agate or jasper  
Ooid dispersion
- \* Single colored eyes, densely packed, dominate in rock  
Oolites, Oolitic
- \* General round structures of a size large than grains  
Orbits, Orbicular
- \* Elongated, rounded shapes  
Ovoids
- \* Merged eyes dominate, making abstract merged shapes  
Paisley, Calico
- \* Large orbs, often concentrically banded, sometimes agate filled, and with vugs  
Peanuts
- \* Dark orbits in lighter matrix, one color  
Polka Dots
- \* Separated orbits, concentric rings, eyes dominate in rock  
Poppies, Poppy
- \* Merged colloidal shapes, botryoids fill specimen  
Turtleback

#### Flower Pattern Series:

Plume – Flower – Bouquet

#### Tubular Series (denser tube structures):

Tubes – Tendrils – Curtain

#### Needle Inclusion Series (denser structures):

Acicular – Sagenite – Pom-pom

#### Pattern Series:

Mottled – Cauliform

Note: No series is listed for dendrites and moss although the two are commonly associated with each other. Dendrites are universal and form in many types of rocks including the carbonates, and on most any rocks by precipitation in rock fractures. Dendrites occur in agate and jasper but not chalcedony roses. Moss inclusions only occur in the agates and jaspers. The two are fundamentally different, so there is no series where one grades into the other.

#### Naming by Single Dominant Color

- \* Massive violet  
Amethystine
- \* Opaque black  
Basanite, Obsidian, Sideromelane, Jasper
- \* Translucent black  
Black Agate
- \* Baby blue
  - a. Rayleigh scattering  
Blue Agate
  - b. Not lighting effect  
Mojave Blue
- \* Light Purple nodules  
Burro Creek Purple Nodular Agate
- \* Wine (burgundy)  
Burgundy Agate
- \* Yellow (translucent)  
Canary Stone
- \* Orange-Red, translucent  
Carnelian
- \* Green shells, intrusions along fractures, green inclusions  
Celadonite Coloration
- \* Opaque white, pink  
Chalcedony
- \* Orange-Salmon, translucent  
Cherry Opal
- \* Apple-green  
Chrysoprase
- \* Whitish to grayish, translucent, often oolitic inclusions  
Common Agate
- \* Opaque, waxy opal, any color, often white, tan, green  
Common Opal
- \* Honey or caramel, translucent  
Honey Agate
- \* Translucent, colorless  
Hyalite
- \* Green, opaque  
Imperial Jasper, Chloropal, Lizard Stone, Plasma Agate, Prase Opal
- \* Opaque red, yellow, chocolate brown, purple, black, or green.  
Jasper
- \* Lemon  
Lemon Opal

- \* Opaque, milky white, translucent  
Milk Agate
- \* Translucent, milky white  
Milk Opal
- \* Pink to Pink-Purple  
Orchid
- \* Red, opaque  
Royal Jasper
- \* Brown chalcedony with weak banding  
Sard
- \* Red-Brown chalcedony with weak banding  
Sardoine
- \* White, translucent  
White Opal
- \* Pink in agate, geodes, thundereggs  
Zeolitic Coloration

#### Naming by Multiple Color Set

- \* Red and Green  
Bloodstone
- \* Red, green, white  
Christmas Tree Agate
- \* Large, diffuse, interconnected white blotches, large open spaces, against different colored matrix  
Clouds
- \* Gradual transition between two colors, transition in the shade of a color  
Color Gradient
- \* Small fragment, chips, mixed colors  
Confetti Jasper
- \* Arching, curled rods of marcasite or its iron replacement  
Marcasite Helectite (Curls)
- \* Blotches of light yellow around marcasite plumes  
Marcasite Stains
- \* Diffuse, small blotches of any color  
Mottled
- \* Light Pastels  
Pastelite
- \* Spots, lines, blotches of carnelian in honey or white agate  
Pigeon Blood Agate
- \* Dense diffuse, interconnected white blotches, few , thin, areas of matrix or agate  
Sheep's Wool
- \* Light browns and tans to grays and purples, banded (any color set)  
Silicified Sediments
- \* Fine, porous, filamentous white inclusions, large open spaces, against different colored matrix  
Snowflakes
- \* Multiple, mixed colors  
Variegated Agate, Jasper

#### Naming by Color Patterns

- \* Red, white, blue bands  
All-American Agate
- \* Red-white thick alternating bands  
Bacon Jasper

