Technical Data Sheet

SILASTIC™ 4-2010 Liquid Silicone Rubber

Two-part liquid silicone rubber

Features & Benefits

- Robust retention of physical properties
- Sealing force retention in the PEM fuel cell environment with no adverse impact on long-term performance of the stack
- Moderate adhesion to stack plate materials is provided without priming in combination with good mold release without special mold coatings
- Short cycle times are achieved for improved molding productivity

Applications

- Injection molding grade two-part silicone for fuel cell stack sealing

Typical Properties

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

Test[1]	Property[2]	Unit	Result
	Extrusion Rate Part A	g/min	318
	Extrusion Rate Part B	g/min	222
	MDR, S'Max[3]	lb-in	18.52
	MDR, TC-2[3]	sec	6.5
	MDR, TC-90[3]	sec	26.3
CTM0022	Specific Gravity		1.20
CTM0099	Durometer	Shore A	52.5
CTM0137A	Tensile	MPa (psi)	5.3 (775)
CTM0137A	Elongation at Break	%	249
CTM1112	Tear Die C	ppi (kN/m)	57.3 (10)
CTM1224	Compression Stress Relaxation[4], Sealing Force Retained		
CTM1224	1008 Hours in Air at 23°C	%	76
CTM1224	1008 Hours in Air at 100°C	%	42
CTM1224	1008 Hours in DI Water at 75°C	%	38
CTM1224	1008 Hours in DI Water at 100°C	%	27

1. CTM: Corporate Test Method, copies of CTM's are available on request.
2. Properties obtained on 2.0 mm (0.080 inch) thick slabs; molded 5 minutes at 175°C (347°F).
3. MDR at 120°C (248°F).
4. Compression Stress Relaxation: Results shown were obtained with 2.0 mm thick flat o-rings in JAMAK jigs.

Form No. 80-8513-01-1120 S2D

How to Use

SILASTIC™ 4-2010 Liquid Silicone Rubber is a two-part liquid silicone rubber intended for injection molded seals in PEM Fuel Cell Stack applications.

Mixing

The 2 parts should be mixed in a 1:1 +/- 0.05 ratio by weight. Manual weighing and mixing using a propeller mixer is suitable for small volumes. However for large volumes, meter-mix units are suggested. In either case, air entrainment should be avoided as much as possible by careful choice of mixer blade design and mixing speed. It is not normally necessary to vacuum de-air the mixture prior to use.

Working Time

SILASTIC™ 4-2010 Liquid Silicone Rubber has a working time of about 6 hours at 23°C. Higher temperatures will reduce working time.

Cure

The cure time for a particular part is a function of the cure temperature and the cross section dimensions of the part. SILASTIC™ 4-2010 Liquid Silicone Rubber cures rapidly to completion (25–30 seconds for 5 mm cross section) when the temperature of the part reaches 120°C. During cure of LSRs, low levels of volatile materials are evolved, and although not significant in comparison to solvent based materials, these volatiles can condense in the extraction system over a long period of time. Hence it is still necessary to maintain a low level of extraction in the cure ovens, and to monitor the flue gas ducting for condensate and degradation products (silica) that collect.

Cure Problems

LSRs are addition curing materials which use platinum catalyst, and as such, are susceptible to poisoning by contaminants. Example poisons are organo-tin and other organo-metallic compounds; silicone rubber containing and organo-tin catalyst; sulfur; polysulfides, polysulfones, and other sulfur-containing materials; and unsaturated hydrocarbon plasticizers. Many lubricating oils contain sulfur. The effect on the LSR is to prevent complete cure, with the result that the coating feels sticky.

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

Usable Life and Storage

When stored at or below 40°C (104°F) in the original, unopened container, this product has a usable life of 12 months from the date of production.

Packaging Information

Available in customize packaging and form.

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, dow.com or consult your local Dow representative.

Disposal Considerations

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Technical Representative for more information.

Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

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