INDUSTRIAL & CHEMICAL PROCESSING

Liquid silicone rubbers for fashion textile coatings

Product selection guide

SILASTIC™ Liquid Silicone Rubber

The distinct chemistry and material properties of silicone polymers allows them to be formulated as Liquid Silicone Rubbers (LSR). LSRs have multiple benefits like water and flame resistance, good adhesion, high elongation and they are suitable for some skin-contact applications. Dow's portfolio of LSRs are available in multiple grades to serve many different markets and applications, such as industrial, electrical, optical, automotive and consumer products.

LSRs for textile coating

LSRs are widely used in textile-coating applications due to their remarkable and versatile properties, processability, and performance — extending the life of fabrics in a variety of end-use applications. In addition, they help enable development of innovative new applications.

The demand for LSRs in textiles is primarily for industrial technical textile and fashion coating applications. This guide focuses on fashion coating, involving aesthetics and/or functional benefits, and includes a selection of SILASTIC™ textile-grade LSRs. This useful guide is organized with product selection by application and benefits, and offers product technical information by selected application which include:

- Printing inks
- Fabric coating
- Anti-slip
- Fabric bonding

Choosing LSR for your application

Selecting the right LSR for a specific application is determined by the end-use benefits, derived from the cured LSR's mechanical properties and their processing and curing properties.

Textile grade LSRs are generally available in two options:

- Two-part, polyaddition cure, high-temperature vulcanized (HTV) elastomers
- One-part, moisture cure, room-temperature vulcanized (RTV) elastomers

These LSRs are formulated to offer a variety of property ranges that are most suited to fashion textile applications and can be optimized for compatibility and effectiveness with specific processes and equipment.

LSR features and benefits for textiles

Substrate adhesion and wash fastness

Suitable LSR rheology, wetting properties, substrate reactivity, and elastomer properties allows excellent adhesion to most natural and synthetic fabrics and blends, giving excellent garment wash fastness.

Elasticity and stretch

High elasticity with elongation break, (up to 1450% for some grades) makes LSRs suitable for highly elastic synthetic fabrics and sportswear.

Reinforcement and stretch recovery

Medium- to high-hardness elastomers with high tensile and tear properties offers fabric reinforcement properties.

Grip

Low- and medium-hardness elastomers offer grip to skin and ground respectively.

Protection

Silicone elastomers retain their properties across a wide temperature range (-45°C to +180°C). They are also water resistant, protecting fabric from water ingress, and some LSRs can be formulated with fabric flame resistance.

Handfeel

Low-hardness elastomers offer soft flexible material with some tackiness, while higher hardness elastomers will offer lower coefficient of friction (LCF).

Appearance

Primarily clear elastomers, LSRs can be colored by pigment pastes to any desired color, and their visual appearance can go from super matte to super glossy.

We understand that every application is unique. Let us help in selecting the right LSR for your specifications.

Product selection by application

The following table allows you to find the LSR product most suitable for your textile application based on generic applications and the key benefits/properties required.

