

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

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