Aqualock® 2000

Nitrile Phenolic Primer

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Description

Aqualock® 2000 (AL 2000) is a heat curing nitrile/phenolic water based primer. Cured AL 2000 furnishes excellent resistance to chemicals and water. AL 2000 is qualified to Boeing BMS5-42, Type 3.

Features

- Very low VOC; 15 G/L
- Changes color from blue to blue-green when cured
- Excellent resistance to chemicals
- Eliminates cobwebbing
- One box coat can deliver desired primer thickness
- Excellent visibility at sub-micron film thickness

Uses

Primer for anodized aluminum used in conjunction with nitrile/phenolic film adhesives, such as Plastilock® 639.

Typical Technical Data	AL 2000
Base:	Nitrile Rubber, Phenolic Resin
Color:	Dark Blue
Viscosity:	(Brkfld #2 @ 20 rpm) 800-3500 cps
Wt./Gallon:	8.45 lbs. (1.01 kg/liter)
Total Solids (wt.):	10-14%
Thinner:	Distilled or deionized water
Calculated Coverage:	200 SF/Gal/Mil *(4.9m²/liter/.0254mm)*
Dry Time:	(1 mil wet film dried at 73ºF *(23ºC)*, 50% R.H.) 25-45 min.
Shelf Life:	12 months @ 40-60ºF *(4-16ºC)* **DO NOT FREEZE!**

*Shelf life of AL 2000 is 12 months when stored at 50ºF *(10ºC)*.
Storage at ambient temperature will reduce shelf life.

Typical technical data and performance properties given for reference only. Not for specification purposes.

Performance Properties
Aluminum lap shears and metal/metal peel prepared and tested per Boeing BMS 5-42, Class 1 requirements. AL 2000 applied to .3 mil dry film thickness, with Plastilock® 639 adhesive film. Primer cured 90 minutes at 315°F *(157°C)*.

Test Conditions

Lap Shear		**AL 2000**	**BMS 5-42 Requirement**
°F	°C		
-67	-54	3165	2300
75	24	4200	2700
180	82	1800	1375
250	121	1500	1100
Climbing Metal/Metal Peel			
75	24	100	60

Application Method
Surface Preparation
Clean surfaces to be bonded; aluminum should be acid etched and then phosphoric acid anodized.

Method
Spray with conventional or airless system.

AL 2000 Application
Gently stir the AL 2000; it is very stable with minimal settling. **DO NOT MIX AT HIGH SPEED OR SHAKE**. This will incorporate air into the AL2000, which will affect the spraying.

Apply AL 2000 to surfaces to be bonded. The dry primer thickness should be 0.15-0.3 mil *(.0038-.0076mm)*. Allow primer to *air dry 25-45 minutes at 73°F *(23°C) (50% R.H.)*. Then place into a 315°F *(157°C)* oven and cure primer for 90 minutes. Keep in mind humidity affects evaporation rates, which can cause drying problems during warmer months. Normal drying cycles may require seasonal adjustments to provide adequate drying.

AL 2000 being a water base will not go back into solution if it is left to dry out. After the container has been opened, any material that has dried must be strained out. Use a paint strainer or equivalent to strain out dried material that could affect the spraying of AL 2000.

When applying AL 2000, keep gun about 12" from part and apply AL 2000 in uniform Box Coat. If the spray gun sit between uses, it may be necessary to periodically wipe the tip with a damp cloth to keep the nozzle free of dried-out primer. Depending on how fast you move the gun, one box coat will put down about 0.1 mil dry film thickness. If you move across the panel quickly, you could need up to four box coats. This will put you at a dry film thickness of 0.1 - 0.3 mil. It is not necessary to let the primer flash between box coats but you can do this; both methods have been used and work well.

Spray equipment used at SIA: Binks Model 115, Cap-78S; Nozzle-78; needle 78SS. DeVilbiss Series 502, Cap 394; Nozzle-G; Needle-G. Accuspray, Cap-#9; Nozzle-#36; Needle-#36.

Spray parameters: Standard air line pressure of 40-70 psi. HVLP; 6-8 psi on the cup.

Clean-up
The methods used to clean adhesive residue will vary with the physical state of the material.

Wet Adhesive
Wash parts with tap water.

Dried, Uncured Adhesive
Immerse parts in a 5-10% alkaline cleaner solution for 2-4 hours. Cleaning action can be accelerated by warming the cleaning bath to 70ºC. The adhesive film will not dissolve, but will soften sufficiently to be removed by gentle scrubbing.

Cured Adhesive
The adhesive is largely unaffected by water or solvents. Abrasive removal of the adhesive film is the only practical method.

Storage
Store at 40ºF *(4ºC)* to 70ºF *(21ºC)*. Keep away from heat. **DO NOT FREEZE**. Provide adequate ventilation. Avoid prolonged breathing of vapors. No extended or repeated contact with skin.

Storage of material @ above 70ºF *(21ºC)* will rapidly effect viscosity growth.

When stored as recommended, Aqualock® 2000 does not generally require agitation to assure a uniform mix. Upon standing, Aqualock® 2000 will develop a slight reversible gel that will raise its apparent viscosity and may make pumping more difficult. This reversible gel can readily be broken down with gentle agitation. Use a high pitch, low shear blade design, 1/4 to 1/3 the diameter of the container. Position the blade to approximately 1/3 the depth of the liquid. Mix on a low speed mixer (no more than 1725 rpm) for 3 minutes after movement is seen on the surface of the adhesive. Speed should be increased gradually or the container should be covered to avoid splashing. DO NOT OVERMIX! Extended mix times at high speed will entrap excessive amounts of air and may reduce the mechanical stability of the product.

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