Products	Fashion applications				Benefits							
	Coating	Printing	Anti-slip	Bonding	Substrate adhesion — washfastness	Stretch	Reinforcement stretch recovery	Grip	Protection	Hand feel	Appearance	Cure system
SILASTIC™ 590 EU Liquid Silicone Rubber	●					●			●			HTV
SILASTIC™ LC 1000 Liquid Silicone Rubber	●	●			● ●	● ● ●				Soft		HTV
SILASTIC™ DY 35-3115 Coating	●	●			●	● ●				Soft		HTV
DOWSIL™ Q3-3442 Plus EU Flowable Acetoxy			●		●			●				RTV
DOWSIL™ Q3-3559 PLUS EU Semiflowable Acetoxy			●		●			●				RTV
SILASTIC™ LCF 3600 Coating	●	●			● ●					LCF		HTV
SILASTIC™ 3631 Liquid Silicone Rubber	●	●	●		●	● ●		●				HTV
SILASTIC™ DY 35-5088 Liquid Silicone Rubber		●			● ●						Super gloss	HTV
SILASTIC™ LCF 5120 Liquid Silicone Rubber	●			●		●	●					HTV
SILASTIC™ LCF 8300 Liquid Silicone Rubber	●	●					●		●			HTV
SILASTIC™ LCF 8400 Binder	●	●		●	● ●	● ●						HTV
SILASTIC™ LSR 9151-200P Liquid Silicone Rubber	●								●			HTV
SILASTIC™ RBL-9200-20 Liquid Silicone Rubber	●		●			● ●		●				HTV
XIAMETER™ RBL-9205 Clear Liquid Silicone Rubber	●			●								HTV
SILASTIC™ RBL-9252/150P Liquid Silicone Rubber	●		●		●				●			HTV
SILASTIC™ RBL-9252/250P Liquid Silicone Rubber	●				●				●			HTV
SILASTIC™ 9252/500P Liquid Silicone Rubber	●		●		●				●			HTV
SILASTIC™ 9252/900P Liquid Silicone Rubber	●		●		●				●			HTV
SILASTIC™ NPC 9300-40 Liquid Silicone Rubber	●		●			●	●	●				NPC
SILASTIC™ 9332 Liquid Silicone Rubber	●			●	● ●	●						HTV
SILASTIC™ LTC 9400-40 Liquid Silicone Rubber	●		●				●	●				HTV
SILASTIC™ LCF 9600 Textile Printing Ink Base		●	●		● ●	●	●	●		LCF	Matte	HTV
SILASTIC™ LCF 9600 M Textile Printing Ink Base		●			● ●	●	●	●		Very soft	Super matte	HTV
SILASTIC™ LCF 9601 Textile Print Ink Base		●				● ●				Very soft	Gloss	HTV
SILASTIC™ LCF 9618 Textile Printing		●				●				Soft	Gloss	NPC
SILASTIC™ LCF 9800 Textile Printing Ink Base		●	●		●	●	●	●		Soft	Matte	HTV

These are typical properties, not to be construed as specifications.

Stretch (Elongation %): 500<•<800; 800<••<1000; 1000<•••
RTV: Room Temperature Vulcanized
HTV: High Temperature Vulcanized

LTC: Low Temperature Cure
NPC: Non Post Cure
LCF: Low Coefficient of Friction

LSR Printing inks

Printing inks are systems composed of an ink base, a catalyst, and an inhibitor/retardant for which a typical ratio of 100:5:3 is used. This table identifies LSRs specifically formulated as printing inks for screen printing processes as well as LSRs whose properties correspond to a binder/adhesive layer, applicable through similar printing processes. Key properties and certifications are provided to help you identify the best product for your application.

Refer to the auxiliary product and formulation section (page 9) for additional information.

