

Silbione® LSR 4300 SERIES

October 2017

Liquid Silicone Rubber

Description

Silbione® LIQUID SILICONE RUBBERS (LSRs) are two-component platinum-catalyzed silicone elastomers designed for liquid injection molding healthcare and medical devices, including applications of less than 30-day implantation in the human body.

Available in a full range of hardnesses from 01 to 70 durometer – Shore A, Elkem Silicones' **Silbione® LSRs** offer the distinctive advantages of easy processing and release combined with high performance physical properties.

Designed specifically for healthcare applications, **Silbione® LIQUID SILICONE RUBBERS LSRs** meet or exceed testing requirements of United States Pharmacopoeia (USP) Class VI. Biocompatibility testing addresses the categories of evaluation for cytotoxicity, skin sensitization and skin irritation specified in ISO 10993 for skin contact or device use of less than 30-day implantation.

Advantages

- Excellent mold release for shorter cycle times.
- Superior clarity.
- High performance physical properties – high tear and elongation.
- Rapid cure at elevated temperatures.
- Can be post-cured, but post cure is not necessary to achieve desired physical properties.

Processing

Silbione® LSRs are supplied as kit-matched products. Parts A and B components are designed to be mixed in equal parts using standard liquid injection molding pumping and metering equipment and techniques. Airless mixing, metering and dispensing equipment are recommended.

Cure:

Cure is initiated once the two part A and part B components are mixed and can be accelerated by heating the mixed elastomer. Cure is dependent upon molding temperature and part size. Special care must be taken to assure clean molds and a clean work area with no organic rubbers used on the same processing equipment.

Caution: Traces of foreign materials can poison the catalyst and inhibit the cure. All metering and mixing equipment should be thoroughly cleaned. Polymer systems, which contain traces of amines, sulfur, nitrogen oxide, organotin compounds and carbon monoxide can interfere with the cure of this product and should be avoided.

Note: Kit matching, accurate measuring and complete mixing are essential factors in obtaining consistent results.

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Typical Properties

As supplied:

Typical properties	ASTM	LSR 4301	LSR 4305	LSR 4310	LSR 4325	LSR 4330	LSR 4340	LSR 4350	LSR 4360	LSR 4365	LSR 4370
Appearance	TP 038	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear
Extrusion Rate, g/min	TP 001	550	545	275	135	100	90	85	95	70	70
Specific Gravity	TP 013	1.07	1.07	1.09	1.11	1.11	1.12	1.12	1.12	1.14	1.14

Press Sure, 5 minutes, 177°C (350°F):

Typical properties	ASTM	LSR 4301	LSR 4305	LSR 4310	LSR 4325	LSR 4330	LSR 4340	LSR 4350	LSR 4360	LSR 4365	LSR 4370
Hardness, Shore A	D2240	1	5	10	23	30	40	50	60	65	70
Tensile strength, Psi (N/mm ²)	D412	270 (1.9)	480 (3.3)	850 (5.8)	1250 (8.6)	1340 (9.2)	1250 (8.6)	1225 (8.4)	1275 (8.8)	1270 (8.8)	1250 (8.6)
Elongation, %	D412	1100	1050	1020	970	800	660	600	480	470	440
Tear strength, Ppi (N/mm)	D624 Die B	45 (7.8)	65 (11.5)	115 (20)	180 (32)	185 (32)	230 (40)	270 (47)	240 (42)	250 (43)	230 (40)
Modulus, 100%, Psi (N/mm ²)	D412	12 (0.1)	19 (0.1)	32 (0.2)	59 (0.4)	83 (0.6)	157 (1.1)	277 (1.9)	380 (2.6)	443 (3.1)	540 (3.7)

Post-cured, 4 hours, 200°C (392°F):

Typical properties	ASTM	LSR 4301	LSR 4305	LSR 4310	LSR 4325	LSR 4330	LSR 4340	LSR 4350	LSR 4360	LSR 4365	LSR 4370
Hardness, Shore A	D2240	2	4	10	26	31	40	50	61	68	72
Tensile strength, Psi (N/mm ²)	D412	219 (1.5)	450 (3.1)	750 (5.1)	1198 (8.2)	1350 (9.3)	1250 (8.6)	1275 (8.8)	1250 (8.6)	1196 (8.2)	1200 (8.3)
Elongation, %	D412	800	1000	1060	1035	750	605	530	430	445	440
Tear strength, Ppi (N/mm)	D624 Die B	35 (6.1)	60 (10)	125 (22)	168 (29)	205 (36)	285 (50)	290 (51)	235 (41)	255 (45)	200 (35.1)
Modulus, 100%, Psi (N/mm ²)	D412	32 (0.2)	20 (0.1)	28 (0.2)	72 (0.5)	200 (1.4)	200 (1.4)	340 (2.3)	400 (2.8)	484 (3.3)	580 (4.0)

Please note: The typical properties listed in this bulletin are not intended for use in preparing specifications for any particular application of **Silbione®** silicone materials.

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Regulation

Bio-compatibility Testing

Designed specifically for healthcare applications, **Silbione®** LSRs meet or exceed testing requirements of United States Pharmacopoeia (USP) Class VI. Biocompatibility testing addresses the categories of evaluation for cytotoxicity, skin sensitization and skin irritation specified in ISO 10993. These products are not suitable for use in devices requiring human implantation for greater than 30 days.

Storage and shelf life

For shelf life, please refer to the expiry date (to be used before « month-year ») marked clearly on the packaging.
Comply with the storage instructions and expiry date marked on the packaging.
Beyond this date, Elkem Silicones no longer guarantees that the products meet the sales specifications.





Safety

Please consult the Safety Data Sheets of **Silbione® LSRs**.

Packaging

Silbione® LSRs are available in multiple packages, please check with our team.

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