Bonding Billets to Frosted Slides

BONDING BILLETS TO FROSTED SLIDES: USER GUIDE

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This user guide will help thin section technicians bond the flattened billets to frosted slides. For more information refer to the Logitech Thin Rock Section Production manual, available in the Thin Section Lab both on a Logitech thumb drive in the bookcase and computer under the "Manual" folder on the desktop.

PREPARING FOR RESIN

1. Set the billets flattened side up on heat pad and spray them with isopropyl alcohol. This will help them dry.
2. Clean frosted slides off with isopropyl alcohol, blow them dry, and measure them again.

a. It is best to have them all the same thickness for the billet group that are being bonded.

b. Take note of how thick the slides are and write it on the sample tray. The samples will need to be 30 microns on top of the slide thickness.

3. Place the slides on the heat pad as well.

MIXING RESIN

1. Mix one full pump of EpoTek 301 part A and part B into a weighing dish.
    a. The ratio is 3 to 1. The pumps are preset to this.
    b. Make sure pump is primed first or there will not be the right ratio.
2. Stir the resin slowly with wooden stick until there are no trails of the two mixing (Fig. 1) and go slow to avoid bubbles.

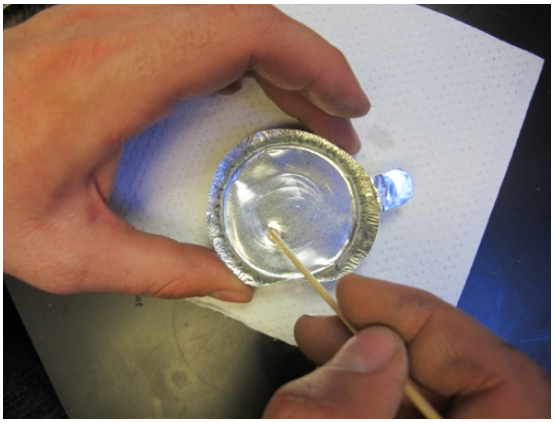

Figure 1

Make sure no wood particles fall into the resin; pick them out if they do.

The resin should stay good for about 45 minutes. If it starts to get too thick, place on the hot plate for a few seconds and it will become thin again for a very short time.

PUTTING RESIN ON THE BILLETS

1. Once the samples are completely dry clean the surface off with a kim-wipe and isopropyl alcohol.
2. Place the billet on a Teflon puck.
3. With the wooden stick slowly draw an X with the resin on the sample (Fig. 2).

Figure 2

a. If the first stroke is discolored it means the resin is soaking in the vesicles. This is one way to tell if surface impregnation is needed.

4. Spread the resin around so it covers the whole sample.

5. Let it sit for a minute or two and watch if any bubbles form. If there are bubbles get them out with the metal point tool (Fig. 3).

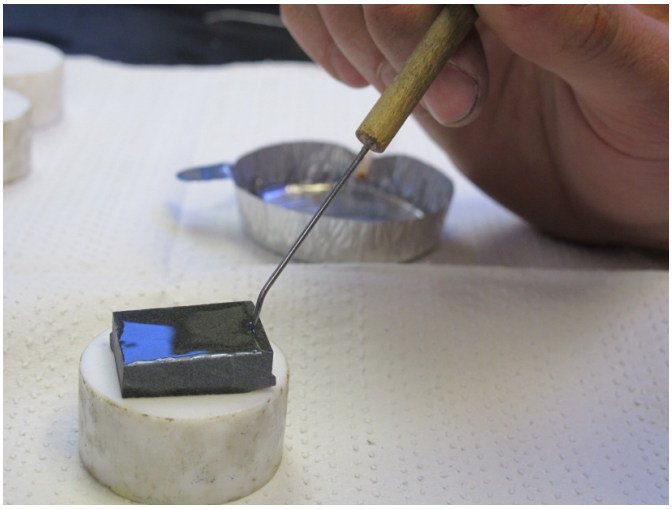

Figure 3

SURFACE IMPREGNATION

1. If the billet is soaking up resin, it is a good idea to surface impregnate it.
2. Hook up the vacuum hose to the impregnation stand (Fig. 4).
3. Place the billet under the bell jar (Fig. 4).
4. Check the vacuum oil level. Refill if it starts to run low.

