

STATE OF CALIFORNIA

Department of Transportation

Non-Leaflng Aluminum Finish Paint,  
Waterborne Acrylic Latex Vehicle  
(Specification PWB-161A)

**Description**

This specification covers a single component, waterborne non-leaflng aluminum paint suitable for use as a contrast coat on properly prepared metal surfaces. This coating is intended for spray application, limited application can be made by brushing and rolling. This paint is an industrial maintenance coating and is not for residential use.

**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 and methods used by the Transportation Laboratory.

**Composition**

Paint shall be mixed in the following proportions and sequence. Combine the aluminum paste pigment, stabilizer, and half of the coalescent solvent. Mix well, cover mixing vessel to help prevent evaporation of solvents and allow mixture to sit undisturbed for two hours. Then, add the acrylic latex and the remainder of the coalescent solvent to the grind. ***Do not over grind the aluminum pigment using high shear.*** This will cause fragmentation of the inhibited aluminum pigment that could result in the formation of hydrogen gas and pressure build up in sealed containers. (***Causing a safety hazard.***)

All properties listed shall be maintained for a minimum of one year after acceptance. If the vendor is making this paint for the first time, the Transportation Laboratory in Sacramento must be consulted.

<u>Component</u>		<u>Weight percent</u>	<u>(LB/100 gallons)</u>
Aluminum paste	(1)	6.88	60
Pigment stabilizer	(2)	0.86	7.5
Coalescent, (divided)	(3)	5.32	46.4
Acrylic Latex	(4)	85.47	745.0
Defoamer	(5)	0.44	3.8
Lamp Black	(6)	0.23	2.0
Preservative	(7)	0.11	1.0
Thickener	(8)	~ 0.34	~ 3.0

**Characteristics of Finished Paint:**

VOC, g/L, ASTM D 6886, maximum	140
Flash Point, °F, ASTM D 3828	> 215
Density, g/mL, ASTM D 1475	1.02 – 1.04
Nonvolatile content, percent, ASTM D 2369	42.9 – 44.2
Pigment content, percent, ASTM D 3723	4.3 – 5.5
Consistency, ASTM D 562, grams Equivalent KU	165 - 221 75 - 85
High-shear viscosity, ASTM D 4278 0 to 5-P cone, shear rate 12 000 s <sup>-1</sup>	0.3 - 0.5
pH	8.5 - 9.5
Fineness of grind, Hegman, ASTM D 1210, minimum	6
Specular gloss, 60°, ASTM D 523	35 - 45

Color tolerance<sup>1</sup>, ASTM D 2244, maximum  $\Delta E^*$  2  
CIE 1976 L\*a\*b\*, 10° Standard observer, Illuminant D 65

<sup>1</sup>Color to match color chip PWB 161A on file at the Transportation Laboratory

Film hardness, ASTM D 3363, minimum 2B

Package stability, ASTM D 1849, 14 days, 52°C No pressure build up  
Viscosity, slight change 3 KU max  
Appearance, 4 mil wet film. No change

Salt fog exposure, 100 hours, ASTM B 117  
Rust rating, ASTM D 610 10 minimum  
Blister rating, ASTM D 714 No more than 8F

Drying time, 4 mil wet film, ASTM D 1640  
Set to touch, hours, maximum ½  
Dry through, hours, maximum 1

- (1) Aquamet NPW 17800 Non-Leafing aluminum paste (Schlenk Metallic Pigments)
- (2) Raybo 41-Spangle, (Raybo Chemical Co.)
- (3) Texanol<sup>®</sup> 2,2,4-Trimethylpentanediol-1,3-monoisobutyrate, (Eastman Chemical Co.)
- (4) Maincote<sup>®</sup> HG-54D (Dow Chemical)
- (5) Foamaster<sup>®</sup> 111 (BASF)
- (6) Lamp Black, Aqua-Chem<sup>®</sup> 895-9901, (Degussa Corporation)
- (7) Proxel<sup>®</sup> BD20 (Lonza Inc.) or CANGUARD BIT 20 AS (Dow Chemical)
- (8) Acrysol<sup>®</sup> RM-12W (Dow Chemical)

### **Packaging**

The containers shall be new, round and of no more than twenty-liter (20 L) capacity. Pails larger than fifteen liters shall be standard, full open head. Three liter 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 content (VOC), mixing instructions, and the following provision in addition to any other labeling required.

### **Mixing Procedure**

Mix well using mechanical stirring; do not shake. Avoid incorporating air into the paint.

### **Application**

The paint shall be applied to a total dry film thickness of 1.5 to 3.0 mils. 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.