

Technical Information

WBC Guide 10

Performance Colors & Glass

25 Series - Waterborne Coatings



Our organic coatings have good glass adhesion, mechanical and chemical resistance, and are especially suited to high-speed decoration and bottle filling lines. To avoid application mistakes please follow the instructions of this technical information.

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1.0 Product Preparation

The 25 Series water-borne organic coatings can be supplied ready to use or can be supplied the basic coatings and the pigment dispersions separately in order that obtain the color needed.

Ensure that the product has been well mixed prior to use. Some settling may occur during prolonged storage. Product temperature should be equivalent to your room temperature prior to measuring viscosity or application of the material. Filtering before use with a 10 - 25 micron filter is recommended.

Thinning may be necessary depending on application equipment. Distilled or deionized water is recommended for thinning. Do not use tap water; salts present in tap water may cause lumps or gelling to occur or may cause water sensitivity of the cured film. Water should be added slowly while the coating is under agitation. Coating should be mixed gently to assure uniformity. Do not mix under high-speed agitation, this may whip or entrap air into the coating and affect spray performance. The 25 Series contains water; equipment used must be made of stainless steel or corrosion resistant metals. Membrane pumps made of stainless steel or polypropylene are recommended. The compressed air supply must be free of oil and dirt. Immediately after use, wash the guns and alimentation system with distilled or deionized water.

2.0 Substrate Preparation

Cleanliness of the substrate is extremely important. Dirt, dust, fingerprints, wax, lubricants or oils on the glass or in the workplace environment can cause surface defects or performance problems. Cold end coatings based on polyethylenes, soaps, oleic acid are known to cause wetting problems or adhesion issues and should be removed.

3.0 Curing Parameters

For complete curing and best performance the 25 Series coating and the substrate must reach a temperature of about 210°C. In forced air ovens and Lehrs a recommended starting point cure cycle is 10 minutes at 210°C. The actual time necessary to cure the coating is dependent on the heat transfer rate of the oven or Lehr and the size, shape, and thickness of the ware. Infrared ovens can allow faster cross-linking cycles of the coating, and hence shorter cycle times.

Cured film can be tested by rubbing with a rag soaked in a strong solvent (MEK or acetone) – if under-cured, the solvent will remove the film.

4.0 Storage Recommendations

This product contains water and freezing can occur at temperatures below 0°C. Product must be stored in cool and dry conditions. The storage temperatures should not be below 5°C and not exceed 40°C. Settling may occur if stored for long periods of time. Before use, products must be stirred thoroughly. Partly used containers must be tightly sealed after use. Product should always be filtered as it is transferred into spray equipment. If stored as recommended, a shelf life of six months after the production date is guaranteed.

5.0 Quality Assurance

In accordance with the QM system of Ferro, certified to DIN EN ISO 9001, 25 Series organic coatings have to pass stringent quality control after production. Each production lot is carefully checked and compared to our production standard. Only those batches that meet Ferro standards are released for sale.

6.0 Product Characteristics

6.1 General Properties

Waterborne coating with good glass adhesion and broad color range

	25-0018	25-0079	25-0057	25-0028
DESCRIPTION	Gloss coating	Gloss coating	Matt coating	Base coat for metallic colors
Solids	32 - 36	40 - 44	37 - 39	11 - 13
V.O.C.	22 - 24	22 - 24	15 - 17	11 - 13
Flash point	> 60°C	> 60°C	> 60°C	> 60°C
Density (g/ cm³)	1.03 ± 0.03	1.05 ± 0.03	1.06 ± 0.03	1.00 ± 0.02
Viscosity (Clear or Colors)	50 - 60 seconds #4 Ford 20°C			
Adhesion Promoter reference	25-0002			
Thinner	De-ionized water			

6.2 Recommended Application Parameters

Application methods	Hand held or automatic spray gun, electrostatic disc or aero bell spray equipment.
Recommended application conditions	Glass temperature: room temperature Air Temperature: 20 - 30°C Relative Humidity: Good behavior even with low humidity.
Preparation before use:	Add 2 - 3% 25-0002 and water until application viscosity needed
Applied Film Thickness	10 to 20 microns average for transparent colors and 20 to 30 for solid colors (dry film thickness)
Filtering recommendations	Filtering before use is recommended: 10 microns filter application viscosity
Atomization pressure	(3– 6 bar) depending on application
Paint supply pressure	(1 bar) maximum
Spray gun nozzle size	Hand held gun: 0.5 – 1.5 mm diameter. Automatic machine: 0.5 – 1.0 mm diameter
Thinning	Use water until application viscosity 18 ± 2 seconds #4 Ford for transparent colors and 23 ± 3 seconds #4 Ford for solid colors
Suggested cleaning solvents	With water or glycol, or mix of both. Paint thinners, mineral spirits or turpentine is not recommended.

