

314 Glass Product Line

Water Based, Low VOC

The 314 Product Line is a coating system developed to decorate tempered and annealed glass for interior architectural installations. The 314 Product Line includes primers, clearcoats, colorcoats, and backcoats available in stock and custom colors. Ideal for use with wall panels, countertops, white boards, showcases, partitions, and more.

Each coating shares the following properties:

- Waterbased, nonflammable, and low VOC (<100 g/l)
- Develop early adhesion to glass
- Dry quickly for swift handling and processing
- Primed for integration with digital printing
- Can be force cured at moderate temperatures
- Can be chemically crosslinked to increase early moisture resistance

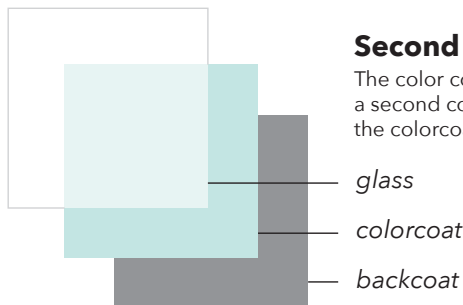
Custom Colors

Custom colors are created utilizing a complete palette of intermix Bases and Carbit's color database. Custom colors are matched by Carbit, or can be made by the end user with purchase of Carbit's intermix Color Mixing System and Training.

Glass Coating Systems

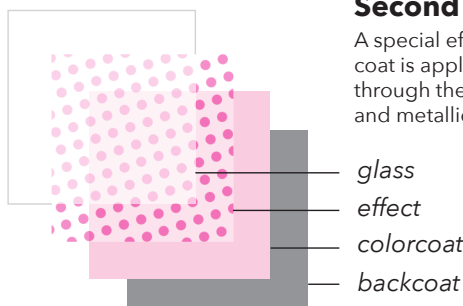
Second Surface (Back-Painted) Glass

The color coat to be viewed is applied first to the backside (second surface) of the glass. Depending on color, a second coat may be applied for more opacity. The backcoat is applied last and provides a protective layer for the colorcoat to shield it from the adhesives and glues that bond the glass to its mounting surface.



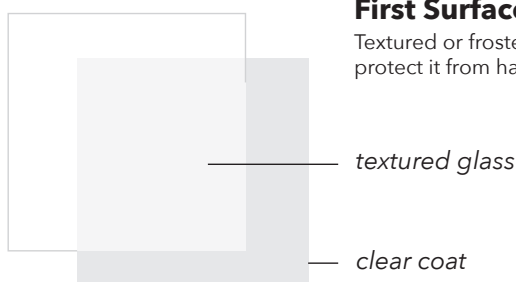
Second Surface Color Coated Glass with Special Effects

A special effect clear or translucent coating may be applied first to the backside of the glass before the color coat is applied. These coatings contain pigments whose particles transmit varied light reflective properties through the glass to achieve a special effect with the color coat. Examples are sparkle, pearlescence, and metallic flake.



First Surface Clear Coat for Textured Glass

Textured or frosted glass can be coated on the front side (first surface) with a high-gloss or low-gloss clear to protect it from handling and to provide a more cleanable surface.



314 Glass Coating Process

Custom Colors

314 coatings should be applied when the ambient air and substrate temperature is between 60° F (15° C) and 90° F (32° C) and the relative humidity(RH) < 85%. Good air movement is essential when RH>50% to help the coating dry properly.

Surface Conditions

It is generally recommended to paint the non-tin side of float glass. Clean the surface with a glass cleaner followed by isopropyl alcohol.

Application

314 coatings can be applied by a variety of methods. The best method depends on the individual application and process requirements. Consult Carbit for recommendations for specific requirements.

Some successful test applications have used a pressure tank and a Binks 2100 conventional siphon gun with a 66SS (1.80 mm) fluid nozzle and 66SD air cap. (Binks parts: Fluid nozzle - 45-6601, needle 47-56500) Initial air and fluid pressures were 40 lbs atomizing air and 20 lbs fluid pressure.

Thinning is usually not necessary but if required use clean, potable water. Overthinning will result in runs, sags and loss of opacity.

Dry Times

314 coatings are waterbased and dry by evaporation of the water. The drying rate is influenced by the coating thickness, temperature, relative humidity and air movement. Good air movement is essential when the relative humidity (RH) is >50% to help the coating dry properly.

Note: A coating may be dry enough to handle or recoat, but still lack key physical properties. Force curing and crosslinking significantly shorten the time required to reach total performance.

AIR DRY TIME	Color or Backcoat @1mil DFT (±.1)
Set-to-touch	15 min.
Dry-to-touch	20 min.
Dry-hard	30 min.
Dry-through	60 min.
¹ ASTM D1640 @ 72°F, 50% RH	

Cure Times

Curing occurs when a liquid coating changes from a liquid to a solid and develops specific physical properties. Examples include adhesion, hardness, moisture resistance ,and chemical resistance.

