Fusing with OPALIKA® and ARTISTA ®: It works!

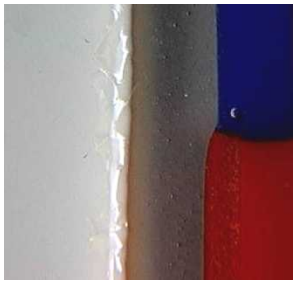
On the basis of many discussions with enthusiastic users we know that OPALIKA® is being used more and more for fusing with ARTISTA®. The purpose of this article is to provide the necessary background information and tips to enable you to successfully overcome one or two minor hurdles.

Similar basic glass

OPALIKA® white flashed opal glass is a machine-drawn, fire polished two-ply glass comprising a colorless base glass that acts as a substrate and a thin layer of white flashed opal glass. Depending on the thickness, formats of up to 1600mm x 2400mm can be supplied. The composition of the transparent base glass is very similar to that of ARTISTA®. For this reason there are basically no problems as regards fusibility. The difficulties that arise in working the glass result from the behavior of the flashed layer which is caused by its composition.

Crystallization and its consequences

The light diffusion of the white flashed layer is caused by alkali fluoride crystals deposited in the body of the glass. Light falling on the glass is broken up over and over again and reflected on the outer edges of the crystals. The result is virtually ideal diffusion of the light. The crystals and the glass phase surrounding them have a common linear expansion which corresponds to that of the clear substrate.
In the course of melting and bending processes of the type normally involved in fusing and sagging or bending the glass goes through temperature ranges, however, which cause changes in the structure of the flashed layer.



Flaked edge resulting from change in crystal structure.

Wall panels incorporating ARTISTA® and OPALIKA® in the Bad Kissingen foyer
Contractor: Glaswerkstätte Rothkegel, Würzburg

After thermal processing the composition of the relatively thin flashed layer has changed more or less considerably as regards the number, type and size of the crystals deposited in it.
Increased opacity can be seen with the naked eye. This change to the properties of the glass is often welcomed by users.

There is, however, an extra phenomenon that occurs and this can cause significantly more headaches. With the change to the structure of the crystals the thermal expansion behavior of the flashed layer also changes. The extent of this change to the properties depends on how high the temperature is and the length of time the temperature is applied.

Simple bending work with OPALIKA® at (relatively) low temperatures is not critical as regards these effects.
Fused OPALIKA® on the other hand has a tendency to suffer surface cracking which causes chipping especially at points where it joins up to pieces of colored ARTISTA®.

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In the case of glass items, which appear to be acceptable after fusing, it is not unusual for crizzle-like cracks to appear all over the surface after a further stage involving temperature, e.g. when slumping (bowls, etc).

Cracks and splits after fusing.

However, the behavior referred to above should be taken by anybody as a reason to immediately throw in the towel. To avoid the effects described above we have the following

Practical tips:

1. When the flashed opal layer is completely covered with colored or clear ARTISTA® overlays, flaking does not occur.
2. If the opaque side of OPALIKA® is placed downwards on a shelf primer in the fusing kiln, unsightly adhesions can result which cannot be removed by cleaning. Direct contact with fiber paper is likely to be more successful. Any traces of paper which are found sticking to the glass after fusing can be easily removed with water and a brush. Flaking has not been observed to date when this method has been used.

With OPALIKA® creative minds have a material at their disposal whose good light diffusion properties make it eminently suitable for lighting applications and large fused surfaces where transparency is to be deliberately avoided.

Because of thinness of the opaque flashed layer, applied colored glass is very effective when backlit. Body tinted opaque glasses on the other hand absorb significantly more light as a rule.

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ARTISTA® FORUM-TIP

As the manufacture of opal glass is always dependent on the presence of a certain controlled crystal phase, the mechanisms occurring in the heat treatment of OPALIKA® can be transferred to the opal-bodied opaque glasses available on the market.
It is also necessary to take into account the wide range of faults that can occur, starting with surface devitrification after the first heating upcycle up to breakage after several such cycles.