5. Turn on vacuum pump by turning on the power strip connected to the wall (Fig. 4).

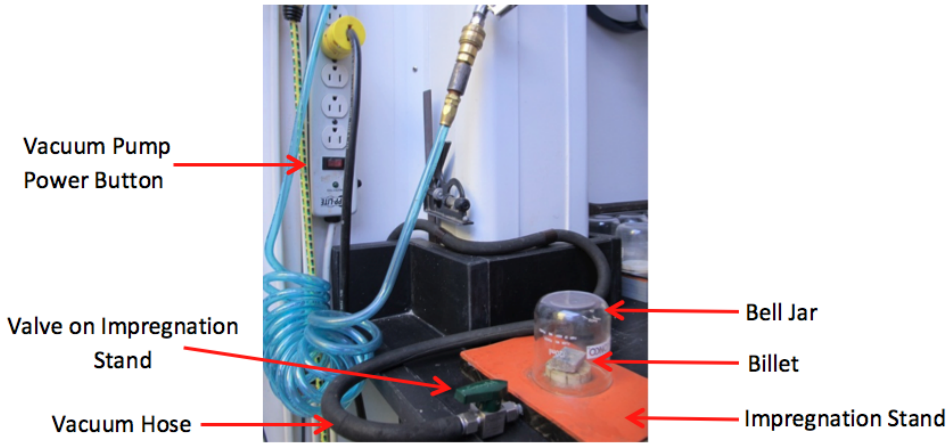

Figure 4

6. Close the valve on the upper right side of the Logitech VS2 (Fig. 5) and make sure the valve on the impregnation stand is open (parallel with the vacuum hose) (Fig. 4).

