

## Silopren™ LSR 4660

### Silopren\* LSR 4660

#### Description

Silopren LSR 4660 is a two-component liquid silicone rubber for injection molding processes. In comparison to Silopren LSR 4060, Silopren LSR 4660 shows a lower viscosity, improved tear resistance and a higher reactivity. Therefore, it is also possible to reduce the vulcanization temperature while maintaining a standard crosslinking rate. The increased reactivity does not affect the properties of the vulcanizate.

#### Key Features and Benefits

Vulcanizates of Silopren LSR 4660 are typically distinguished by the following properties:

- High reactivity, lower viscosity, shorter cycle time
- Excellent thermal stability
- Biocompatible
- Sterilizable with ethylene oxide, steam and gamma radiation
- High stability and flexibility at low temperatures
- Good rubber-like properties, high tear resistance
- Long service life at dynamic stress
- High stability to ozone and ultraviolet light
- Outstanding resistance to aging

- Excellent dielectric behavior over a wide range of temperatures
- Not readily combustible, does not melt or drip
- Easily pigmentable with LSR color pastes

### Typical Physical Properties

<u>Typical Properties of the Rubber:</u>			
		<b>A-part</b>	<b>B-part</b>
Appearance		Translucent	Translucent
Viscosity in Pa•s $\dot{\gamma} = 10 \text{ s}^{-1}$ at 20°C	DIN 53018	500	500
The pot-life of the mixture of the two components (closed vessel) at 20°C is usually three days. Increased temperatures reduce the pot-life.			
<u>Typical Properties of the Vulcanizate:</u>			
Mixing Ratio of Components A : B = 1 : 1.			
Vulcanization: 10 min. 175°C + 4 hrs 200°C post-cure			
Density	DIN 53 479 A	g/cm <sup>3</sup>	1.13
Shore A Hardness	DIN 53 505		62
Tensile Strength	DIN 53 504 S2	N/mm <sup>2</sup>	9.0
Tear Strength	ASTM D 624 die B	N/mm	45
Compression Set	DIN 53 517 (22 h at 175°C)	%	20

Typical data are average data and actual values may vary.

Typical data shall not be used as product specifications.

### Potential Applications

Because of its outstanding properties, Silopren LSR 4660 is an excellent candidate to consider for the following elastomeric articles:

- Sealing elements
- O-rings
- Stoppers

- Diaphragms
- Keypads
- Bellows
- Catheters
- Vibration dampers
- Switch cover
- Breast shields
- Pressure cookers parts
- Spark plug boots
- Catheters, parts of medical technical equipment s.o.

## Regulatory Compliance

- A representative sample of an analogous product to Silopren LSR 4660 met the requirements of USP Class VI (maximum contact time with human tissue 28 days) and ISO 10993 under Good Laboratory Practices (GLP).
- The ingredients are listed in the BfR recommendation XV “Silicones” <sup>(1)</sup>
- Compositionally compliant with 21 CFR 177.2600 – Rubber articles intended for repeated use<sup>(2)</sup>
- Tested according Eur. Pharmacopia VI 3.1.9

(1) Producer of the final article needs to test and confirm that the final product meets the extraction limits of BfR XV or corresponding EU legislation.

(2) It is the responsibility of the user to determine that the final product complies with the extractive limitations and other requirements of 21 CFR 177.2600, under their specific manufacturing procedures.

## Processing Recommendations

Ready-to-use mixtures (of the components A and B) are fed directly to the injection molding machine from the original containers by means of a metering and mixing unit. The mixture, consisting of the two components in the ratio 1:1, is injected into the

heated mold. At mold temperatures of 140 - 200°C, the addition-crosslinking silicone rubber typically vulcanizes without any dissociation products within a few seconds. High curing speed and easy demolding can help enable the fully automated production of a large number of articles in short cycle times.

## Regulatory Compliance

- Compositionally compliant with the requirements of 21 CFR 177.2600 – Rubber articles intended for repeated use and have been found, through testing of a representative sample, to meet the extractives limitations in 21 CFR 177.2600(e) and/or (f)<sup>(1)</sup>
- A representative sample of LSR 4660 has passed USP Class VI (United State Pharmacopoeia 32, National Formulary 27, 2009. <88> Biological Reactivity Test, In Vivo tests) and ISO 10993 (Part 6, 10, and 11) tests using Good Laboratory Practices (GLP)<sup>(2)</sup>
- The ingredients are listed in the BfR recommendation XV “Silicones”<sup>(3)</sup>

(1) It is the responsibility of the user to determine that the final product complies with the extractive limitations and other requirements of 21 CFR 177.2600 under their specific manufacturing procedures.

