



VB-02

LIQUID CRYSTAL™

VM4101 Emerald
VM4102 Emberglo
VM4103 Caspian
VM4104 Glacier

LIQUID CRYSTAL™ pearls are a unique selection of color shifting crystal particles that greatly enhance basecoat color with a crisp and vivid sparkle effect.

Users have the flexibility to intermix these unique pigments with existing color or use them as a mid-coat to create one of kind colors. Assortments of pre-crafted colors are also available to choose from.



Compatible Products and Systems

Liquid Crystal can be used in conjunction with the systems and products shown below:

- DBC Refinish Systems-Follow P-175 DELTRON® DBC recommendations for proper preparation and compatible primers.
- BC Refinish Systems-Follow EU-02 GLOBAL REFINISH SYSTEMS® BC recommendations for proper preparation and compatible primers.
- ENVIROBASE® Refinish Systems-Follow EB-143 ENVIROBASE® High Performance BC recommendations for proper preparation and compatible primers.
- AQUABASE® Plus-Follow Aquabase Plus PDS N5.3.2 recommendations for proper preparation.
- DBC500 Color Blender -Follow P-176 DBC500 recommendations for proper preparation and compatible primers.
- D895 Color Blender -Follow EU-113 *Global Refinish Systems* BC recommendations for proper preparation and compatible primers.
- VWM5555 VIBRANCE COLLECTION® Midcoat -Follow VB-13 recommendations for proper preparation and use.
- VWM5556 *Vibrance Collection* Waterborne Midcoat-Follow VB-15 recommendations for proper preparation and use.

Directions For Use

Surface Preparation:



When working on custom finishes close attention to the details outlined for standard basecoat preparation, sanding, and cleaning is needed to achieve the optimum results.



Liquid Crystal colors are designed to be applied over properly cleaned, sanded and primed surfaces. See product bulletin P-175 (*Deltron* DBC), EU02 (*Global Refinish Systems* BC), EB-143 (*Envirobase* High Performance) for appropriate preparation or *Aquabase* Plus PDS N5.3.2 recommendations for proper preparation.

Liquid Crystal

Directions For Use

Mixing:

(adding VM410x to a basecoat color or blender)

As concentrations of *Liquid Crystal* pigments increase, the minimum film build of the clear becomes increasingly more important. The recommended percentage of addition as a starting point is 2%. The maximum percentage of that may be added to DBC/DBC500 or BC/D895 is 12%. or VWM5555 or VWM5556 is 5%. The maximum percentage for *Envirobase* High Performance or *Aquabase* Plus waterborne basecoat is also 5%.

Reducing:

(basecoat color or blender already containing VM410x)



DBC/DBC500 reduction with VM410x	Color	DT Reducers	*DX 57
	1	1	+ 1.5 oz. per RTS quart
BC/D895 reduction with VM410x	Color	D-Thinners	*D888
	1	1	+ 1.5 oz. per RTS quart
VWM5555 reduction with VM410x	VWM	DCH Hardener	N/A
	4	1	+ N/A
VWM5556 reduction with VM410x	VWM	T494 Thinner	N/A
	4	1	+ N/A
<i>Envirobase</i> High Performance Reduction with VM410x	Color	T494 Thinner	**T581
	4	1	+ 10% to ready to spray
<i>Aquabase</i> Plus Reduction with VM410x	Color	P980-5000 Thinner	**P210-9120
	4	1	+ 10% to ready to spray

* DX57, D888 activators **must** be used in *Deltron* DBC or *Global Refinish Systems* BC colors containing *Liquid Crystal*. When using *Liquid Crystal* tri-coat custom colors, DX57 or D888 activator **must** be used in both the ground coat and mid coat colors. The pot life of these mixtures is 2 hours at 70°F (21°C). ** As an optional addition, T581 or P210-9120 activators may be added to *Envirobase* High Performance or *Aquabase* Plus waterborne basecoats for improved basecoat film performance. The pot life for these mixtures is 2 hours at 70°F (21°C).

