



Technical Data Sheet

DOWSIL™ MS-1001 Moldable Silicone

DOWSIL™ MS-1001 Moldable Silicone is a medium viscosity, high Shore A hardness, two-part, 1:1 ratio, fast-curing optical molding resin for producing optical parts with good resistance to environmental aging.

Features & Benefits

- Good transparency
- Two part material
- Lighter than glass
- Medium viscosity for injection molding
- Excellent features reproduction
- Better heat resistance than plastic
- Less yellowing than some plastic

Composition

- Polydimethylsiloxane

Applications

- Injection or compression molding for primary or secondary leases, light pipes, light guides and other optic devices

Typical Properties

Specification Writers: These values are not intended for use in preparing specifications.

Property	Unit	Result
One or Two-Part		Two
Viscosity (Part A)	cP	20,000
	Pa-sec	20
Viscosity (Part B)	cP	9,000
	Pa-sec	9
Viscosity (Mixed)	cP	14,000
	Pa-sec	14
Durometer	Shore A	87
	Shore D	25
Tensile	psi	1,740
	MPa	12.0
Elongation	%	50

Typical Properties (Cont.)

Property	Unit	Result
Refractive Index at 632.8 nm		1.41
Transmission at 380 nm, 3.2 mm	%	92
450 nm, 3.2 mm	%	93
760 nm, 3.2 mm	%	94
Working Time at 25°C (Pot Life - hours)	hr	30
Linear CTE (by TMA)	ppm/°C	250
Specific Heat at 25°C	Btu/lb*°F	0.327
	J/g°C	1.37
	cal/gm°C	0.327
Specific Heat at 50°C	Btu/lb*°F	0.337
	J/g°C	1.41
	cal/gm°C	0.337
Dielectric Strength	volts/mil	736
	kV/mm	29

Description

Dow optical molding materials are designed to meet the challenging needs of the optical market; high purity, moisture resistance, thermal stability and optical transmittance. Injection moldable optical silicone materials from Dow are two-part, heat-cure silicone resins that are especially suitable for precision molding applications, as micrometer-sized features can be replicated on the lens surface to direct light output.

Silicone optical molding materials can be molded into complex shapes, withstand heat and resist yellowing better than plastic, and are lighter than glass. Parts have been fabricated using a variety of techniques, including injection molding, casting or cavity molding, transfer molding, and others.

Mixing And De-Airing

Dow silicone 1:1 optical molding materials are supplied in two parts that do not require lot matching. The 1:1 mix ratio, by weight or volume, simplifies the proportioning process. To ensure best properties Parts A and B must each be thoroughly mixed, inadequate mixing and may result in incomplete cure or reduced physical properties. Automated meter, mix and dispense equipment may be utilized. In applications or molds that are sensitive to air entrapment, de-airing or vacuum application in the mold may be helpful.

Processing/Curing

These products are compatible with commercially available equipment and industry standard processes. These materials can be pumped, meter mixed and molded similarly to liquid silicone rubber (LSR). Mix at a 1:1 ratio. They are lower in viscosity than traditional LSR materials, but they are not shear thinning as LSRs. This allows for reduced pressure in the pumping and mixing areas but similar performance in the injection unit compared to LSRs. In the mold the heat does thin the material dramatically allowing for good flow and reproduction in the mold cavity. Dow OS fluids are recommended to clean cured or uncured silicone residue from application equipment.

UNRESTRICTED – May be shared with anyone

©™ Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

DOWSIL™ MS-1001 Moldable Silicone

© 2018 The Dow Chemical Company. All rights reserved.

Pot Life And Cure Rate

Cure reaction begins with the mixing process. Initially, cure is evidenced by a gradual increase in viscosity, followed by gelation and conversion to a solid elastoplastic material. Pot life is defined as the time required for viscosity to double after Parts A and B (base and curing agent) are mixed and is highly temperature dependent. Please refer to the data table. The cure time depends on the thickness and the cure temperature used.

Useful Temperature Ranges

For most uses, silicone elastomers should be operational over a temperature range of -45 to 200°C (-49 to 392°F) for long periods of time. However, at both the low- and high-temperature ends of the spectrum, behavior of the materials and performance in particular applications can become more complex and require additional considerations and should be adequately tested for the particular end use environment. For low-temperature performance, thermal cycling to conditions such as -55°C (-67°F) may be possible, but performance should be verified for your parts or assemblies. Factors that may influence performance are configuration and stress sensitivity of components, cooling rates and hold times, and prior temperature history. At the high-temperature end, the durability of the cured silicone elastomer is time and temperature dependent. As expected, the higher the temperature, the shorter the time the material will remain useable.

Compatibility

Certain materials, chemicals, curing agents and plasticizers can inhibit the cure of addition cure adhesives. Most notable of these include: organotin and other organometallic compounds, silicone rubber containing organotin catalyst, sulfur, polysulfides, polysulfones or other sulfur containing materials, unsaturated hydrocarbon plasticizers, and some solder flux residues. If a substrate or material is questionable with respect to potentially causing inhibition of cure, it is recommended that a small scale compatibility test be run to ascertain suitability in a given application. The presence of liquid or uncured product at the interface between the questionable substrate and the cured material indicates incompatibility and inhibition of cure.

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 WEBSITE AT CONSUMER.DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.

Limitations

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

Health And Environmental Information

To support customers in their product safety needs, Dow has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.

For further information, please see our website, consumer.dow.com or consult your local Dow representative.

How Can We Help You Today?

Tell us about your performance, design, and manufacturing challenges. Let us put our silicon-based materials expertise, application knowledge, and processing experience to work for you.

For more information about our materials and capabilities, visit **consumer.dow.com**.

To discuss how we could work together to meet your specific needs, go to **consumer.dow.com** for a contact close to your location. Dow has customer service teams, science and technology centers, application support teams, sales offices, and manufacturing sites around the globe.

consumer.dow.com

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'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 SPECIFICALLY DISCLAIMS ANY OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY.

DOW DISCLAIMS LIABILITY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

