

Unleaded glass colors Series G 26/ 27

(Firing Temperature 550 – 600°C)

General information

The unleaded glass colors of the Series G 26 have a very low melting range. They are used mainly for the decoration of borosilicate glass - such as cosmetic packaging, OPC-points, Code-Rings and signatures of ampoules.

For the decoration of the Breaking-Ring of ampoules we recommend to use our G 27 colors, which have the same technical specification as the G 26 colors, but are optimized for this application.

The colors can be delivered as powder or pasted ready for oil-based direct printing (standard unit 5 kg).

Characteristics of the powder colors

Particle size diameter is for 95% lower than 15 µm.

The colors of Series 26/ 27 are lead-free. With the only exception of some colors, which contain cadmium pigments, the colors are cadmium-free as well.

The colors are also lithium-free, so there are no limitations concerning the decoration of bottles that are under pressure after having been filled (carbon dioxide-containing beverages).

The colors are only partially miscible with each other.

The thermal expansion coefficient of the colors is approximately $57 - 65 \times 10^{-7}/K$.

Characteristics of the fired colors / Resistance

The essential property of decorations fired with the colors of this Series is the brilliance and color intensity. The colors have no dishwasher resistance.

Printing conditions

Colors of the Series G 26/ 27 have to be homogenized with a three-roll mill. Uninsufficient homogenization can lead to matt or rough surfaces.

Direct screen-printing and decals

The layer thickness of color pastes is not only determined by the screen mesh and the pasting ratio. There is also an influence of the squeegee itself, the angle and the pressure applied with the squeegee, the film coating and the printing speed.

For borosilicate glass we recommend one layer of maximum about 10 microns to avoid cracking of the colors after the firing.

The following details are only a recommendation. The exact ratio has to be adjusted by the printer himself, depending on the medium and the kind of decoration.

Pasting ratio:

| | | |
|------------------|-------------|-------------------|
| Color powder | 100 parts | |
| Medium | 55-60 parts | (decal printing) |
| Medium oil-based | 25-30 parts | (direct printing) |

Screen fabric:

| | |
|-------------------|-------------------|
| Polyester screens | 77-120 threads/cm |
| Steel screens | 220-300 mesh/inch |

In principle all media and cover coats are applicable in combination with the colors.

Firing conditions

The colors can be fired at a temperature of 550 - 600°C with a sufficient holding time. With holding times from 10 to 15 minutes a smooth firing result is reached already at 580°C. With lower holding times a higher firing temperature has to be chosen.

When firing the decorated item the firing temperature and the firing period have to be adjusted to the substrate and the kiln. During the first firing stage (up to approximately 450°C), when organic auxiliary substances burn, a good ventilation is decisive for the quality of the decoration.

Storage

The color powders have to be stored in a dry place, in sealed containers. When they are processed with oily media the powders have to be completely dry. If powders have absorbed humidity this leads to cheesy pastes that cannot be processed perfectly.

Safety

Ceramic colors are chemical products. Special safety guidelines of the Ordinance on Hazardous Substances and the pictographs on packaging and safety data sheets have to be observed.

Information

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