

# Luminar Products

ZIRCAR Refractory Composites, Inc., The manufacturer of LUMINAR Products, supplies advanced materials for hot glass slumping and fusing. No other mold materials are as strong, light-weight, versatile, durable, and easy to use. Our mold making materials are designed to be extremely stable while heated, resist sticking and, in most cases, can be re-used for a number of cast or slumped parts.

## Our products include:

**Mold Mix 6** which is a high temperature refractory Molding compound designed to allow replication of 3-D objects in glass.

**RS-DD Moldable Sheet** is a high alumina ceramic laminate sheet which has the ability to become pliable when wetted and regains its original strength when dried. Hot glass will not stick to it making it ideal for slumping molds as well as re-usable non-stick kiln shelf liners.

**Ceramic Papers** are premium grade, lightweight refractory alumina-silica fibers formed into highly flexible sheets.

**ASPA-1** contains a latex binder to provide increased handling strength at room temperature.

**ASPA-2** is produced with no organic volatiles and will not produce smoke or odor when heated.

**ASPA-970** is formed into highly flexible and drapable sheets.

**RSPA-SOL Body Soluble Papers and RSBA-SOL Body Soluble Blankets** are thermal insulation products capable of withstanding continuous operating temperatures up to **1260°C (2300°F)**. The Silica-Magnesia fibers are body soluble and are designed to have enhanced in-vitro solubility characteristics which enable them to meet European regulatory requirements for synthetic vitreous fibers (European regulatory requirements directive 97/69/EC).

**SB-2000 Silica Blanket** is an extremely strong high temperature insulation blanket made of mechanically interlocked continuous filament amorphous silica fibers with useful properties to temperatures of 1093°C (2000°F). It is great for Bead making insulation.

**RS-100 Fusing Sheet** is a rigid reinforced structural alumina composite material which is ideal for use as glass kiln shelves and furniture in certain applications.

**RSBD-LD and TYPE RSBD-HD Ceramic Fiber Boards** are rigid, high temperature insulation manufactured in a wet forming process using alumina-silica fibers and binders. They are rated to 1260°C (2300°F) and have densities of 0.26 g/cc (16 pcf) and 0.46 g/cc (25 pcf).

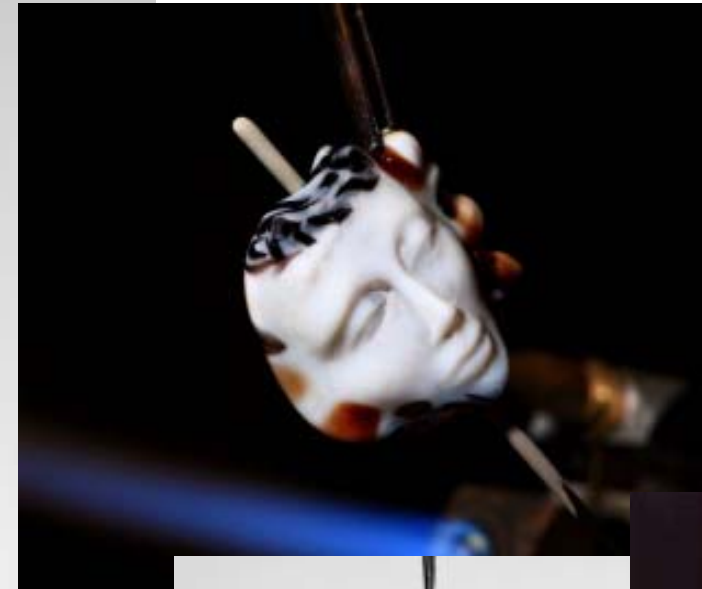
**RS-A Moldable Blanket** is a wet blanket that can be easily formed into a wide variety of simple and complex shapes. Drying results in a strong rigid shape that can be re-wet to restore the original moldability. It is ideal for large slumping molds requiring greater strength or as kiln repair material.

**ALUMINA COAT** is a water solution of high purity alumina. It is an excellent bonding agent for **Moldable Sheet** and a rigidizer for **Ceramic Paper**.

**RS-BNCoat Boron Nitride Coating** is a high temperature, anti-stick release agent/lubricant for glass forming. It is available in a paint or as an aerosol. The aerosol allows easy application of uniform, thin layers, and the acetone/alcohol based carrier assures fast drying. Type RS-BNCoat is useful to temperatures upto 1093°C (2000°F) oxidizing (air) atmospheres.

**RS-SPG Graphite Aerosol** is a superior enhanced graphite dry film aerosol spray that that acts as an ideal anti-stick release agent/lubricant in many glass applications. RS-SPG provides great adherence to most all surfaces such as Mold Mix 6 molds and is fast drying.

## MAKING OPEN FACED PRESS MOLDS USING LUMINAR MOLD MIX 6



## Artist Statement

Melanie Rowe has been a glass artist for 30 years. She and her twin sister Leslie Rowe-Israelson have been experimenting with Mold Mix 6 as their mold of choice for the past 25 years. The twins have kiln cast with ZIRCAR Mold Mix 6, hot cast into life size forms; and bronze cast into Mold Mix 6; so it seemed the obvious next step was to develop away to create molds for Flame working.

Photography by Andy Chamberlayne.

