

## **Geologic Collecting Sources of Agates in the Southwestern U.S. and some other Selected Areas**

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1. Rhyolitic flows by exsolution (lithosilica—silica-rhyolite mix), and in veins
2. Andesitic flows as veins, generally precipitated with calcite
3. Basaltic flows as amygdules, top 15 feet only (lower, overburden pressure collapsed the voids)
4. In volcanic ash under lava caps
5. At ash-tuff contacts in the ash
6. Along faults with volcanic ash
7. In extinct hydrothermal vents in volcanic ash
8. In sinter piles (mounds) along faults
9. On piedmonts above dry lakes (silcretes)
10. Lakeshore fossil bogs, often since uplifted and faulted
11. Petrified wood in volcanic ash, east shore of ancient lakes (downwind)
12. Petrified wood in pyroclastic flows (ash) but not conglomerate flows (unless you want small bits of wood)
13. In volcanic ash on Mojave granitic basement
14. Potentially: Leach caps with silica over copper porphyry deposits
15. Nevada jasperoid-class vein deposits
16. Rhyolite adjacent to perlite and pitchstone (phenocryst obsidian) in lava domes and short flows (geodes only)
17. In perlitic pockets in rhyolite, dacite, andesite flows (geodes only), pockets celadonite altered (green)
18. Serpentine rocks on the Coast Range, CA fault suite (incl. the San Andreas, Nacimiento)—breccia, poppy jasper
19. Interstratified limestone-ash deposits (mainly Midwest)
20. Bentonite (altered ash) deposits
21. Active hydrothermal fields (sinters)
22. In volcanic ash at caliche (hardpan) contacts above the contact
23. Mixed carbonate/silica banded rocks along extinct hydrothermal fault systems (Boron, CA)
24. Volcanogenic massive sulfide (VMS) deposits. Generally structurally round, extinct oceanic vent systems (AZ)
25. Barite silica replacement nodules (UT)
26. Basal part of basaltic flows where the basalt flowed over ash as wet ground. Identified by bottom pitchstone to perlite occurrence. Agates within 3 inches of the basalt/ash contact.
27. Anhydrite silica replacement nodules (sedimentary geodes) (Iowa, Kentucky)
28. Phosphatic clay replacement nodules (sedimentary) (Montana)

### **Poor Quality Collecting**

1. Coast Range Franciscan Formation, a greenstone from seafloor basalt (generally crappy cherts, muddy jaspers)
2. Coast Range rhyolitic volcanics—generally marcasite-saturated geodes (lousy geodes from oceanic intrusion)
3. Hydrothermal intrusion into fractured basalts (thin veinlets, stringers)

### **NOT Geologic Collecting Sources of Agates in the Southwestern U.S. and some other areas**

Most come from geomyths perpetuated about agate, jasper, opal genesis. © Donald Kasper, April 2012

1. Playa lakes
2. Salt flats, absolutely anything to do with salt
3. Mojave flood basalts (sheet basalt flows)
4. Cinder cones
5. Volcanic cones with pumice
6. Obsidian outcrops of any kind
7. Vesicular basalts without volcanic ash
8. Sandstones, sand dunes, any kind of granular sand
9. Granitic, schist rocks of any kind
10. Metamorphic rocks bearing garnet, actinolite, rutile
11. Coast and Central Valley Miocene sedimentary rocks (claystones)
12. Generally any lava source older than Tertiary in the SW, Cretaceous for Midwest
13. Meteorite impact sites
14. Diatomaceous earth sites (diatoms and sponge spicules)
15. Limestone with sponge spicules, diatoms as the only silica source (Midwest)
16. Massive milky quartz deposits (because agates are not a variety of quartz and so do not form the same way)
17. Weathering profiles of rocks and soils, especially acid soils