

Technical Information

DF11

Performance Pigments and Colors

Azurico – Brilliant Blue Resistant Onglaze Colours for Porcelain, Earthenware, Bone China, and Tile Decoration

Conventional cobalt blue onglaze colours with a bright blue colour shade and the typical desired transparency do not have today's required chemical resistance. Therefore, in chemically resistant colour ranges true cobalt blue colour shades are missing.

The **Azurico** series fills this gap and offers the following advantages:

- bright blue transparent appearance after firing with a highly glossy surface
- good chemical resistance, comparable to our Palette 70 and Sunshine colours
- good dishwasher resistance
- no chipping, even in thicker layers
- wide firing range
- suitable for fast firing cycles on porcelain and bone china.

Application

An intensive blue develops its rich effective colour especially in a thicker colour deposit. Due to their linear thermal expansion of $63.5 \times 10^{-7}/K$ **Azurico** colours can be applied in thicker layers. These colours are especially suitable for screen printing and spray application. On hard-paste porcelain the colour layer should not exceed 30 μm . Machine lining and banding are possible and, depending upon the design, **Azurico** colours can be used also for hand painting.

Screen Printing

For direct and indirect screen printing (transfers) we recommend polyester screens with 73-100 threads/cm (185-255 mesh/inch). Intense layers can be obtained by printing the colour twice.

Spraying

Colour suspensions for spraying application can be produced with oil-based media as well as with water-soluble media.

Machine Lining and Banding

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

We supply colour pastes that should be adjusted to the correct processing viscosity by adding distilled water and/or spirit.

For all standard methods, Ferro offers suitable media and covercoats. Further detailed technical information can be found in our **CerDePrint Media Guide**.

The colours should be stored in a dry place. Opened containers should be closed carefully. To ensure that the colours have not absorbed any humidity, we recommend drying the colour powder at approx. 130 °C prior to mixing.

Miscibility

Azurico colours are intermiscible with each other in any ratio. The resistant special flux 10 2500 is well suitable for thinning. It does not change the original character of the blue colour shade even in a higher mixing ratio. Other resistant fluxes cause colour changes to grey-violet when fired at elevated temperatures.

To increase the reddish appearance of 72 2500 Dark Blue, we recommend adding 77 477. With the colours 12 2500 and 72 2500, midnight-blue colour shades can be achieved by adding up to 5 % of 14 209 Black.

Firing Conditions

The firing conditions are listed in the following table 1.

Table 1: Firing conditions

Substrate	Firing Cycle	Temperature
Hard-Paste Porcelain	Normal Firing	780-850 °C
Hard-Paste Porcelain	Fast Firing (1 h)	860-900 °C
Soft-Paste Porcelain	Normal Firing	760-830 °C
Earthenware	Normal Firing	760-800 °C
Bone China	Normal Firing	780-820°C
Bone China	Fast Firing (23 min.)	900 °C

Decoration with Precious Metal Preparations

Any decoration with precious metal preparations must be done in a second firing cycle. The temperature in this second cycle should be at least 50-70 °C lower than for the **Azurico** colours.

For precious metal decoration, following products are suitable: Bright Gold GG 501 and GG 500, Bright Platinum GP 350 and GP 500, Burnish Gold PG 606 HH, PG 628, and PG 615, as well as Burnish White Gold PG 594 H

Resistance

The alkali and acid resistance of fired colour layers is influenced by the thickness of the layer, the firing conditions, and the glaze.

In laboratory tests and under industrial conditions on various substrates, the **Azurico** colours show no visible acid attack (test with 3 % hydrochloric acid, 22 °C, 5 h), but a slight alkali attack (test with 0,5 % Calgonite solution, 77 °C, 16 h).

Heavy Metal Release

The release of heavy metals is primarily influenced by the glaze composition, the firing conditions, and the colour deposit. It is therefore necessary that the end user tests the heavy metal release according to the relevant standard procedures for all products manufactured under his technical production conditions.

If the layers are too thin, the firing temperature too high, the firing cycle at peak temperature too long, or the kiln atmosphere is reductive, heavy metal release might be higher.



The **Azurico** colours fulfil the limits of EN 1388 1-2.

The colours of the **Azurico** series are technically free of cadmium. Due to natural contamination of raw material traces of cadmium are possible.

Our safety data sheets, which are available for every product, provide you with useful advice for working with our products.

While every attempt has been made to reproduce colours exactly, the samples printed here may differ slightly from the finished ceramic products.

Table 2: The Azurico colours

Reference	Colour Shade	Pantone® Code ¹	Colour Sample
12 2500	Blue	661 c	
72 2500	Dark Blue	662 c	
10 2500	Transparent Flux, Milled		

¹ The above mentioned **Pantone®** code is only a guideline for the colour shade.

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