

Dow Corning® QP1-250

Silicone

Dow Corning Corporation

PROSPECTOR®

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Technical Data

Product Description

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

APPLICATIONS

Dow Corning® QP1-2XX Liquid Silicone Rubbers (LSRs) are platinum-catalyzed, heat-cured materials designed for the fabrication of medical devices and device components and for short term applications.

DESCRIPTION

Dow Corning QP1-2XX 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 QP1-2XX LSRs are available in a range of nominal hardness from 30 to 70, 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.

General

Material Status	• Commercial: Active
Literature ¹	• Technical Datasheet (English)
Search for UL Yellow Card	• Dow Corning Corporation • Dow Corning®
Availability	• Africa & Middle East • Asia Pacific • Europe • Latin America • North America
Features	• Autoclavable • Fast Cure • Fast Molding Cycle • Food Contact Acceptable • Good Colorability • Good Processability • High Gas Permeability • Low Viscosity • Non-Blooming
Uses	• Medical/Healthcare Applications
Agency Ratings	• USP Class VI
Processing Method	• Injection Molding

Physical	Nominal Value (English)	Nominal Value (SI)	Test Method
Density / Specific Gravity	1.12	1.12 g/cm ³	ASTM D792
Viscosity ³			
Part A	167 Pa·s	167 Pa·s	
Part B	152 Pa·s	152 Pa·s	
Elastomers	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Stress (100% Strain)	305 psi	2.10 MPa	ASTM D412
Tensile Strength	1200 psi	8.30 MPa	ASTM D412
Tensile Elongation (Break)	500 %	500 %	ASTM D412
Tear Strength ⁴	271 lbf/in	47.4 kN/m	ASTM D624
Hardness	Nominal Value (English)	Nominal Value (SI)	Test Method
Durometer Hardness (Shore A)	51	51	ASTM D2240

Notes

¹ These links provide you with access to supplier literature. We work hard to keep them up to date; however you may find the most current literature from the supplier.

² Typical properties: these are not to be construed as specifications.

³ 10/s

⁴ Die B



Dow Corning[®] QP1-2XX* Liquid Silicone Rubber Products

Dow Corning[®] QP1-230 Liquid Silicone Rubber Kit

Dow Corning[®] QP1-240 Liquid Silicone Rubber Kit

Dow Corning[®] QP1-250 Liquid Silicone Rubber Kit

Dow Corning[®] QP1-260 Liquid Silicone Rubber Kit

Dow Corning[®] QP1-270 Liquid Silicone Rubber Kit

*XX = 30, 40, 50, 60 or 70

FEATURES & BENEFITS

- Contains no peroxides, peroxide by-products, chlorophenyls, or PCBs
- No organic plasticizers, phthalates or latex
- Solventless
- Non-blooming
- Pigmentable
- Formulated to meet European requirements for food contact applications
- Improved rheology
- Lower, balanced viscosity
- Easy processing with reduced cycle time
- Long pot life
- Fast Cure System
- Batch-to-batch consistency
- USP Class VI
- Tissue Culture testing warranted

COMPOSITION

- Two part silicone elastomer

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DESCRIPTION

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The *Dow Corning* QP1-2XX LSRs are available in a range of nominal hardness from 30 to 70, 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 and de-airing

Dow Corning QP1-2XX LSRs are supplied as two-component kits (Parts A and B), which must be mixed in equal portions, by weight, prior to use.

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.

Airless mixing, metering, and dispensing equipment are recommended for production operations.

Pot life

When parts A and B are mixed the mixture will remain usable for 72 hours at 25°C (77°F).

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.

The cure time depends on the thickness and the cure temperature used.

Cure profiles for these products can be found in Figure 1.

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.

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

HANDLING

PRECAUTIONS

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE ON THE DOW CORNING WEBSITE AT DOWCORNING.COM, OR FROM YOUR DOW CORNING SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CORNING CUSTOMER SERVICE.

USABLE LIFE AND STORAGE

Shelf life is indicated by the “Use Before” date found on the product label, when stored at or below 35°C (95°F) in the original unopened containers. The most up-to-date shelf life information can be found on the respective Sales Specification.

PACKAGING INFORMATION

The *Dow Corning* QP1-2XX LSRs are supplied in 40 kg pail and 410 kg drum kits, each containing equal portions of part A and B.

LIMITATIONS

Dow Corning has completed a one-time test of *Dow Corning* QP1-2XX 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, efficacy, legal, and regulatory compliance of these materials for its intended uses. Dow Corning makes no representation concerning the suitability of these products for any particular medical 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 website, 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.

TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, DOW CORNING SPECIFICALLY DISCLAIMS ANY OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY.

DOW CORNING DISCLAIMS LIABILITY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

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Figure 1: Moving Die Rheometry Data¹



¹Rheological properties measured with the Alpha technologies Rheometer MDR 2000. Rheometer conditions: 120°C (248°F), 6 minutes 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.

CTM ¹	ASTM ²	Property	Unit	Dow Corning® QP1-2XX LSRs Results				
				30	40	50	60	70
No Post-cure, Press Cured for 10 minutes at 120°C (248°F)								
0022	D792	Relative Density		1.12	1.11	1.12	1.12	1.14
1094		Viscosity Part A, 10.0 1/s	Pa.s	184	197	167	189	257
1094		Viscosity Part B, 10.0 1/s	Pa.s	165	161	152	168	247
0099	D2240	Hardness	Shore A	30	41	51	59	68
0137A	D412	Tensile Strength	MPa	3.8	8.0	8.3	9.7	9.6
			psi	551	1160	1204	1407	1392
0137A	D412	Elongation	%	632	542	499	394	329
0137A	D412	Modulus, 100%	MPa	0.5	1.3	2.1	3.0	4.0
			psi	73	189	305	435	580
0157	D624	Tear Strength, Die B	kN/m	15.8	37.5	47.4	50.8	55.0
			ppi	90	214	270	290	314

¹CTM: Corporate Test Method, copies of CTMs are available upon request.

²ASTM: American Society for Testing and Materials.

TABLE 1: TYPICAL PROPERTIES (continued)

CTM	ASTM	Property	Unit	Results (<i>Dow Corning</i> QP1-2XX LSRs)				
				30	40	50	60	70
Post-cured - 2 hours at 200°C (302°F)								
0099	D2240	Hardness	Shore A	29	42	52	61	70
0137A	D412	Tensile Strength	MPa	6.8	6.1	7.5	7.2	7.3
			psi	979	887	1093	1040	1057
0137A	D412	Elongation	%	653	418	363	258	214
0137A	D412	Modulus, 100%	MPa	0.5	1.3	2.5	3.5	4.8
			psi	68	194	365	513	697
0157	D624	Tear Strength, Die B	kN/m	28.6	49.1	52.4	58.4	15.0
			ppi	163	280	299	333	86
Post-cured - 4 hours at 200°C (302°F)								
0099	D2240	Hardness	Shore A	30	43	52	60	71
0137A	D412	Tensile Strength	MPa	6.7	7.4	8.3	7.9	7.5
			psi	972	1073	1204	1146	1088
0137A	D412	Elongation	%	647	477	404	276	210
0137A	D412	Modulus, 100%	MPa	0.5	1.4	2.5	3.6	5
			psi	73	203	363	522	725
0157	D624	Tear Strength, Die B	kN/m	26.4	48.2	51.1	53.7	12.2
			ppi	150	274	291	306	70