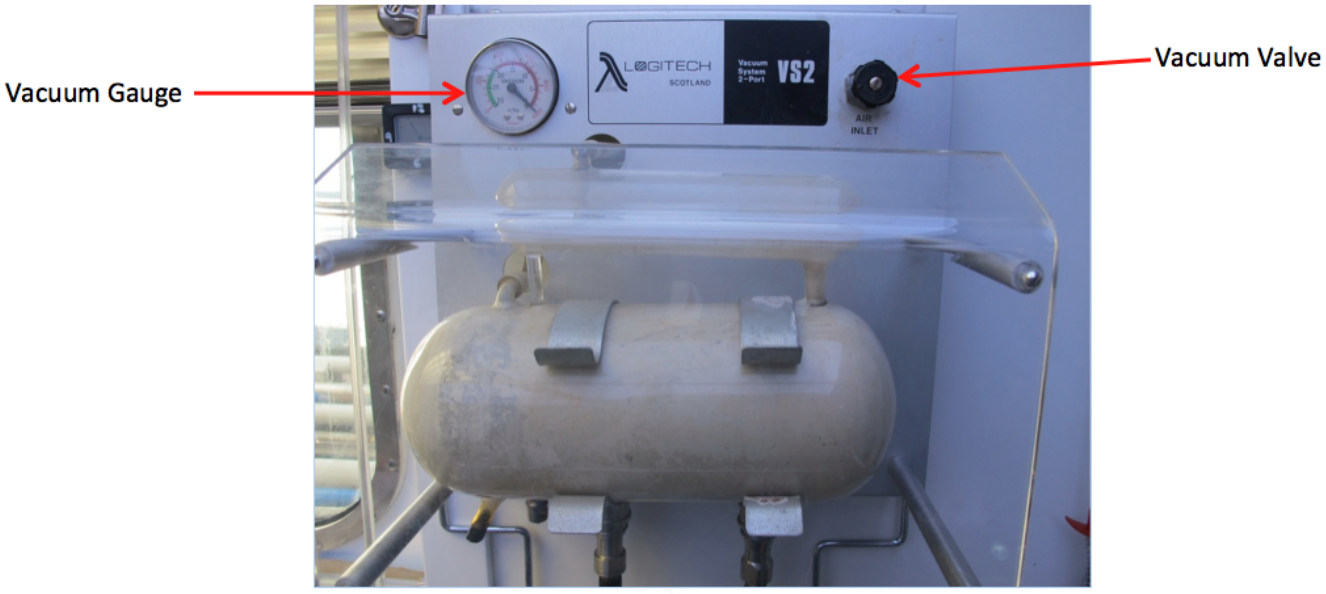

Figure 5

a. Watch the gauge on the left side; it should be in the green around 25 in/Hg.
b. Press on the bell jar to get a good seal.

7. Let the vacuum run for about one minute. Watch the billet while it is running.

a. If the resin on the billet is bubbling it means it is soaking in.

8. Open the vacuum valve slowly. The bubbles should dissipate.

a. Add more resin on the billet if there are bare spots.

9. Repeat steps 6, 7 and 8.

a. There should be fewer bubbles.

10. Repeat step 6 and only let it run for about 30 seconds, and then shut the valve on the impregnation stand (perpendicular with the vacuum hose). Then open the vacuum valve. After the vacuum is fully released open the valve on the impregnation stand quickly.

a. This will force the resin into the billet.

11. Repeat step 10 until there are only a few bubbles left.

12. Remove billet from the impregnation stand and turn off the vacuum pump.

13. After the billet is surface impregnated it can be immediately bonded to a frosted slide.

BONDING FROSTED SLIDES TO THE BILLETS

1. Make sure the frosted slides are clean.
2. Hold the frosted side up to the sample to measure how large it is. Draw two horizontal lines with resin to outline the size of the sample (Fig. 6).

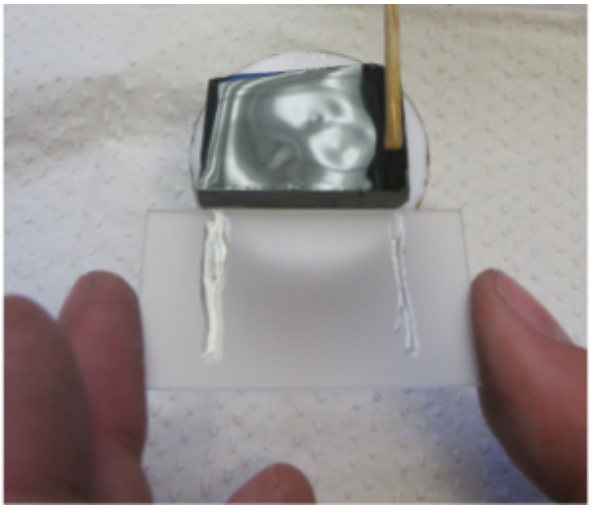

Figure 6

3. Fill in the space between the two lines with resin. Put more resin on the right side.

4. Place the slide with resin side down onto the sample from left to right (Fig. 7). Lay down very slowly to prevent making bubbles.

