



# Stockwell Elastomerics, Inc.

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High Performance Elastomeric Components and Materials



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## Pressure Sensitive Adhesive Backings Applied to Custom Molded Silicone Rubber Components for Improved Product Performance and Lower Per Unit Costs

Stockwell Elastomerics offers the capability of **applying pressure sensitive adhesive tabs, or full pressure sensitive adhesive backings to custom molded silicone rubber components.**

Traditionally, gasketing and cushioning components requiring a pressure sensitive adhesive backing were die cut or hand fabricated from adhesive backed sheets of solid or sponge rubbers.

However, die cut sponge gaskets can't always meet the required moisture sealing

requirements under the lower pressure conditions present in many applications.

Also, adhesive backed die cut gaskets can become expensive due to the the large amount of "center" material generated and discarded resulting from the die cutting process, and that waste material has no recovery value.

However, low durometer silicone rubber materials provide effective sealing, especially on housings designed with low closure force.

moisture sealing requirements, especially where liquid tight sealing is required with limited closure force.

Working closely with one customer, Stockwell Elastomerics developed the triple ribbed gaskets shown in the photo on this page, custom molded from a 20 durometer silicone rubber, using the "shape effect" to replicate the compressibility of a sponge gasket.

An RTV silicone bonding system was being considered to adhere the gasket to the housing, but Stockwell Elastomerics developed a process to apply 3M's #9731 acrylic adhesive to the smooth underside of the molded gasket, and die cut the flash and trim away using steel rule cutting dies.

**The advantages are:**

- **The RTV silicone adhesive was eliminated, speeding our customer's assembly time.**
- **The molded rib design effectively sealed the unit, enhancing the product's market acceptance.**
- **The ribbed design in conjunction with a very soft 20 durometer silicone rubber saved our customer from redesigning the housing to increase closure force.**



### Custom Molded Low Durometer Seals Replace Die Cut Sponge in Laboratory Equipment and Instrumentation Applications

Custom molded silicone rubber gaskets with pressure sensitive adhesives are outperforming and replacing sponge gaskets in applications where sponge gaskets have not been able to meet the required

### Stockwell Elastomerics' Current Adhesive Recommendations for Molded Components with Pressure Sensitive Adhesives

Adhesive Product	Polymer Family	Adhesive Thickness	Adhesion Value	Adhesive Temp. Range	Design Features
3M9731	Acrylic/Silicone	.0055"	65 oz./in.	-20°F to 300°F	Special construction of acrylic adhesive one side/silicone adhesive on the other side of a polyester carrier. The silicone side is applied to the silicone gasket - the user side is a high strength acrylic adhesive.
DP1001	Silicone	.004"	40 oz/in.	-70°F to 450°F	Kapton® film supported silicone polymer adhesive for hot and cold temperature conditions. Specially treated plastic liner releases readily from the adhesive surface. Film support layer is amber.

### Cost Savings Over Die Cutting Solid Silicone Gaskets with Pressure Sensitive Adhesive Backings, A Case Study

A 20 durometer solid silicone gasket with pressure sensitive adhesive backing was being used in a die cut picture frame configuration, approximately 1/8" thick by 6" by 6." The original production method involved laminating adhesive to the \$89.50/yard sheet silicone, and die cutting the gasket. However, **nearly 85% of the material was waste as the "center" had no market value.** For both economic and

environmental reasons, we knew that a better process could be developed.

Working with our customer we determined that the design was stable, and the production program was ongoing, so we developed a program to replace the die cut part with a custom molded product.

The molding process wastes very little material, especially when compared with the earlier die cutting process.

After only 4500 gaskets, the cost of the mold was recovered, so the per unit cost of

the units was lowered beyond that initial 4500 production run. The waste stream generated by the molding process was vastly reduced compared with the die cutting process.

Generally, custom molding becomes an economical alternative to die cutting when the thickness of the part is .125" thick or greater, and the interior "center" mass exceeds the gasket mass by three times or more.

Please contact us for technical assistance regarding die cutting versus custom molding.

### Typically Specified Liquid Silicone Rubber (LSR) Compounds Available\* from Stockwell Elastomerics

SRC LSR Compound	Durometer Shore A	Tensile Strength, PSI	Elongation at Break, %	Tear Strength PPI of Width	Compression Set, % (22 hrs @ 158° F)	General Characteristics
SE2020	20	725	900	55	< 5	<b>Very soft compound</b> , has been specified for seals with minimal available closure force.
SE2030	30	1085	800	85	< 5	<b>General Industrial Grade</b> , Standard colors are Black and Gray, available in other colors.
SE2040	40	1230	850	140	< 5	<b>General Industrial Grade</b> , Standard colors are Black and Grey, available in other colors.
SE2050	50	1230	700	170	< 5	<b>General Industrial Grade</b> , Standard colors are Black and Grey, available in other colors.
SE2070	70	1230	400	170	< 5	<b>General Industrial Grade</b> , Standard colors are Black and Grey, available in other colors.

**Notes:** Durometer Shore A is measured per ASTM D2240. Tensile Strength and Elongation % are measured per ASTM D412. Compression Set is measured per ASTM D395, after 22 hrs @ 158° F. (Most sealing requirements for our LSR molded components need to perform in a range of -20° F to 158° F. Let us know if you require test data beyond this temperature range. Data taken from non-postcured silicone.)

\* We do not recommend these pressure sensitive adhesives on durometer lower than 20 Shore A.

## Liquid Silicone Rubber Injection Molded Parts

Custom injection molded silicone rubber components, in standard formulations and UL Flame Rated compounds, are being specified in a growing number of industries, performing a variety of critical functions.

#### Typical Applications Include:

- Environmental Seals in Hand-Held Communications Devices and Sensors.
- Strain Reliefs and Grommets in Electrical/Electronic Equipment.
- Shock Isolators and Gaskets in Laboratory and Medical Diagnostic Equipment.

The low viscosity of most liquid silicone rubber compounds allows the material to flow through the cavity quickly and completely. This permits molding capability even if the perimeter of the molded part contains a number of turns and radii.

Liquid silicone injection molding also produces tight tolerances in cross sectional dimensions, **and allows for the consistent production of very thin cross-section silicone rubber parts, as thin as .030" diameter.**



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