- \* White-red concentric rings  
Bull's Eye Wonderstone
- \* Concentric color regions (not bands)  
Concentrically Zoned
- \* Black spots on white background  
Dalmatian Jasper
- \* Red and white, red tubes intrude opaque white  
Flame Agate
- \* Interior white, exterior pink-purple  
Hambone Agate
- \* Innumerable small flakes of different colors of jasper,  
no color dominates  
Harlequin
- \* Green outside, red-yellow inside nodules  
Nodular Bloodstone
- \* Color of oolites dominating the rock color  
Oolitic Coloration
- \* Red and white, red plates intrude opaque white  
Paul Bunyan Agate
- \* Brown and white, alternating bands  
Sardonyx
- \* Polygonal vein network in matrix  
Spiderweb
- \* Diffuse spots, often yellow or black  
Spots
- \* Blotches of diffuse colors, often yellow, red, black  
Stains
- \* Green opaque filaments in opaque white  
Tree Agate
- \* General term for multi-colored agate or jasper without  
specific patterns  
Variegated
- \* Green outside, red-yellow inside veins  
Vein Bloodstone
- \* Dark/lighter brown lineations  
Woody
- \* Black and white, alternating, opaque bands  
Zebra

#### Ovoid Inclusion Series:

Oolitic – Spotted – Polka-Dot, Paisley – Poppy, Orbicular  
– Peanut – Spheroidal

#### Naming by Banding Patterns

- \* Vein agate banding not symmetric from opposing wall  
sides  
Asymmetric Banding
- \* Banding following interior void wall in concentric  
rings, one half of the specimen has noticeably thicker  
banding than the opposing side  
Asymmetric Wall-Banding
- \* Banding Patterns  
Banded
- \* Arcuate layers  
Arcuate
- \* Structures perpendicular to banding lines (axiolitic) in  
agate  
Axiolitic Banding

- \* Jasper-agate in alternating layers  
Banded Jasper
- \* Agate in alternating layers in vein agates  
Banded Agate
- \* Dendrites along banding lines  
Banding Dendrites
- \* Mineralization along banding lines. First named for  
native copper along banding lines  
Banding Mineralization
- \* Spots along banding lines  
Banding Spots
- \* Intermittent coloration along banding lines  
Banding Zoned Coloration
- \* White, and red to orange alternating bands  
Candy Striped
- \* Slightly darker coloration in browns along banding  
lines  
Carnelian Banding
- \* Banding layers of diminishing thickness in one  
direction  
Compressional Banding
- \* Zigzag Bands  
Compressional (Ptygmatic), Zigzag
- \* Minute conical structures attached along banding lines,  
typically just one or a few bands  
Conical banding
- \* Banding is crenulated (wavy)  
Crenulated Banding
- \* Banding is discontinuous  
Discontinuous Banding
- \* Banding layers of widely variable thickness  
Differential Banding
- \* Banding layers of uniform thickness  
Equidistant Banding
- \* Very fine, millimeter thickness banding alternating  
between opaque and clear  
Fine Banding
- \* Concentric rings, with sharp angular kinks formed  
around hemi (semi-circular) structures  
Fortification
- \* Minute hemi structures attached along banding lines,  
typically just one or a few bands  
Hemi-banding
- \* In cherts, interconnection silica between bands  
Interconnected banding
- \* Banding layers removed in an area of the wall-  
banding, often due to internal expansion of the quartz  
center  
Interrupted Banding
- \* Banding wavy, around eyelets, choppy, banding  
around groups of eyelets  
Lace Banding, Colloform
- \* Wide concentric, irregular shaped bands  
Liesegang Banding
- \* Moss along banding lines  
Moss Banding
- \* Moss along short segments of curled filaments  
Moss Curls

- \* Small, arcuate shapes within a waterline level  
Mud Curls
- \* Multiple, independent areas of fortification or wall-banding  
Multiple Banding Centers
- \* Banding with fine crystallization perpendicular to the banding, axiolytic in texture, but with agate inclusions  
Needle Layer
- \* Flat, linear, stacked, repetitive banding colors  
Onyx
- \* Microscopic spheres of clays, sometimes with colors from iron and manganese making up banding lamellae  
Ooid Banding
- \* Oolites along banding lines  
Oolitic Banding
- \* Small segments of fortification banding, pinched out due to constrained development  
Pinched Fortification
- \* Banding with layers of different colors, broad bands  
Ribbon Agate, Jasper
- \* Serrated, saw-toothed banding from pseudomorphing and banding over calcite dogtooth crystals  
Serrated Banding
- \* Banding different colors, alternating agate, quartz  
Strong Banding
- \* Generally diffuse banding, zigzag, forms curls and swirls, some taper off into the matrix  
Swirled
- \* Original wall-banding disrupted into curls and swirls  
Swirled Wall-Banding
- \* Vein agate symmetric from both sides, inward  
Symmetric banding
- \* Banding following interior void wall in concentric rings  
Wall-Banding
- \* Flat, linear, stacked, white alternating with non-white colors  
Waterlines
- \* Combined waterlines and wall-banding, bands continuous between the two  
Waterline-Wall-banded
- \* Undulating banding  
Wavelines  
Banding shades of one color  
Weak Banding

