

PRODUCT RANGE

MQ & Specialty Silicone Resins

Tackifying, reinforcing and crosslinking resins for silicone adhesives and rubbers, LED and optical encapsulants, and personal care

www.silfluosilicone.com

Silfluo

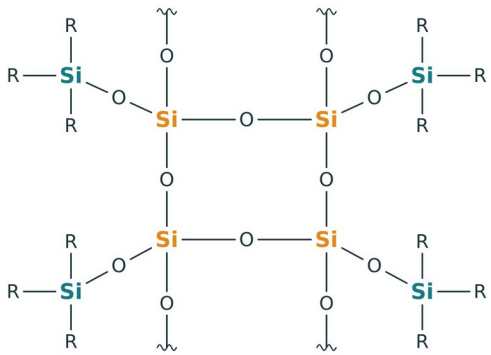
INTRODUCTION

MQ and specialty resins from Silfluo

Silfluo MQ and specialty resins are used to build strength, tack, hardness and refractive index into silicone systems, and as film formers and functional powders.

MQ resins combine monofunctional M units ($R_3SiO_{1/2}$) with tetrafunctional Q units ($SiO_{4/2}$). The Q units form a compact silicate core; the M units cap it and make the resin soluble in silicone fluids and organic solvents. The M/Q ratio sets molecular size, hardness and compatibility.

Replacing part of the methyl groups in the M units with vinyl or Si–H groups lets the resin take part in platinum-catalyzed addition cure. Phenyl-rich resins raise the refractive index of encapsulants. Polymethylsilsesquioxane (PMSQ) is a fully crosslinked T resin supplied as spherical microparticles.



Schematic MQ resin network (R = organic group)

0.60–1.5
M/Q ratio across the MQ, MQV and MQH grades

0.96–13.2%
vinyl content of the LR-MQV liquid grades

1.5420
highest refractive index, LR-PV101 grades

0.5–6 µm
average particle size of LR-610 PMSQ

Product families

01	**Methyl MQ Resins**	Trimethylsiloxy-terminated silicate resins with an M/Q ratio of 0.60–0.80, supplied as a solution or as a powder.	p. 4
02	**Vinyl MQ Resins**	MQ resins with vinyl-functional M units that crosslink with Si–H polymers in platinum-catalyzed addition-cure systems.	p. 4
03	**Hydride and Phenyl Resins**	Si–H functional resins used as resinous crosslinkers, and phenyl vinyl / phenyl hydrogen resins for high-refractive-index addition-cure encapsulants.	p. 5
04	**Personal Care Resins and Microspheres**	Trimethylsiloxysilicate film formers for color cosmetics and sun care, and spherical PMSQ powders for light diffusion, feel and powder flow.	p. 6

SELECTION GUIDE

Product overview

Grade	Type and form	Silicone PSAs	Addition-cure silicones & rubber	Release & defoamers	LED & optics	Personal care	Coatings & polymer additives
LR-MQ Liquid	Methyl MQ, solution	●	●	●			
LR-MQ Powder	Methyl MQ, powder	●	●	●			
LR-MQV Liquid	Vinyl MQ, solution or dispersion	●	●				
LR-MQV Powder	Vinyl MQ, powder	●	●	●		●	
LR-MQH	Hydrogen MQ, liquid		●	●			
LR-SRH series	Si–H hybrid resin, liquid		●				
LR-PV101	Phenyl vinyl resin, liquid	●			●		
LR-PH101	Phenyl hydrogen resin, liquid				●		●
LR-TMS	Trimethylsiloxysilicate, powder or blend					●	
LR-610	PMSQ spherical powder				●	●	●

● main application in the grade's TDS.

Solubility of LR-MQ and LR-MQV

Hydroxyl silicone fluid	●	C9–C13 isoparaffins	●	Paraffin 52	○
Methyl silicone oil	●	Ethanol	●	PE wax	○
Vinyl silicone oil	●	Isopropanol	●	Water	○
Toluene	●	White oil	○	Glycerin	○
Ethyl acetate	●	Castor oil	○	Propylene glycol	○

● soluble (≥20%) ○ insoluble

PRODUCT RANGE

01 Methyl MQ Resins

Trimethylsiloxy-terminated silicate resins with an M/Q ratio of 0.60–0.80, supplied as a solution or as a powder.



LR-MQ Liquid

Methyl MQ silicone resin, solution

COMPARABLE TO*

Wacker Silres 803

Silfluo LR-MQ Liquid is a methyl MQ silicone resin, a trimethylsiloxy-terminated polysilicate network made from tetraalkoxysilane (Q units) and trimethyl silanes (M units), supplied as a clear solution in toluene or xylene or as a dispersion in PDMS fluid. The resin has an M/Q ratio of 0.60–0.80, molecular weight of 5000±1000 and hydroxyl content of ≤0.5%. Main uses are high-temperature defoamers, PU mold release, silicone PSAs and clear LSR.

