



OEM Polyurethane Glass Adhesive Sealant 590

Technical Data

August, 2014

Product Description

3M™ OEM Polyurethane Glass Adhesive Sealant 590 is a one component, fast curing adhesive which forms a rigid yet elastic permanent bond. 3M 590 bonds to a wide variety of materials including glass, acrylic / PMMA, polycarbonate, and many other materials.

Features/Advantages

Feature	3M™ OEM Polyurethane Glass Adhesive Sealant 590	Advantage
One component/moisture curing	X	<ul style="list-style-type: none">• No mixing• Simplifies production
Bonds dissimilar materials	X	<ul style="list-style-type: none">• Gives design flexibility
Adheres to materials commonly used in vehicle window bonding	X	<ul style="list-style-type: none">• Multiple uses and design flexibility
High strength	X	<ul style="list-style-type: none">• Provides long lasting bonds
Fast curing	X	<ul style="list-style-type: none">• Speeds production
Higher modulus / High Shore A Hardness	X	<ul style="list-style-type: none">• Ideal for bonding• Gives high strength bonds

Application Ideas

Market	3M™ OEM Polyurethane Glass Adhesive Sealant
Marine	X
Specialty Vehicle	X
	Bonds glass and plastics commonly used as windows and windshields.

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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.

Properties	3M™ OEM Polyurethane Glass Adhesive Sealant 590
Tack-Free Time @ 73F and 50% RH	25 - 40 minutes
Rate of Cure @ 73F and 50% RH	>1/8" (3.5 mm) per 24 hour
Shore A Hardness (ASTM C661)	60 - 65
Tensile Strength (ASTM D412)	1450 psi (10 MPa)
Elongation at Break (ASTM D412)	>700%
100% Modulus (ASTM D412)	>870 psi (>6 MPa)
Specific Gravity	1.2
Consistency	Thixotropic paste
VOC Content	18.7 g/l
Application Temperature	40°F - 95°F (5°C - 35°C)
Water and salt spray resistance	Excellent
Shearing resistance at 5 hours/23°C/50%RH (Ford SAE J 1529)	>130 psi
Shearing resistance at 7 days/23°C/50%RH (Ford SAE J 1529)	>500 psi
Crash test (standard FMVSS 212): resists after 3 hours/23°C/50%RH	Pass
Approximate Coverage (10.5 oz. [310 mm Cartridge])	1/8" (3 mm) bead = 126 lineal feet (38 lineal meters)

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Performance Data

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Heat Resistance:

Long term exposure to temperatures greater than 212°F (100°C) will decrease tensile strength over time. Do not use these products in applications where the temperatures will continuously exceed 212°F (100°C).

Product Certifications and Listings

	3M™ OEM Polyurethane Glass Adhesive Sealant 590
Federal Motor Vehicle Safety Standard Crash Test FMVSS 212	X
Leadership In Energy and Environmental Design (LEED) Contributes to LEED credit	X

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™ Adhesive Remover 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.

Primer:

Use of a primer is recommended for window bonding using 3M™ OEM Polyurethane Glass Adhesive Sealant 590. Surface prep consists of the appropriate 3M Primer to both bonding surfaces. In areas with VOC restrictions, it is imperative that bonding surfaces are clean of contaminants. It may be acceptable to bond fritted glass without primer if the frit area is abraded with 3M™ Scotch-Brite™ abrasive to improve adhesion. Contact 3M for technical support.

Do not apply 3M 590 on frozen nor wet surfaces. Do not apply over silicone nor in the presence of curing silicone.

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Directions for Use (continued)

Window Bonding Application:

Supplies:

- 3M™ OEM Polyurethane Glass Adhesive Sealant 590 in cartridges or 600 ml sausage packs
- Solvent or non-greasy cleaner
- Appropriate 3M Primer matched to the substrate:

Fritted Glass	3M™ Fritted Glass Primer P590
Plain Glass	3M™ Teak & Glass Primer P595
PMMA	3M™ Plastic Primer P591
Fiberglass	3M™ Plastic Primer P591
Metal	3M™ Fritted Glass Primer P590 or 3M™ Metal Primer P592
- Wool dauber(s) for 3M Primer application
- Applicator gun
- Nozzle(s)
- Glass or plastic window/windshield
- Personal protective gear (safety glasses, powder-free gloves, etc)

Alignment: Dry-set glass and align for uniform fit. Adjust setting blocks as required. Apply masking tape to the corners and frame to aid with alignment when bonding. Clean entire surface of main body using a solvent or non-greasy cleaner. Clean entire surface of window using a non-greasy glass cleaner: clean back side first, then flip over and clean front side (bonding side) second.

