English
Last Revision Date: May, 2022

Technical Data Sheet

3M™ OEM Polyurethane Glass Adhesive Sealant 590

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.

Product Features

Technical Information Note

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

Typical Physical Properties

Property	Values	Additional Information
Color	Black	
VOC	18.7 g/L	
VOC	0.16 lb/gal	
Approximate Coverage	38 lineal m	View ^
Notes: 10.5 oz. [310 mm Cartridge]; 1/8 in (3 mm) bead		
Approximate Coverage	126 lineal ft	View ^
Notes: 10.5 oz. [310 mm Cartridge]; 1/8 in (3 mm) bead		
Specific Gravity	1.2	
Water and salt spray resistance	Excellent	

Typical Uncured Physical Properties

Property	Values	Additional Information

Consistency	Thixotropic paste

Typical Mixed Physical Properties

Property	Values	Additional Information
Tack Free Time	25 to 40 min	
Rate of Cure	>1/8 in per 24 hr	
Rate of Cure	3.5 mm per 24 hr	

Typical Cured Characteristics

Property	Values	Additional Information
Shore A Hardness	63	View

Test Method: ASTM C661

Modulus at 100% Elongation	3.2 MPa	View

Test Method: ASTM D412

Modulus at 100% Elongation	450 lb/in²	View

Test Method: ASTM D412

Typical Performance Characteristics

Property	Values	Additional Information
Tensile Strength	7.6 MPa	View

Test Method: ASTM D412

Tensile Strength	1100 lb/in²	View

Test Method: ASTM D412

Elongation at Break	375 %	View

Test Method: ASTM D412

Application Temperature	5 to 35 °C	
Application Temperature	40 to 95 °F	
Crash Test	Pass	View

Test Method: standard FMVSS 212

Dwell/Cure Time: 3.0
Dwell Time Units: hr
Temp C: 23C
Temp F: 72F

Product Certifications and Listings

Typical Environmental Performance

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).

Storage and Shelf Life

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).When stored at recommended conditions, the shelf life is 12 months from the date of manufacture.

Bottom Matter

3M
Industrial Adhesives and Tapes Division
3M Center, Building 225-3S-06
St. Paul, MN 55144-1000
800-362-3550

Trademarks

Automotive Disclaimer

Automotive Applications: This product is an industrial product and has not been designed or tested for use in certain automotive applications, including, but not limited to, automotive electric powertrain battery or high voltage applications. This product does not fully adhere to typical automotive design or quality system requirements, such as IATF 16949 or VDA 6.3. This product may not be manufactured in an IATF certified facility and may not meet a Ppk of 1.33 for all properties. The product may not undergo an automotive production part approval process (PPAP). Customer is solely responsible for evaluating the product and determining whether it is appropriate and suitable for customer's automotive application and for conducting incoming inspections before use of the product. Failure to do so may result in injury, death, and/or harm to property. No written or verbal statement, report, data or recommendation by 3M related to automotive use of the product shall have any force or effect unless in an agreement signed by the Technical Director of 3M's Automotive Division. Customer assumes all responsibility and risk if customer chooses to use this product in an automotive electric powertrain battery or high voltage application, and 3M will not be liable for any loss or damage arising from or related to the 3M product or customer's use of the product, whether direct, indirect, special, incidental, or consequential (including, but not limited to, lost profits or business opportunity or recall costs), regardless of the legal or equitable theory asserted, including, but not limited to, warranty, contract, negligence, or strict liability. In no event shall 3M be liable for any damages in excess of the purchase price paid for the product.
NOTWITHSTANDING ANY OTHER STATEMENT TO THE CONTRARY, 3M MAKES NO REPRESENTATIONS, WARRANTIES OR CONDITIONS WHATSOEVER, EXPRESS OR IMPLIED, REGARDING THE PRODUCT IF USED IN AN AUTOMOTIVE ELECTRIC POWERTRAIN BATTERY OR HIGH VOLTAGE APPLICATION, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTY ON PERFORMANCE, LONGEVITY, SUITABILITY, COMPATIBILITY, OR INTEROPERABILITY, OR ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ARISING OUT OF A COURSE OF DEALING, CUSTOM, OR USAGE OF TRADE.

Handling/Application Information

Application Examples

Application Equipment

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: www.graco.com).

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.

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™ All Purpose Primer P591

Fiberglass 3M™ All Purpose Primer P591

Metal 3M™ All Purpose Primer P591 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 appropriate3M 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.

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.

Typical Curing Time:

Time (Hours) to Reach Overlap Shear Strength

Note: Data should be considered representative or typical only and should not be used for specification purposes.

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.

References

Property	Values
3m.com Product Page	https://www.3m.com/3M/en_US/p/d/b40066994/
Safety Data Sheet SDS	https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&msdsLocale=en_US&co=ptn&q=590

Family Group

Link Tags:

590

Products	Color	Rate of Cure	Shore A Hardness
590	Black	3.5 mm per 24 hr	63

ISO Statement

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

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.

Information

Technical Information: The technical information, guidance, and other statements contained in this document or otherwise provided by 3M are based upon records, tests,

or experience that 3M believes to be reliable, but the accuracy, completeness, and representative nature of such information is not guaranteed. Such information is intended for people with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. No license under any 3M or third party intellectual property rights is granted or implied with this information.

Product Selection and 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. As a result, customer is solely responsible for evaluating the product and determining whether it is appropriate and suitable for customer's application, including conducting a workplace hazard assessment and reviewing all applicable regulations and standards (e.g., OSHA, ANSI, etc.). Failure to properly evaluate, select, and use a 3M product and appropriate safety products, or to meet all applicable safety regulations, may result in injury, sickness, death, and/or harm to property.

Warranty, Limited Remedy, and Disclaimer: Unless a different warranty is specifically stated on the applicable 3M product packaging or product literature (in which case such warranty governs), 3M warrants that each 3M product meets the applicable 3M product specification at the time 3M ships the product. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ARISING OUT OF A COURSE OF DEALING, CUSTOM, OR USAGE OF TRADE. If a 3M product does not conform to this warranty, then the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price.

Limitation of Liability: Except for the limited remedy stated above, and except to the extent prohibited by law, 3M will not be liable for any loss or damage arising from or related to the 3M product, whether direct, indirect, special, incidental, or consequential (including, but not limited to, lost profits or business opportunity), regardless of the legal or equitable theory asserted, including, but not limited to, warranty, contract, negligence, or strict liability.

Disclaimer: 3M industrial and occupational products are intended, labeled, and packaged for sale to trained industrial and occupational customers for workplace use. Unless specifically stated otherwise on the applicable product packaging or literature, these products are not intended, labeled, or packaged for sale to or use by consumers (e.g., for home, personal, primary or secondary school, recreational/sporting, or other uses not described in the applicable product packaging or literature), and must be selected and used in compliance with applicable health and safety regulations and standards (e.g., U.S. OSHA, ANSI), as well as all product literature, user instructions, warnings, and limitations, and the user must take any action required under any recall, field action or other product use notice. Misuse of 3M industrial and occupational products may result in injury, sickness, or death. For help with product selection and use, consult your on-site safety professional, industrial hygienist, or other subject matter expert. For additional product information, visit www.3M.com.