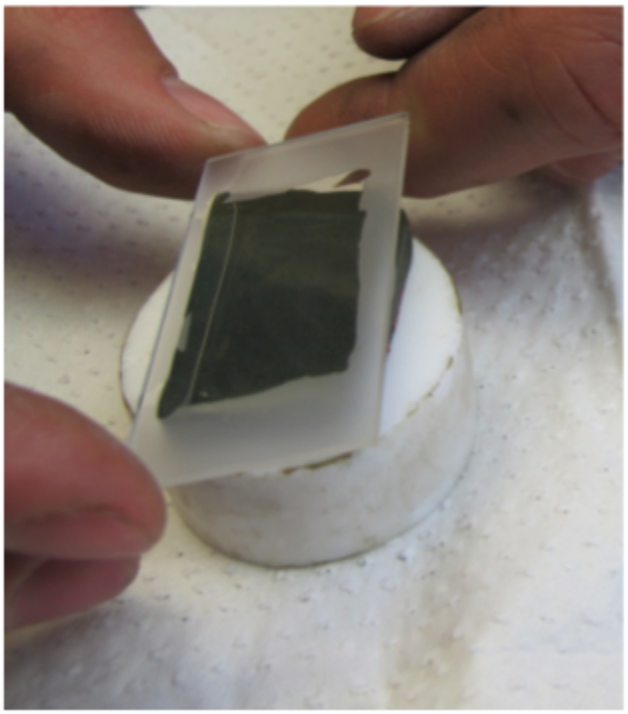

Figure 7

5. Press on the middle of the slide moving any bubbles out to the sides (Fig. 8).

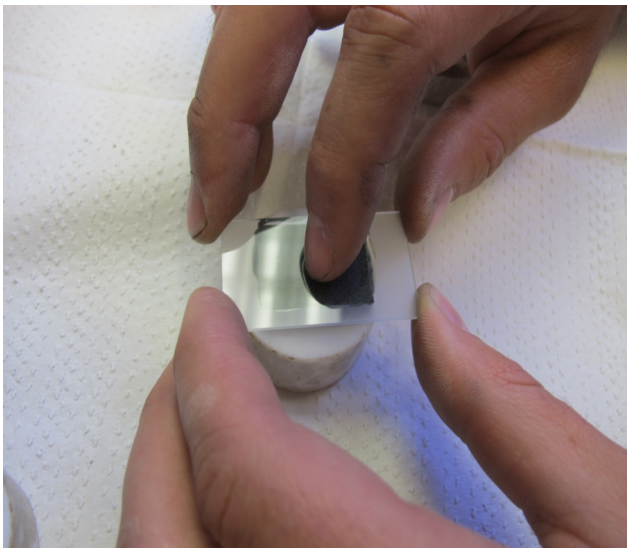

Figure 8

a. If there are lots of bubbles take off the slide. Wipe off the resin and clean the sample off with isopropyl alcohol then start over again.

6. Put the sample on the hot plate under the jig with the slide up and place a Teflon puck on top.

Lower the rod very gently down (Fig. 9).

a. Squeeze the spring and remove the Teflon puck to begin lowering.

Figure 9

7. Let the resin cure for about one hour.

a. Poke the resin with the metal point tool to make sure it is no longer sticky.

8. Write down the thickness of the frosted slide on the sample tray.

9. When cured remove sample and replace Teflon pucks.

GRAIN MOUNTS

1. Dry the grains on the hot plate for an hour or more in a weighing dish.

2. Mix up EpoTek resin.
3. Place dry grains into a clean plastic mold and cover them with resin.
    a. It is best to use a small mold and to fill it at least half way.
4. Label the mold with the sample number.
5. Place the mold on the hot plate on top of a Teflon puck.
6. Let it cure until it is hard all the way through-it may take the whole day.
7. Peel away the mold and make sure to label the sample.
8. Once the resin is dry the grain mount can be treated as a hard rock billet.
9. When flattening the grain mount it is best to do it by hand. Make sure enough material is taken off so the grains are cut in half.
10. When bonding the grain mount to a slide treat it as a hard rock.

IMPREGNATING A BILLET

1. Impregnation should be done on samples that are soft, water soluble or vesicular billets (ex. pumas, sandstone, mudstone, and clay stone).
    a. These samples should all be dried first. Refer to the Freeze Drier user guide.
2. Once the samples are dry mix up 3 pumps of both part A and B of EpoTek resin.
3. Place the billet into a clean plastic mold that is best fit it.
4. Label the mold with the sample number.
5. Cover the billet with resin (Fig. 10).

