avantor™ | NuSil™

Advaned Technologies
Product Guide

Specialty silicone components

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Specialty components for advanced silicone chemistries

SUPERIOR PERFORMANCE FORMULATED WITH DECADES OF EXPERIENCE

For over 40 years, NuSil® has developed high-purity components for sophisticated silicone chemistries. Our deep expertise allows us to develop innovative chemistries that serve demanding requirements in multiple industries and applications. Manufacturers use our materials in their silicone formulations to produce a range of specialized features, including high-temperature performance, fuel resistance, optical properties and low volatility.

HIGH PURITY COMPONENTS

NuSil has formulated specialty polymers and finished systems that are designed to create unique silicone systems. From polymers that increase thermal resistance to resins that provide viscosity control and toughness, our components can help reduce time to market, improve performance, extend product life or incorporate other specialized features for optoelectronics and electronics applications.

Leading manufacturers use our comprehensive line of high-purity components to formulate advanced silicone compounds with the utmost reliability.

POLYMERS

Our polymers are available with a wide variety of organosiloxane compositions that can be used to create a range of silicone properties, such as increased thermal stability or resistance to common fuels and organic solvents.

RESINS

NuSil produces silicone resins for a range of applications, from formulating pressure sensitive adhesives (PSAs) to reinforcing addition cure formulations that require manageable viscosity, thermal stability and toughness. Resins can be modified to vary molecular structures, functional groups and refractive indices.

GELS

A complete two-part solution, our gel-finished systems are ideal for creating custom thermally or electrically conductive materials. Low volatility and broad operating temperature options are available.

CURING COMPONENTS

NuSil offers platinum crosslinking catalysts and components to control cure rates for addition cure systems. We also offer condensation catalysts as well as adhesion promotor silanes.

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CUSTOMIZATION MASTERED

From prototype to mass production, NuSil has the expertise, processes and proprietary technology to customize silicone polymers, crosslinkers, resins, gels and curing components. We leverage our insight into silicone chemistry and material characterization capabilities to supply off-the-shelf and custom formulations tailored to meet process and end-application performance requirements. Our solutions are rapidly and economically scalable to help accelerate time to market. If you don't see the component you're looking for in our product guide, contact us for more options.

NUSIL SUPPORT

We develop our silicones to meet or exceed industry and international quality, reliability and consistency requirements with comprehensive, documented systems. NuSil is ISO 9001 certified to ensure consistent manufacturing processes and quality standards. We also support customers with testing and documentation for RoHS and REACH compliance.

Polymers

Description

NuSil's functional siloxane polymers provide a range of properties, including low modulus, thermal stability, fuel resistance and volatility. Our high-purity polymer offerings are available with a wide variety of organosiloxane compositions that can be used for reacting with hydrosilylation, peroxide or condensation cure chemistry.

HYDRIDE FUNCTIONAL SILOXANE POLYMERS

PRODUCT NUMBER	DESCRIPTION	VISCOSITY	mmol/g h (approximate)	VOLATILE CONTENT (maximum)
DIMETHYL				
XL2-7500	Hydride-terminated PDMS	4.5 cSt	2.9	20%
XL3-7500	Hydride-terminated PDMS	14 cSt	1.4	20%
XL1-7501	Hydride-terminated PDMS	125 cSt	0.3	1%
XL-7505	Hydride-terminated PDMS	500 cP	0.2	1%
XL-110	Trimethyl-terminated, pendant hydride	5 cSt	7.0	50%
XL-150	Trimethyl-terminated, pendant hydride	10 cSt	3.5	40%
XL-153	Trimethyl-terminated, pendant hydride	30 cSt	5.3	6%
XL-115	Trimethyl-terminated, pendant hydride	50 cSt	4.0	1%
XL-112	Trimethyl-terminated, pendant hydride	50 cSt	6.5	1%
XL-116	Trimethyl-terminated, pendant hydride	100 cSt	0.9	1%
XL-151	Trimethyl-terminated, pendant hydride	500 cP	0.4	0.9%
FLUOROSILICONE				
XL-150	Fluoro, dimethyl copolymer trimethyl-terminated, pendant hydride	10 cSt	4.0	40%

SILANOL FUNCTIONAL SILOXANE POLYMERS

PRODUCT NUMBER	DESCRIPTION	VISCOSITY	% OH (approximate)	VOLATILE CONTENT (maximum)	REFRACTIVE INDEX at 589 nm
DIMETHYL					
PLY-7601	Silanol-terminated PDMS	40 cSt	4.0	-	1.40
PLY1-7600	Silanol-terminated PDMS	500 cSt	0.5	3%	1.40
PLY-7608	Silanol-terminated PDMS	750 cP	-	2%	1.40
PLY2-7600	Silanol-terminated PDMS	1,000 cP	-	3%	1.40
PLY-7609	Silanol-terminated PDMS	3,500 cP	0.2	2%	1.40
PLY3-7600	Silanol-terminated PDMS	10,000 cP	0.1	3%	1.40
PLY1-7630	Silanol-terminated PDMS (low volatility)	800 cSt	0.3	0.25%	1.40
PLY2-7630	Silanol-terminated PDMS (low volatility)	3,500 cP	0.2	0.25%	1.40
PLY3-7630	Silanol-terminated PDMS (low volatility)	20,000 cP	0.1	< 0.5%	1.40
PHENYL					
PLY-7661	Silanol-terminated - Diphenyl copolymer	2,500 cP	0.25	1%	1.43
FLUOROSILICONE					
PLY-7683*	Silanol-terminated 100mol% Fluoro	1,500 cP	0.6	1%	1.38
PLY-7810	Silanol-terminated 100mol% Fluoro	60,000 cP	-	1%	1.38

