

# AGATE CRAFT



Purpose of craft: To learn about agates in a hands-on way

Target age group: ages 8-12

Materials needed: a 8.5" x 11" sheet of clear plastic (copier transparencies are ideal and can be purchased at the printing department of any office supply store), the following patterns copied onto white paper, acrylic paints, small brushes, water, paper clips to hold the pattern pages in place, craft glue, a small amount of sand

Introduction: What is an agate? ("Agate" rhymes with "bag it.")

Agates are made of silica,  $\text{SiO}_2$ . (the elements silicon and oxygen) Glass is also made of silica so it is not surprising that agates can look smooth and glassy when polished.

The type of silica found in agates is called "chalcedony." This name was given by Theophrastus, a Greek philosopher and naturalist who discovered this type of stone along the Achates River.

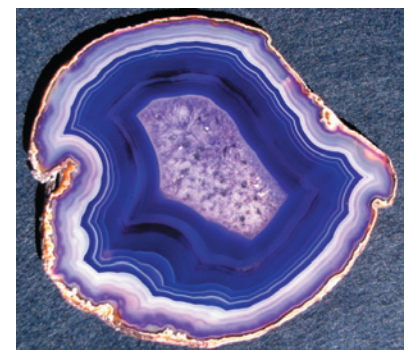
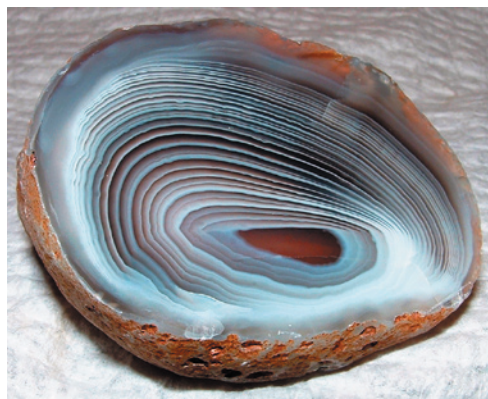
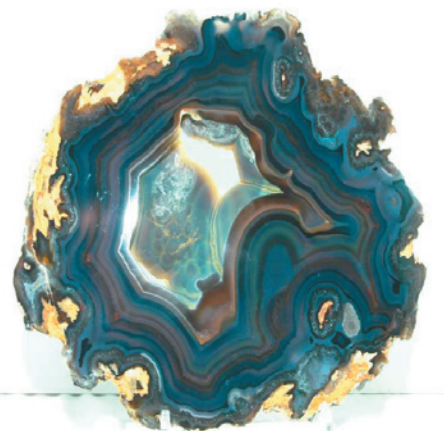
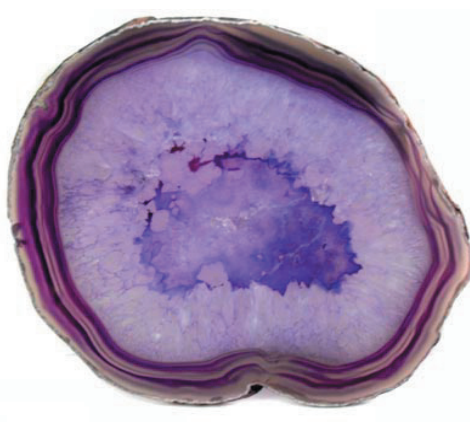
Most agates are found in volcanic rock, although some are found in metamorphic rock. They started out as empty bubbles in the rock, then the space eventually filled in with minerals (mostly silica) and possibly mixed with hot water. Some bubbles filled in completely and others only partially, leaving an empty space at the center. Therefore, agates can be completely solid, or can have a hole in the center. Agates are not always round, however, and can be found as stripes filling long gaps and cracks in volcanic rocks. These are known as banded agates or striped agates.

Agates usually come in shades of red and brown, gray, or blue. Bands of chalcedony often alternate with bands of crystalline quartz. If there is a hole in the center, it is often not smooth, but has large crystals around the edge.

Agates are very resistant to weathering. In some places, they are found as hard, round balls, called "geodes" which must be cracked open with a hammer in order to see the beautiful minerals inside. One of the largest geodes ever found was in Brazil. It weighed 35 tons and the inside was lined with amethyst crystals (another form of silica, often light purple in color).

Agates are primarily used for decorative purposes such as jewelry, book ends, and other crafts. Two practical uses that have been documented (in just a few parts of the world) are burnishing leather, and using very thin agate slices as panels for stained glass windows.

EXAMPLES OF AGATES (You can find these, and more, using Google image search.)





