

Farbglashütte Reichenbach GmbH

Technical references for cast glass

Farbglashütte Reichenbach GmbH has developed a range of transparent stained glass that is particularly well suited for the casting of plaster moulds etc.

It has the following characteristics:

- The entire colour palette is created using the same base glass. This results in uniform melting and casting behaviour. It is possible to mix all colours with one another.
- Low viscosity at the recommended casting temperatures.
- High devitrification consistency.
- Low cooling point and therefore low relaxation temperatures.
- Optical clarity, high refraction index and high dispersion.

Important technical parameters:

Linear coefficient of expansion: 96×10^{-7} (20-400 °C)

Density: 3.6 g/cm³

Recommended casting temperature range: 790-850 °C

Upper cooling point: approx. 475 °C

Details concerning the processing of gold ruby, other gold-based colours and silver-based colours

Here, the colour is created through finely dispersed small metallic gold cubes. Only when allowing clouding at a specific viscosity does the colour develop. The colloidal separation of the gold, that is to say condensed in an ultra-microscopically fine form in the glass, results in the typical gold ruby hue. The same applies to silver and essentially also in the case of copper ruby.

The processing of gold and silver based colours requires a knowledge of this process, since the success of the work is highly dependent on this.

Monitoring and control, and a precise awareness of the conditions at the kiln are important in order to achieve the desired hue in the end product. For this reason, the user should carry out a small degree of experimentation in order to reach the required confidence.

In essence, the following applies:

Colouring depends on the size and number of colloidal gold particles. During the heating up of the glass mass, a few small particles initially result, which bring about a brownish gold ruby hue. With increasing temperature and therefore the accompanying time process, the number and size of the particles increase. The initial brown gradually turns into violet. During the course of this process, the typical gold ruby develops. If the time period or temperature is excessive, the individual particles become too large, and the glass becomes livery and spoils.

We recommend slow heating up of the gob to a casting temperature of approx. 790 - 850 °C. When the glass has fully melted into the form, reduce the temperature to approx. 700 °C. The volume of the product also needs to be taken into account here. In the case of a higher mass, temperatures only drop slowly at the core. Reaction time is then longer. The danger of turning livery is therefore still a possibility during the cooling down process. Hence, it is necessary to maintain the temperature of approx. 700 °C for 1.5 to 4.0 hours. After this, the temperature should drop to the cooling temperature range relatively quickly.

It is advisable to have a small glass sample in the kiln. This sample can repeatedly be taken out quickly in order to check whether the colour is moving in the direction of ruby red.

When mixing with other colours, there may be changed clouding nuances. It should also be noted that reducing agents and a reducing flame in the kiln can lead to colour changes.

Details concerning the casting of opal white 1100

Opal white, just like gold ruby, is a kind of tarnish. Lead phosphate droplets develop. The number and growth of these droplets influence transparency and lead to semi-transparency through to a rich opaque.

The delivered raw material is transparent. The specific degree of opaqueness develops based on the duration and extent of temperature treatment.

Initially experiment with smaller samples, since conditions vary from kiln to kiln. As a principle, as in the case of other colours, a melting temperature of 790 to 850 °C applies. Subsequently lower the temperature to approx. 600 °C and maintain this for between 10 and 20 minutes depending on the size of the object.