

## **20 Things You Always Wanted To Know About Stonecasting**

### **1 What stones can be cast using this technique?**

Diamonds, sapphires, rubies, garnet, aquamarines, peridots and cubic zirconia (in any colour and shape). The most critical point is the clarity of the stones. Any minor carbon inclusions will cause disastrous cracking to occur in any type of stone. Other types of stone have been found to change colour. Any shape can be used but more care needs to be taken with princess cut stones because they seem to be more difficult to handle.

### **2 What damage can I do?**

Natural stones can be burnt. This gives a roughened surface and a slightly cloudy appearance inside the stone. Follow the firing instructions carefully to avoid this problem and do not overheat the metal. Flawed stones are very likely to be badly cracked or chipped if subjected to heat. Badly fitting stones can be crushed by the contraction of metal around them or may fall out of the setting during the investing process. The answer to both of these problems is to use good quality stones and to size them accurately before setting.

### **3 How safe is it?**

SRS Stonecast has been widely used around the world for the last 5 years for casting diamonds in place. It is a well-tried and tested method, used for a wide range of product styles and with a wide range of production methods. The only secret is to follow the instructions carefully.

### **4 What size stones can be cast in place?**

The largest stones that we have seen successfully cast in place were 12mm cubic zirconia.

### **5 Do I need to make changes to the model?**

Minor changes are required to ensure that the stones will fit snugly into the waxes whilst allowing for any metal contraction.

### **6 What type of wax should be used?**

The easiest type of wax to use will have good flexibility to set the stone and sufficient resilience to spring back and hold it securely in place.

### **7 Do I need to make any changes to the wax pattern?**

The stones need to fit exactly into the wax pattern, claws may need to be adjusted accordingly.

### **8 Do I need to alter the sprue?**

The sprue should be as heavy as possible.

### **9 How should the stones be handled?**

SRS recommend that the stones should be handled with vacuum tweezers. Small stones are very difficult to handle. Excessive handling can lead to a greasy layer on the stones and this can cause metal to flash over the surface in a thin film.

### **10 Which powder should be used?**

Use SRS Stonecast for natural stones and SRS Classic for cubic zirconia.

**11 Are any changes needed to the investing process?**

The investing procedure is exactly the same for casting stones in place or for plain work. SRS Stonecast contains everything needed to invest natural stones and Classic is ideally suited for synthetics. Just follow the instructions given on the leaflet in each bag and drum.

**12 Should the flasks be dry or steam dewaxed?**

Either. The most important thing is that the flasks are completely free from wax residues at the time of casting.

**13 Do I need a different furnace?**

This is one of the most critical points of the process. Firing with natural stones requires a lower burnout temperature (maximum 630°C/1166°F) and this can give a poor burnout. Any carbon residue from the wax left on or adjacent to the stones can lead to burning of the stones and so it is vitally important that there is a good air flow through the furnace during the burnout procedure. This is easy to achieve in gas fired furnaces but electric furnaces may need extra ventilation holes drilling through the brickwork at the bottom or through the door. It is also important that air can flow underneath and up through the flasks so do not stand them directly onto a solid floor.

The burnout cycle for synthetic stones is exactly the same as plain gold and so no changes are needed to the furnace.

**14 What temperature should be used in the burnout furnace?**

Accurate temperature control is vital and an electronic controller is the best option. Cubic zirconia can be fired up to 730°C/1346°F in your usual investment powder. Diamonds and other natural stones should be fired to a maximum of 630°C/1166°F following the firing cycle given by the manufacturer.

**15 What metals can be used?**

Any gold, silver or brass alloys can be used.

**16 What metal temperature is required?**

Whatever temperature is recommended by the alloy manufacturer for the type of piece being produced. There have been some problems caused by overheating nickel-containing golds in hand pouring and vacuum only machines to improve metal fluidity. A vacuum plus pressure system is by far the best type of casting machine to use.

**17 Can the flasks be cast centrifugally?**

Yes.

**18 Can torch melting be used?**

Yes, but care must be taken not to get the metal extremely hot.

**19 How is the investment removed from the castings?**

The safest method is to allow the flasks to cool to room temperature and then knock the castings out with a punch and hammer or water blast them.

**20 How can the rings be finished?**

A variety of methods can be used. The most common is to water blast the castings to remove most of the investment and then to pickle the metal in investment remover. The castings can be polished in a magnetic polisher.