

Dow Corning[®] QP1 Liquid Silicone Rubber Products

Dow Corning[®] QP1-20 Liquid Silicone Rubber Kit
Dow Corning[®] QP1-30 Liquid Silicone Rubber Kit
Dow Corning[®] QP1-40 Liquid Silicone Rubber Kit
Dow Corning[®] QP1-45 Liquid Silicone Rubber Kit
Dow Corning[®] QP1-50 Liquid Silicone Rubber Kit
Dow Corning[®] QP1-60 Liquid Silicone Rubber Kit
Dow Corning[®] QP1-70 Liquid Silicone Rubber Kit
Dow Corning[®] QP1-75 Liquid Silicone Rubber Kit

FEATURES

- Contains no peroxides, peroxide by-products, chlorophenyls, or PCBs
- No organic plasticizers, phthalates or latex additives
- Solventless
- Non-blooming
- Can be post-cured
- Pigmentable
- Formulated to meet FDA 21 CFR 177.2600 and BfR, XV requirements for food contact applications.

BENEFITS

- Easy processing
- Fast Cure System
- United States Pharmacopeia (USP) Class VI
- Tissue Culture testing warranted
- Batch-to-batch consistency

COMPOSITION

- Two part silicone elastomer

Liquid Silicone Rubber materials for device and component fabrication in the healthcare industry.

APPLICATIONS

- Dow Corning[®] QP1 Liquid Silicone Rubbers (LSRs) are platinum-catalyzed, heat-cured materials designed for the fabrication of medical devices and device components including those intended for implantation in humans for less than 30 days and non-implant applications.

DESCRIPTION

Dow Corning QP1 LSRs are a series of two-part platinum-catalyzed silicone elastomers specifically designed for liquid injection molding. Each elastomer is supplied in a two-part kit (Part A and Part B), equal portions (by weight) of which must be thoroughly blended together prior to use. The elastomer is thermally cured via an addition-cure (platinum-catalyzed) reaction. When blended and cured as indicated, the resulting elastomer consists of cross-linked dimethyl and methyl-vinyl siloxane copolymers and reinforcing silica.

The Dow Corning QP1 LSRs are available in a range of nominal hardness from 20 to 75, Durometer-Shore A. The elastomers can be used without any post cure; although, if necessary, this may be employed to stabilize the final properties. Furthermore, the cured elastomers are heat stable up to 204°C (400°F),

can be autoclaved, and exhibit high gas permeability compared with most thermoset elastomers and thermoplastics.

HOW TO USE

Mixing

Dow Corning QP1 LSRs are supplied as two-component kits (Parts A and B), which must be mixed in equal portions, by weight, prior to use.

Airless mixing, metering, and dispensing equipment are recommended for production operations. Information is available from Dow Corning on the suppliers of suitable pumping, mixing, and molding equipment.

De-airing

If hand mixing, a vacuum of 711 to 737 mm Hg (28 to 29 inches of

mercury) should be sufficient to de-air the material in 20-30 minutes. Use a container 3-4 times the volume of the mixture to allow for expansion.

Cure

Cure of the mixed elastomer is initiated by heat. Raising the temperature of the fabrication to 140°C (284°F) results in a rapid cure to a tough elastomeric material.

Cure profiles for these products can be found in Figure 1. Please note that mixing parts A and B at anything other than a 1:1 ratio will likely change the molding times, and the resulting material's properties.

CAUTION: The cure may be inhibited by traces of amines, sulfur, nitrogen oxide, organotin compounds and carbon monoxide. Because organic rubbers often contain these substances, they should not come into contact with the uncured elastomer. Catalyst residues from some room temperature vulcanized and peroxide-cured silicone elastomers may also inhibit the cure.

Post-curing

These materials cross-link via an addition-cure (platinum catalyzed) reaction. No organic residues, such as peroxides or their by-products, are present and post-cure is not normally required for most applications. The user must confirm that molding conditions or short oven cures are suitable for any specific application.

The principal volatile components evolved during post-curing are low molecular weight polydimethyl-silicone fluids and water vapor.

See Typical Properties chart (Table 1) for specific post-cure information.

HANDLING PRECAUTIONS

Product safety information required for safe use is not included. Before handling, read product and safety data sheets and container labels for safe

use, physical and health hazard information. The material safety data sheet is available on the Dow Corning Web site at dowcorning.com. You can also obtain a copy from your Dow Corning sales representative or distributor or by calling your local Dow Corning Global Connection.