Products	Key features	Cure system (1)	Cure condition (2 mm)	Mix ratio (base, catalyst, retardant)	Color	Viscosity @10s- 1, Pa.s CTM 0050		Specific gravity	Shore A ASTM D2240	Elongation (%) ASTM D412	Tensile strength (Mpa) ATSM D412	Tear strength (kN/m) ASTM D624 DIE B	ZDHC L1
						Part A	Part B						
SILASTIC™ LC 1000 Liquid Silicone Rubber	Good adhesion	2-Part HTV	120°C 10 min	1:1	Translucent	155	195	1.05	10	1450	5.7	12	Y
SILASTIC™ DY 35-3115 Coating	Good adhesion	2-Part HTV	120°C 10 min	1:1	—	200	330	—	25	940	6	13	Y
SILASTIC™ LCF 3600 Coating	Good adhesion	2-Part HTV	120°C 3 min	1:1	Clear	30	7.5	1.07	45	180	3.8	5.5	R
SILASTIC™ 3631 Liquid Silicone Rubber	Anti-slip	2-Part HTV	100°C 15 min	1:1	Clear	90	90	1.3	19	800	5	16	Y
SILASTIC™ DY 35-5088 Liquid Silicone Rubber	Super gloss	2-Part HTV	—	1:1	—	15	20	1.06	54	180	7.4	—	R
SILASTIC™ LCF 8300 Binder	Abrasion resistance	2-Part HTV	100 - 200°C 1-10 min	1:1	—	30	15	1.04	70	< 350	10	< 20	—
SILASTIC™ LCF 8400 Binder	Good adhesion	2-Part HTV	—	1:1	—	300	300	1.08	29	900	—	—	R
SILASTIC™ LCF 9600 Textile Printing Ink Base	Matte	1-Part HTV	120°C 12 min	100:5:3	Clear	490	490	—	—	625	—	—	Y
SILASTIC™ LCF 9600 M Textile Printing Ink Base	Super matte	1-Part HTV	120°C 10 min	100:5:3	Translucent	750	—	1.05	22	549	2.5	—	Y
SILASTIC™ LCF 9601 Textile Print Ink Base	High elongation	1-Part HTV	140°C 1 min	100:5:3	Clear	280	280	—	—	800	-7.7	—	Y
SILASTIC™ LCF 9618 Textile Printing	Gloss	1-Part HTV	140°C 1 min	100:1	—	70	70	1.10	31	537	—	—	Y
SILASTIC™ LCF 9800 Textile Printing Ink Base	Fast cure	1-Part HTV	120°C 2 min	100:5:3	Opaque	100	100	1.23	23	625	—	—	Y

These are typical properties, not to be construed as specifications.

Legend: ZDHC L1: | Y=Certified | R=Registered

Fabric coating application

The following products are typically compatible with many existing fabric-coating processes that apply either a continuous fabric coating, strips, or a dot pattern for a specific application or benefit.

Key properties and certifications are provided to help you identify the best product for your application.

Products	Key features	Cure system (1)	Cure condition (2 mm)	Mix ratio (base, catalyst, retardant)	Color	Viscosity @10s- 1, Pa.s CTM 0050		Specific gravity AST%MD732	Shore A ASTM D2240	Elongation (%) ASTM D412	Tensile strength (Mpa) ATSM D412	Tear strength (kN/m) ASTM D624 DIE B	ZDHC L1
						Part A	Part B						
SILASTIC™ 590 EU Liquid Silicone Rubber	Fire resistance	2-Part HTV	10 min 120°C	1:1	Off-white	80	90	1.23	35	570	7	11	R
SILASTIC™ LC 1000 Liquid Silicone Rubber	Adhesion	2-Part HTV	10 min 120°C	1:1	Translucent	195	195	1.05	10	1450	5.7	12	Y
SILASTIC™ DY 35-3115 Coating	Adhesion	2-Part HTV	10 min 120°C	1:1	—	330	330	—	25	940	6	13	Y
SILASTIC™ LCF 3600 Coating	Adhesion	2-Part HTV	3 min 120°C	1:1	Clear	30	7.5	1.07	45	180	3.8	5.5	R
SILASTIC™ 3631 Liquid Silicone Rubber	Anti-slip to skin	2-Part HTV	15 min 100°C	1:1	Clear	90	90	1.3	19	800	5	16	Y
SILASTIC™ LCF 5120 Liquid Silicone Rubber	High strength	2-Part HTV	10 min 120°C	—	Clear	160	200	1.1	30	600	7	40	Y
SILASTIC™ LCF 8300 Binder	Abrasion resistance	2-Part HTV	1-10 min 100-200°C	1:1	—	30	15	1.04	70	< 350	10	< 20	—
SILASTIC™ LCF 8400 Binder	Adhesion	2-Part HTV	1-10 min 100-200°C	1:1	—	300	300	1.08	29	900	—	—	R
SILASTIC™ LSR 9151-200P Liquid Silicone Rubber	Fire resistance	2-Part HTV	10 min 120°C	10:1	Off-white	25	25	1.26	40	200	1.3	2.6	R
SILASTIC™ RBL-9200-20 Liquid Silicone Rubber	Anti-slip to skin	2-Part HTV	10 min 120°C	—	Translucent	120	130	1.1	17	930	6.2	21	—
XIAMETER™ RBL-9205 Clear Liquid Silicone Rubber	Adhesion	2-Part HTV	10 min 120°C	10:1	Clear	30	30	1.15	35	500	8.3	16	—
SILASTIC™ RBL-9252/150P Liquid Silicone Rubber	Clarity	2-Part HTV	10 min 120°C	10:1	Translucent	15	15	1.07	37	340	4.4	5	—
SILASTIC™ RBL-9252/250P Liquid Silicone Rubber	Clarity	2-Part HTV	10 min 120°C	10:1	Translucent	25	25	1.09	33	450	5	7	—
SILASTIC™ 9252/500P Liquid Silicone Rubber	E-Insulation	2-Part HTV	10 min 120°C	1:1	Translucent	55	75	1.11	36	480	6	10	R
SILASTIC™ 9252/900P Liquid Silicone Rubber	E-Insulation	2-Part HTV	5 min 150°C	10:1	Translucent	100	100	1.12	38	520	6.6	15	Y
SILASTIC™ NPC 9300-40 Liquid Silicone Rubber	Low volatile	2-Part HTV	1 min 180°C	1:1	—	190	190	1.11	40	560	8.8	34	Y
SILASTIC™ 9332 Liquid Silicone Rubber	Adhesion	2-Part HTV	1 min 180°C	—	—	110	150	—	30	650	4.2	—	Y
SILASTIC™ LTC 9400-40 Liquid Silicone Rubber	Low-temperature cure	2-Part HTV	10 min 120°C	1:1	Translucent	180	170	1.11	40	510	9.7	30	—