Volatility tested at 3 hours at 150˚C

*ITAR controlled

VINYL FUNCTIONAL SILOXANE POLYMERS

PRODUCT NUMBER	DESCRIPTION	VISCOSITY	mmol/g Vi (approximate)	VOLATILE CONTENT (maximum)	REFRACTIVE INDEX at 589 nm
DIMETHYL					
PLY1-7500	Vinyl-terminated PDMS	500 cP	0.16	1%	1.40
PLY2-7500	Vinyl-terminated PDMS	1,000 cP	0.10	1%	1.40
PLY3-7500	Vinyl-terminated PDMS	10,000 cP	0.05	1%	1.40
PLY4-7500	Vinyl-terminated PDMS	50,000 cP	0.03	3%	1.40
PLY1-7530	Low-volatility vinyl-terminated PDMS	100 cSt	0.35	1,000 ppm D4-D10	1.40
PLY2-7530	Low-volatility vinyl-terminated PDMS	500 cP	0.15	1,000 ppm D4-D10	1.40
PLY3-7530	Low-volatility vinyl-terminated PDMS	1,000 cP	0.11	1,000 ppm D4-D10	1.40
PLY4-7530	Low-volatility vinyl-terminated PDMS	5,200 cP	0.05	1,000 ppm D4-D10	1.40
PHENYL					
PLY1-7560	Vinyl-terminated - Ph_2 copolymer	500 cP	0.20	1%	1.43
PLY2-7560	Vinyl-terminated - Ph_2 copolymer	1,000 cP	0.15	1%	1.43
PLY3-7560	Vinyl-terminated - Ph_2 copolymer	10,000 cP	-	1%	1.43
PLY4-7560	Vinyl-terminated - Ph_2 copolymer	50,000 cP	0.06	1%	1.43
PLY-7664	Vinyl-terminated - Ph_2 copolymer	6,000 cP	-	1%	1.46
PLY-7665	Vinyl-terminated - Ph_2 copolymer	600 cSt	0.80	1%	1.52
FLUOROSILICONE					
PLY2-7580*	Vinyl-terminated 100mol% F	1,000 cP	0.50 Vi	1%	1.38
PLY3-7580	Vinyl-terminated 100mol% F	10,000 cP	0.20 Vi	1%	1.38
PLY4-7580	Vinyl-terminated 100mol% F	50,000 cP	0.07 Vi	1%	1.38
PLY5-7580	Vinyl-terminated 100mol% F	100,000 cP	0.05 Vi	1%	1.38

*ITAR controlled

AMINE FUNCTIONAL SILOXANE POLYMERS

PRODUCT NUMBER	DESCRIPTION	VISCOSITY	mmol/g AMINE (approximate)	VOLATILE CONTENT (maximum)
PLY-7550	Pendant aminoethyl aminopropyl - dimethylsiloxane copolymer	200 cSt	1.4	0.3%

Resins

Description

NuSil siloxane resins are branched structures used in coatings, pressure-sensitive adhesives (PSAs) or other applications that require thermal stability, gloss finish and toughness.

Our resins can be modified to vary molecular structures, functional groups and refractive indices.

FUNCTIONAL SILOXANE RESINS

PRODUCT NUMBER	DESCRIPTION	VISCOSITY (average)	WIJS mmol H/g (average)	REFRACTIVE INDEX at 589 nm	% SOLIDS (typical)
HYDRIDE					
XL-111	Methyl hydride, solventless	15-40 cP	9.5	1.40	45.0
PLY2-7707	Phenyl methyl hydride T, solventless	1,100 cP	4.0	1.55	98.5
VINYL					
PRODUCT NUMBER	**DESCRIPTION**	**VISCOSITY (average)**	**WIJS mmol H/g (average)**	**REFRACTIVE INDEX at 589 nm**	
CF-4721	MTD vinyl resin, solventless	110 cSt	4.7	1.52	
PLY2-7717	Vinyl resin, solventless	100-500 cP	1.4	1.53	
SILANOL					
PRODUCT NUMBER	**DESCRIPTION**	**% OH (typical)**	**MW DALTONS (typical)**	**% SOLIDS**	**SPECIAL FEATURE**
RES-4600	MQ	0.32	7,700	60	In xylene

Gels

Description

Gel finished systems help decrease time to market by providing a complete two-part kit with little formulating required. Our high-purity gel systems are excellent for filling with compatible specialty fillers that create custom thermally or electrically conductive materials. Dimethyl and phenyl gel systems are available in a variety of hardnesses, siloxane chemistries and volatility specifications.

