

Sealing out harsh environments



Liquid Silicone and
Elastomer Technologies

DELPHI

Innovation for the Real World

Automotive

Medical

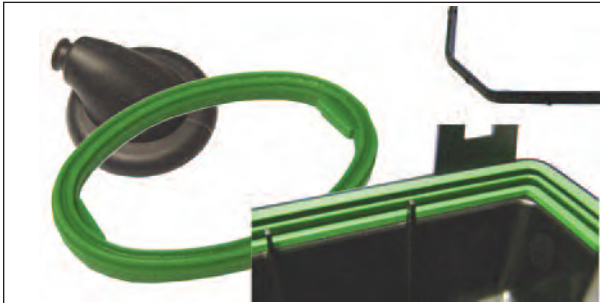
Industrial

Delphi Liquid Silicone and Elastomer Technologies

Delphi's liquid silicone and elastomer technologies include electrical/electronic cable seals, connector seals, switch products and unit gaskets for automotive, industrial and medical markets. These sealing products help improve the integrity of electrical/electronic contacts and component assembly sealing, especially in damp or harsh-environment applications.



Connector and cable sealing



Unit gaskets and special products



Special switch products

Leveraging years of experience and leading-edge technologies, Delphi designs and manufactures Liquid Silicone products to world-class standards. Delphi produces more than 4 billion LSR (Liquid Silicone Rubber) pieces per year. Along with its LSR products, Delphi produces several 2-shot header systems using thermoplastic elastomer materials. We can work with customers for single part or co-molded technologies, as well as integrate third-party systems. Delphi also offers application, tooling and process support.

Typical Applications – Automotive, industrial and medical markets.

- Cable seals and cavity plugs
 - Individual cavity sealing
 - Multiple-cavity sealing
 - Multiple-cavity sealing with Delphi layer technology
- Connector housing seals: in-line and device
 - Peripheral
 - Compression
 - 2-shot molding
- Unit gaskets: special applications medical, industrial and automotive
 - Manifold
 - Endplate
 - Vacuum
 - 2-shot distribution box sealing
- Special products
 - Switch products
 - 2-shot sealed headers (LSR and TPE)

Performance Advantages –

- Expertise
 - In-house design, process, tooling and manufacturing know-how
 - Full system supplier, delivering customer-responsive technologies
 - More than 20 years of LSR production
 - 4.5 billion pieces produced globally
- Innovative seal process technologies
- Large product portfolio accommodating customers needs

Cable Seals and Cavity Plugs

Delphi designs and manufactures a complete portfolio of seals, plugs and gaskets using liquid silicone technologies. The product overview chart captures only a few of the

diverse sealing products available for customer's requirements. Please contact your Delphi representative for additional product selections and application information.

	3.6 mm	4.0 mm	5.2 mm	5.7 mm	5.8 mm	6.7 mm	6.8 mm	8.5 mm	9.8 mm	12.5 mm	13.8 mm								
Yellow 1.0	15339412 1.9-2.1	White 0.35-0.75	15366021 1.2-1.82	15324974 1.2-2.0	Grey 0.35-1.0	10720941 1.2-2.0	15366065 1.2-1.9	RedBrown 0.35-1.0	15324983 1.2-2.0	Green 0.5-1.5	10720611 1.5-2.3	Yellow 0.35-1.0	15363779 1.2-2.0	LightBrown 0.5-1.5	15324997 1.6-2.4	Blue	15324999 3.61-4.5	Blue 1.5-2.5	15492996 2.2-3.0
Red 0.35-0.5	15327913 1.2-1.6	Blue 1.0-1.5	15366060 1.86-2.25	10737671 1.5-2.3	Yellow 1.0-2.5	10720950 2.1-2.9	15366067 2.7-3.0	Light Brown 2.5	15324985 1.6-2.4	Yellow 1.5-2.5	10720613 2.2-3.0	White 1.0-2.5	15363604 2.0-2.9	RedBrown 1.5-2.5	15324995 2.0-2.9	Dark Red	15324998 4.54-4.7	RedBrown 4.0-6.0	15327126 3.4-4.3
Grey 0.5-1.0	15327918 1.2-2.0	Green	15305171 cavity plug	15324976 1.6-2.4	White	15305170 cavity plug	12191235 3.4-3.7	White	15324982 2.0-2.9	White 4.0	10720615 3.4-3.7	White 1.0-2.5	15327864 2.8-3.8	RedBrown 2.5-4.0	15324994 2.8-3.8	Red	15355390 6.63-6.89	Green 10.0	10720983 6.0-6.4
White	12198198 cavity plug	Red 0.75-1.0	15339560 1.7-2.1	15327863 2.0-2.7	White	15305170 cavity plug	15305170 cavity plug	White	15324980 2.8-3.5	RedBrown	10720617 cavity plug	RedBrown	10720617 cavity plug	RedBrown 2.5-4.0	15324996 3.6-4.5	Grey 2.5-4.0	15324996 3.6-4.5	Green 16.0	15470809 6.5-7.5
Yellow 0.35-0.5	15344777 1.2-1.6	Yellow 1.5	10720807 2.2-2.4	15324973 2.0-2.9	RedBrown 1.0-2.5	Grey 2.5-4.0	15324981 3.5-4.2	Blue 4.0-6.0	15324981 3.5-4.2	Green	12010300 cavity plug	Blue	12010300 cavity plug	Green 6.0	15344647 4.4-5.1	Grey 4.0-6.0	15344647 4.4-5.1	Green	10720907 cavity plug
Green 0.5-1.0	15344778 1.4-2.0	Green	10720811 cavity plug	10737670 2.2-2.4	RedBrown 1.0-1.5	Green	12010300 cavity plug	Light Green	12066082 cavity plug	Light Green	12066082 cavity plug	Light Green	12066082 cavity plug	Green 4.0-6.0	12059255 cavity plug	Blue 4.0-6.0	12059255 cavity plug	Green	10720907 cavity plug
RedBrown 0.35-1.0	15344324 1.2-2.1	Yellow 1.5	10720807 2.2-2.4	15324973 2.0-2.9	RedBrown 1.0-2.5	Grey 2.5-4.0	15324981 3.5-4.2	Blue 4.0-6.0	15324981 3.5-4.2	Green	12010300 cavity plug	Blue	12010300 cavity plug	Green 6.0	15344647 4.4-5.1	Grey 4.0-6.0	15344647 4.4-5.1	Green	10720907 cavity plug
Yellow 0.75-1.0	15305351 1.7-2.1	Yellow 1.5	10720807 2.2-2.4	15324973 2.0-2.9	RedBrown 1.0-2.5	Grey 2.5-4.0	15324981 3.5-4.2	Blue 4.0-6.0	15324981 3.5-4.2	Green	12010300 cavity plug	Blue	12010300 cavity plug	Green 6.0	15344647 4.4-5.1	Grey 4.0-6.0	15344647 4.4-5.1	Green	10720907 cavity plug
Light Green 0.5-0.75	15366022 1.47-1.85	Green	10720811 cavity plug	10737670 2.2-2.4	RedBrown 1.0-1.5	Green	12010300 cavity plug	Light Green	12066082 cavity plug	Light Green	12066082 cavity plug	Light Green	12066082 cavity plug	Green 4.0-6.0	12059255 cavity plug	Blue 4.0-6.0	12059255 cavity plug	Green	10720907 cavity plug
Orange	15305169 cavity plug	White 1.5-2.5	15337197 cavity plug	10730124 cavity plug	White	15305170 cavity plug	15305170 cavity plug	White	15324982 2.0-2.9	White 4.0	10720615 3.4-3.7	White 1.0-2.5	15327864 2.8-3.8	RedBrown 2.5-4.0	15324994 2.8-3.8	Red	15355390 6.63-6.89	Green 10.0	10720983 6.0-6.4



