



Ceramic Slumping Molds from Divine Glass Design

Ceramic molds are an economical, easy to use and practical form of mold for slumping glass. Most are made by a slip casting technique (slip being a liquid form of clay) in the same way as many hobby ceramics pieces are made (also known as greenware).

But beware - not all greenware is created equal. Most greenware is designed to be painted or decorated and fired with no other weight on it and for a limited number of times (2 ~ 3) at moderate temperatures and firing rates. A good glass slumping mold on the other hand needs to be able to be fired multiple times - carrying also the weight of the glass to be slumped (which is often heavier than the mold itself) - and whilst glass slumps at relatively low temperatures they are often reached relatively quickly. For instance, when curing kiln wash on molds, it is common to ramp the kiln at 600°/hour to 260° - a rate which will cause many ceramics to break. Even following manufacturers recommended firing schedules for a 250 mm x 6 mm fused piece, ramping will often be at far faster rate than recommended for most hobby ceramics greenware.

This means that a glass slumping mold needs to be well designed; well made and comprised of clays which are strong; have high resistance to thermal shock; can be worked to remove any textures arising from the manufacturing process; and will accept a good coating of kiln wash.

We only sell molds which have been tried and tested in our studio over a long period of time and which have proved themselves to be reliable in regular daily use.

Mold shapes

When you look at a mold you must try to imagine the shape of a piece of glass slumped over or into it. Inevitably that means that some beautiful looking molds can produce ugly pieces of glass and conversely some ugly looking molds produce beautiful finished pieces – a great example of this is the round scallop plate mold. For this reason, we are using pictures of glass produced in the molds rather than the molds themselves.

We do not generally recommend slumping glass over (as opposed to into) ceramic molds with square edges as our experiences have not been positive with the glass contracting more rapidly than the ceramic - often trapping the mold or breaking the glass.

Mold Sizes

A mold can accept a piece of glass up to but not larger than the size specified. The actual mold may be slightly larger – if it seems like a tight fit in your kiln please check with us as to the actual size of the mold as opposed to the glass it accepts.

Venting air

Every time you slump into a mold you need to think about how you will prevent air being trapped between the mold and the glass. If air is trapped, you may well end up with large (ugly) bubbles in your finished piece. Air expands at an exponential rate so a small bubble at 500° is golf ball size by the time it heats to 670°.

Many molds have small vent holes to allow air to escape. We have found these to be less than effective at times, particularly when the glass slumps irregularly across the piece – as is often the case with geometric patterns. Some glass colours absorb more heat than others and slump first. Sometimes one part of the glass will slump over (and seal) the strategically placed vent hole which renders it useless. Additionally, we discovered that when molds cracked they almost inevitably cracked from or to one of the vent holes which had been a form of weakness in the ceramic structure.

We recommend for all ceramic molds that in addition to kiln washing, they receive a light dusting of china clay. This china clay allows multiple pathways for the air to escape as well as preventing the glass dragging on the mold as it slumps – appropriately named “stretch marks” – and, for transparent glasses, the china clay adds an extra sparkle. Therefore we do not put any vent holes in small or gently sloping molds. Where a mold shape does require vent holes – i.e. drops over square edges – we drill the vent holes after the mold has been fired.



Kiln washed



Dusted



Dusted (detail)

How long will a mold last?

It is impossible to say how many firings you will get out of a particular mold – suffice it to say that you should regard them as consumable items and keep a spare of your favourite shapes. Unfortunately, some molds will crack on their first firing, others will last for literally hundreds of firings. We even have some shapes that the only time we have broken them has been from bad handling and not from use in the kiln.

Dropping them; banging them together; or storing different shapes on top of each other is definitely not recommended and in our experience is the greatest cause of failure.

The other major destroyer of molds is thermal shock. If your kiln is front loading then never, ever open it whilst above 50° when it has a ceramic mold in it – in a front loading kiln the molds are actually more susceptible to thermal shock than the glass. (as a rule we don't recommend the use of front loading kilns for glass work)

A good glass kiln needs to have even heating – i.e. elements all around the piece and be digitally controlled with a PID controller. In our experience you can't fire glass successfully manually, with a pyrometer or some of the allegedly "digital" controllers on the market.

Always allow plenty of air circulation around the mold in the kiln - at least 50 mm all round. If the kiln is 300 square then the maximum mold size is 200 mm; 400 is 300 etc.....

Place the mold on fibre or props - not a kiln shelf. A kiln shelf is generally a heat sink and therefore significantly colder (during heat up) or hotter (during cool down) than the rest of the kiln - that sort of temperature variance may cause breaks.

As a general rule, shallow molds, thickly constructed, should give long service. Steep or thin molds last lesser times. In the catalogue we have rated each mold-

A – Very durable – in our experience, unlikely to break in firing.

B – Durable – in our experience, likely to survive a moderate number of firings

C – Extra care required – in our experience, a design which has not proven to be durable.

These ratings are a guide only and based on our experience with the molds in our studio and our kilns. Given that the use of the molds is outside of our control, there is no warranty offered as to the number of firings any mold will deliver.