FERRO
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Technical Information

Performance Colors & Glass

754 Series Lead-Free Glass Enamels

Product Codes and Color Shades

Table 1 Interference colors

Product No.	Color Shade	Product No.	Color Shade
117541	Green	**117542**	Bluish green
127541	Blue	**127542**	Violet blue
137541	Yellow	**177541**	Red
177542	Magenta	**187541**	Violet
107561	Flux		

Table 2 Metallic colors

Product No.	Color Shade	Product No.	Color Shade
137545	Metallic yellow	**197545**	Silver

Heavy Metal Release

Colors in the 754 Series do not contain voluntary additions of heavy metals that include lead, cadmium, mercury and hexavalent chromium (Cr6+). Ferro manages heavy metals in the 754 Series colors with controls in place to maintain the following limits: Lead content < 300ppm ; Cadmium content < 100ppm.

Application

Interference colors applied on dark background (e.g. cobalt blue or black) can achieve an intense bright and glossy tone. On light background, interference colors give the impression of a transparent coating that shimmers green, blue, red, or golden when viewed at certain angle.

Ferro's 754 series of interference colors is a lead-free range of container glass enamels formulated for the decoration of opal glass dinnerware and is also suitable for some types of glass tumblers.

It is not recommended for or the decoration of pressurized containers.

We recommend to over print flux 107561 for this system to improve the chemical resistance and attain good interference effect.

For direct and indirect screen printing, we recommend polyester screen 110-200 mesh/inch for table 1 colors and table 2 colors.

We recommend the following ratio of color to medium: Color powder: medium(80820)=10: 10 -12
Cover flux powder: medium (80820)= 10: 7-8
Please note: In order to avoid pigment breakdown, color pastes and color suspensions should not be processed in a ball

Miscibility

Interference colors of the similar shade are intermixable, different color group should not be mixed. Such as 117541 green can be mixed with 117542 blue green, but should not be mixed with 177541 red. we recommend performing preliminary tests before launching production with color mixtures from this system. Additional colors are available on demand.

Firing

We recommend firing temperature 600-630℃ in a cycle of 1-1.5h, with a soaking period of approx.10 min, depending on both the type of furnace and the volume of ware load. We recommend an oxidizing atmosphere to give optimal fired appearance and brightness. It is essential to maintain good ventilation and an efficient extraction of the combustion gases and the products resulting from decomposition of the medium.

Color Deposit

The maximum color deposit after firing, depending on the glass and the firing temperature. Too thick color deposit may cause blistering. We recommend the customer to do the trials prior to production.

Chemical Resistance

Acid resistance: 22±2℃, 4% acetic acid , 24 h； Grade 4 or better

Alkali resistance: 9.1%NaOH+0.9Na3PO4·12H2O ,88℃， 4 h; Grade 5 or better

1.	No attack apparent.
2.	Appearance of iridescence or visible stain on the exposed surface when viewed at a 45angle but not apparent at angles less than 30.
3.	A definite stain which does not blur reflected images and is visible at angles less than 30.
4.	Definite stain with a gross color change or strongly iridescent surface visible at angles less than 30and which may blur reflected images.
5.	Surface dull or matte with chalking possible.
6.	Significant removal of enamel with pinhole evident.
7.	Complete removal of enamel in exposed area.

Expansion Coefficient (CTE)

The CTE of the colors from this series is about 90-100×10-7/℃（30-300℃）. This system is suitable for the decoration of most soda-line glasses.

Supplying Forms

Our colors in this system are usually provided in powder form.

Storage

The colors should be stored in a dry place. Opened containers should be closed carefully. To ensure that the colors have not absorbed any humidity, we recommend drying the color powder at approx.130℃ prior to pasting.