Note: The cable diameter is the maximum possible diameter the seal can accept. The usage is dependent upon cable, conductor and isolation crimp types of the terminal system.

Leading Edge Technologies

Delphi engineers are experts in sealing technologies and have helped develop and integrate industry-leading manufacturing processes. Several of Delphi's key innovative sealing process technologies include:

- 2-shot molding technology
- LSR (liquid silicone rubber) - lower cost, higher quality seal production
- Implementation of clean room
 - Clean room condition ISO class 7
 - Integrated post curing process
 - Decentralized machine with air ionization system
- Direct injection technology and new ejection systems
- Delphi's modular, front-end nozzle setup to help reduce service time

These manufacturing technologies have improved the process and end product in both quality and cost.

Noted improvements include:

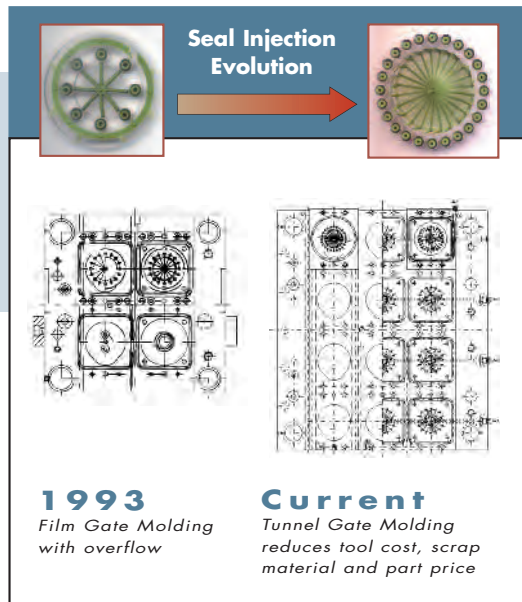
- Increased mold cavity from 32 to 288
- Reduced sprue and scrap
- Introduction of a modular mold design
- Moldflow® and infrared thermo analysis support
- Capability to produce LSR Fluor materials



Delphi's Liquid Silicone and Elastomer molding plant, Wuppertal, Germany




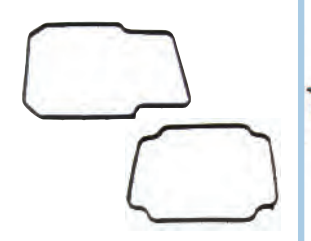


Clean room plant, Wuppertal, Germany



Delphi's Liquid Silicone molding plant, Brookhaven, MS, USA

Product Line Overview

Cable Seals			
			
Cable seals and cavity plugs	FPC cable sealing	Multi-cavity sealing	Multi-cavity layer sealing
Connector Seals			
			
Connector seal	Peripheral and compression combination	Standard connector sealing	2-shot connector sealing
Unit Gaskets			
			
Medical unit gasket	Medical unit gasket	Automotive unit gasket	2-shot cover, self bonding LSR
Special Products			
			
Steering wheel switch cover	Steering wheel switch cover	Steering wheel switch cover	2-shot and insert mold header

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