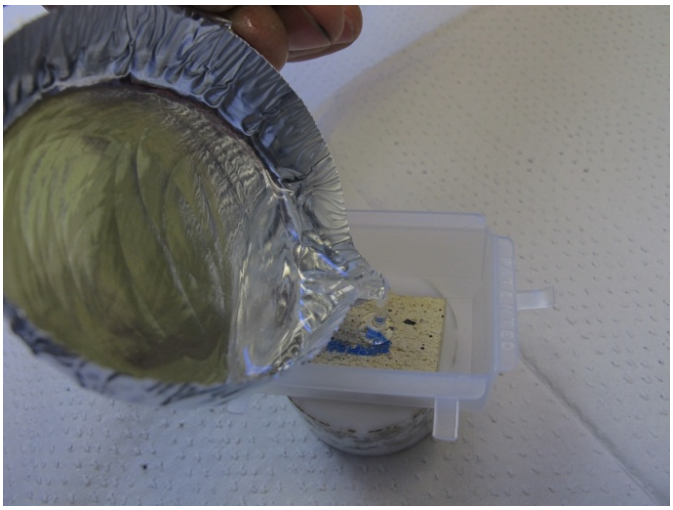

Figure 10

6. Hook up the vacuum hose to the impregnation stand (Fig. 4).

7. Place the mold with the billet under the bell jar (Fig. 11).

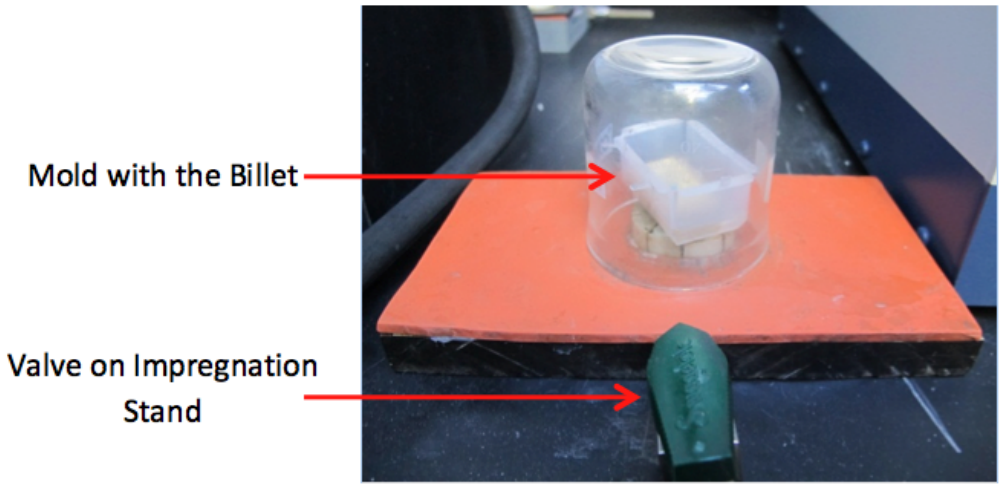

Figure 11

8. Check the vacuum oil level. Refill if it starts to run low.

9. Turn on vacuum pump by turning on the power strip connected to the wall (Fig. 4).

10. Close the valve on the upper right side of the Logitech VS2 (Fig. 5) and make sure the valve on the impregnation stand is open (parallel with the vacuum hose) (Fig. 11).

    a. Watch the gauge on the left side; it should be in the green around 25 in/Hg.
    b. Press on the bell jar to get a good seal.

11. Let the vacuum run for about one minute. Watch the billet while it is running.

    a. If the resin on the billet is bubbling it means it is soaking in.

12. Open the vacuum valve slowly. The bubbles should dissipate.

    a. Add more resin on the billet if there are bare spots.

13. Repeat steps 9, 10 and 11. There should be fewer bubbles.

14. Repeat step 9 and only let it run for about 30 seconds, and then shut the valve on the impregnation stand (perpendicular with the vacuum hose). Then open the vacuum valve. After the vacuum is fully released open the valve on the impregnation stand quickly. This will force the resin into the billet.

15. Repeat step 13 until there are only a few bubbles left.

16. Remove the mold from the impregnation stand and turn off the vacuum pump.

17. Place the mold on the hot plate on top of a Teflon puck.

18. Let it cure until it is hard all the way through-it may take the whole day.

19. Peel away the mold and make sure to label the sample.

20. Remove any excess resin with the rock saw or the band sander.

21. When flattening the impregnated billet it is best to do it by hand. Make sure that all the resin is removed from the bottom so the billet is showing.

22. Treat the impregnated billet as a hard rock when bonding it to a slide.

Credit

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