

Silopren* LSR 7090

Description

Silopren LSR 7090 liquid silicone rubber is a two-component, high-transparency, high-hardness, low-viscosity, fast-cure speed and ultra clear liquid silicone rubber (LSR). Providing good optical clarity, Silopren LSR 7090 liquid silicone rubber combines typical LSR properties, such as high temperature stability and flowability, with excellent UV and blue light stability. As a result, molded lenses produced using this material can exhibit excellent durability and maintain optical clarity, even if exposed to high temperatures or UV light. Due to its high flowability, Silopren LSR 7090 liquid silicone rubber can help enable excellence in manufacturing complex and micro-structure optical lenses, even in large quantities, utilizing the injection and compression molding processes.

Key Features and Typical Benefits

Optical Clarity

- 94% transmission
- <1% haze
- Abbe number of approximately 50
- Strong color stability

Durability

- High temperature resistance even above 150 °C
- UV light resistance
- Micro-crack resistance
- Listed as UL 94 HB (File No. E56745)

Design Freedom

- High flowability helps enable complex and micro-structure design
- Enhanced options for part integration
- Reduced weight in design
- Colorability due to optical clarity

Productivity

- Excellent processability for injection/compression molding
- Material waste may be minimized in the coldrunner-based LSR injection process

Typical Physical Properties

	A Component	B Component
Appearance	Optical Clarity	Optical Clarity
Viscosity in Pa·s at 23 °C (D=10/s)	67	17
Mix ratio by weight	1:1	
Viscosity (mixed) at 23 °C Pa·s	42	
Pot Life (23°C), hr	40	

Tokimeck Type B8U No.7*10rpm*5min. The typical pot-life of the mixture of the two components (closed vessel) at 20 °C is two days. Increased temperatures reduce the pot-life.

Typical Cured Properties (Press cure 15 min at 130 °C, 1hr at 150 °C)

Basic			
Density	JIS K 6249	g/cm ³	1.08
Shore A hardness	JIS K 6249		90
Shore D hardness			42
Tensile strength	JIS K 6249	N/mm ²	8.0
Elongation at break	JIS K 6249	%	50
Tear strength	JIS K 6249	N/mm	8
Optical			
Transmittance (2mm)	400nm	%	93
	700nm		94
Refractive Index		(n _D ²⁵)	1.42
Haze	D 1003	%	<1

Dispersion	Abbe number		51
Thermal			
CTE linear (40-90 °C)		ppm/°C	250
Linear Shrinkage	JIS K 6249	%	2.0
Others			
Water Absorption	D 570	%	< 0.1
Curing Data	10' at 110 °C	T60 [min]	1.7

Typical properties are average data and are not to be used as or to develop specifications.

Potential Applications

- Interior and exterior lighting - lenses and other illumination optics
- Automotive lighting – lenses and light guides
- Electronics – mobile phones, flash lenses, sensing lenses and other optics
- Solar – lenses and light guides

Processing Considerations

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. Because of low viscosity, the injection speed and injection pressure need to be carefully adjusted so that the injection time can be decreased. At mold temperatures of 110 - 150 °C, the addition-crosslinking silicone rubber cures free of dissociation products within a few seconds. Excellent flowability and easy de-molding can help enable fully automated production of large numbers of articles in shorter total cycle times.

Packaging

Silopren LSR 7090 liquid silicone rubber is available in a pail kit (18kg of A and B part - each).

Patent Status

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