6.3 Curing/Drying Of Product

Curing Method	any heat system.
Curing Parameters	Flash dry: 2-3 minutes at room temperature Cure Temp: 200-210°C glass temperature Time: 10 - 20 minutes depending on glass weight

6.4 General Performance Characteristics*

	25-0018	25-0079	25-0057	25-0028
DESCRIPTION	Gloss coating	Gloss coating	Matt coating	Base coat for metallic colors
MEK/Acetone double rubs	min 100 double rubs			PASS WITH TOPCOAT
24 hrs soak in water	pass			PASS WITH TOPCOAT
24h soak G1	pass			PASS WITH TOPCOAT
24h soak Ethanol	pass			PASS WITH TOPCOAT
Scuff resistance (0 = bad, 5 = very good) +1,5 % 25-0055, scuff +1	2 - 3	4	Polishing resistance GOOD	NOT APLICABLE, ALWAYS NEEDED A TOPCOAT
Scratch test (Internal Elcometer test) after 150 cycles. Visual Evaluation: 0 = bad, 5 = very good	2 with 25-0055 / 3	3 with 25-0055 / 4-5	–	–
Taber test , 100 cycles , visual evaluation 0 = bad, 5 = very good	1 - 2	3	–	–
Dishwasher resistance (According to EN 12875 part 1.)	125 - 375 according color and cure conditions			–

*Note: Performance characteristics based on testing conducted in Ferro development laboratories. Data is given for general comparison only; it is not a guarantee of performance in a particular application. It is always recommended that the customer evaluate the coating for suitability in the intended application. We strongly recommend that all safety precautions be followed as per the relevant Ferro MSDS.

7.0 25 Series - Waterborne Coatings: Product List

Product number	Coating Color	Product Description
25-0028	Clear	base coat for metallic colors based on 25-0029 or 25-0033
25-0079	Clear	base coat for brilliant colors
25-0057	Frost	base coat for matt colors or etch imitation
25-0006	Blue	Color concentrate
25-0007	Intensive Black	Color concentrate; for solid black add 5% of 25-0007 + 6-12% of 25-0049
25-0008	Yellow	Color concentrate
25-0009	Violet	Color concentrate
25-0012	Orange	Color concentrate
25-0014	Green	Color concentrate
25-0016	Red	Color concentrate; addition of 8-12% for intensive color
25-0017	White	Color concentrate; addition of 30-40% for solid white
25-0032	Carmine Red	Color concentrate
25-0047	Vermillion Red	Color concentrate for very transparent colors
25-0048	Fuchsia	Color concentrate for very transparent colors
25-0049	Black	less intensive than 25-0007
25-0051	Lemon	less intensive than 25-0008
79-0704	Magenta	Fluorescent pigment to use in combination with 25-0057
79-0708	Green	Fluorescent pigment to use in combination with 25-0057
79-0709	Red	Fluorescent pigment to use in combination with 25-0057
79-0710	Yellow	Fluorescent pigment to use in combination with 25-0057
79-0712	Violet	Fluorescent pigment to use in combination with 25-0057
79-01055	Orange	Fluorescent pigment to use in combination with 25-0057
25-0029	Aluminum	Aluminum paste to use in combination with 25-0028. After curing it needs a second layer of base coat on top. In combination with 25-0057 a one layer metallic effect can be realized.
25-0033	Aluminum Nickel Effect	Aluminum Nickel effect to use in combination with 25-0028. After curing it needs a second layer of base coat on top.
79-0907	Silver Coarse	Coarse particle aluminum to use in combination with 25-0057 or a mixture of both.
25-0002	Adhesion Promoter	Adhesion promoter to use in all base coats. Recommended addition: 2% (3% in case of tableware or high intense colors)
25-0054	Anti-Scratch Wax	Wax additive to improve scratch resistance of matt and semi-matt colors. Recommended addition: 2,5%
25-0055	Anti-Scratch Powder	Nanoparticle material to improve scratch resistance of glossy base coat 22-0079. Recommended addition: 1,5%

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