

HPA High Performance Acrylic

HPA is a high performance acrylic conformal coating specifically designed to meet the demanding requirements of many applications found in the defence and aerospace industries. HPA is approved to MIL-1-46058C and has been formulated for professional use only.

- Excellent performance in a wide range of challenging conditions; military approved
- Transparent coating with excellent clarity; ideal for LED applications and those exposed to UV light
- High adhesion to a wide variety of substrates and resistant to mould growth
- Ideal for applications requiring rework; can be removed with Electrolube ULS

Approvals

RoHS-2 Compliant (2011/65/EU):
MIL Approval (MIL-1-46058C):
IPC-CC-830:
NATO Stock Number:

Yes
Approved (Reference: 46058-562-90)
Meets approval
6850992608540 (HPA200H)

Liquid Properties

Appearance:
 Density @ 20°C (g/ml):
 VOC Content:
 Flash Point:
 Solids content:
 Viscosity @ 20°C (mPa s):
 Touch Dry:
 Recommended Drying Time:

Pale Coloured Liquid
 0.91 (Bulk), 0.78 (Aerosol)
 65% (Bulk), 85% (Aerosol)
 -7°C (Bulk), -4°C (Aerosol)
 35% (Bulk), 15% (Aerosol)
 300 - 350
 10-15 minutes
 24 Hours @ 20°C
 4 Hours @ 60°C
 2 Hours @ 90°C

Coverage @ 25µm:

14m² per litre (Bulk), 2.4m² (200ml Aerosol)

Dry Film Coating

Colour:
 Operating Temperature Range:
 Flammability:
 Thermal Cycling (MIL-1-46058C):
 Coefficient of Expansion:
 Dielectric Strength:
 Dielectric Constant:
 Surface Insulation Resistance:
 Comparative Tracking Index
 Dissipation Factor @ 1MHz @ 25°C:
 Moisture Resistance (MIL-1-46058C):

Colourless
 -55°C to +130°C
 Meets UL94-V1
 Pass
 130ppm
 45 kV/mm
 2.5
 1 x 10¹⁵ Ω
 >300 Volts
 0.01
 Pass

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All information is given in good faith but without warranty. Properties are given as a guide only and should not be taken as a specification.

Electrolube cannot be held responsible for the performance of its products within any application determined by the customer, who must satisfy themselves as to the suitability of the product.

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| <u>Description</u> | <u>Packaging</u> | <u>Order Code</u> | <u>Shelf Life</u> |
|-----------------------------------|------------------|-------------------|-------------------|
| <u>HPA Conformal Coating</u> | 200ml Aerosol | HPA200H | 36 Months |
| | 1 Litre Bulk | HPA01L | 48 Months |
| | 5 Litre Bulk | HPA05L | 48 Months |
| <u>Universal Acrylic Thinners</u> | 5 Litre | UAT05L | 72 Months |
| <u>Removal Solvent</u> | 200ml Aerosol | ULS200D | 36 Months |
| | 400ml Aerosol | ULS400D | 36 Months |
| | 1 Litre Bulk | ULS01L | 72 Months |
| | 5 Litre Bulk | ULS05L | 72 Months |
| | 25 Litre Bulk | ULS25L | 72 Months |

Directions for Use

HPA can be sprayed, dipped or brushed. The thickness of the coating depends on the method of application (typically 25-75 microns). Temperatures of less than 16°C or relative humidity in excess of 75% are unsuitable for the application of HPA. As is the case for all solvent based conformal coatings, adequate extraction should be used (refer to MSDS for further information).

Substrates should be thoroughly cleaned before coating. This is required to ensure that satisfactory adhesion to the substrate is achieved. Also, all flux residues must be removed as they may become corrosive if left on the PCB. Electrolube manufacture a range of cleaning products using both hydrocarbon solvent and aqueous technology. Electrolube cleaning products produce results within Military specification.

Spraying – Bulk

HPA needs to be diluted with the appropriate thinners (UAT) before spraying. The optimum viscosity to give coating quality and thickness depends on the spray equipment and conditions, but normally a dilution ratio of 2:1 (HPA:UAT) is required. Suitable spray viscosity is typically 50-80mPa s. If bulk coating material has been agitated, allow to stand until air bubbles have dispersed.

HPA is suitable both for use in manual spray guns and selective coating equipment.

