

STATE OF CALIFORNIA
Department of Transportation Specification
Iridescent Green Finish Paint, Waterborne
Acrylic Latex Vehicle (Formula PWB-169F)

SCOPE

This specification covers a pre-mixed waterborne paint formulated for use as a finish coat on properly prepared metal surfaces.

This coating is intended for spray application. Limited application can be made by brushing and rolling.

REQUIREMENTS

This specification is intended to specify paint that will meet service requirements for bridge construction and maintenance. All properties listed shall be maintained for a minimum of one year after date of manufacture. If the vendor is making this paint for the first time, the Transportation Laboratory in Sacramento must be consulted.

QUALITY ASSURANCE

All paint intended for use by the California Department of Transportation (Department) must be sampled, tested and approved by the Transportation Laboratory **before** shipment.

The manufacturer shall take a representative one-quart sample of each batch of paint and ship the samples to the Transportation Laboratory for approval, unless other arrangements have been made. Raw materials and copies of batch records used in the manufacture of the paint shall be submitted if requested.

Caltrans Transportation Laboratory, Chemical Testing Branch, 5900 Folsom Blvd.,
Sacramento, CA 95819
chemistry.branch@dot.ca.gov

A batch shall be that amount of paint that was manufactured and packaged in a single operation. The paint container shall be labeled with, but not limited to, the State Specification number, date of manufacture and batch number. The Department also reserves the right to retest any batch after delivery. Results from such retesting shall prevail over all other tests and will be the basis of rejection. Material not meeting the specification shall be removed and replaced by the supplier at their expense, including all costs for handling, retesting and shipping.

All tests shall be conducted in accordance with the appropriate ASTM test methods referenced under the “Characteristics of Mixed Paint” section of this document and methods used by the Transportation Laboratory.

Patents:

The contractor shall assume all costs arising from the use of patented materials, equipment, devices, or processes used on or incorporated in the work, and agrees to indemnify and save harmless the State of California, and its duly authorized representatives from all suits at law or action of every nature for, or on account of, the use of any patented materials, equipment, devices, or processes.

Composition

Paint shall be mixed in the following proportions and sequence.

Vehicle

<u>Components</u>		<u>(lbs./100 gallons)</u>	<u>Weight Percent</u>
Acrylic Latex	(1)	775.0	83.68
Defoamer	(2)	2.0	0.22
Coalescent solvent*	(3)	14.0	1.51
Co-solvent*	(4)	30.0	3.24
TEG-EH*	(5)	3.0	0.32
Ammonium Hydroxide (28%)	(6)	2.0	0.22
Preservative	(7)	1.0	0.11

Under low shear slowly add:

Pigments (8)

Mearlin Sparkle	(8a)	5.65	0.61
Mearlin Super Blue	(8b)	8.40	0.91
Aqua-Chem 895 Phthalogreen	(8c)	10.3	1.11
Mearlin Bright Green	(8d)	73.22	7.91
Thickener	(9)	1.60	0.17

*Pre-mix coalescent solvent, co-solvent and plasticizer, (TEG-EH), before adding to latex mixture. Mix thoroughly being careful not to incorporate air into paint. Avoid using high shear; this will cause fragmentation of the pigment resulting in unacceptable appearance of the paint.

Characteristics of Mixed Paint:

VOC, grams per liter, ASTM Designation: D 6886	100 Maximum
Density, grams per milliliter, ASTM Designation: D1475	1.07 - 1.09
Nonvolatile Content, percent, ASTM Designation: D2369	53.0 – 55.0
Pigment by weight of paint, percent, ASTM Designation: D3723	9.5 - 10.5

Consistency, Stormer Viscometer, ASTM Designation: D562, grams Equivalent KU	150 - 200 75- 80
Viscosity, centipoise, ASTM Designation: D2196, Method A 50 rpm, #3 spindle	700 - 900
Fineness of Grind, Hegman, ASTM Designation: D1210	6 min.
High-shear viscosity, ASTM Designation: D4278 0 to 5-P cone, shear rate 12 000 s ⁻¹	0.4 to 0.5
Specular Gloss, 60°, ASTM Designation: D523	23 -30
*Color Tolerance, ASTM Designation: D2244 BYK Gardner, CIE L*a*b*, 10° Standard observer, Illuminant D 65	2 ΔE Maximum
Color Tolerance after 300 hours of UV-exposure, ASTM Designation: D 4587, Cycle-2, UVA-340 bulbs	1 ΔE Maximum
Specular Gloss, 60°, ASTM Designation: D523, maximum loss after 300 hours of UV-exposure, ASTM Designation: D 4587, Cycle-2, UVA-340 bulbs	28% of original value
Film hardness by pencil test, ASTM Designation: D3363	2B Minimum
PH	8-10
Drying Time at 77°F, 50% relative humidity, 4 mil-wet film, ASTM Designation: D 1640	
Set to touch, hours	0.5 max.
Dry through, hours	1 max.

*Color to match color chip PWB-169F on file at the Transportation Laboratory.

Material Ingredients of Paint:

- (1) Avanse® MV-100 (Rohm and Haas)
- (2) Foamaster® 111 (Cognis Corp.)
- (3) 2,2,4-Trimethylpentanediol-1, 3-monoisobutyrate (Texanol®)
- (4) Di(propylene glycol) methyl ether (Dowanol® DPM)
- (5) Triethylene glycol di-2-ethylhexanoate (Eastman Chemical Co.)
- (6) Ammonium Hydroxide (28%)
- (7) Proxel® BD 20 (Avecia Inc.)
- (8a) Exterior® Mearlin Sparkle 139P (BASF Corp.)
- (8b) Exterior® Mearlin Super Blue 639Z (BASF Corp.)
- (8c) Aqua-Chem® 895-5505 Phthalogreen (Degussa Corporation)
- (8d) Exterior® Mearlin Bright Green 8289X (BASF Corp.)

(9) Acrysol® RM-12W (Rohm and Haas)

Packaging:

The containers shall be new, round and of no more than five-gallon capacity. Pails larger than three gallons shall be standard, full open head. One gallon and larger containers shall have ears and bails. All containers shall be suitably lined or constructed so as to prevent any reaction between the container and contents and also must comply with U.S. Department of Transportation or I.C.C. Regulations as applicable. Labels must be marked with the volatile organic compound (VOC) content, mixing instructions and the following provision in addition to any other labeling required:

Application:

The paint shall be applied to a total dry film thickness of 1.5 mil minimum and 3 mil maximum. For best results, conventional spray application of this coating is recommended, however limited application can be made by brush and roll. Paint should not be applied when the ambient or surface temperature is above 100°F or below 50°F, when the relative humidity exceeds 75 percent, or when the surface temperature is less than 5°F above the dew point.

Clean-up:

Use tap water for clean up. 10% ammonia, acetone or other suitable solvent may be used to remove dried paint from spray guns and other equipment.