



# Scotch-Seal™

## Polyurethane Sealant 540

## Polyurethane Adhesive Sealant 560

Technical Data

July, 2008

### Product Description

3M™ Scotch-Seal™ Polyurethane Sealant 540 and 3M™ Scotch-Seal™ Polyurethane Adhesive Sealant 560 are one component, moisture curing products which form permanent elastic bonds. They bond to a wide variety of materials including plastics, FRP, SMC, aluminum, steel, coated metal, and wood.

### Features/Advantages

Feature	Scotch-Seal 540	Scotch-Seal 560	Advantage
One component/moisture curing	X	X	<ul style="list-style-type: none"><li>• No mixing</li><li>• Simplifies production</li></ul>
Bonds dissimilar materials	X	X	<ul style="list-style-type: none"><li>• Gives design flexibility</li></ul>
Adheres to a wide variety of materials	X	X	<ul style="list-style-type: none"><li>• Multiple uses and design flexibility</li></ul>
Permanently elastic	X	X	<ul style="list-style-type: none"><li>• Provides long lasting bonds</li></ul>
Fast curing	X	X	<ul style="list-style-type: none"><li>• Speeds production</li></ul>
Paintable	X	X	<ul style="list-style-type: none"><li>• Improves appearance</li></ul>
High tensile strength		X	<ul style="list-style-type: none"><li>• Gives high strength bonds</li><li>• Replace rivets and mechanical fasteners</li></ul>
Low modulus	X		<ul style="list-style-type: none"><li>• Ideal for sealing</li><li>• Good for bonding material with different coefficients of thermal expansion</li></ul>

### Application Ideas

Scotch-Seal 540	Scotch-Seal 560
Seal lap seams on trucks, trains, trailers, vans, RV's specialty vehicles and construction panels.	Bonds floors, exterior/interior panels, roofs for trucks, trains, trailers, vans, RV's, and specialty vehicles.
General industrial bonding/sealing	General industrial bonding/sealing

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### Technical Data

**Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.**

<b>Properties</b>	<b>3M™ Scotch-Seal™ Polyurethane Sealant 540</b>	<b>3M™ Scotch-Seal™ Polyurethane Adhesive Sealant 560</b>
Tack-Free Time @ 73°F and 50% Relative Humidity	90 minutes	50 minutes
Rate of Cure @ 73°F and 50% Relative Humidity	3/16 inch per 24 hours	3/16 inch per 24 hours
Shore A Hardness (ASTM C661)	40-45	55
Tensile Strength (ASTM D412)	250 psi	580 psi
Elongation at Break (ASTM D412)	>800%	>300%
100% Modulus (ASTM D412)	90 psi	145 psi
Service Temperature	-40°F - 194°F (-40°C - 90°C)	-40°F - 194°F (-40°C - 90°C)
Colors	White, Black and Gray	White, Black and Gray
Specific Gravity	1.17	1.17
Solids Content	> 90%	> 90%
Consistency	Medium paste	Medium paste
Flash Point	136°F (58°C)	136°F (58°C)
Coverage Approximate (10.5 oz)	1/8 inch bead = 126 lineal feet	1/8 inch bead = 126 lineal feet
VOC's	112 gms/liter	112 gms/liter

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**Performance Data**

**Note:** The following data represents a 30-day at 72°F (22°C), ambient humidity, and a 17-mil bond thickness. All substrates were abraded and solvent wiped prior to making bonds. Actual values will vary, as the final bond strengths are dependent upon many variables such as substrate type, substrate uniformity, and environmental conditions.

**Overlap Shear Data:**

Substrate	3M™ Scotch-Seal™ Polyurethane Adhesive Sealant 560 (psi)	Failure Mode
Fir	371	Cohesive
Stainless Steel	223	Cohesive
Aluminum	354	Cohesive
Cold Rolled Steel	281	Cohesive
Nylon 66	243	Adhesive
ABS	156	Adhesive
Acrylic	49	Adhesive
Polycarbonate	190	Cohesive
FRP	440	Cohesive
Polypropylene	25	Adhesive
Polyethylene	25	Adhesive
PVC	114	Adhesive
EPDM	7	Adhesive

**UV Properties:**

Both products have good resistance to UV aging and will retain strength and flexibility over long-term exposure to UV light. The white product may show some yellowing with long-term exposure to UV light.

**Heat Resistance:**

Long term exposure to temperatures greater than 190°F (88°C) will decrease tensile strength over time. For this reason these products should not be used in applications where the temperatures will continuously exceed 190°F (88°C).

**Flammability and Smoke Testing:**

3M™ Scotch-Seal™ Polyurethane Sealant 540 and 3M™ Scotch-Seal™ Polyurethane Adhesive Sealant 560 were tested for surface flammability, smoke, and toxic gas generation. Both products, when applied to a steel substrate, met Federal Railroad Administration requirements as they pertain to surface flame spread (ASTM E 162), and rate of smoke generation (ASTM E 662). These materials also met Bombardier’s requirements as they pertain to toxic gas production (Bombardier SP 800-C). Copies of these reports are available upon request.