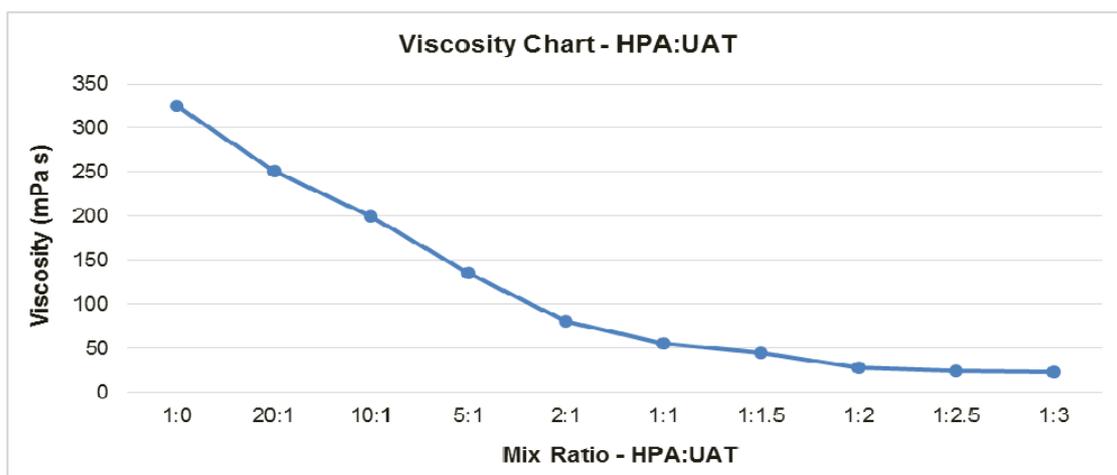
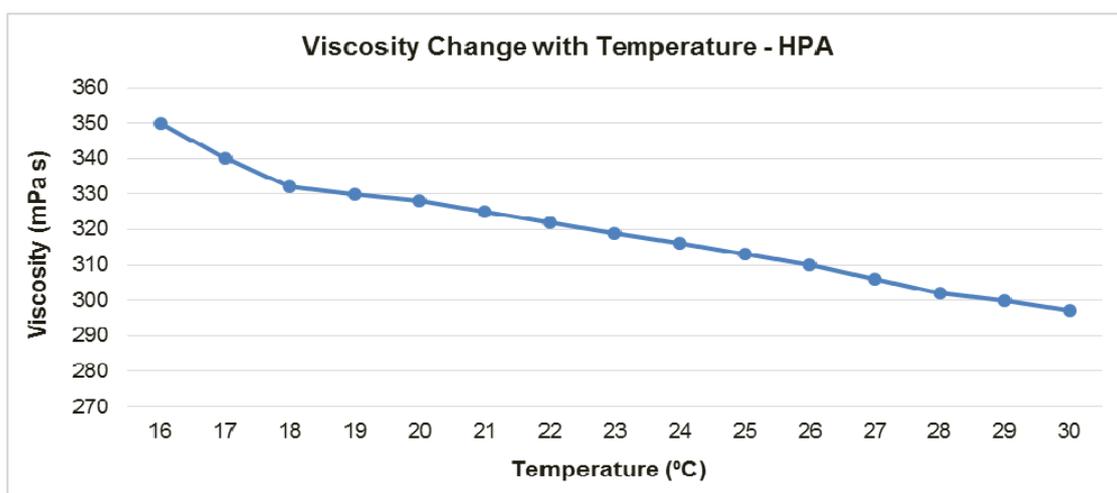
The selected nozzle should enable a suitable even spray to be applied in addition to suiting the prevailing viscosity. The normal spray gun pressure required is 274 to 413 kPa (40 – 60 lbs/sq.inch). After spraying, the boards should be placed in an air-circulating drying cabinet and left to dry.

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Spraying - Aerosol

When applying HPA in aerosol form care must be taken to ensure the can is not shaken before use. Shaking the can will introduce excessive air bubbles and will give a poor coating finish.

The can should be held at 45°, and 200mm from the substrate to be coated. The valve should then be depressed when the can is pointing slightly off target and moved at about 100mm/s across the target. To ensure the best coating results are achieved try to use a smooth sweeping motion with small overlap for successive rows.

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To ensure penetration of the coating beneath the components and in confined spaces, spray the assembly from all directions to give an even coating. After spraying, the boards should be placed in an air-circulating drying cabinet and left to dry.

Dip Coating

Ensure that the coating material in the container has been agitated thoroughly and has been allowed to stand for at least 2 hours for all the air bubbles to disperse.

Universal Acrylic Thinners (UAT) should be used to keep the HPA coating at a suitable viscosity for dipping (200 – 300mPa s @ 20°C). UAT is added periodically as the solvent evaporates. The viscosity should be checked using a viscosity meter or "flow cup".

The board assemblies should be immersed in the HPA dipping tank in the vertical position, or at an angle as close to the vertical as possible. Connectors should not be immersed in the liquid unless they are very carefully masked. Electrolube Peelable Coating Masks (PCM/PCS) are ideal for this application.

Leave submerged for approximately 10 seconds until the air bubbles have dispersed. The board or boards should then be withdrawn slowly (1 to 2s/mm) so that an even film covers the surface. After withdrawing, the boards should be left to drain over the tank or drip tray until the majority of residual coating has left the surface.

After the draining operation is complete, the boards should be placed in an air-circulating drying cabinet and left to dry.

Brushing

Ensure that the coating material has been agitated thoroughly and has been allowed to settle for at least 2 hours. The coating should be kept at ambient temperature.

When the brushing operation is complete the boards should be placed in an air-circulating drying cabinet and left to dry.

Inspection

HPA contains a UV trace, which allows inspection of the PCB after coating to ensure complete and even coverage. The stronger the reflected UV light, the thicker the coating layer is. UV light in the region of 375nm should be used for inspection.

Revision 2: Jan 2014