

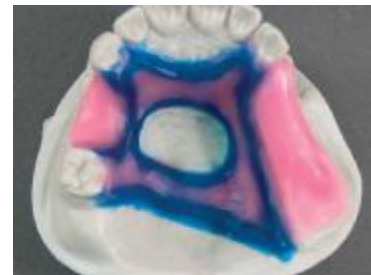
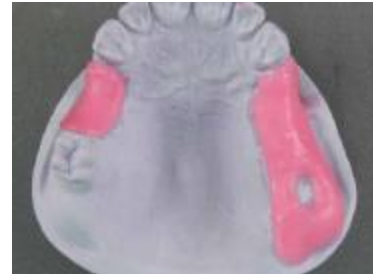
FLEXIACETAL

For years, partials have been made using metal. The metals and equipment used to cast partials have improved over the years, but there haven't been any real changes in materials. However, thermoplastics have become a popular alternative to metal. One such thermoplastic material is FlexiAcetal and it has many advantages over metal. A framework processed with FlexiAcetal is stable, metal free, lightweight, comfortable, cosmetic and biocompatible. It's so biocompatible that this acetal resin is used for the handles of surgical tools and heart valve parts because of its acceptance into the body. Also, you can process it using less expensive equipment than traditional metal casting. In this article you will learn step-by-step how to process a FlexiAcetal framework.

Block out the model using base plate wax (**Image 1**). Notice there is a large tissue stop so the partial will be stable in the mouth during the framework try in and to keep the partial stable during the packing or injecting of the acrylic. Remember this is a semi-flexible resin so under pressure, without proper support, it could move. Duplicate the model using expansion stone (**Image 2**). FlexiAcetal resin shrinks as it cools, so an expansion stone is needed to counteract the shrinkage of the material. If you do not use expansion stone, you will not get consistently good fitting frameworks. After the stone sets, paint the model with thermoplastic model separator, which will leave the underside of the appliance very smooth (**Image 3**). Flexiacetal resin does not absorb liquid, so staining cannot occur on the inside. Staining can only develop on the outside there for it is very important to keep the outside surfaces smooth.

When thermoplastic model separator sets (about five minutes) start waxing (**Image 4**). Place 10 gauge rope wax 2mm below the blocked out area. This will establish the external finish line. Use the same 10 gauge rope wax to outline the major connector (**Image 5**). The partial is not precisely waxed, but this is not metal so you will spend less time waxing because you can easily remove excess material after injection. Use hot wax to fill in between the major connector borders (**Image 6**) and place a layer of wax on the saddle area. Do not wax retention holes on the saddle areas, they will be added later.

Invest the lower half of the partial using yellow buff stone (**Image 7**). Attach sprues using 3/16 utility wax. The base of the sprue should be 4mm to 5mm across. The sprues thin down to about 1mm to 2mm across where they enter the appliance (**Image 8**), which keeps the appliance from warping and stops bubbles from forming where the sprue attaches to the partial. Boil the wax away and trim off any areas of stone that might break off and flow into the appliance during injection (**Images 9, 10**). Inject the case.



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Generally, because not all machines can be calibrated, the temperature for processing the Flexiacetal is 400°F (205°C). The hold time is 20 minutes when loaded into a hot machine. It is recommended to measure the heating system you are using with a temperature sensing device to ensure the proper melt temperature.

Image 11 shows examples of what to look for when evaluating the machine's proper temperature. The first appliance (left) shows an injection that is too hot. The appliance has stone stuck to it and flash. The second appliance (middle) shows a perfect injection. Not too shiny with a slight dusting of stone on the surface. The third appliance (right) has been processed at too low a temperature and the material is shiny with a wrinkled orange peel surface. **Image 12** shows the injected partial. The look of it indicates the proper time and temperature was used.



Image 13 shows the burs that will be used to finish the framework (from left to right):

- A reversed cone carbide bur used to define the internal and external finish lines.
- A diamond saucer bur used to create an undercut in the internal and external finish lines.
- A diamond disk used to cut off the sprues.
- The next three are all carbides of different sizes and shapes these are used to shape and contour the appliance.



The reverse cone carbide works well to define the internal and external finish lines (**Image 14**). It makes a flat wall for the acrylic to butt up against. Once the finish lines are defined with the reverse cone, go over them with the diamond saucer bur (**Image 15**). This will make an undercut into which the acrylic will lock. These frameworks are stable in the mouth, but they do have some flexibility. The reason to make the framework with an undercut is so there is a lock between the acrylic and the framework.



Finalize the thickness of the frameworks clasps and major connector (**Image 16**). The clasps should be thick at the base but much thinner from the middle to the tip. The major connector should be between .7mm and 1mm thick. When you have the framework properly contoured create your retentive area on the saddle. **Image 17** shows the finished and polished appliance. The major connector is designed with a strap, which offers stability for flexible appliances. No matter what flexible material you use, try to have a cross arch strap. That strap will keep the appliance from being forced out facially during mastication.



When placing the partial on the model the appliance will snap into place (**Image 18**). The Flexiacetal frameworks should fit tighter on the model than in the mouth. The Flexiacetal



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framework will fit with more retention to a dry rough model because of the friction. When the partial is placed in the mouth it will fit less tightly because of the saliva and the smoothness of natural teeth. **Image 19** shows the contour of the clasps, which are thicker at the base and thinner from the middle to the tip. Keep in mind that the FlexiAcetal comes in pink as well, so you could make the framework in pink and the clasps in tooth color. For that process you are talking about one step to make the framework and a second step to place the clasps.



Image 20 is an example of clasping in the anterior. The clasps are small and cover less than half the facial of the teeth. FlexiAcetal clasps are flexible and can catch undercut on the mesial of the teeth. This appliance snapped into place and is very retentive. Because the clasps can flex into the deep undercut, it removes them from the smile line (**Image 21**). FlexiAcetal clasps are tooth colored, small and out of the smile line making a very functional and cosmetic appliance.



Image 22 shows an example of clasping in the anterior. You can bring the clasp down to about .5mm from the gingival. If possible, it is best not to make contact with the gingival because that could cause soreness or even periodontal problems.



Images 23 and 24 show a framework with the acrylic processed. Make sure when getting the shade from your doctor that you request a denture tooth shade and the shade down toward the necks of the teeth. The reason for this is evident as the clasps are down low on the teeth and the teeth tend to be darker in that area (**Image 25**).