M/Q ratio
0.60–0.80

Molecular weight
5000±1000

Hydroxyl content
≤0.5%

Viscosity, 50% in toluene
4.0 mm²/s

LR-MQ Powder

Methyl MQ silicone resin, powder

COMPARABLE TO*

Wacker Silres 803

Silfluo LR-MQ Powder is a solid methyl MQ silicone resin made by co-hydrolysis of tetraalkoxysilane (Q units) and trimethyl-functional silanes (M units), forming a trimethylsiloxy-terminated polysilicate network. It is a free-flowing white powder with 100 µm average particle size, 0.25 g/cm³ bulk density, M/Q ratio of 0.60–0.80 and ≤0.5% hydroxyl content. Main uses are high-temperature defoamers, PU mold release, silicone PSAs and clear LSR.

M/Q ratio
0.60–0.80

Molecular weight
5000±1000

Average particle size
100 µm

Bulk density
0.25 g/cm³

02 Vinyl MQ Resins

MQ resins with vinyl-functional M units that crosslink with Si–H polymers in platinum-catalyzed addition-cure systems.



LR-MQV Liquid

Methyl vinyl MQ silicone resin, nine standard grades

Silfluo LR-MQV Liquid is a series of methyl vinyl MQ silicone resins supplied as a 75% solution in toluene or as a 1:1 dispersion in silicone oil. Standard grades cover viscosities from 6,300 to 70,000 mPa·s with an M/Q ratio of 0.7–0.9, and the vinyl groups crosslink into platinum-catalyzed addition-cure systems. Main uses are transparent mold-making rubbers, silicone PSAs, glazing polishes and reinforcement of addition-cure silicones.

M/Q ratio
0.7–0.9

Viscosity
6300–70000 mPa·s

Vinyl content
0.96–13.2%

Volatiles, LR-MQV6 to MQV10
≤1%

Grade	Viscosity, mPa·s	Vinyl, %
LR-MQV6	6300±500	0.96±0.02
LR-MQV7	6500±500	1.31±0.02
LR-MQV9	8000±500	1.32±0.02
LR-MQV61	6500±500	1.94±0.02
LR-MQV10	11000±1000	1.10±0.02

Grade	Viscosity, mPa·s	Vinyl, %
LR-MQV19	19500±1500	1.10±0.02
LR-MQV70	70000±10000	1.25±0.02
LR-MQV60	60000	1.6±0.02
LR-MQV101	11000±1000	13.2±0.2

* Comparable grades are given for orientation only and do not mean identical composition or performance; suitability must be confirmed by application testing. Trademarks are the property of their respective owners.

02 Vinyl MQ Resins (continued)

LR-MQV Powder

Vinyl-functional MQ silicone resin, powder

Silfluo LR-MQV Powder is a vinyl-functional MQ silicone resin supplied as a white spherical powder with ≥95% active content, an M/Q ratio of 0.7–1:1 and custom vinyl content. Its vinyl groups react with Si–H crosslinkers by platinum-catalyzed hydrosilylation, so the silicate core raises modulus, hardness and tensile strength of the cured network. Main uses are clear LSR, HCR, release coatings, PSAs, Class H insulation and color cosmetics.

Active content
≥95%

M/Q ratio
(0.7–1):1

Vinyl content
to order

Typical loading
1–20 wt%

03 Hydride and Phenyl Resins

Si–H functional resins used as resinous crosslinkers, and phenyl vinyl / phenyl hydrogen resins for high-refractive-index addition-cure encapsulants.



LR-MQH

Hydrogen-containing MQ silicone resin

Silfluo LR-MQH is a hydrogen-containing MQ silicone resin, a colorless transparent liquid whose Si–H bonds take part in hydrosilylation crosslinking. Grades range from 10 to 3,000 mPa·s and 0.15–0.75 wt% hydrogen, with an M/Q ratio of 1.2–1.5 and ≥80% solids. Used as a crosslinker and filler in addition-cure silicone rubbers, a tackifier in sealants, an intermediate for modified MQ resins and in release agents and defoamers.

M/Q ratio
1.2–1.5

Viscosity, 25 °C
10–3000 mPa·s

Hydrogen content
0.15–0.75 wt%

Solids
≥80%

LR-SRH series

Hydride-functional hybrid silicone resins (LR-SRH-08, -50, -80, -95)

Silfluo LR-SRH-08 series (LR-SRH-08, -50, -80 and -95) are hydride-functional hybrid silicone resins with a branched Q/M framework, T-unit modification and reactive Si–H groups. The colorless transparent liquids have hydrogen contents from 0.07 to 1.00 wt% and viscosities of 30–150 mPa·s at 25 °C. Used as resinous crosslinkers with vinyl silicones in platinum-catalyzed addition-cure systems and to build Si–H resin segments into silicone networks.