Spray gun Set-up:



Apply:	Sufficient number of coats to achieve desired effect
Fluid Tip:	1.2 -1.5 mm or equivalent
Air Pressure:	8 - 10 PSI at the cap for HVLP guns 35 - 45 PSI at the gun for conventional guns 29 - 40 psi at the gun for compliant guns

Drying Times:



Between Coats: 70°F (21°C)	5 - 10 minutes
Dry Time to Clearcoat: 70°F (21°C)	15 minutes at 70°F (21°C) 24 hour maximum to clearcoat
Tape Time: 70°F (21°C)	30 - 60 minutes with DX57 or D888

Note: Basecoat colors are designed to dry low in gloss. This makes color match and its approval difficult to see until the clearcoat is applied. Spray the basecoat and clearcoat on a small test panel before spraying the job.

If the basecoat color is allowed to dry more than 24 hours, it must be scuffed and new basecoat color applied.

Tape times:

Deltron DBC and *Global Refinish Systems* BC is 30 - 60 minutes @ 70°F (21°C) and 50% relative humidity.

Envirobase High Performance and VWM5556 is 30 - 35 minutes @ 70°F (21°C) and 50% relative humidity

Envirobase High Performance and VWM5555 is 12 - 16 hours @ 70°F (21°C) and 50% relative humidity or forced dried for 20 min. at 140°F (60 °C) at substrate temperature.

Aquabase Plus and VWM5556 is 35 - 30 minutes @ 70°F (21°C) and 50% relative humidity

All striping, two toning must be completed within 24 hours. If allowed to dry for more than 24 hours, it must be sanded and reapplied. VWM5555 only requires a scuff before recoating but does not need to be re-applied. In all cases, avoid thick films of basecoat.

Striping or Two Toning:

Tri-Coat Mixing:

When applying *Deltron* or *Global Refinish Systems* basecoat, 5% DX57 or D888 Basecoat Activator must be added to the reduced basecoat prior to spraying in BOTH the ground coat and mid coat layers. When applying *Envirobase* High Performance or *Aquabase* Plus basecoats, an optional 10% by volume of T581 or P210-9120 basecoat activator may be added to the ready to spray color in BOTH the ground coat and mid coat layers.

Liquid Crystal can be blended as a mid-coat color with DBC500, D895 Color Blenders or VWM5555, VWM5556 midcoats. In doing so you can achieve more transparency, when combined with varying ground coat colors and create different degrees of custom effects.

Clearcoating:

You **must** apply 2.5 - 3 mils of clear (usually 2 - 4 coats) to cover the basecoat.

Clear with any *Vibrance Collection* clearcoat or any clear recommended for *Deltron* DBC (see the Compatible Clearcoat section of P-175 for a complete listing), *Global Refinish Systems* BC (see the Overcoat/Recoat section of EU02), *Envirobase* High Performance (see the compatibility section of EB-143 for complete listing) or *Aquabase* Plus PDS N5.3.2 for recommendations.

Styling Tips

- It is recommended that a complete spray out panel (including clearcoat) is created for each color combination to verify what the final appearance will be.

Technical Data

For use in automotive refinish markets where 4.5 and 5.2 lbs./gal Multi-Stage (BC/CC) category limits apply

