

## Technical Information



### 741 Series Lead-Free High Temperature Fast Firing Colors for the Decoration of Porcelain, Bone China, Vitreous China and Earthenware

#### Product Codes and Color Shades

Product No.	Color	Pantone® Code <sup>1</sup>
117412	chromium Green	371C
117413	blue green	329C
127411	sky blue	305C
127413	blue	2728C
127414#	cobalt blue	2738C
127415#	cobalt blue	2370C
127416	cyan	2185C
127417	cobalt blue	2748C
127418	cobalt blue	2757C
137411	lemon yellow	101C
137412*	cadmium yellow	102C
137413*	orange	2013C
147412	black	Black C
157412	grey	535C
167411	yellow brown	471C
167412	red brown	478C
177411*	orange red	1505C
177414H*	dark red	485C
177413*	red	2347C
777413	purple	7425C
197411	opaque white	
197412	mixing white	
107411	low temperature flux	
107413	High temperature flux	

\*Denotes cadmium-containing colors

# Denotes lead-containing colors

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<sup>1</sup> The above mentioned Pantone® code is only a guideline for the color shade.

### Heavy Metal Release

The colors in the 741 series are formulated to be lead-free with controls in place to maintain upper limits of 600 ppm lead and 100 ppm cadmium with the following exceptions:

- Lead-containing colors: 127414, 127415
- Cadmium-containing colors: 137412, 137413, 177411, 177413, 177414H

All colors in the 741 Series meet the limits for heavy metal release in accordance with QB/T 2455-2011, California Prop. 65 and FDA requirements if fired correctly.

It is recommended that 741 Series colors are applied on lead and cadmium-free glazes to prevent unleaded colors from being contaminated due to some chemical reactions.

Ferro maintains and manages the heavy metal limit through careful monitoring of raw materials combined with accurate processing and continuous precise quality control.

### Application

Colors in the 741 Series have excellent processing properties in all conventional decorating methods including direct and indirect screen printing, spraying, machine lining and banding, and brush application.

### Screen Printing

we recommend polyester screens: 73-120 threads/cm (180-300 mesh/inch).

### Spraying

Color suspensions for spraying can be made with water-soluble or oil-based medium.

### Machine Lining and Banding

Color suspensions applied via brushes, steel- or neoprene-rollers are generally based on water-soluble media.

### Miscibility

The colors can be mixed with each other. Anyhow, we recommend customers to test the color stability under individual conditions.

We recommend mixing with white 197412 to make pastel shade. To lighten color tone, we recommend flux 107411 and 107413. Mixing with the two fluxes can give variations of use for the various substrates and firing conditions. 107411 can obviously decrease the firing temperature, 107413 is not only suitable for mixing with purple colors but also suitable for other colors.

### Firing

The best firing temperature is related to glaze and firing cycle etc. We recommend as follows.

Porcelain : 1170-1250°C/60-90min.

Bone China : 1050-1100°C/60-90min.

Imitation Bone China : 1150-1200°C/60-90min.

If the firing time is too long or fired on soft glazes, the temperature should be decreased accordingly, otherwise the pigment will dissolve too much. We recommend 777413 purple fire on the soft glaze with more than 1100°C.

### Color Deposit

The maximum color deposit after firing, depending on the glaze and the firing temperature etc.

Too thick color deposit may cause blistering. We recommend the customer to do the trials prior to production.

### Chemical Resistance

The chemical resistance of the fired color layers is influenced by the color deposit, the firing conditions and the glaze etc.

The colors do not show a visible attack with 4% acetic acid solution (22±2°C, 24h) as well as with 5% sodium carbonate solution (60±2°C, 32h).

### 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°C prior to pasting.

### Limitation of Warranty and Liability

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