## Instructions:

- 1) Copy (or print out) the agate pattern pages onto white paper. Copy the info sheet (where you will glue your final project) onto white card stock. If you want to extend this project and make it more challenging, have the students draw their own patterns.
- 2) Place the sheet of plastic over one of the pattern pages. (Or use your own.) You can use some paper clips or small pieces of tape to keep the plastic sheet in place while you paint.
- 3) Use acrylic paints to paint colored stripes. (TIP: Limit the number of colors you use. Your agate will look more genuine if it is in shades of just blue, or just red and brown, or just gray, or just purple.) Bear in mind that the agate will be seen from the reverse side. You are painting on the back. If you paint a stripe on top of a stripe, only the first stripe will be seen on the front side.
- 4) Notice that the outer (crusty-looking) layer should not be painted. This is where you will glue the sand.
- 5) When the paint is dry, cut out the agate, including that unpainted strip (for the sand) on the outside.
- 6) Turn your agate over and put craft glue on the outer edge. Then dust with sand, making sure the sand is firmly embedded in the glue. Let dry.
- 7) Glue your agate (shiny side up!) to the info sheet. You could also make your own info sheet, or simply glue it to a blank sheet of paper.

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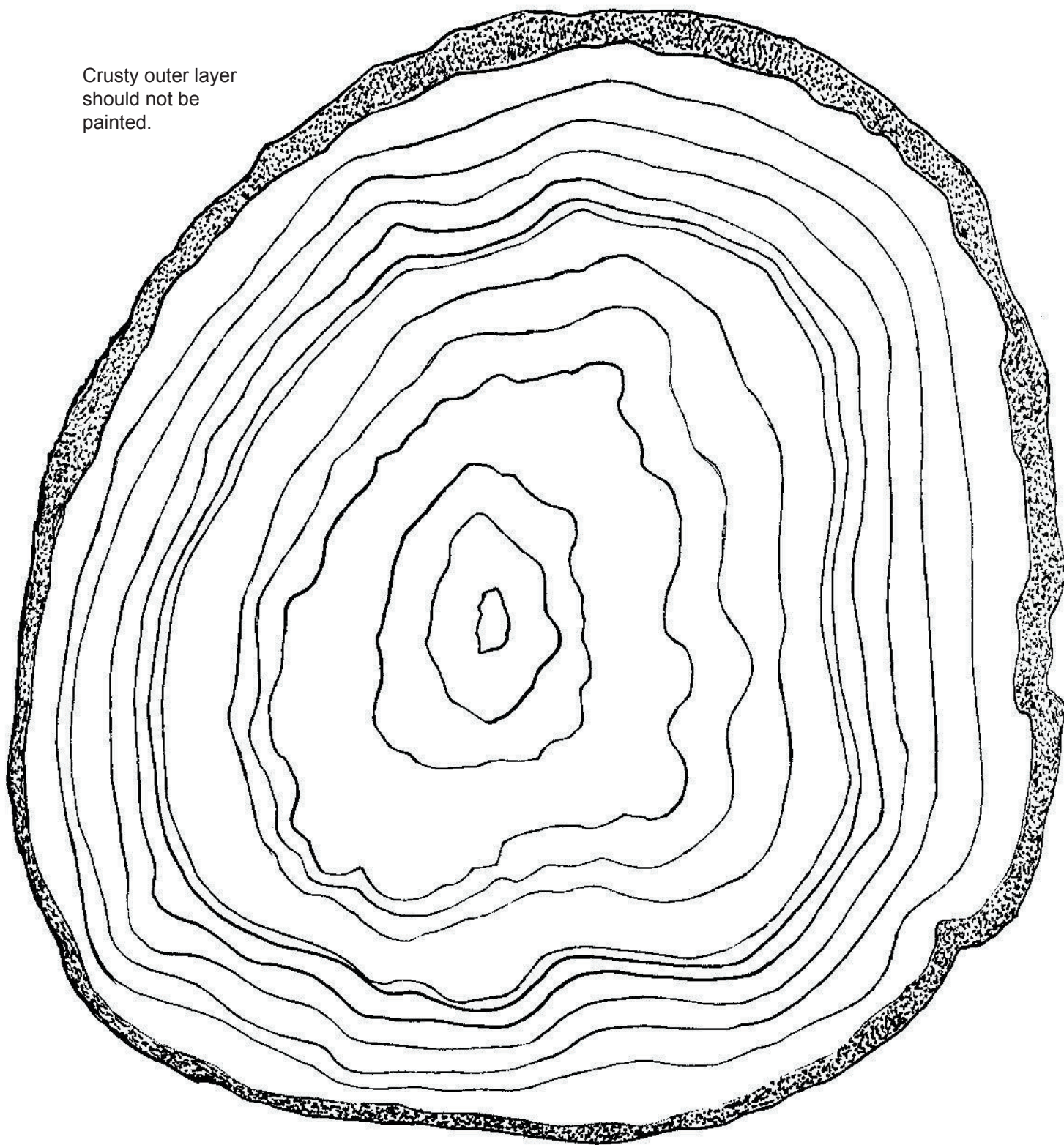
**For a video demonstration showing how to do this craft, go to [YouTube.com/eejm63](https://www.youtube.com/eejm63), click on “Videos,” then “Playlists,” then “Craft project demos,” then “Agate craft demo.”**

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Place plastic sheet over this pattern.