Color side mix:	DBC/DBC500 (w/ VM410x)*	BC/D895 (w/ VM410x)*
Applicable Use Category:	N/A	N/A
Package VOC Actual	5.20-6.16 lbs/gal (623-738 g/l)	5.38-5.81 lbs/gal (645-696 g/l)
Package VOC Regulatory (Less Water Less Exempts)	5.20-6.16 lbs /gal (623-738 g/l)	5.38-5.81 lbs/gal (645-696 g/l)
RTS Volume Ratio:	1:1+ 1.5 oz. ready to spray qt.	1:1+ 1.5 oz. ready to spray qt.
RTS VOC Regulatory (Less Water Less Exempts)	5.70-6.20 lbs/gal (683-743 g/l)	6.02-6.23 lbs/gal (713-747 g/l)
Volume Solids (RTS)	10-15%	9.4-17.5%
Sq. Ft Coverage per US Gal., 1 mil. 100% Transfer Efficiency	160-241	151-281
Dry Film Build Per Coat	0.3 – 0.5 mils	0.3 – 0.5 mils
* For 4.5 lbs./gal Multi-Stage limit use clears with a maximum RTS VOC of 2.77 lbs./gal, for 5.0 lbs./gal Multi-Stage limit use clears with a maximum RTS VOC of 3.77 lbs./gal and for 5.2 lbs./gal Multi-Stage limit use clears with a maximum RTS VOC 4.17 lbs./gal. (but 4.20 lbs./gal allowed for DBC)		

For use in automotive refinish markets where 3.5 lbs/420 g/L basecoats are required

Color side mix:	Envirobase (w/ VM410x)*	Aquabase Plus (w/ VM410x)*	VWM5555 (w/ VM410x)*	VWM5556 (w/ VM410x)*
Mix components:	EHP : T494	AQB : P980-5000	VWM5555 : DCH	VWM5556 : T494
RTS Volume Ratio:	4:1	4:1	4:1	4:1
Applicable Use Category:	Color Coating	Color Coating	Color Coating	Color Coating
Package* VOC Actual	0.39-1.00 lbs/gal (47-120 g/L)	0.39-1.00 lbs/gal (47-120 g/L)	1.86-1.93 lbs/gal (223-231 g/L)	0.39 - 0.41 lbs/gal (47 - 49 g/L)
Package* VOC Regulatory (Less Water Less Exempts)	1.73-3.30 lbs/gal (207-395 g/L)	1.73-3.30 lbs/gal (207-395 g/L)	3.02-3.22 lbs/gal (362 - 386 g/L)	1.82-1.97 lbs/gal (218-236 g/L)
RTS VOC Actual (Less Water Less Exempts)	0.35-0.84 lbs/gal (42-100 g/L)	0.35-0.84 lbs/gal (42-100 g/L)	1.51 - 1.63 lbs./gal (181 - 195 g/L)	0.36-0.41 lbs/gal (43 - 49 g/L)
RTS VOC Regulatory (Less Water Less Exempts)	1.85-3.45 lbs/gal (222-413 g/L)	1.85-3.45 lbs/gal (222-413 g/L)	2.54 - 2.60 lbs./gal (304 - 311 g/L)	2.13 - 2.30 lbs./gal (255 - 276 g/L)
Density	8.28-9.72 lbs./gal (992-1164 g/L)	8.28-9.72 lbs./gal (992-1164 g/L)	8.83 - 8.96 lbs./gal (1059 - 1074 g/L)	8.31 - 8.55 lbs./gal (996 - 1026 g/L)
Volatiles wt. %	67.1 - 87.9	67.1 - 87.10	51.6 - 55.8	83.7 - 87.8
Water wt. %	59.0 - 79.6	59.0 - 79.7	0.0	79.0 -83.3
Water vol%	69.1 - 81.6	69.1 - 81.7	0.0	81.1 -83.3
Exempt Solvents wt. %	0.0	0.0	34.4 - 37.2	0.0
Exempt Solvents vol%	0.0	0.0	34.0 - 36.7	0.0
Volume Solids (RTS)	9.5 - 21%	9.5 - 21%	41.4 - 45.7%	12-14%
Sq. Ft Coverage per US Gal., 1 mil. 100% Transfer Efficiency	153 - 337	154 - 337	664 - 733	193-218
Dry Film Build Per Coat	0.7 - 1.0 mils	0.7 - 1.0 mils	0.7 - 1.0 mils	0.7 - 1.0 mils

PPG Automotive Refinish

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