These are typical properties, not to be construed as specifications.

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Anti-slip application

The products in this table are recommended due to their anti-slip properties — whether skin anti-slip (hardness 20) or ground anti-slip (hardness 40).

Key properties and certifications are provided to help you identify the best product for your application.

Products	Key features	Cure system (1)	Cure condition (2 mm)	Mix ratio (base, catalyst, retardant)	Color	Viscosity @10s- 1, Pa.s CTM 0050		Specific gravity AST%MD732	Shore A ASTM D2240	Elongation (%) ASTM D412	Tensile strength (Mpa) ATSM D412	Tear strength (kN/m) ASTM D624 DIE B	ZDHC L1
						Part A	Part B						
DOWSIL™ Q3-3442 Plus EU Flowable Acetoxy	Anti-slip to skin	1-Part RTV moisture cure	RT	1	Clear	65	—	—	18	300	1.2	—	—
DOWSIL™ Q3-3559 PLUS EU Semiflowable Acetoxy	Anti-slip to skin	1-Part RTV moisture cure	RT	1	Clear	50	—	—	18	400	1.6	—	—
SILASTIC™ 3631 Liquid Silicone Rubber	Anti-slip to skin	2-Part HTV	15 min 100°C	1:1	Clear	90	90	1.3	19	800	5	16	Y
SILASTIC™ RBL-9200-20 Liquid Silicone Rubber	Anti-slip to skin	2-Part HTV	10 min 120°C	—	Translucent	120	130	1.1	17	930	6.2	21	—
SILASTIC™ 9252/150P Liquid Silicone Rubber	Glass	2-Part HTV	10 min 120°C	10:1	Translucent	15	15	1.07	37	340	4.4	5	—
SILASTIC™ 9252/500P Liquid Silicone Rubber	E-Insulation	2-Part HTV	10 min 120°C	1:1	Translucent	55	75	1.11	36	480	6	10	R
SILASTIC™ 9252/900P Liquid Silicone Rubber	E-Insulation	2-Part HTV	5 min 150°C	10:1	Translucent	100	100	1.12	38	520	6.6	15	Y
SILASTIC™ NPC 9300-40 Liquid Silicone Rubber	Low volatile	2-Part HTV	10 min 120°C	1:1	—	190	190	1.11	40	560	8.8	34	—
SILASTIC™ LTC 9400-40 Liquid Silicone Rubber	Low-temperature cure	2-Part HTV	10 min 120°C	1:1	Translucent	180	170	1.11	40	510	9.7	30	Y
SILASTIC™ LCF 9600 Textile Printing Ink Base	Matte	1-Part HTV	12 min 120°C	100:5:3	Clear	—	490	—	—	625	—	—	Y
SILASTIC™ LCF 9800 Textile Printing Ink Base	Fast cure	1-Part HTV	2 min 120°C	100:5:3	Opaque	—	100	1.23	23	625	—	—	Y