(2) Please contact Product Stewardship and Regulatory Group for details

(3) Producer of the final article needs to test and confirm that the final product meets the extraction limits of BfR XV or corresponding EU legislation

## Containers

Silopren LSR 4660 is available in 20 kg pails and 200 kg drums.

## Patent Status

Nothing contained herein shall be construed to imply the nonexistence of any relevant patents or to constitute the permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of the patent.

### **Product Safety, Handling and Storage**

Customers should review the latest Safety Data Sheet (SDS) and label for product safety information, safe handling instructions, personal protective equipment if necessary, emergency service contact information, and any special storage conditions required for safety. Momentive Performance Materials (MPM) maintains an around-the-clock emergency service for its products. SDS are available at [www.momentive.com](http://www.momentive.com) or, upon request, from any MPM representative. For product storage and handling procedures to maintain the product quality within our stated specifications, please review Certificates of Analysis, which are available in the Order Center. Use of other materials in conjunction with MPM products (for example, primers) may require additional precautions. Please review and follow the safety information provided by the manufacturer of such other materials.

### **Limitations**

Customers must evaluate Momentive Performance Materials products and make their own determination as to fitness of use in their particular applications.

### **Contact Information**

Email

[commercial.services@momentive.com](mailto:commercial.services@momentive.com)

### **Telephone**

<b>Americas</b>	<b>Latin America</b>	<b>EMEAI- Europe, Middle East, Africa &amp; India</b>	<b>ASIA PACIFIC</b>
+1 800 295 2392	<b>Brazil</b>	<b>Europe</b>	<b>China</b>
Toll free*	+55 11 4534 9650	+390510924300	800 820 0202
+704 805 6946	Direct Number	Direct number	Toll free
Direct Number			+86 21 3860 4892
			Direct number

*All American countries	<b>Mexico</b> +52 55 2169 7670 Direct Number	<b>India, Middle East &amp; Africa</b> + 91 44 71212207 Direct number*	<b>Japan</b> +81 3 5544 3111 Direct number
		<b>*All Middle Eastern countries, Africa, India,</b>	<b>Korea</b> +82 2 6201 4600

For literature and technical assistance, visit our website at: [www.momentive.com](http://www.momentive.com)

**DISCLAIMER:**

**THE MATERIALS, PRODUCTS AND SERVICES OF MOMENTIVE PERFORMANCE MATERIALS INC. AND ITS SUBSIDIARIES AND AFFILIATES (COLLECTIVELY “SUPPLIER”), ARE SOLD SUBJECT TO SUPPLIER’S STANDARD CONDITIONS OF SALE, WHICH ARE INCLUDED IN THE APPLICABLE DISTRIBUTOR OR OTHER SALES AGREEMENT, PRINTED ON THE BACK OF ORDER ACKNOWLEDGMENTS AND INVOICES, AND AVAILABLE UPON REQUEST. ALTHOUGH ANY INFORMATION, RECOMMENDATIONS, OR ADVICE CONTAINED HEREIN IS GIVEN IN GOOD FAITH, SUPPLIER MAKES NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, (i) THAT THE RESULTS DESCRIBED HEREIN WILL BE OBTAINED UNDER END-USE CONDITIONS, OR (ii) AS TO THE EFFECTIVENESS OR SAFETY OF ANY DESIGN INCORPORATING ITS PRODUCTS, MATERIALS, SERVICES, RECOMMENDATIONS OR ADVICE. EXCEPT AS PROVIDED IN SUPPLIER’S STANDARD CONDITIONS OF SALE, SUPPLIER AND ITS REPRESENTATIVES SHALL IN NO EVENT BE RESPONSIBLE FOR ANY LOSS RESULTING FROM ANY USE OF ITS MATERIALS, PRODUCTS OR SERVICES DESCRIBED HEREIN.** Each user bears full responsibility for making its own determination as to the suitability of Supplier’s materials, services, recommendations, or advice for its own particular use. Each user must identify and perform all tests and analyses necessary to assure that its finished parts incorporating Supplier’s products, materials, or services will be safe and suitable for use under end-use conditions. Nothing in this or any other document, nor any oral recommendation or advice, shall be deemed to alter, vary, supersede, or waive any provision of Supplier’s standard Conditions of Sale or this Disclaimer, unless any such modification is specifically agreed to in a writing signed by Supplier. No statement contained herein concerning a possible or suggested use of any material, product,

service or design is intended, or should be construed, to grant any license under any patent or other intellectual property right of Supplier covering such use or design, or as a recommendation for the use of such material, product, service or design in the infringement of any patent or other intellectual property right.

\*Silopren™ es una marca comercial de Momentive Performance Materials Inc.

The use of the "™" symbol designates registered or unregistered trademarks of Momentive Performance Materials Inc. or its affiliated companies. Momentive and the Momentive logo are trademarks of Momentive Performance Materials Inc.