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):**	**Yes**
	MIL Approval (MIL-1-46058C):	**Approved (Reference: 46058-562-90)**
	IPC-CC-830:	**Meets approval**
	NATO Stock Number:	**6850992608540 (HPA200H)**
Liquid Properties	Appearance:	Pale Coloured Liquid
	Density @ 20°C (g/ml):	0.91 (Bulk), 0.78 (Aerosol)
	VOC Content:	65% (Bulk), 85% (Aerosol)
	Flash Point:	-7°C (Bulk), -4°C (Aerosol)
	Solids content:	35% (Bulk), 15% (Aerosol)
	Viscosity @ 20°C (mPa s):	300 - 350
	Touch Dry:	10-15 minutes
	Recommended Drying Time:	24 Hours @ 20°C 4 Hours @ 60°C 2 Hours @ 90°C
	Coverage @ 25µm:	14m^2 per litre (Bulk), 2.4m^2 (200ml Aerosol)
Dry Film Coating	Colour:	Colourless
	Operating Temperature Range:	-55°C to +130°C
	Flammability:	Meets UL94-V1
	Thermal Cycling (MIL-1-46058C):	Pass
	Coefficient of Expansion:	130ppm
	Dielectric Strength:	45 kV/mm
	Dielectric Constant:	2.5
	Surface Insulation Resistance:	1 x 10^{15} Ω
	Comparative Tracking Index	>300 Volts
	Dissipation Factor @ 1MHz @ 25°C:	0.01
	Moisture Resistance (MIL-1-46058C):	Pass

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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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BS EN ISO 9001:2008
Certificate No. FM 32082

Description	Packaging	Order Code	Shelf Life
HPA Conformal Coating	200ml Aerosol	HPA200H	36 Months
	1 Litre Bulk	HPA01L	48 Months
	5 Litre Bulk	HPA05L	48 Months
Universal Acrylic Thinners	5 Litre	UAT05L	72 Months
Removal Solvent	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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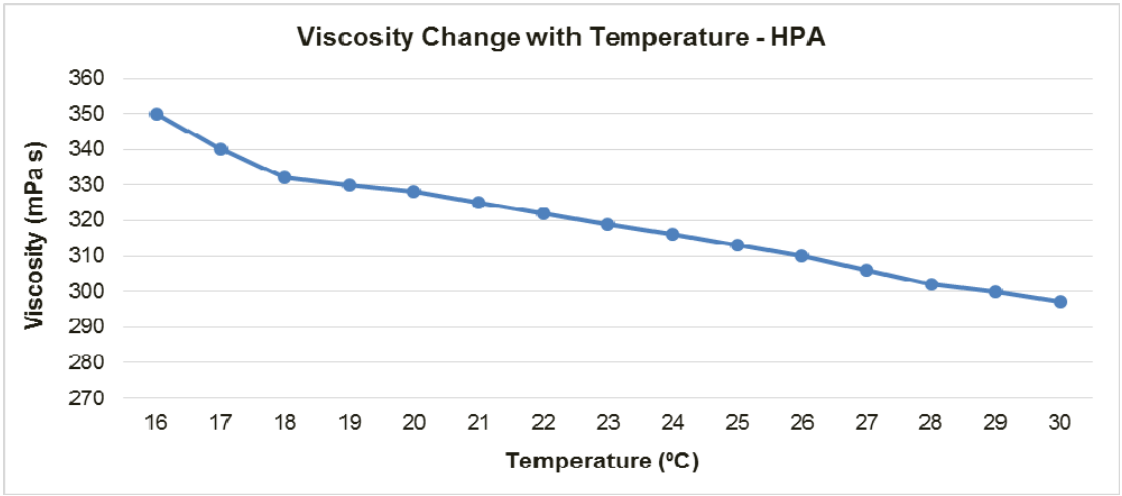

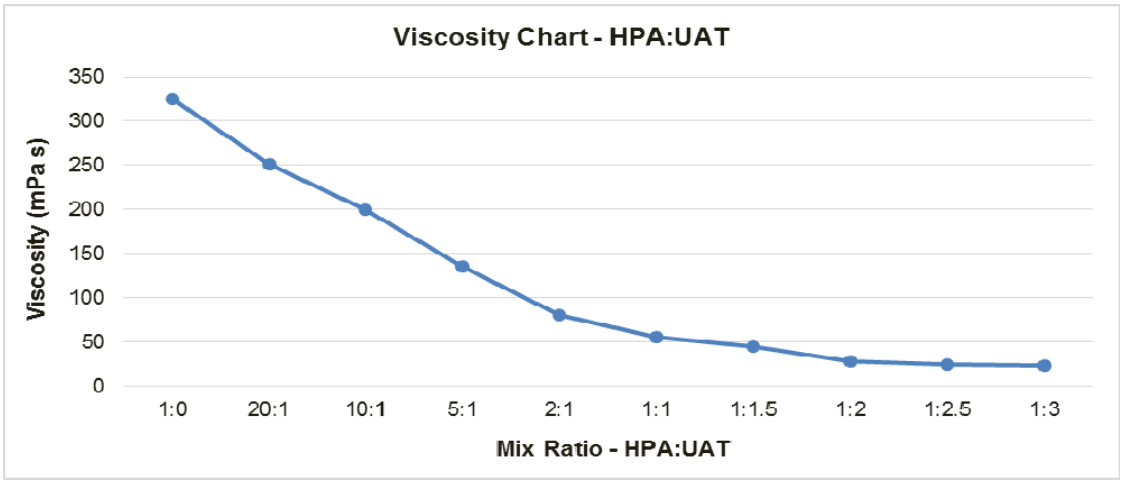

Spraying - Aerosol

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.

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