Apply appropriate 3M Primer to Main Body and Window: Shake appropriate 3M Primer for 30 seconds after you hear the ball moving inside the bottle. Dip a clean wool dauber into the primer. Roll the dauber around the edge of the bottle to squeeze out excess primer. Replace cover on primer bottle. Apply a single continuous layer of primer to the surface. Wait 30 minutes to dry.

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Directions for Use (continued)

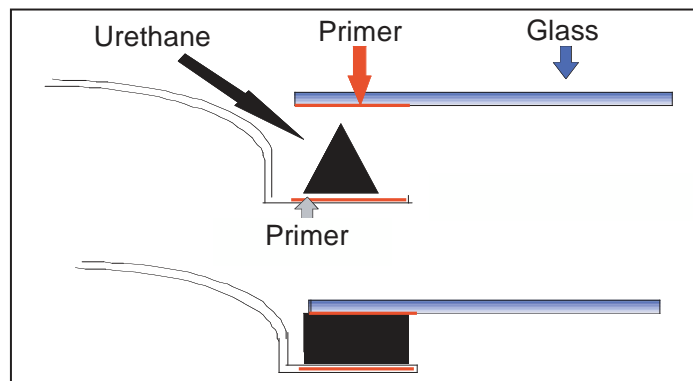
Loading the applicator gun: make sure the applicator is set up with correct plunger attachment for cartridge or sausage pack.

Cartridge: Puncture seal in the center of the nozzle connection on top and remove the pull-tab seal at the bottom of the cartridge. Load into applicator and fix retaining ring (if applicable). Attach the nozzle and cut to desired size and shape.

Sausage Pack: Make a 1" slit close to the crimp on one end of the sausage pack. Load the sausage pack into the applicator barrel (slit side out). Take care to not squeeze the sausage pack when inserting into the applicator. Place the rounded end of the supplied sausage nozzle onto the slit end of the sausage pack and fix with retaining ring. Cut nozzle to desired size and shape.

Suggested nozzle size and shape: Use a nozzle with a triangle cut. A notch clipper for pig ears or a blade can be used to make the cut. The desired size of the triangle cut is 1/2" (10-12 mm) high and 1/4" (5-6 mm) wide.

3M™ OEM Polyurethane Glass Adhesive Sealant 590 should be used within 24 hours after cartridge is opened. Dispense 3M 590 onto the primed main body with the nozzle tip perpendicular to the substrate to insure uniform contact with the substrate. Press window into the frame until the triangle bead is squeezed to half its original height. The cross-section of the bond should be approximately 1/4" x 1/4" (5 mm x 5 mm) square after application:



Apply clamps if necessary. Curing time is dependent upon the temperature and humidity. Please see attached chart for reference.

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Directions for Use
(continued)

**Typical Curing Time:
Time (Hours) to Reach Overlap Shear Strength**

	Time (hr)	40°F (4°C)	50°F (10°C)	60°F (15.5°C)	70°F (21°C)	80°F (27°C)	90°F (32°C)
100 psi	>80% RH	21 hr	8.5 hr	4 hr	2.5 hr	1 hr	1 hr
	75% RH	24 hr	10 hr	5 hr	3 hr	1.5 hr	1.5 hr
	50% RH	47 hr	16.5 hr	9 hr	4 hr	2.5 hr	1.5 hr
150 psi	>80% RH	40 hr	13 hr	6.5 hr	3 hr	1.5 hr	1 hr
	75% RH	43 hr	14.5 hr	7.5 hr	4 hr	2 hr	1.5 hr
	50% RH	72 hr	26 hr	13 hr	5 hr	3.5 hr	2.5 hr
250 psi	>80% RH	75 hr	22 hr	10 hr	5.5 hr	2.5 hr	2 hr
	75% RH	77 hr	24 hr	12 hr	6.5 hr	3 hr	2.5 hr
	50% RH	120 hr	47 hr	21.5 hr	9 hr	5.5 hr	3.5 hr

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Cleanup:

While sealant is still soft, cleaning can be done with the same solvents used for surface preparation. Avoid cleaning with alcohol as it will interfere with the curing process. 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.

Application Equipment Suggestions

Cartridge and Sausage Pack:

A variety of applicators are available. Please contact your sales rep for assistance in selecting an applicator.

Bulk Dispensing:

A 38:1 ratio dual action piston pump with a ram is suggested. Actual equipment should be designed for your application based on the volume required. Please contact your sales rep or the technical service group to suggest equipment manufacturers (Graco: 1-877-844-7226 or www.graco.com).

Storage

3M™ OEM Polyurethane Glass Adhesive Sealant 590 must be stored in a controlled environment to maximize shelf life. Store the products in the original unopened containers below 77°F (25°C).

Shelf Life

When stored at recommended conditions, the shelf life of cartridges and sausage packs is 12 months from the date of manufacture. For 5 and 55 gallon containers, the shelf life is 9 months from date of manufacture.

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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.

Technical Information

The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

Product Use

Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.

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ISO 9001

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



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