B.J.B. WATER CLEAR TIPS:

MOLDS: All BJB WC series products produce most optimum results when cast into Platinum based (addition cure) silicone molds. *Some customers have had success in casting the 80 Shore D water clears (*never any of the lower durometer products*) by baking out their Tin based systems overnight at 150°F or utilizing a well aged mold. This allows the methanol that causes the inhibition to dissipate.

For best results from silicone molds, we recommend allowing the mold to cure fully, rinsing the mold in a light solution of dishwashing detergent and warm water, then rinsing well with warm water and drying well before casting. Avoid scrubbing the mold as it could affect surface detail on your mold.

Other mold mediums may be utilized but keep in mind that the surface of the mold will be duplicated. You cannot obtain a glossy part from a rough mold. It is also important to remember that keeping the temperature of the mold and the WC material close to each other will eliminate inhibition and chill marks.

RELEASE: Most mold releases will cause fogging or clouding of the part surface with the WC series. We have seen excellent surface clarity when using the Mann ER-400 or the Chemlease 77. Recommend that testing be done if the customer insists on another product.

VACUUM VS. PRESSURE: While both of these processes work well separately for eliminating air bubbles in the part, using both will often produce the best results. Vacuum will generally eliminate 97% of the air and low pressure (40-60 psi) can diminish the remaining amount.

Vacuum: When using vacuum it is best to de-air the material after mixing parts A & B together *before* casting the part. In most instances you will see the material continue to "bubble" under vacuum. An easy rule of thumb for pulling vacuum is to mix A & B, pull vacuum, break, wipe sides with a stir stick, and pull vacuum again. This should break the surface tension and eliminate continued "bubbling". BJB offers the AF-4 for assisting in de-aeration during vacuum. The AF-7 works well when using WC-786 for dual-cartridge dispensing and pulling vacuum on the "A" & "B" sides separately before loading.

Pressure: Generally using 50-70 psi works best when using pressure without utilizing vacuum first. It is important to add pressure gradually when using silicone molds. Putting the pressure on too fast will very often distort the mold. When using pressure it is important to take temperature into consideration. The temperature in most pressure tanks is less than 77°F and will often cause the material to cure slowly or to inhibit a through cure, especially if cast in a thin section. We recommend that the customer utilize a heater band on the pressure vessel when possible.

CURING: The flexible water clear products can be cured with elevated heat for faster demold times. However, heat curing has proved to compromise the finished physical properties – mainly tear strength and elongation. Slightly elevated temperatures (80-85°F) will assist in giving thin sections a "kick" for curing but any additional temperature would be detrimental to the finished properties.

For more information call BJB Enterprises, Inc. (714) 734-8450 FAX (714) 734-8929

Trouble Shooting Tips:

Surface is tacky: Did the part see adequate amount of time in the mold?
Was a tin based silicone mold utilized?
Was thin wall (1/8" or less) given a "heat boost"?

Part is Foggy: Was it cast cold? (under 77°F-80°F)
Was a suspicious release agent utilized?
Was another material cast in the mold before the WC?

Shrinkage: Was part in a two-part mold with risers?
Was part mass cast without risers?

Part Shatters from Mold: Was the mold cold when the part was cast?
Was the material preconditioned (warmed)?
Was the part left in for the full recommended time before demolding?

- Optimal results occur when the material is processed and *postcured* as stated on the technical data sheet, especially when the cast is done in a thin wall section.
- Casts done 1/8" or less will require slight temperature increase to promote internal exotherm.
- Clear casts that come from the mold looking "cloudy or hazy" have most likely been cast at lower than ambient temperature (75°F), has been cast in a mold that has not been finished, or has been used with a release that would cause the cloudiness. Determine temperature of materials with a thermometer, not the thermostat for your room!
- Shrinkage will occur with large cast parts, even when utilizing the longer work life materials in thicker masses. Closed molds with feed gates are highly recommended in those applications.
- The WC series of polyurethanes can all be tinted to translucent colors or pigmented for opacity.

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TIPS FOR POLISHING WATER CLEAR POLYURETHANE PARTS

To achieve the best finish possible on water-clear urethanes, a post-cure is required regardless of part size. Follow the instructions provided on the data sheets for post-curing operations.

The surface condition of your part will dictate where you are to begin finishing and will determine the grit of sandpaper required.

To finish/polish a machined part (milled, saw cut or lathe turned finish), begin with the finest grit sandpaper possible to produce a flat surface free of tool lines or steps. 800 grit wet/dry sandpaper will provide a good place to start. Utilize a hard, flat acrylic or hardwood block. Rubber blocks or your hand may cause unevenness and will provide a wavy surface on the final polish. Take extra care to maintain an even surface if you are working with a curved or rounded part, and are hand-sanding.

Soak the sandpaper in water for 1 to 2 hours prior to sanding to soften. Add a small amount of dishsoap to a spray bottle or bucket with water to lubricate while sanding (keep the surface wet). This mixture will avoid loading the sandpaper.

Begin sanding in one direction only until the surface is flat and uniform in appearance without noticeable tooling step lines or defects. If you find the defects are too deep and are difficult to remove, you should switch to a lower grit sandpaper and proceed until they are completely removed.

Continue sanding with higher grits, i.e.; 600, 800, 1000, 1500 and 2000. If you have obtained a flaw-free surface early on, these steps will go quickly. Rotate 90 degrees each time you change grits. Continue to sand across the last completed grit area. This step will assist you in perceiving the previous lines, and when they are gone you may move to the next grit. When you reach the 2000 grit paper, you should be able to note a slight shine to the surface. This will help you determine whether you have removed all flaws. If so, proceed with the polishing steps.

High-speed buffers tend to work well on metals but will burn plastics quickly. Lower speeds perform better, and the heat build-up can be controlled. Finishing with a foam buff pad tends to provide better results than with the use of traditional wool or cotton.

3M products have proven excellent for polishing urethane. Start with Finesse It compound in a cup. Apply a light film onto the part with a chip brush. Do not allow the surface to dry out for long while buffing. Continue to re-apply the compound. Monitor the surface temperature – warm is good, hot is not. This step will provide a high shine on the part. In some instances, this may be enough of a polished finish for your part.

For a higher sheen, utilize a new buff pad using 3M's Imperial Hand Glaze in the same manner as the Finesse It. Though not intended as a machine compound, on the clear urethane product, it works beautifully. Then spray the part with Brillianize (an anti-static polish/spray available where acrylic products are sold). Hand buff with a polishing cloth or very soft flannel towel. Avoid terry cloth because it may scratch.

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