

## LT-4

### Fluoropolymer Nano-coating

### Technical Data Sheet

The LT-4 Nano-coating is a low-cost, high-performance fluoropolymer dissolved in a cost effective solvents.

The LT-4 when applied to products exhibits superior hydrophobic (water repellent) and oleophobic (oil repellent) properties at a sub micron level.

Designed for protection of high quality products like printed circuit boards (PCBs), LT-4 will protect a board and the electronic components from moisture, water, condensation and corrosion.

LT-4 also excels in preventing damage from solvents and other chemicals.

The LT-4 material can be applied to printed circuit boards (PCBs) and other electronic devices without the need for masking when applied at 1-2 um film thickness.

The LT-4 coating can be applied via spray, dip or brush. The coating can be cured in air or accelerated via oven bake. The material can be supplied with a UV trace added to aid inspection.

### Features

- Highly repellent to liquid (hydrophobic) and oil (oleophobic)
- Resistant to solvents and chemicals
- Dries extremely quickly at room temperature
- Possible to apply coating without masking critical components
- Wide temperature range performance
- High dielectric strength material
- Easily inspected with a UV trace
- Products certified to IPX5, IPX7
- Easy to apply by spray and dip methods
- Customizable chemistry
- Survives Gamma and E-beam exposure

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## Properties

### Liquid Properties

Color and clarity:	Slightly cloudy to clear
Odor:	Similar to acetone
Content/Concentration:	1.0- 2.0 wt%
Viscosity:	Varies with concentration of solids
Shelf Life At Room Temperature:	6 months in unopened container
Solubility:	In hydrocarbon solvents
Flammability:	Flammable
Environmental:	Low in toxicity, non-ozone depleting (dry state)
Toxicity rating:	Non-toxic (dry film state)

### Electrical Properties

Dielectric Breakdown Strength:	1000 V/mil
Dielectric Constant [at 30% RH]:	3.0 (at 1 kHz)
Dissipation Factor [at 30% RH]:	0.009 (at 1 kHz)

### Physical Performance

Continuous operating temperature:	125°C
Max heat (short term):	200°C
Contact Angle (water):	>105° (on glass)
Contact Angle (oil):	60° (on glass)
Adhesion:	Excellent

### Application

Ease of application:	Easy, no vacuum chamber required
Mode of application:	Spray, dip, brush

### Work Schedule

Dry to Touch:	10-20s
Tack Free time:	30-45 minutes
Recommended Dry time:	12 hours

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## **APPLICATION**

### **Cleaning**

In general all surfaces to be coated should be thoroughly cleaned before coating. This may be required to ensure that satisfactory adhesion to the substrate is possible.

### **Dip Coating**

Hydrocarbon solvent like MEK should be used to keep the LT-4 coating at a suitable viscosity for dipping.

Solvent is added periodically as the solvent evaporates. The viscosity should be checked using a viscosity meter or "flow cup" on a regular basis.

The product should be immersed in the LT-4 dipping tank in the vertical position, or at an angle as close to the vertical as possible. The product should then be withdrawn.

After withdrawing, the product should be left to drain over the tank until the majority of residual coating has left the surface.

### **Bulk Spraying**

LT-4 does not need to be thinned before spraying.

If the bulk coating material has been agitated, allow to rest until air bubbles have dispersed.

LT-4 is suitable both for use in manual spray guns and selective spray equipment.

A good technique is to hold the gun at 45 degrees angle and a distance of approximately 20-25cm while spraying. Spray a thin and continuous film onto the product with an even motion. Turn the circuit 90 degrees and repeat the process. Rotate a full 360 degrees to cover all sides of the product.

This process helps to ensure penetration of the coating beneath the components and in confined spaces.

### **Aerosol Spraying**

Avoid shaking the can before use. This may add excessive bubbles and give a poorer finish.

A good technique is to hold the aerosol can at 45 degrees angle and a distance of approximately 20-25cm while spraying. Spray a thin and continuous film onto the product with an even motion. Turn the product 90 degrees and repeat the process. Rotate a full 360 degrees to cover all sides of the product.

This process helps to ensure penetration of the coating beneath the components and in confined spaces.

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**Brushing**

The coating should be kept at ambient temperature. Gently apply the coating with a good quality brush so as not to leave brush marks and so that the components and wiring are not disturbed.

**Drying times & curing conditions**

LT-4 will be touch dry in 10-20 seconds at room temperature and does not require a thermal cure.

The full properties of LT-4 will be obtained after 12 hours at room temperature.

**Coating removal & repair**

LT-4 can be easily removed using hydrocarbon solvents, which can be locally or completely stripped depending on requirements. Removal can be achieved using a cotton bud, brush or complete immersion in a bath of the stripper.

Compatibility of the fluorinated solvents with the PCB should be assessed at all times.

**Inspection**

The LT-4 coating can be supplied with a UV trace within the coating itself, which fluoresces under UV light.

This aids inspection of the material after drying and during coating application. Suitable lighting includes UVA.

**Applications**

The LT-4 coating is used in almost all industrial sectors.

They include:

- Aviation
- Aerospace
- Defense
- Automotive
- Industrial
- Oil & Gas
- Membranes
- Electronics
- Medical/Pharmaceutical
- Optics
- Telecommunications
- White goods / Commercial
- Fabrics

This list is limited and there are a lot more areas that they are used.

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