These are typical properties, not to be construed as specifications.

Legend: ZDHC L1: | Y=Certified | R=Registered

Fabric bonding

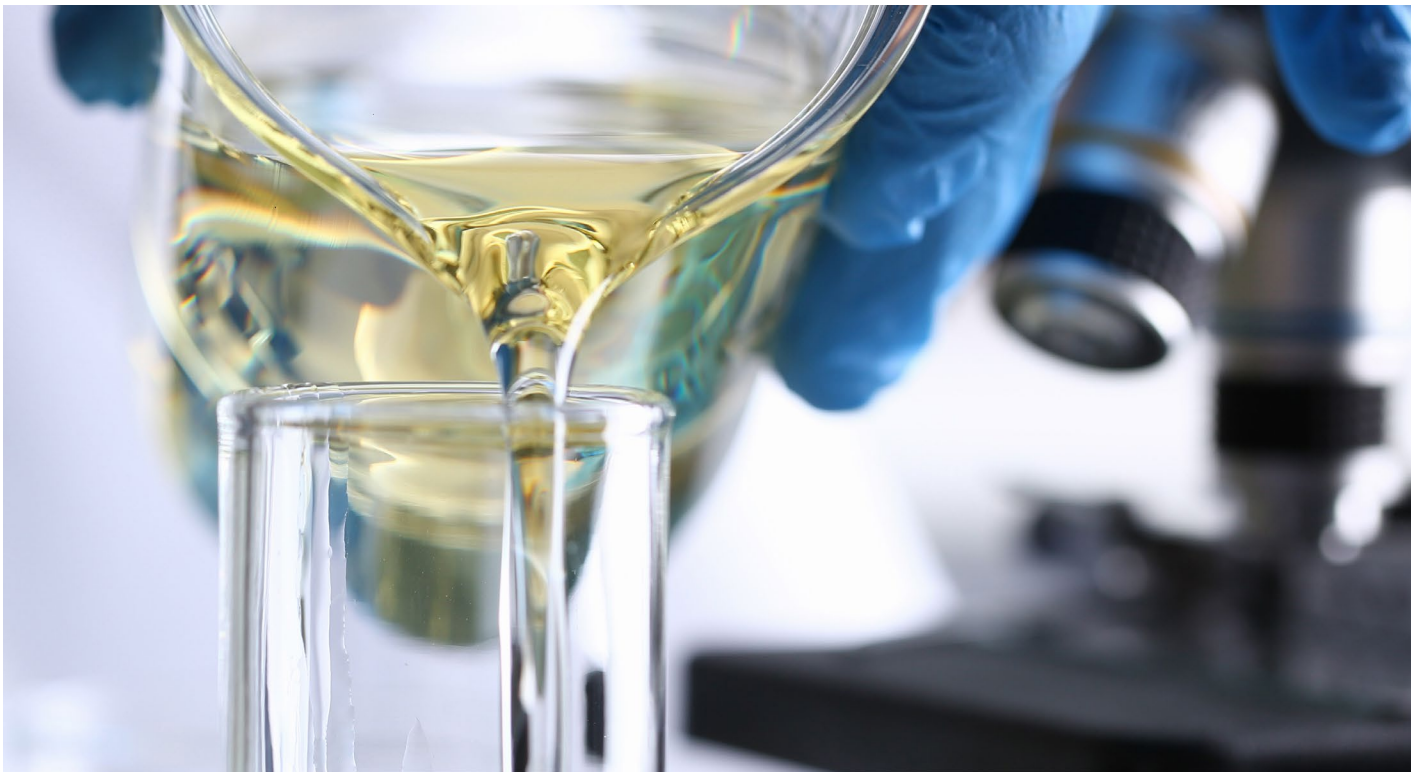
The following products have specific properties that meet the requirements and usage for fabric bonding. These products are characterized by their high adhesion to fabric substrates, high tear strength, and medium-high elongation.