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### Packaging

Both products are available in 10.5 oz. cartridges, 400 ml and 600 ml, flex packs. Colors are gray, black or white. 3M™ Scotch-Seal™ Polyurethane Sealant 540 is also available in bulk containers.

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### Directions for Use

#### Surface Preparation:

Surfaces to be sealed or bonded should be clean and dry. Surfaces should be free from grease, mold release, oil, water/condensation, and other contaminants that may affect the adhesion of the sealant. Abrading with 180 to 220 grit abrasive followed by a solvent wipe will improve the bond strength. Suitable solvents include 3M™ Citrus Based Adhesive Remover, 3M™ Scotch-Grip™ Solvent No. 3 or methyl ethyl ketone (MEK).\*

**\*When using solvents, use in a well ventilated area. Extinguish all sources of ignition in the work area and observe product directions for use and precautionary measures. Refer to product label and MSDS for further precautions. Always pre-test solvent to ensure it is compatible with substrates.**

**Local and federal air quality regulations may regulate or prohibit the use of these products or surface preparation and cleanup materials. Consult local and federal air quality regulations before using these products.**

**Note:** Alcohol will interfere with the curing process and extra care must be taken when using alcohol as a cleaning solvent to prevent any contact with the sealant.

Use of a primer is an extra step and cost and will depend on substrates and the final end use. Using primer can improve the corrosion resistance of certain metals as well as improve the durability of the bond when exposed to high humidity conditions. For most applications high strength bonds on metal can be achieved without the use of a primer. Pre-testing for adhesion is suggested to determine if a primer is needed. The 3M™ Scotch-Weld™ Structural Adhesive Primer EC-1945 B/A works well for most metals.

#### Application:

Puncture seal in nozzle and knock out the thin seal at cartridge bottom before placing in caulking gun. (For flex packs cut off the small crimp at the end and then place in caulking gun barrel with the open end up). Assemble tip and retaining ring on gun, cut tip to desired size. Product should be used within 24 hours after seal is punctured and should be pressed firmly into the joint to ensure adequate contact of the sealant with the substrate. Apply product when temperatures are between 40°F (4°C) and 100°F (38°C). Do not apply on frozen surfaces or wet surfaces. Do not apply over silicones or in the presence of curing silicones. Avoid contact with alcohol and solvents during curing. Sealant can be tooled immediately after applying to give desired appearance.

#### Cleanup:

While sealant is still soft cleaning can be done with the same solvents used for surface preparation. If sealant is already cured, removal is done mechanically with razor knife, piano wire, sanding or 3M™ Scotch-Brite™ Molding Adhesive and Stripe Removal Disc. This disc is available from 3M Automotive Aftermarket Division.

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### Application Equipment Suggestions

#### Cartridge and Flex Pack:

For ease of dispensing an all metal, rod driven, friction feed manual applicator gun or an air operated applicator gun is suggested. Various types of these dispensers are available thru Shopware (800-877-9344).

#### Bulk Dispensing:

For bulk dispensing a 46:1 ratio dual action piston pump with a ram is suggested. Actual equipment is dependent on the fluid flow desired, the number of guns to be supplied for each pump and distance product has to be pumped. It is best to consult with the equipment supplier to make sure the proper type and size of equipment is specified. Common suppliers of this type of pumping systems are Graco and Binks. It is best to work with a distributor for Graco or Binks located in your area. Our technical service group will be glad to work with you and your chosen supplier to ensure the proper equipment is selected.

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### Storage

3M™ Scotch-Seal™ Polyurethane Sealant 540 and 3M™ Scotch-Seal™ Polyurethane Adhesive Sealant 560 must be stored in the original, unopened containers below 90°F (32°C) for maximum shelf life. Rotate stock on a “first in-first out” basis.

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### Shelf Life

When stored at the recommended conditions in original unopened containers, Scotch-Seal 540 and 560 have a shelf life of 6 months from date of shipment.

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### Precautionary Information

Refer to Product Label and Material Safety Data Sheet for health and safety information before using this product. For additional health and safety information, call 1-800-364-3577 or (651) 737-6501.

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### Product Use

All statements, technical information and recommendations contained in this document are based upon tests or experience that 3M believes are reliable. However, many factors beyond 3M's control can affect the use and performance of a 3M product in a particular application, including the conditions under which the product is used and the time and environmental conditions in which the product is expected to perform. Since these factors are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for the user's method of application.

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### Warranty and Limited Remedy

Unless stated otherwise in 3M's product literature, packaging inserts or product packaging for individual products, 3M warrants that each 3M product meets the applicable specifications at the time 3M ships the product. Individual products may have additional or different warranties as stated on product literature, package inserts or product packages. 3M MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's application. If the 3M product is defective within the warranty period, your exclusive remedy and 3M's and seller's sole obligation will be, at 3M's option, to replace the product or refund the purchase price.

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### Limitation of Liability

Except where prohibited by law, 3M and seller will not be liable for any loss or damage arising from the 3M product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability.

**ISO 9001:2000**

This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9001:2000 standards.



#### Industrial Adhesives and Tapes Division

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