GELS

PRODUCT NUMBER	REFRACTIVE INDEX at 589 nm	PENETRATION (mm) DUROMETER (Type)	VISCOSITY cP (mPa·sec)	WORK TIME	DESCRIPTION
DIMETHYL GELS					
GEL-8136	1.40	13 mm	450	-	High surface tack
GEL-8100	1.40	10 mm	535	> 24 h	Very soft, flows when cured
GEL-8111	1.40	10 mm	535	> 24 h	Low volatility, flows when cured
GEL-8170	1.40	9 mm	600	-	Soft and medium tack
GEL-8150	1.40	5 mm	500	4 h	Soft
GEL8-8150	1.40	4 mm	500	1.5 h	Soft, able to RTV
EPM-2480	1.40	4 mm	2,500	> 24 h	Low volatility, soft and high tack
GEL1-8155	1.40	0.4 mm	14,500	-	Firm and medium tack
PHENYL GELS					
LS1-3443	1.43	6 mm	650	2 h	Broad operating temperature
LS-3246	1.46	10 (00)	1,000	8 h	Reduced water permeability
LS1-3252	1.52	65 (000)	425	-	Reduced water permeability
LS-3354	1.54	75 (000)	8,000	2 h	Reduced water permeability
LS3-3354	1.54	75 (000)	8,000	2 h	Reduced water permeability, designed for improved adhesion

All materials are platinum cure

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Curing components

Description

NuSil offers curing catalysts and components to control cure rates for addition cure systems. Our platinum catalysts can be customized to specific concentration levels and diluent types to provide compatibility in various organosiloxane systems.

Our inhibitor components enable tailoring of pot life in platinum cure silicones. We also offer condensation catalysts as well as adhesion promotor silanes.

CURING COMPONENTS

PRODUCT NUMBER	REFRACTIVE INDEX at 589 nm	% PLATINUM	DESCRIPTION
PLATINUM CATALYST FOR ADDITION CURE REACTIONS			
CAT-50	1.40	2.5	Karsted catalyst, platinum-divinyltetramethylsiloxane complex
CAT1-50	1.40	2.0	Karsted catalyst, platinum-divinyltetramethylsiloxane complex
CAT2-50	1.40	0.9	Karsted catalyst, platinum-divinyltetramethylsiloxane complex
CAT-7717	1.41	3.0	Ashby catalyst, platinum-tetravinyltetramethylcyclotetrasiloxane complex
CAT-53	1.52	2.0	Karsted catalyst, platinum-divinyltetramethylsiloxane complex
INHIBITORS			
PRODUCT NUMBER	**CURE TEMPERATURE (minimum)**	**DESCRIPTION**	
XL-119	Ambient	2,4,6,8 –Tertramethyl-2,4,6,8-tetravinylcyclotetrasiloxane used as a competitive inhibitor for controlling work time of addition cure silicones	
XL-128	> 70° C	Methyl Butynol (MeBuOH), fugitive inhibitor for controlling work time of addition cure silicones.	
CAT-41	> 120° C	Ethynyl Cyclohexanol (ETCH), fugitive inhibitor for controlling work time of addition cure silicones.	
ADHESION PROMOTERS			
PRODUCT NUMBER	**DESCRIPTION**		
SP-7717	Titanate catalyst for reacting adhesion promoters to substrate		
SP-7707	Vinyl functional adhesion promoter		
SP1-7707	Epoxy functional adhesion promoter		

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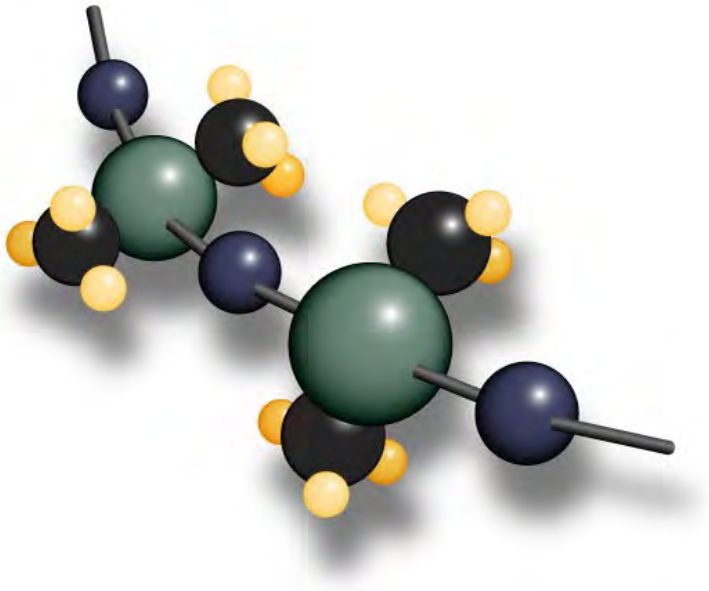

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