MOMENTIVE™
inventing possibilities

Self-Bonding
Liquid Silicone Elastomers

Self-Bonding Liquid Silicone Elastomers

Advances in adhesion technology can help improve the bond between dissimilar materials, reduce assembly steps and successfully meet complex design requirements. The demands of soft-hard design have driven the growth of multi-component processes, that require good adhesion performance between different substrates.

Silicone elastomers and thermoplastics are widely used for soft-hard design via 2K molding or insert molding processes in applications ranging from consumer electronics and health care to packaging, automotive and industrial use. In these applications, unique performance characteristics such as waterproofing, durability and enhanced protection all require good adhesion performance.

Despite advances in adhesion technology, many available substrates still have adhesion challenges. A primer or pre-treatment on the surface of the substrate currently is required to achieve the desired adhesion performance between silicone elastomers and selective thermoplastics. With some plastics, such as polycarbonate (PC), the adhesion requirement is difficult to meet even when primer is applied.

Momentive offers a solution to this ongoing design challenge. Momentive's Silopren* LSR 27x9 liquid silicone rubber series is a strong self-bonding product portfolio serving the market needs on a wide range of thermoplastics e.g. polycarbonate (PC), polybutyleneterephthalate (PBT) and copolyesters.

The new Silopren LSR27x9 series for PC, PBT and copolyesters enlarges Momentive´s Self-Bonding LSR portfolio and enables soft-hard design freedom for its customers.

Key Features and Typical Benefits

- Primerless adhesion to various substrates
- Self-bonding properties to thermoplastics including PC, PBT and copolyesters
- Typically no primer needed
- Typically no special treatment on substrates' surface needed
- Typically no adhesion to the mold
- Excellent aging stability and weathering resistance
- Good physical properties
- Low temperature cure possible
- Fast cure for high productivity processes
- Improved productivity in integrated multi-component molding process by eliminating the need for assembling
- In compliance with FDA

Potential Applications:

Silopren LSR 27x9 liquid silicone rubber can be considered for manufacturing articles where plastics and elastomers need to be combined in an overmolding or insert-molding process. Parts made by Silopren LSR 27x9 liquid silicone rubber are excellent candidates for use in various applications without post-curing. Examples include

- Sealing elements
- Gasket
- Membranes
- Vibration damper
- Spatula
- Handle
- Respiratory devices
- Other soft-hard combinations

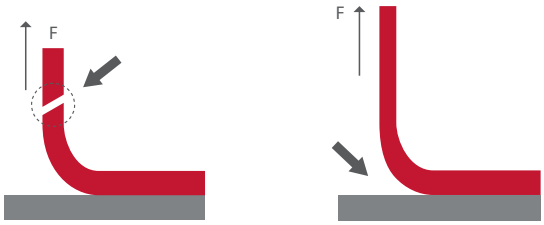
*Silopren is a trademark of Momentive Performance Materials Inc.

Test of Adhesion Strength

1. Test specimen by insert molding

Pellets of thermoplastic | Injection molding of thermoplastic part | Overmolding of LSR + additives possibly

