



Silfluo LF-PM11

Phenylmethyl Silicone Fluid

Description:

Silfluo LF-PM11 is a series of non-reactive phenylmethyl polysiloxane fluids (polyphenylmethylsiloxane) available in four grades differentiated by phenyl content, refractive index, and viscosity range, covering low-phenyl to high-phenyl compositions.

Unlike the reactive silanol-terminated (LF-OHP2, LF-OHPM) and vinyl-terminated (LF-VPDMS) grades, LF-PM11 fluids carry no reactive end groups and function as non-crosslinkable functional fluids — used as dielectric fluids, heat transfer media, optical matching fluids, lubricant base oils, and high-gloss additives rather than as base polymers for cured elastomers.

The defining performance advantage of the LF-PM11 series over standard PDMS fluids is the phenyl group contribution: elevated refractive index (up to 1.533), superior thermal and oxidative stability, significantly improved radiation resistance, and, critically for low-phenyl grades, suppression of siloxane backbone crystallization at ultra-low temperatures down to -120°C .

Typical Technical Properties:

Silfluo Code:	LF-PM11A	LF-PM11B	LF-PM11C	LF-PM11D
Chemical Name:	Phenylmethyl Silicone Oil			
Synonyms:	Phenyl Silicone Fluid; Polyphenylmethylsiloxane			
CAS NO.	63148-52-7	63148-52-7	63148-52-7	9005-12-3/63148-58-3
Appearance	Colorless to yellowish transparent liquid			
Viscosity (25°C, mm ² /s)	50-30000	100-1100	75-200	20-500
Refractive Index(25°C, nD25)	1.4150-1.4250	1.4900~1.5200	1.4900~1.5000	1.4700~1.5330
Chemical Structure:				

Applications:

1. Aerospace, Aviation, and Cryogenic Systems

Low-phenyl grades (LF-PM11A) suppress crystallization of the siloxane backbone at temperatures down to -120°C , maintaining fluid flow and sealing effectiveness in aircraft hydraulic systems, sub-zero lubricants, and cryogenic insulation materials where standard PDMS fluids would crystallize or become excessively

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viscous. The broad viscosity range of LF-PM11A (50 – 30,000 mm²/s) provides flexibility for formulating both thin functional fluids and heavier compound bases.

2. Nuclear and Radiation-Resistant Applications

High-phenyl grades (LF-PM11B, LF-PM11C, LF-PM11D) exhibit resistance to gamma and high-energy radiation due to the radiation energy absorption capacity of phenyl ring structures. Used as heat-transfer fluids, dielectric coolants, radiation-resistant coatings bases, and seal impregnants in nuclear power plant environments where standard organic or PDMS-based fluids undergo rapid chain scission and degradation under irradiation.

3. Extreme-Duty Electronics Potting and Dielectric Fluids

Used as high-performance dielectric encapsulants and potting fluids for sensitive electronics, power transformers, and engine control components subjected to severe thermal cycling. Superior thermal stability and wide service temperature range (–57 ° C to 200 ° C) prevent fluid decomposition, loss of dielectric strength, or crystallization at temperature extremes that degrade standard silicone fluids.

4. Lubrication, Release Agents, and Impregnating Resins

Used as base oil for high-temperature extreme-environment lubricating greases, release agent formulations, and fiber or textile impregnating resins where standard PDMS fluids lack sufficient thermal or oxidative stability for long service life.

5. Optical Matching Fluids and Cosmetic Applications

High-phenyl grades (LF-PM11B RI 1.490 – 1.520; LF-PM11D RI up to 1.533) function as optical matching fluids for fiber optic coupling, microscopy immersion, and optical sensor applications requiring RI above the ~1.40 ceiling of standard PDMS. In personal care, high-RI grades serve as premium high-gloss additives delivering superior shine and smooth sensory profile in hair and skin formulations.

Grade	RI Range	Viscosity Range	Key Characteristic	Primary Use
LF-PM11A	1.4150–1.4250	50–30,000 mm ² /s	Low phenyl; ultra-low temp fluidity to –120°C; broadest viscosity range	Aerospace/cryogenic fluids; dielectric oils; transformer insulation
LF-PM11B	1.4900–1.5200	100–1,100 mm ² /s	High phenyl; high RI; radiation resistant	Optical matching fluids; nuclear heat-transfer; HRI cosmetic additives
LF-PM11C	1.4900–1.5000	75–200 mm ² /s	High phenyl; low viscosity; good flow	Optical immersion fluids; radiation-resistant potting diluent
LF-PM11D	1.4700–1.5330	20–500	Variable phenyl; widest RI	Tunable RI optical fluids;

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Grade	RI Range	Viscosity Range	Key Characteristic	Primary Use
		mm ² /s	range; lowest viscosity floor	high-gloss personal care; specialty lubricants

Package & Storage:

In 25kg and 200kg drum.

Keep in cool, dry and ventilated place. Keep away from sunlight and fire sources. Keep in unopened containers, shelf life is 36 months from the date of production. Storage beyond the shelf life does not necessarily mean that the product is no longer usable. In this case however, the properties required for the intended use must be checked for quality assurance reasons.