



Silfluo LC-FC130

Fluorinated Electronic Coating

Description:

Silfluo LC-FC130 is a fluoropolymer-based electronic coating carried in a non-flammable fluorinated solvent, available in three solid content grades (2%, 5%, 10%) with customizable concentrations on request. Upon solvent evaporation, it deposits a colorless, transparent, low-surface-energy fluoropolymer film with dry film thickness of 0.5 - 2.5 μm (grade-dependent) and static water contact angle $\geq 110^\circ$.

The fluorinated carrier solvent has no flash point, a boiling point of 50 - 68 $^\circ\text{C}$, zero ozone depletion potential (ODP), and is RoHS compliant. Rapid solvent evaporation at ambient temperature produces tack-free films in 30 seconds (LC-FC130-2) to 2 minutes (LC-FC130-10) without heat or UV cure.

The cured fluoropolymer film provides surface free energy of 10 - 12 mN/m, repelling water, oils, acidic sweat, and corrosive condensates, and functions as an epilame (anti-migration barrier) preventing capillary creep of lubricating oils in precision mechanical assemblies.

Typical Technical Properties:

Active Ingredient:	Fluoropolymer
Appearance:	Milky white liquid
Carrier Solvent:	Fluorinated solvent
Solid Content (%):	2%, 5%, 10% (Customizable upon request)
Dynamic Viscosity (cPs, 25 $^\circ\text{C}$):	10 - 30
Odor:	Odorless
Flash Point:	None
Boiling Point ($^\circ\text{C}$):	50 - 68

Cured Film Properties (By Grade)

Property	LC-FC130-2	LC-FC130-5	LC-FC130-10
Solid Content:	2.0%	5.0%	10.0%
Cured Film Color:	Colorless	Colorless	Colorless
Light Transmittance:	$\geq 90\%$	$\geq 90\%$	$\geq 90\%$
Single-Coat Dry Film Thickness:	0.5 - 1.5 μm	1.0 - 2.0 μm	1.5 - 2.5 μm
Tack-Free Time	30s	1min	2min
(Ambient temperature and humidity):			
Static Water Contact Angle:	$\geq 110^\circ$	$\geq 110^\circ$	$\geq 110^\circ$
Static n-Hexadecane Contact Angle	$\geq 70^\circ$	$\geq 70^\circ$	$\geq 70^\circ$
Surface Free Energy (mN/m)	10 - 12	10 - 12	10 - 12
Adhesion (ASTM D3359)	5B	5B	5B
Melting Point	25 - 30 $^\circ\text{C}$	25 - 30 $^\circ\text{C}$	25 - 30 $^\circ\text{C}$

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Thermal Stability (1% weight loss)	~ 190° C	~ 190° C	~ 190° C
Dielectric Constant:	3.1	3.1	3.1
Volume Resistivity:	$>10^{14}\Omega\cdot\text{m}$	$>10^{14}\Omega\cdot\text{m}$	$>10^{14}\Omega\cdot\text{m}$
Surface Resistivity:	$>10^{14}\Omega\cdot\text{m}$	$>10^{14}\Omega\cdot\text{m}$	$>10^{14}\Omega\cdot\text{m}$

Coating Process

Suitable for spray coating, dip coating, roll coating, and blade coating. For dip coating, control withdrawal speed to manage wet film thickness and uniformity. For spray coating, use fluoropolymer-compatible spray equipment; standard stainless steel or PTFE-lined equipment is recommended. Avoid metal equipment that may react with the fluorinated solvent carrier.

Applications

1. PCBA and FPCA Protection

Applied to printed circuit board assemblies and flexible PCBs as a thin conformal barrier against condensation, dust, industrial oils, solvents, and corrosive gases (H_2S , SO_2 , salt spray). Film thickness of 0.5 – 2.5 μm does not affect electrical connectivity of contact pads, test points, or connector pins — a functional advantage over conventional 25 – 125 μm conformal coatings where electrical contact must be maintained through the coating.

2. LED Surface Treatment

Applied to LED display surfaces and modules to deposit an anti-fouling, water-repellent, and oil-repellent film. Light transmittance $\geq 90\%$ and colorless film maintain optical output and color rendering of the LED surface. Static water contact angle $\geq 110^\circ$ prevents water adhesion and reduces dust accumulation on display surfaces.

3. Precision Anti-Migration (Epilame)

Applied to surfaces adjacent to lubricated components in micro-motors, high-end watch movements, and optical camera mechanisms to form a low-surface-energy barrier (10 – 12 mN/m) that prevents capillary migration of lubricating oils beyond the intended lubrication zone. LC-FC130-2 is the recommended grade for this application due to minimal film build and 30-second tack-free time compatible with precision assembly line throughput.

4. Hard Disk Drive (HDD) MR Head Protection

Applied to magnetoresistive (MR) read heads to prevent lubricant transfer from disk surfaces and particulate contamination. Film thickness control (0.5 – 1.5 μm for LC-FC130-2) is critical for MR head applications — verify film thickness by ellipsometry or profilometry before production qualification.

5. Precision Micro-Part Sealing

Used for environmental sealing of precision micro-parts, MEMS devices, and miniaturized sensors where conventional coating film thicknesses are incompatible with component dimensional tolerances.

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Fluorinated Coating Series - Product Comparison

Dimension	LC-FC260	LC-FC631/633	LC-FC181/183	LC-FC130
Water contact angle	≥110°	≥110°	≥118°	≥110°
n-Hexadecane contact angle	≥75°	≥75°	≥80°	≥70°
Surface free energy (mN/m)	10–12	10–11	8–10	10–12
Thermal stability (1% wt loss)	~250°C	~260°C	~260°C	~190°C
Tg / melting point	Tg 10–15°C	Tg 5–10°C	Mp 70–80°C	Mp 25–30°C
Max single-coat thickness	2.0–3.5 μm	1.5–2.5 μm	3–10 μm	1.5–2.5 μm
Visual indicator	Yellow tint — ambient light	UV fluorescent (633 only)	UV fluorescent (183 only)	Not specified
Color retention	≥30 days	N/A	N/A	N/A

Packing

In 100g, 500g, 1kg, 25kg.

Safety and Storage

Keep in a cool, dry, and well-ventilated environment, strictly avoiding direct sunlight, heat, and ignition sources. The shelf life is 24 months from the date of manufacture when stored in original unopened containers. Classified as a non-hazardous substance for transport and handling. Storage beyond the shelf life does not necessarily mean the product is unusable; however, the properties required for the intended use must be thoroughly checked for quality assurance reasons prior to application.

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