Technical Data Sheet

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Silfluo LF-PM12

Diphenyl Silicone Fluid

Description:

Silfluo LF-PM12 is a series of diphenyl dimethyl polysiloxane copolymer fluids (CAS 68083-14-7) with trimethylsilyl end groups and a backbone containing both diphenylsiloxane (D-Ph) and dimethylsiloxane (D-Me) repeat units, available in three grades (LF-PM12A, B, D) differentiated by diphenyl content and refractive index.

The molecular architecture — bulky diphenyl groups distributed along a dimethylsiloxane backbone — delivers higher thermal stability (continuous service to 250–300° C), higher refractive index (1.420–1.510), and superior oxidative and radiation resistance compared to standard PDMS, while trimethylsilyl end-capping renders these fluids fully non-reactive.

LF-PM12 occupies a distinct position relative to LF-PM11 (phenylmethyl backbone, reactive end groups available) and LF-OHP2 (all-diphenyl backbone, silanol-terminated reactive polymer): LF-PM12 is a non-reactive, trimethyl-terminated functional fluid optimized for use as a heat-transfer medium, dielectric fluid, optical blending component, or cosmetic emollient rather than as a curable base polymer.

Typical Technical Properties:

Silfluo Code:	LF-PM12A	LF-PM12B	LF-PM12D
Chemical Name:	Diphenyl Dimethyl Polysiloxane		
Synonyms:	Diphenyl Silicone Oil; Polydiphenyldimethylsiloxane; Phenyl Dimethicone		
CAS NO.	68083-14-7		
Molecular Formula:	$(CH_3)_3SiO[(C_6H_5)_2SiO]_m[(CH_3)_2SiO]_nSi(CH_3)_3$		
Appearance	Colorless to yellowish transparent liquid		
Viscosity (25°C, mPa.s)	50-3000	150-250	400-500
Refractive Index(25°C, nD25)	1.4200~1.4400	1.4800~1.5000	1.5000~1.5100
	Low Diphenyl Content	Medium Diphenyl Content	High Diphenyl Content

Chemical Structure:

Features

- Continuous high-temperature service to 250–300° C: exceeds standard PDMS (200° C) and LF-PM11 (200° C) limits
- Tunable refractive index from 1.420 to 1.510 across the three grades via diphenyl content adjustment
- Non-reactive, trimethylsilyl-terminated: fully compatible with both addition-cure and condensation-cure silicone systems as a non-crosslinking blending component
- INCI-recognized as Phenyl Dimethicone: suitable for cosmetic formulation without additional chemical registration in most markets

- Outstanding oxidative, UV, and radiation resistance from diphenylsiloxane units.

Applications:

1. Cosmetics and Personal Care

LF-PM12B and LF-PM12D are used as premium emollient and gloss-enhancing additives in hair serums, lipsticks, lip glosses, liquid foundations, and sunscreen formulations. High refractive index (up to 1.510) imparts exceptional mirror-like shine and color depth in color cosmetics. Non-greasy, breathable skin feel and excellent water repellency — properties derived from the silicone backbone — distinguish LF-PM12 from conventional organic emollients. INCI name: Phenyl Dimethicone. Confirm regulatory compliance (COSMOS, REACH, China GB standards) for target market before incorporating into finished personal care products.

2. Optical Blending and LED Encapsulation

LF-PM12B and LF-PM12D serve as non-reactive, high-RI blending components in two-part addition-cure LED encapsulant formulations to fine-tune the refractive index of the cured system without introducing additional crosslinkable groups. Used alongside reactive base polymers (LF-OHP2, LF-OHPM) and crosslinkers (LF-PH11) where RI adjustment is required but an increase in crosslinker Si–H content is not desirable. Non-reactive nature means LF-PM12 functions as a plasticizer-type diluent — optimize loading level to avoid phase separation or bleed-out in the cured network; verify compatibility via cured sample testing.

3. Extreme-Temperature Industrial Fluids

LF-PM12A, with continuous service capability to 250–300° C, is used as a high-temperature dielectric fluid in power transformers, a heat-transfer medium in industrial thermal systems, and a base oil for extreme-duty lubricating greases and mold release agents operating above the service limit of standard PDMS fluids (~200 ° C). Diphenylsiloxane units in the backbone raise the thermal oxidative degradation onset significantly above that of dimethylsiloxane-only fluids. Broad viscosity range of LF-PM12A (50–3,000 mPa • s) enables grade selection optimized for system flow and heat-transfer requirements.

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 24 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.