Key properties and certifications are provided to help you identify the best product for your application.

Products	Key features	Cure system (1)	Cure condition (2 mm)	Mix ratio (base, catalyst, retardant)	Color	Viscosity @10s- 1, Pa.s CTM 0050		Specific gravity AST%MD732	Shore A ASTM D2240	Elongation (%) ASTM D412	Tensile strength (Mpa) ATSM D412	Tear strength (kN/m) ASTM D624 DIE B	ZDHC L1
						Part A	Part B						
SILASTIC™ LCF 5120 Liquid Silicone Rubber	High strength	2-Part HTV	10 min 120°C	—	Clear	160	200	1.1	30	600	7	40	Y
SILASTIC™ LCF 8400 Binder	Adhesion	2-Part HTV	1-10 min 100-200°C	1:1	—	300	300	1.08	29	900	—	—	R
XIAMETER™ RBL-9205 Clear Liquid Silicone Rubber	Adhesion	2-Part HTV	10 min 120°C	10:1	Clear	30	30	1.15	35	500	8.3	16	—
SILASTIC™ 9332 Liquid Silicone Rubber	Adhesion	2-Part HTV	1 min 180°C	—	—	110	150	—	30	650	4.2	—	Y

These are typical properties, not to be construed as specifications.

Legend: ZDHC L1: Y=Certified | R=Registered



Formulation and modifications

SILASTIC™ Printing Inks are composed of a printing ink base which is pigmented prior to use, and then formulated with a cure catalyst and a cure inhibitor/retardant to align with process cure speed and pot life requirements. Increasing cure catalyst in printing ink can also be considered to reduce cure temperature and cure speed.

Fabric coating LSRs' two-part formulation ratios are product specific, and unless otherwise noted are typically 1:1. Any deviation from the recommended ratio will result in modified cured elastomer properties.

Some specific products like SILASTIC™ LTC 9400-40 Liquid Silicone Rubber may benefit from a cure acceleration additive to allow a lower temperature cure (LTC).

A thinner or viscosity regulator like XIAMETER™ PMX-200 Silicone Fluid 5 cSt may be used (up to 5%) to reduce LSR's mix viscosity, allowing easier application or lighter coat weight. The thinner will evaporate during cure and slowly with time.

Coloration masterbatches are available as XIAMETER™ RBL-9105 Masterbatches or from external suppliers are typically based on heat-stable coloring pigments dispersed in crosslinkable fluid. These are frequently used at 2% in LSR two-part systems.

Other potential adjuvants to LSRs may be adhesion promotors, and flame retardancy.

It is up to the skills/experience of the applicator to modify the components of an LSR system with the specific processing capability or limitation for the desired textile coating result.

Products	Key features	Benefits
SILASTIC™ LCF 9600 Series Textile Printing Ink Catalyst	Catalyst	Cure
SILASTIC™ LC 9608 Textile Printing Retardant	Retardant	Pot life extension
SILASTIC™ LTC 9400 Acceleration Additive	Catalyst	Lower-temperature cure
XIAMETER™ PMX-200 Silicone Fluid 5 cSt	Solvent / thinner	Viscosity reduction

Learn more

We bring more than just an industry-leading portfolio of advanced silicone-based materials. To find out more about Dow's LSRs for textile fashion coatings, and how we can support your applications, visit **dow.com/textiles.**

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