#### **Naming by Optical Effects**

- \* Orange opalescence  
Fire Opal
- \* Fluorescence, most often occurring in opal, rare in agate, not observed in jasper  
Fluorescent
- \* Iris (Schiller)  
Iris, Schiller Effect
- \* Translucent opalescence  
Jelly Opal
- \* Thick pink chalcedony appearing lavender  
Lavender

- \* Combination of white, weak banding and red hemispheres making a lavender color  
Lavenderization
- \* Opalescence  
Opalescent, Jelly Opal
- \* Flashes of many colors, depending on angle of viewing, in Brown Sard  
Play-of-Color, Fire Agate (properly, Precious Agate)
- \* Flashes of many colors, depending on angle of viewing, Opal  
Play-of-Color, Iridescent, Precious Opal
- \* Orange opalescence and play-of-color  
Precious Fire Opal
- \* Baby blue-white coloration in agate  
Rayleigh Scattering
- \* Shadow Effects  
Shadows

#### **Naming by Trapped Metallic Minerals, other Elements**

- \* Violet-purple quartz  
Amethyst
- \* White, metallic sulfide  
Arsenopyrite
- \* Gold  
Auriferous
- \* Hematite Jasper  
Banded Iron Formation
- \* Yellow-Green  
Celadonite
- \* Chromium  
Chromium, Mtorolite (in silica)
- \* Octahedral chromite Crystals, always separate, never masses, in serpentine silica rocks  
Chromite
- \* Nickel  
Chrysoprase
- \* Cinnabar  
Cinnabar, Myrickite, Montroydite (oxidized)
- \* Yellow quartz  
Citrine
- \* Native Copper  
Copper
- \* Rectangular, clear crystals in ash and host lava, also as conical wheat sheaves in geode shells  
Feldspar
- \* Haystack crystals (X-shaped)  
Goethite, Stilbite, Wheat Sheaves and Haystack (general)
- \* Hematite Agate  
Hematite Agate
- \* Microscopic, acicular, black tufts  
Ilmenite
- \* Iron Oxides  
Red, Yellow, Chocolate Brown, Purple, Black, Green Jasper
- \* Specular Hematite  
Jasper-Taconite

- \* Marcasite
    - a. Blooms
  - Marcasite
    - b. Chains of oolites
  - Marcasite beads
  - \* Manganese
    - a. In Jasper
      - Manganese Jasper
    - d. In agate
      - Manganese
  - \* Magnetite, identified by crystal inclusions
    - Magnetite
  - \* Native Copper (rare)
    - Native Copper
  - \* Native Silver (rare)
    - Native Silver
  - \* Olivine (translucent green)
    - Olivine
  - \* Chocolate brown blades
    - Pentlandite
  - \* Green quartz
    - Prasiolite
  - \* Pyrite grains (microscopic)
    - Pyrite
  - \* Pyrite in bands and clasts in jasper
    - Jasper-Pyrite
  - \* Chocolate brown grains, often sulfuric acid staining
    - Pyrrhotite
  - \* Native sulfur, not found from hydrothermal deposits, only from cinnabar decomposition so far
    - Sulfur
  - \* Uranium
    - Uraniferous
- Amygdule/Geode/Lithosilica/Thunderegg Structures**
- \* Tall, slender amygdules filled with crystal clear quartz or amethyst quartz
    - Cathedral
  - \* Banding curved outward to a point
    - Asymptotic banding
  - \* Square shaped interior
    - Biconoid
  - \* Square shaped interior, hollow, druzy lined
    - Biconoid Cavity
  - \* Bubble in top of amygdule
    - Blister
  - \* Hour glass-shaped interior
    - Box Core
  - \* Thundereggs made of pastel colored breccia, filled with colorful veinlets
    - Butterfly Jasper
  - \* Calcite stones in amygdules
    - Calcite Capture
  - \* Group of geodes or thundereggs with connected centers
    - Cluster
  - \* The central agate structure of a thunderegg or central vug of a geode
    - Core
  - \* Lining or complete infilling of the central vug with zeolite
    - Cotton Ball, zeolite lined geode a Zeolitic Geode, complete zeolite infilling a Zeolitic Thunderegg
  - \* Protruding button of knob with radial structure from it sometimes seen
    - Cristobalite Button
  - \* Flow bands or interior rhyolite segments curled into interior
    - Curls
  - \* Hash and debris at bottom, with crystals in and on the surface, nucleated from the debris
    - Debris Nucleation
  - \* Two Geodes or Thundereggs, shared interior
    - Doublet
  - \* Spheroidal or Oblong shape, no agate in the interior
    - Dud, Goof Ball
  - \* Sheared, offset, rehealed thunderegg
    - Faulted, Slip Egg
  - \* Agate center with two or more star points
    - Geometric Center
  - \* Hemi-shaped geode due to its collapse. Zeolite infilled.
    - Implosion (Geode Implosion)
  - \* Extruded, often arcuate lava structure from a thunderegg rupture to its interior.
    - Intrusion (Thunderegg Intrusion)
  - \* A stony, has interior of a thunderegg or lithosilica
    - Irregular Interior
  - \* Protuberances on amygdules
    - Knobs
  - \* Highly irregular agate center
    - Non-geometric Center
  - \* Thunderegg filled entirely with opal
    - Opal Thunderegg
  - \* Oblong geode, thunderegg
    - Potato
  - \* Exterior rind mineralization. Named originally for native copper rind.
    - Rind Mineralization
  - \* A mostly round agate center
    - Round Center
  - \* Individual wedge-shaped silica openings in a geometric geode or thunderegg
    - Star Point
  - \* Lava stones in amygdules
    - Stone Capture
  - \* Interior with various angles of waterlines
    - Tiltage
  - \* Tapered thunderegg
    - Torpedo
  - \* Triangle shaped interior
    - Triconoid
  - \* Triangle shaped interior, hollow, druzy lined
    - Triconoid Cavity
  - \* Long tubular thunderegg
    - Tube Lithophysae

