



Hysol® AL 2000

Nitrile Phenolic Primer

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Description

Hysol® AL 2000 is a heat curing nitrile/phenolic water based primer. Cured Hysol® AL 2000 furnishes excellent resistance to chemicals and water. Hysol® 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 Hysol® PL 639.

Typical Technical Data	Hysol® 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 (<i>4.9m²/liter/.0254mm</i>)
Dry Time:	(1 mil wet film dried at 73°F (23°C), 50% R.H.) 25-45 min.
Shelf Life:	12 months @ 40-60°F (4-16°C) DO NOT FREEZE!

*Shelf life of Hysol® AL 2000 is 12 months when stored at 50°F (10°C).

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. Hysol® AL 2000 applied to .3 mil dry film thickness, with Hysol® PL 639 adhesive film. Primer cured 90 minutes at 315°F (157°C).

Test Conditions

Lap Shear		Hysol® 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.

Hysol® AL 2000 Application

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

Apply Hysol® 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.

Hysol® 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 Hysol® AL 2000.

When applying Hysol® AL 2000, keep gun about 12" from part and apply Hysol® 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 70°C. 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 40°F (4°C) to 70°F (21°C). 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 70°F (21°C) will rapidly effect viscosity growth.

When stored as recommended, Hysol® AL 2000 does not generally require agitation to assure a uniform mix. Upon standing, Hysol® AL 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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Users should review the Materials Safety Data Sheet (MSDS) and product label for the material to determine possible health hazards, appropriate engineering controls and precautions to be observed in using the material. Copies of the MSDS and label are available upon request.