USABLE LIFE AND STORAGE

When stored at or below ambient temperature in the original unopened containers, 20 LSR, 30 LSR, 45 LSR, and 50 LSR have useable lives of 15 months from the date of production.

The 40 LSR and 60 LSR have 18 months from the date of production.

The 70 LSR and 75 LSR have 8 months from the date of production.

PACKAGING INFORMATION

If sourced from the Americas, *Dow Corning* QP1 LSRs are supplied in 36.2 kg (80 lb) pail and 408.2 kg (900 lb) drum kits, each containing equal portions of part A and B.

If sourced from Europe, *Dow Corning* QP1 LSRs are supplied in 40 kg pail and 410 kg drum kits, each containing equal portions of part A and B.

TESTING

Dow Corning has completed a one-time test of *Dow Corning* QP1 LSR products according to the United States Pharmacopeia (USP) Class VI. The limit of information available from Dow Corning for support of these results is a certificate which indicates the product has been tested and did pass.

IMPORTANT INFORMATION THE USER'S ATTENTION IS IN PARTICULAR DRAWN TO THE FOLLOWING STATEMENT:

It is the User's responsibility to ensure the safety and efficacy of

these materials for all intended uses. Dow Corning makes no representation concerning the suitability of these products for any healthcare or pharmaceutical application. Under no circumstances should these materials be considered for implantation into the human body for periods that exceed 30 days in duration.

HEALTH AND ENVIRONMENTAL INFORMATION

To support Customers in their product safety needs, Dow Corning has an extensive Product Stewardship organization and a team of Product Safety and Regulatory Compliance (PS&RC) specialists available in each area.

For further information, please see our Web site, dowcorning.com, or consult your local Dow Corning representative.

LIMITED WARRANTY INFORMATION – PLEASE READ CAREFULLY

The information contained herein is offered in good faith and is believed to be accurate. However, because conditions and methods of use of our products are beyond our control, this information should not be used in substitution for customer's tests to ensure that our products are safe, effective, and fully satisfactory for the intended end use. Suggestions of use shall not be taken as inducements to infringe any patent.

Dow Corning's sole warranty is that our products will meet the sales specifications in effect at the time of shipment.

Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted.

**DOW CORNING SPECIFICALLY
DISCLAIMS ANY OTHER
EXPRESS OR IMPLIED
WARRANTY OF FITNESS FOR A
PARTICULAR PURPOSE OR
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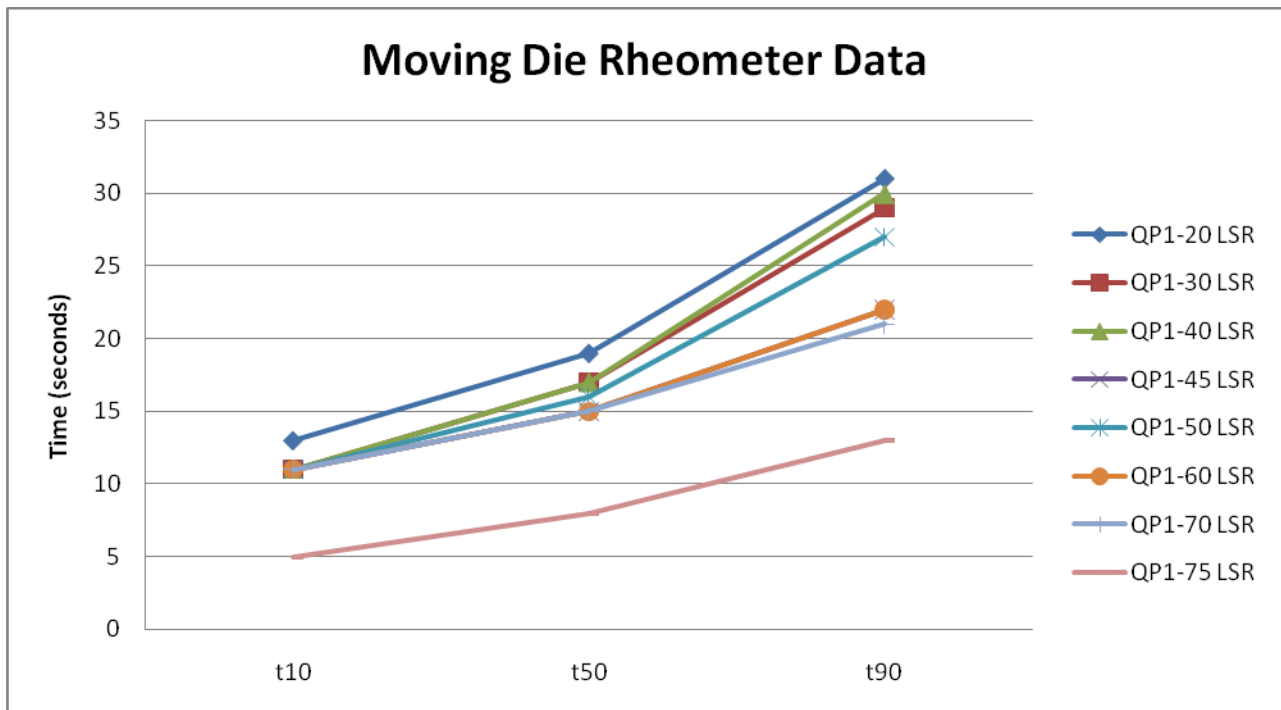
**INCIDENTAL OR
CONSEQUENTIAL DAMAGES.**

