

# How to make a thin section

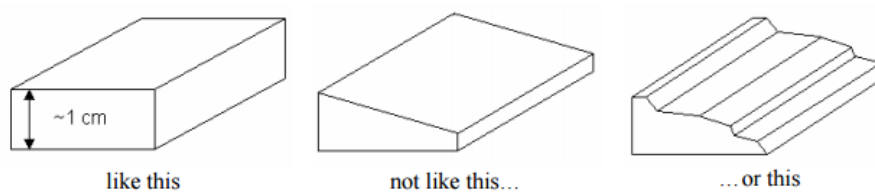
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A thin section is a 30  $\mu\text{m}$  (= 0.03 mm) thick slice of rock attached to a glass slide with epoxy.



## INSTRUCTIONS

1. Mark the slab and cut the chip ( 4cm x 2cm x 1cm).



2. Hand grind the chip first with #80 grit sandpaper, #240 grit sandpaper, then with #400 SiC grit.

**(Wash the chip using ultrasonic atomizer when change different grit. )**

3. Frost the glass slide with #400 SiC grit.
4. The washed chip and glass slide were oven dried at 60°C for 24 hours.
5. (1) Cover a hot plate with aluminum foil and set the hot plate to 3 (90°C).  
(2) Put the chips on the hot plate smooth side up. **Don't touch the ground surfaces!**  
(3) Let them heat up for at least 30 minutes.
6. (1) Put the frosted glass slide up onto the hot plate to heat up for a minute.  
(2) First use the wooden stick that you mixed the epoxy with to spread epoxy onto the glass slide. Second, coat the smooth side of one chip with epoxy.  
(3) Put the glass slide onto the chip, epoxy sides together. Use a rounded pencil eraser to work out the bubbles by pressing gently in the middle of the slide and moving the slide in small circles. Move the eraser around to slowly work the bubbles to the edge of the slide until all or most have been worked out.  
(4) When the bubbles are gone (or as many as possible), move the slide so that it is nearly centered over the chip, with an equal space around three sides of the chip and a larger space at one end for the sample number. Set the chip in an unused part of the hot plate to cure.  
(5) When finished, turn the hot plate to about 3(90° C)~4(170° C), and let the chips to sit for at least 15 minutes to cure. Allow it to cool at room temperature

at least 1 hour.

3  $\doteq$  105°C , 4  $\doteq$  180°C

55	89	63
61	135	77
58	100	65

*Cover the hot plate with two layers of aluminum foil (Check the temperature using the contact thermometer.)*

7. The slide/block is sawn as close to the glass as possible using a thin bladed diamond saw. The section is now 1mm to 0.5mm (500 microns) thick.
8. Hand grind the section using #80 grit, #240 grit sandpaper, #400 SiC grit, #600 SiC grit, #1200 SiC grit and #2000 grit sandpaper, respectively.  
**(Wash the chip using ultrasonic atomizer when change different grit. )**
9. Fine polishing is done on with the 1 micro diamond compound, 0.3 and 0.05 micron aluminum-oxide polishing powders.
10. Typically quartz is used as the gauge to determine thickness as it is one of the most abundant minerals (1<sup>st</sup> order grey) .
11. Label the section.
12. Be sure the room and equipment is clean when you leave.

## **APPENDIX: MIXING EPOXY**

Mixing petropoxy 154 thoroughly

Add the curing agent to the resin at the concentration of 10 phr (phr stands for parts per hundred parts of resin, by volume). For example, to 5.0ml of Resin, add 0.5ml of Curing Agent. Using one of the string rods provided, mix thoroughly for at least one minute, taking particular care to frequently scrape the sides and bottom of the beaker with the stirring rod.