Hydrogen, -08 / -50
0.07–0.10 / 0.45–0.55 wt%

Hydrogen, -80 / -95
0.75–0.85 / 0.90–1.00 wt%

Viscosity, 25 °C
30–150 mPa·s

LR-PV101

Phenyl vinyl silicone resin (five grades)

Silfluo LR-PV101 is a series of vinyl-functional phenyl polysiloxane resins, colorless to light yellow clear liquids that cure with Si–H crosslinkers under platinum catalysis. The five grades cover 7,000–60,000 mPa·s, 5.17–5.97% vinyl and refractive indices of 1.5250–1.5420, with ≤1% volatiles (150 °C/3 h) and impurities below 50 ppm. Main uses are LED and optical encapsulants, composites, electrical varnishes and silicone PSAs.

Viscosity, 25 °C
7000–60000 mPa·s

Vinyl content
5.17–5.97%

Refractive index
1.5250–1.5420

Volatiles, 150 °C / 3 h
≤1%

03 Hydride and Phenyl Resins (continued)

LR-PH101

Phenyl hydrogen silicone resin (three grades)

Silfluo LR-PH101 is a phenyl hydrogen polysiloxane crosslinker that reacts with vinyl silicones under platinum catalysis to form a hard, optically clear network. Three grades cover 40–6,800 mPa·s, 0.22–0.52% hydrogen and refractive indices of 1.4910–1.5400, with ≤1% volatiles (150 °C/3 h). Main uses are high-refractive-index LED and optical encapsulants, composites, electrical insulating varnishes and protective coatings.

Viscosity, 25 °C
40–6800 mPa·s

Hydrogen content
0.22–0.52%

Refractive index
1.4910–1.5400

Volatiles, 150 °C / 3 h
≤1%

04 Personal Care Resins and Microspheres

Trimethylsiloxysilicate film formers for color cosmetics and sun care, and spherical PMSQ powders for light diffusion, feel and powder flow.



LR-TMS

Trimethylsiloxysilicate (INCI)

Silfluo LR-TMS is a series of trimethylsiloxysilicate (MQ silicone resin) grades for personal care, supplied as 100% active white powders below 150 or 80 µm or as clear blends in cyclopentasiloxane, dimethicone or isododecane. The resin forms a flexible, non-tacky film that gives wash-off resistance and holds pigments in place. Main uses are transfer-resistant color cosmetics, sun care, antiperspirants, hair styling and skin care.

Powder grades
100% resin, <150 or <80 µm

Liquid blends
20–50% resin

Carriers
cyclopentasiloxane, dimethicone, isododecane

LR-610

Polymethylsilsesquioxane spherical powder (five grades)

Silfluo LR-610 is a series of spherical polymethylsilsesquioxane (PMSQ) micropowders, a highly crosslinked (RSiO3/2)n network made by hydrolysis and condensation of organosilanes. The five grades have ≥99% active content and average particle sizes of 0.5–6 µm, and do not dissolve in organic solvents or melt below 400 °C. Typical uses include light diffusion in PS and PC, cosmetics, polymer modification, coatings, inks and powder flow.

Average particle size
0.5–6 µm

Active content
≥99%

Specific gravity, 25 °C
1.3

Dosage, PS / PC
0.5–1.0% / 0.25–0.75%

PROCESSING

Handling and supply

Dispersing powders

Disperse powder grades into the polymer with heat and high-shear mixing, or pre-dissolve them in a compatible solvent such as toluene, xylene, C9–C13 isoparaffins or ethyl acetate before adding them to the formulation.

Addition-cure systems

Vinyl and Si–H resins react by platinum-catalyzed hydrosilylation. Balance the vinyl and Si–H content of resin, polymer and crosslinker, and determine the optimum loading by testing in the actual formulation.

Custom grades

Vinyl content of LR-MQV Powder and the specifications of the LR-MQV, LR-PV101 and LR-PH101 series can be adjusted on request.

Packaging

Product group	Packaging
LR-MQ, LR-MQV Liquid	20 kg boxes, 25 kg pails, 200 kg drums
LR-MQ Powder / LR-MQV Powder	40 kg or 200 kg pails / 40 kg pails
LR-MQH, LR-SRH series	25 kg or 200 kg drums
LR-PV101, LR-PH101	25 kg pails, 200 kg drums
LR-TMS	25 kg barrels (powder), 40 or 200 kg drums (liquid)
LR-610	20 kg cartons, 500 kg big bags

Packaging is given per grade in the TDS; other pack sizes on request.

Silfluo

TECHNICAL SUPPORT

Selecting a grade

To recommend a grade, our technical team needs a few details about your formulation:

01 Application: PSA, LSR or HCR, release coating, encapsulant, cosmetic or other

02 Cure system: platinum addition cure, condensation cure or peroxide

03 Target hardness, tack or peel force, and optical requirements such as refractive index

04 Required functional group and content: vinyl, Si–H or none

05 Preferred form: powder, solvent solution or dispersion in silicone fluid

06 Reference grade you use today (optional)

07 Regulatory requirements, for example for cosmetics or food-contact parts

Technical data sheets, safety data sheets and samples are available on request.

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