



Technical Data Sheet

SILASTIC™ RBL-9694-45M Liquid Silicone Rubber

Two-part silicone elastomer for integrated compression seals

Features & Benefits

- Two-part addition cure silicone elastomer
- User-friendly, easy to handle 1:1 mix ratio
- High tear resistance
- Low compression set
- Good adhesion to many substrates
- Long term stability over a wide temperature range (-50°C to +200°C)
- Hardness suitable for sealing applications under high clamping loads
- Non-sag nature yields accurate, uniform gasket beads of precise dimensions as defined by robot application parameters
- Fast cure at elevated temperatures, no post curing
- Does not require solvents, CFCs or other environmentally harmful materials for processing

Applications

- SILASTIC™ RBL-9694-45M Liquid Silicone Rubber is designed to be dispensed and cured directly on automotive and other industrial components to form integrated gaskets. Typical applications include gaskets for components which require high clamping forces, e.g. cam covers, water pumps, ABS modules and thermostat housings.

Typical Properties

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

ASTM ¹	Property	Unit	Result	
			Part A	Part B
	As Supplied			
	Consistency		Pumpable Paste	Pumpable Paste
	Color		Black	White
CTM ² 0364 G	Extrusion Rate ³	g/minute	77	98
D56	Flash Point - Closed Cup	°C	> 100	> 100
	As Mixed 1:1 Ratio			
	Color		Black	Black
D1298	Specific Gravity		1.20	1.20
D5289-92	Cure Time T90% (115°C)	s	34	34

1. ASTM: American Society for Testing and Materials.
2. CTM: Corporate Test Method
3. Extrusion rate: 90 PSI, 1/8 inch orifice.

Typical Properties (Cont.)

Test	Property	Unit	Result
As Cured (5 minutes 150°C) - Physical Properties			
D2240	Durometer hardness	Shore A	45
D412C	Tensile strength, Die C	MPa	7.25
D412C	Elongation at break	%	600
D412C	Modulus 100%	MPa	1.45
D624B	Tear strength, Die B	kN/m	45
Compression set, -25%			
D395B	Compression for 22 hours at 177°C	%	29
Lap Shear Adhesion (10 minutes 150°C)			
D816	On aluminum	MPa	1.64
	On PA 66 GF 30	MPa	1.35

Description

SILASTIC RBL-9694-45M Liquid Silicone Rubber is a two component heat-cure silicone elastomer, designed to be easily mixed and dispensed via meter-mix equipment. It is cured directly on automotive and other industrial components to form an integrated, high strength compression seal. It is resistant to many industrial fluids (e.g. engine oils, water/glycol mixtures) over a broad temperature range with the exception of fuels and non-polar solvents.

The Cured-In-Place Gasket Concept (CIPG)

The "Cured-in-Place-Gasket" concept made possible with SILASTIC RBL-9694-45M Liquid Silicone Rubber provides a successful alternative to traditional gasketing methods using manually installed preformed rubber gaskets. This approach provides greater design flexibility as the robotically applied liquid silicone beads can easily follow complex surface geometries. Additionally, changes in part design can be rapidly accommodated by reprogramming the dispensing system. The extruding seals are applied and positioned with excellent reproducibility time after time, ensuring good sealing performance. Equally important, the sealing/curing process lends itself ideally to a continuous, fully automated operation thus providing meaningful savings on the costs associated with manual gasket installation.

How To Use

Substrate Preparation

SILASTIC RBL-9694-45M Liquid Silicone Rubber adheres to many metallic and plastic substrates (normally without using primer). This feature ensures the cured gaskets will not be displaced during packaging or handling of the sealed component. Regardless of the substrate, the sealing surfaces should be clean and free of dirt, oils, and release agents to ensure good adhesion. In most instances washing with waterbased industrial detergents will remove these contaminants.

Some substrates however will require additional treatment to achieve good adhesion. This could mean plasma, corona, flame treatment or chemical priming. Contact us for more information.

How To Use (Cont.)

Processing

SILASTIC RBL-9694-45M Liquid Silicone Rubber is optimally mixed, dispensed and applied to the components to be sealed using a fully automated and integrated process.

Metering/Mixing

The mixing step is successfully carried out with commercially available two-component meter-mix pumps designed to work on a 1:1 weight ratio. The A and B components are pumped from pails or drums using follower-plate mounted piston pumps, then fed into smaller, precise gear or piston pumps where the actual metering takes place. The precisely metered A and B components are then mixed by means of standard multi-element static mixers. The working time of the A/B mixture at room temperature is about 4–6 hours and this eliminates the danger of blocking the mixer with cured product during normal production stops.

Application

For automated bead application the mixing head is attached to a robotic arm or alternatively the wrist applicator of an X-Y-Z table gantry.

Typically the meter-mix equipment and the robot or X-Y-Z table are fully integrated in a system which dispenses precisely metered volumes of uncured elastomer in a pre-programmed path onto the component to be sealed. The desired bead dimensions are achieved by a combination of parameters involving the pump throughput rate, the dispensing head diameter and tip speed, and the distance from tip to component surface. The non-sag nature of SILASTIC RBL-9694-45M Liquid Silicone Rubber ensures that the dispensed bead dimensions remain unchanged after the bead is cured. The gasket bead size is a function of the sealing gap and the flange width.

Curing

Curing and adhesion of SILASTIC RBL-9694-45M Liquid Silicone Rubber gasket beads are achieved by submitting the uncured elastomer to a temperature of 150°C for 6–8 minutes. In an automated process the components to be sealed will typically be mounted on a conveyor system and the bead applied by robot with a typical cycle time of 10 to 45 seconds per component (depending on size). The gasket beads are then cured by passing the sealed components through a heating tunnel. The required cure time of 6–8 minutes is obtained by appropriate dimensioning of the tunnel length for a given conveyor speed. A particularly efficient way to transfer heat to the elastomer for effective curing, and to minimize heat dissipation in the mass of the component, is the use of focused infrared heating elements.

Handling Precautions

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Handling Precautions (Cont.)	SILASTIC RBL-9694-45M Liquid Silicone Rubber is nonhazardous and non-flammable according to classification guidelines as laid down in EU-Directive 88/379/EEC and its subsequent amendments. The part B of SILASTIC RBL-9694-45M Liquid Silicone Rubber can evolve hydrogen when in contact with hydroxy containing materials such as water, alcohols and others. Ensure that containers are properly closed after use in order to avoid contamination of the components.
Usable Life And Storage	Product should be stored at or below 35°C in original, unopened containers.
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, www.consumer.dow.com or consult your local Dow representative.

<http://www.silastic.com>

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