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# MAKING OPEN FACED PRESS MOLDS USING MOLD MIX 6

ZIRCAR Mold Mix 6 is a refractory-molding compound designed to allow replication of three-dimensional objects in glass. It comes as a paste, which is applied to a suitably prepared pattern and hardens upon drying. Properly prepared molds of Mold Mix 6 will resolve the finest details and possess good strength. However, it remains sufficiently pliable to permit easy removal after annealing. Mold Mix 6 is highly resistant to reaction with hot glass and gives the fired work a high quality surface free of hazing common to investment type molds. Mold Mix 6 may be used for hot casting, kiln casting methods and slumping, all with excellent results. The greatest advantage of Mold Mix 6 is its ease of use. Our Users Manual will show you how to use it most effectively.



1. Preparing Your Wax Positive Model for Mold Mix 6.



2. Preparation of Mold Mix 6.



3. Prepare glass twists for decoration.



4. Molds sprayed with dry graphite and placed on copper scrub pads to cushion mold while pressing molten glass into it.

Mold mix 6 molds are lightweight and thin walled molds, which can be used for repeated pressing. Therefore, you want to make the wax positives thin walled also. The reason for this is, microcrystalline wax expands when heated. If you make the wax model out of solid wax, when you are burning out the wax from the mold mix 6 mold, the wax will expand and may crack the mold. Keep the wax wall thickness to no thicker than 1/4" total. Mold Mix 6 will reproduce incredible detail, so make sure that there are no imperfections in your wax positive. **Remember to have NO undercuts in your open face mold.** Undercuts may trap molten glass and damage the mold.

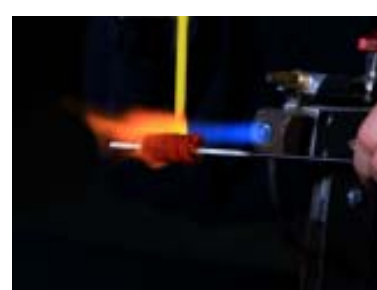
Using a hand held mixer, first, mix the mold mix 6 in a tall milkshake container until it reaches a pourable consistency. **DO NOT ADD WATER!** The agitation will cause the Mold Mix 6 to become runny. Because the mold material is white in color and you apply the Mold Mix 6 in thin even coats to the surface of the wax, use food coloring to dye the Mold Mix 6. Mix up three different colored batches. This allows you to see that you are applying the layers evenly. Put the mixed Mold Mix 6 into airtight containers. This is very important or the Mold Mix 6 will dry out. Using a paintbrush, apply thin layers of Mold Mix 6 and let them dry between coats. Build up the thin layers to a total wall thickness of 1/8<sup>th</sup> inch. You can speed up the drying process by placing the mold in front of a fan. Do not dry the layers with heat, as it will cause the wax positive to melt, which will leach into the Mold Mix 6 and cause delaminating of the layers of Mold Mix 6. When the mold is completely dry, you can start burning out the wax.

To "loosen" or "burn-out" the wax, use DRY HEAT. **DO NOT USE STEAM**, as it will add moisture back into your dry mold. A propane torch is used for this method. You **MUST** burnout your molds outdoors. Place your mold upside down on a steel grate, which is placed on top of a metal garbage can. Fill the can with 1/3<sup>rd</sup> water. Using a propane torch, evenly heat the mold with the flame held at a horizontal angle. The wax will melt out of the mold and float on the surface of the water. After the wax is completely melted out of the mold, it looks clean of any wax residue and turns completely white. If you still see black residue on the mold fire the burned out mold to

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5. Build up molten glass around mandrel that has been dipped in bead release.



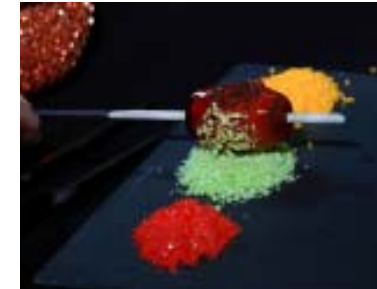
6. Adding volume and colour to mandrel.



7. Adding more colour.



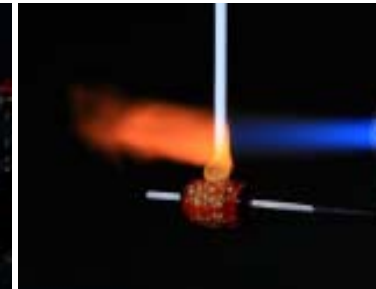
8. Shaping molten glass bead



9. Rolling and picking up System 96 Uroboros frit.



10. Melting frit in flame.



11. Adding volume for face to fit into mold.



12. Decorating with dots and twists.



13. Adding more dots of colour.



14. Using flame to cut glass from rod.



15. Shaping bead with graphite paddle.



16. Final bead shaping then get bead really hot and molten



17. Quickly lay bead into mold supported with copper scrub pad.



18. Press molten glass into mold.



19. Quickly remove the graphite paddle used to press glass or it will chill the glass



20. Give a light tap to the mold and pull the bead out of the mold



21. Fire-polish any chill marks caused by graphite paddle. Keep face out of flame. Mold Mix 6 does not cause chilling, so there is no need to fire-polish face.



22. Place finished bead into annealing kiln.



23. Flame-working tools and Mold Mix 6 press mold



24. Finished Bead

1400°F to completely clean out any residue, making the mold ready to apply a kiln wash. Use a kiln wash for glass, as this will prevent the glass from sticking and give your mold a longer life. In your kiln completely dry the moisture out of the kiln wash at 300°F. The last step is to spray the kiln washed mold with DRY SPRAY GRAPHITE Type RS-SPG.

**Important Tip— Spray graphite after every press made with molten glass. This will extend the life of the mold. The Artist has been using some of the same molds for 5 years.**