Crusty outer layer  
should not be  
painted.

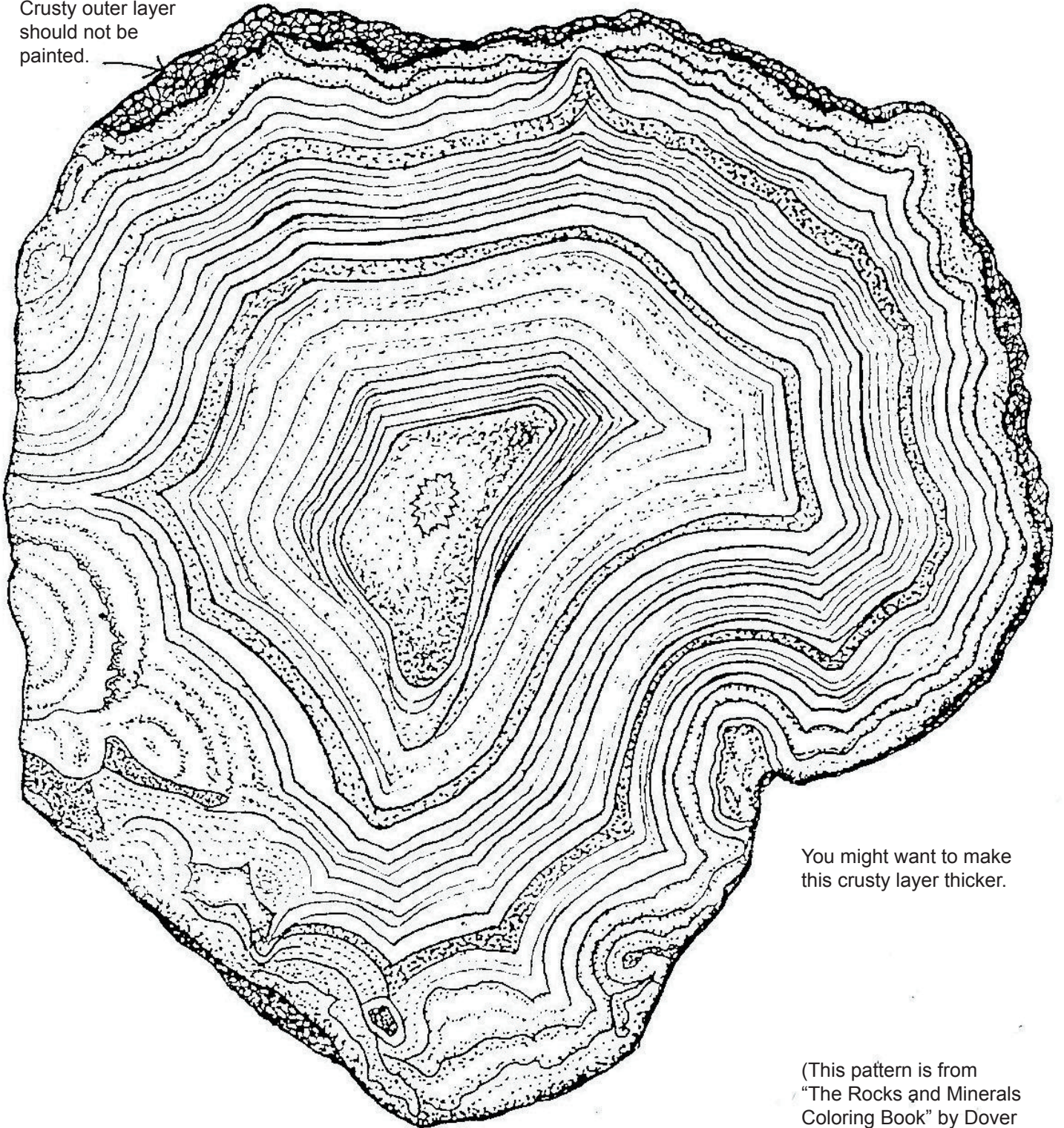




# Place plastic sheet over this pattern.

NOTE: You don't need to use all the lines in this pattern. Feel free to simplify it a bit.

Crusty outer layer  
should not be  
painted.



You might want to make  
this crusty layer thicker.

(This pattern is from  
"The Rocks and Minerals  
Coloring Book" by Dover  
Publishing Co.)

# AGATES

Agates are made of silica,  $\text{SiO}_2$  (the elements silicon and oxygen). They started out as empty bubbles inside lava. After the lava cooled, silica and other minerals (probably dissolved in hot water) seeped in, then cooled and crystallized, forming beautiful colored rings.