Although the rate of cure is affected by the paint chemistry, application thickness, air movement, and relative humidity, the most important factors are time and temperature.

CURE RATE TO ACHIEVE PROPERTY	314 Colors and 314E100 Backcoat @ 1 mil DFT (±.1) Tested on Sapphire 1/4" Glass, non tin side					
	AMBIENT ¹		HEAT CURED ²		HEAT CURED + HARDENER ³	
	Cure Time Before Test	Results	Cure Time Before Test	Results	Cure Time Before Test	Results
Water resistance ⁴	7 days	Pass ⁵	4 hrs	Pass ⁵	4 hrs	Pass ⁵
Adhesion ASTM D3359	7 days	5B	4 hrs	5B	4 hrs	5B
MEK rubs ASTM 5402	7 days	5 dbl rubs	24 hrs	5 dbl rubs	4 hrs	100 dbl rubs
Pull Off Adhesion ASTM 4541	7 days	> 250 psi	24 hrs	> 1000 psi	24 hrs	> 1000 psi
Pencil Hardness ASTM 3353	7 days	2B	24 hrs	B	24 hrs	HB
¹ Ambient = 72°F, <50% RH with good air movement						
² Force Cured - 90" flash off; raise to 180°F (82°C) hold for 120"; raise to 350°F (176°C) hold for 180"; total oven time 5.5 min. Cure time shown is time at ambient temperature after force cure. Other heat schedule will work but must be evaluated based on performance expectations.						
³ Heat Cured with Hardener - 2% by weight of 314C2 Hardener chemically crosslinks 314 colors and backcoat.						
⁴ Test procedure - Water spot placed under watch glass. After 24 hours remove watch glass, dry and report blush or blisters. Reinspect after 24 hours at ambient conditions. Pass = no blush or blisters after 24 hours recovery and 5B adhesion.						
⁵ Possible very light blush or micro-blisters after 24 hour water spot test that but fully recovers after 24 hours						

Clean Up

314 Coatings dry very quickly. Clean equipment and spills with water followed by isopropyl alcohol as needed to remove residue.

Safety

CAUTION! Do not take internally. Close container after each use. KEEP OUT OF THE REACH OF CHILDREN. Consult product MSDS for additional warnings and precautions.

Typical Properties

Dry times (ASTM 1640) @ 72°F and <50% RH					60° Gloss			VOC g/l	Visc.#3 Zahn	% Vol. Solids
Set-to-touch	Dry-to-touch	Dry-hard	Dry-hard Through	Time to Recoat	Clear Low Gloss	Clear High Gloss	Color Coats			
15 min.	20 min.	30 min.	60 min.	1-2 hrs	25-35	75-85	25-45	<100	25-30 sec	40%

* Dry time based on .003" wft on sealed black and white card at 72°F and <50% RH with good air movement. Full-cure is achieved when all critical performance properties defined by the user are met. The conditions required to achieve full-cure depend on many variables that must be determined for each specific application process and set of performance requirements.

Custom Color Matching System

Custom colors are created with Carbit's Intermix Bases and Carbit's X-Rite color computer. The custom colors are based on standards supplied by the customer or made to match various standards, eg. RAL, Federal Standards, Munsell, etc.

314 INTERMIX COLORCOAT BASES	
314A2	Black Satin Base
314B14	Special Blue Satin Base (G/S)
314B2	Blue Satin Base (R/S)
314B4	Quinacridone Violet Satin Base
314B8	Carbzolet Violet Satin Base
314D2	Burnt Umber Satin Base
314G4	Phtalo Green (Y/S)
314R16	Bright Red Satin Base
314R2	Red Oxide Satin Base
314R4	Red Satin Base
314R6	Orange Satin Base
314W2	White Satin Base
314Y2	Yellow Oxide Satin Base
314Y4	Medium Yellow Satin Base
314Y6	Bright Yellow Satin Base

314 SPECIAL EFFECT FINISHES	
314Y282	Copper Metallic
314E242	Brilliant Metallic Aluminum
314E2415	Antique Silver Pearl
314Y2416	Rich Gold Pearl
314X0012	Brilliant White Pearl *
* requires white color coat	

314 WHITE AND BACKCOAT	
314E100	Backcoat - Light Gray
314W4	Colorcoat - Bright White

314 ADDITIVES	
314C2	Hardener

314 CLEAR PRIMERS & FINISHES	
314V10	Clear Low Gloss Finish
316V1	Clear Satin Ink Primer
315V1	Clear Gloss Textured Glass *
* requires heat cure for 10 min. @ 350° F	

