Technical Data Sheet

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Silfluo LC-FC181 / LC-FC183 Series

Fluorinated Conformal Coating with Optional Fluorescent Inspection

Description:

Silfluo LC-FC181 and LC-FC183 are fluoropolymer electronic coatings in a non-flammable fluorinated carrier. Both are available in 2%, 5%, and 10% solids grades; other concentrations may be supplied on request. LC-FC181 forms a standard clear film, while LC-FC183 contains a fluorescent tracer for coating-coverage inspection.

After solvent evaporation, the coatings form a colorless, low-surface-energy film. Typical single-coat dry-film thickness is 0.5–10 μm, depending on grade. The static water contact angle is ≥118°, and the typical surface free energy is 8–10 mN/m. Solderability and solvent-removability must be confirmed under the customer's process conditions before production use.

Compared with LC-FC130, the LC-FC181/183 series has a higher listed water contact angle, a lower listed surface free energy, and higher listed thermal-analysis values. These typical data do not by themselves define continuous service temperature or prove polymer composition. The product has zero ozone depletion potential (ODP) and is RoHS compliant.

Typical Technical Properties:

Product Type:	High oleophobic type
Active Ingredient:	Fluoropolymer
Appearance:	Colorless transparent liquid
Carrier Solvent:	Fluorinated solvent
Solid Content (%):	2%, 5%, 10% (Customizable upon request)
Dynamic Viscosity, 25 °C (mPa·s):	10–30
Flash Point:	No flash point
Boiling Range (°C):	50–68

Cured Film Properties (By Grade)

Property	LC-FC181/183-2	LC-FC181/183-5	LC-FC181/183-10
Solid Content:	2.0%	5.0%	10.0%
Cured Film Color:	Colorless	Colorless	Colorless
Film Gloss:	Glossy	Glossy	Glossy
Light Transmittance:	> 91%	> 91%	> 91%
Single-Coat Dry Film Thickness:	0.5 - 1.5 μm	1.5 - 2.5 μm	3 - 10 μm
Tack-Free Time (ambient conditions):	30s	1min	2min
Static Water Contact Angle:	≥ 118°	≥ 118°	≥ 118°
Static n-Hexadecane Contact Angle:	≥ 80°	≥ 80°	≥ 80°
Surface Free Energy (mN/m)	8 - 10	8 - 10	8 - 10
Adhesion (ASTM D3359)	5B	5B	5B
Melting Point	70 - 80°C	70 - 80°C	70 - 80°C
Thermal Stability (1% mass loss):	~ 260°C	~ 260°C	~ 260°C
Dielectric Constant:	3.1	3.1	3.1
Volume Resistivity (Ω·m):	$>10^{14}$	$>10^{14}$	$>10^{14}$
Surface Resistivity (Ω/sq):	$>10^{14}$	$>10^{14}$	$>10^{14}$

Coating Process

Apply by spray, dip, roll, or blade coating using equipment compatible with the formulation. Stainless-steel

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or PTFE-lined equipment is generally suitable. For dip coating, control withdrawal speed to achieve the required film thickness and uniformity. For spray application, provide adequate local exhaust ventilation. Establish process parameters through trials on the intended substrate.

Applications

1. PCBA and FPCA Protection

May be evaluated as a thin conformal coating for PCBAs and flexible circuits to reduce exposure to moisture, condensation, dust, and oils. LC-FC183 supports fluorescent coverage inspection. Mask electrical contacts unless the assembly process, solderability, and rework method have been validated with the coating.

2. Precision Anti-Migration (Epilame)

May be applied around lubricated components in watches, micro-motors, cameras, and other precision mechanisms to reduce lubricant migration. The 2% grade provides the lowest listed film build. Confirm epilame performance with the intended lubricant, substrate, surface preparation, and film thickness.

3. Hard Disk Drive MR Head Protection

Potential use as a thin contamination and lubricant-migration barrier for magnetoresistive read heads. This is a precision application; film thickness, adhesion, electrical performance, and cleanliness must be validated before use.

4. Precision Micro-Part Sealing

Potential use on precision parts, MEMS devices, and miniaturized sensors where low film build is important. The listed 1% mass-loss temperature is a thermal-analysis result and does not by itself establish reflow-soldering compatibility.

Fluorinated Coating Series – Product Comparison (Typical Values)

Property	LC-FC260	LC-FC633	LC-FC181/183	LC-FC130
Type	Yellow indicator	Standard	High oleophobic	Matte
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% mass loss)	~280°C	~260°C	~260°C	~200°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	Fluorescent	Fluorescent (183 only)	None; matte film

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Property	LC-FC260	LC-FC633	LC-FC181/183	LC-FC130
Color retention	≥30 days	N/A	N/A	N/A

Packing

Available in 100 g, 500 g, 1 kg, and 25 kg packs.

Safety and Storage

Store at 5–35 °C in the original tightly closed container in a cool, dry, and well-ventilated area. Protect from direct sunlight, heat, and ignition sources. The shelf life is 24 months from the date of manufacture when stored in unopened original containers under these conditions. Refer to the current SDS for handling and transport information. Material stored beyond the shelf-life period should be retested against the required properties before use.

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