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Figure 1: Moving Die Rheometry data¹



1. Rheological properties measured with the Alpha technologies Rheometer MDR 2000. Rheometer conditions: 149°C (300°F), 3 minute sweep time, 5.0-gram sample weight.

TABLE 1: TYPICAL PROPERTIES

Specification Writers: These values are not intended for use in preparing specifications. Please contact your local Dow Corning sales office or your Global Dow Corning Connection before writing specifications on this product.

Dow Corning® QP1 Liquid Silicone Rubber

CTM	ASTM	Test	Unit	-20	-30	-40	-45	-50	-60	-70	-75
No Post-cure, Press Cured for 5 minutes at 150°C (302°F)											
0022	D792	Relative Density		1.12	1.13	1.14	1.13	1.13	1.14	1.14	1.16
0099	D2240	Hardness	Shore A	22	28	42	45	48	59	68	73
0137A	D412	Tensile Strength	MPA	5.6	5.7	7.5	7.8	8.6	9.6	9.7	8.9
			psi	815	835	1090	1140	1260	1405	1420	1300
0137A	D412	Elongation	%	650	625	580	485	510	460	405	400
0137A	D412	Modulus, 200%	MPA	1.0	0.8	2.2	2.8	3.4	4.9	5.3	4.5
			psi	145	120	315	410	500	710	775	650
0157	D624	Tear Strength, Die B	kN/m	18.4	18.4	31.6	38.6	41.2	51.8	44.7	15.8
			ppi	105	105	180	220	235	295	255	90
Post-cured - 2 hours at 150°C (302°F)											
0099	D2240	Hardness	Shore A	22	28	42	46	48	59	68	74
0137A	D412	Tensile Strength	MPA	6.4	6.1	8.3	9.4	8.9	9.1	9.5	7.7
			psi	935	885	1210	1375	1300	1330	1390	1115
0137A	D412	Elongation	%	690	660	605	585	500	450	375	385
0137A	D412	Modulus, 200%	MPA	1.0	0.8	2.2	3.0	3.6	4.7	5.6	4.4
			psi	140	115	320	430	530	690	820	640
0157	D624	Tear Strength, Die B	kN/m	21.9	23.7	34.2	39.5	43.9	50.0	21.9	14.0
			ppi	125	135	195	225	250	285	125	80
Post-cured - 4 hours at 150°C (302°F)											
0099	D2240	Hardness	Shore A	26	28	43	47	49	59	69	76
0137A	D412	Tensile Strength	MPA	6.1	6.4	7.2	9.6	9.2	10.1	7.8	8.5
			psi	890	930	1050	1405	1340	1470	1130	1235
0137A	D412	Elongation	%	580	680	565	575	535	470	290	430
0137A	D412	Modulus, 200%	MPA	1.2	0.8	2.2	3.1	3.5	5.0	5.7	4.5
			psi	170	115	320	455	515	730	835	660
0157	D624	Tear Strength, Die B	kN/m	27.2	23.7	36.0	38.6	45.6	50.9	27.2	13.2
			ppi	155	135	205	220	260	290	155	75

1. CTM: (Corporate Test Method) corresponds to American Standard Test Methods (ASTM).

Copies of CTMs are available upon request.