

Unleaded glass colors Series G 65

(Firing Temperature 600 – 650°C)

General information

The resistant glass colors of the Series G 65 colors are used mainly for the decoration of drinking glasses and beverage bottles.

The colors are delivered as powder (standard unit 5 kg).

If required all colors can be delivered pasted ready for direct printing, either thermoplastic or medium/oil-based.

Characteristics of the powder colors

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

The colors of Series 65 are lead-free. With the only exception of some colors, which contain cadmium pigments, the colors are cadmium-free as well.

The colors contain lithium. Therefore they should not be used for the decoration of bottles that are under pressure after having been filled (carbon dioxide-containing beverages).

The colors are miscible with each other. There have not been any incompatibilities within the series during the whole development stage.

For reaching bright tones (pastel) we recommend a blending with our White G 65 165. This White G 65 165 we recommend also as white underlayer.

The thermal expansion coefficient of the colors is approximately 76 - 84 x 10⁻⁷/K.

Characteristics of the fired colors / Resistance

An essential property of decorations fired with the colors of this Series is – beside the color intensity – the good dishwasher durability as well as the high resistance to chemical exposure and mechanical stress.

The colors show a good durability in industrial dishwashers. Due to the variety of dishwasher types and detergents you always have to take individual test results into account.

Printing conditions

Colors of the Series G 65 have to be homogenized with a three-roll mill. Uninsufficient homogenization can lead to matt or rough surfaces. For a high glossy result after firing, the colors should be applied in a thick layer.

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.

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	60-65 parts	(decal printing)
Medium oil-based	30-35 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 600 - 650°C with a sufficient holding time. With holding times from 10 to 15 minutes a smooth firing result is reached at 620°C.

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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