2. Test of adhesion strength by peeling test

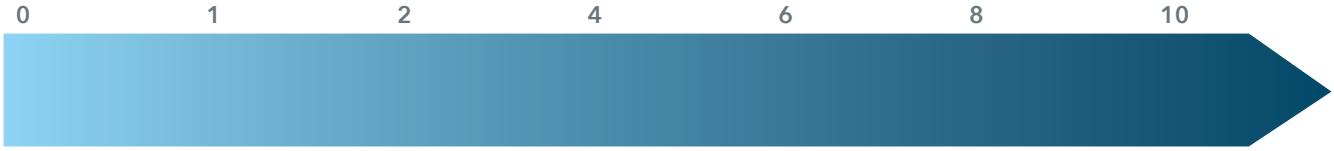


Cohesive failure strength of LSR < adhesion strength

Adhesive failure strength of LSR > adhesion strength

Evaluation of Adhesion Strength

Peeling Force N/mm



No Adhesion
Separates with demolding

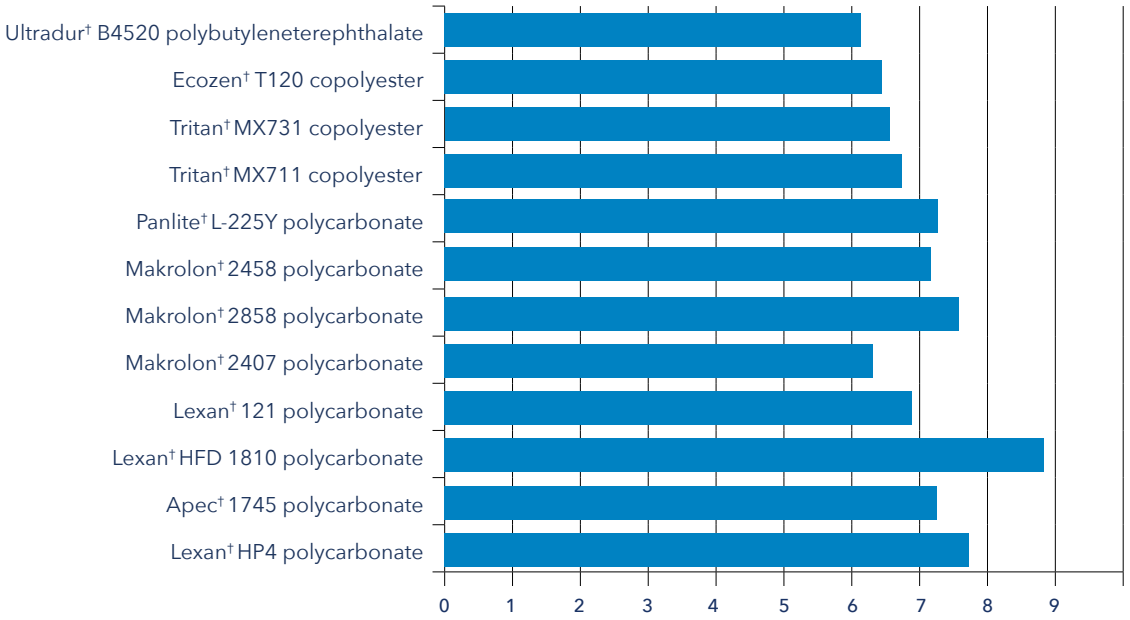
Stable Adhesion

Excellent Adhesion
Cohesive Failure

Adhesion Performance:

Test of Silopren* LSR 27x9 Liquid Silicone Rubber and Selective Substrates[1]

Peeling Force Avg. (N/mm)
24 h at RT (Room Temperature)



Note: Test data. Actual results may vary.

Test specimen molded with injection molding and subjected to an additional storage for 24 h at RT.
Molding conditions: 100 sec at 130 °C.
[1] In accordance to DIN 53268.

†Trademarks of their respective owners.
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Adhesion Performance:

Test of Silopren* LSR 27x9 Liquid Silicone Rubber and Selective Substrates[1]

Engineering Thermoplastics	Suppliers	Peeling Force (N/mm) 24h/RT	Peeling Force (N/mm) 4h/100 °C
Lexan† HP4 polycarbonate	Sabic Innovative Plastics	7,7	8,8
Lexan† HFD 1810 polycarbonate	Sabic Innovative Plastics	6,4	9,7
Lexan† 121 polycarbonate	Sabic Innovative Plastics	8,7	8,9
Apec† 1745 polycarbonate	Covestro AG	7,2	9,0
Makrolon† 2407 polycarbonate	Covestro AG	6,3	9,4
Makrolon† 2858 polycarbonate	Covestro AG	7,3	9,8
Makrolon† 2458 polycarbonate	Covestro AG	7,2	9,3
Panlite† L-1225Y polycarbonate	Teijin Limited	7,3	8,8
Tritan† MX711 copolyester	Eastman Chemical Company	6,7	9,4
Tritan† MX731 copolyester	Eastman Chemical Company	6.4	9,4
Ecozen† T120 copolyester	SK Chemicals	6,4	8,6
Ultradur† B4520 polybutyleneterephthalate	BASF AG	6,2	9,7

Note: Test data. Actual results may vary.
†Trademarks of their respective owners.
[1] In accordance to DIN 53289.

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