- \* White hash with stones at the bottom of geodes, thundereggs  
Zeolitic Hash

#### **Amygdule/Geode/Lithosilica/Thunderegg/Vein Agate Shells**

- \* Flow banded shell, center formed by arcuate deformation of bands  
Arcuate Flow Bands
- \* Yellow-Green outer crust  
Celadonite Crust
- \* Multiple layers as bands, separated by vugs, quartz, druzy lined vugs  
Concentric (Shell-in-Shell)
- \* Extrusion of silica from the interior of a lithophysa to the outside  
Dyke
- \* Single dominant pressure ridge around middle of shell  
Equatorial Ring (Meniscus)
- \* Outside skin porcelain, glassy  
Glazed Skin
- \* Goethite rich ash shell, observed in vein agates in ash vent deposits  
Goethite Ash Shell
- \* Orbicular structures in the surface of amygdules, often with celadonite  
Poppy Patterning
- \* Outermost layer of unbanded silica found in lithophysae  
Primary Layer
- \* Outside Ridges, intersecting  
Pressure Ridges, Shell Ridges
- \* The vugs between concentric geode shell bands where the bands break and the chalcedony contents merge  
Rupture Chambers
- \* Outside crevasses, intersecting  
Shell Channels
- \* Spherulite at interior side  
Spherulitic Core
- \* Spherulite indentation at opposite interior side to Spherulitic Core  
Spherulitic Dimple
- \* Flow banded shell, center formed by tearing and separating of bands  
Torn Flow Bands
- \* Tube penetrating shell to agate interior  
Tube of Entry, Tube of Escape, Fill Tube, External Tube
- \* Many, branding, rounded ridges on outside shell  
Wrinkled Skin

#### **Geode/Lithosilica/Thunderegg Shell Textures as general geologic terms not listed in Lexicon**

- \* Aphanitic (fine grained)
- \* Axiolitic (radial texture)
- \* Flow Banded
- \* Hemi (lensatic segments, fan-shaped)
- \* Porphyritic (crystal granules)

- \* Spheroidal (flow banded or aphanitic spheres of matrix composition)

#### **Naming by Geode/Lithosilica/Thunderegg Interior Shapes**

- \* Biconoid (square)
- \* Box Cavity
- \* Box Core (hourglass)
- \* Curvilinear, Arcuate, Atoll
- \* Irregular (hash, earthy))
- \* Lensatic
- \* Ovoid
- \* Round
- \* Septarian
- \* Star-shaped (4-8 star points)
- \* Triconoid

Simple to Complex Structure Series (rhyolite exteriors):  
Lithosilica – Thunderegg – Geode

Simple to Complex Structure Series (NO rhyolite exteriors):  
Nodule – Amygdule – Concretion

#### **Specialized Opal Terms-Optical**

- \* Cat's Eye Opal
- \* Crystal Opal
- \* Fire Opal
- \* Harlequin Opal
- \* Jelly Opal
- \* Pinfire Opal
- \* Precious Opal

#### **Specialized Opal Terms-Structural**

- \* Boulder Opal
- \* Matrix Opal
- \* Pipe Opal
- \* Seam Opal
- \* Yowah Nuts
- \* Wood Opal

#### **Post-Genetic Minerals (those formed by intruding solutions after the agate formed)**

- \* Caliche
- \* Humic Acid
- \* Selenite