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October, 2017

3M™ All Purpose Primer P591

Product Description

3M™ Primer P591 is a low viscosity adhesion promoter recommended for use with the 3M™ 500-Series Polyurethane Adhesives/Sealants and 3M™ 700-Series Hybrid Adhesives/Sealants, as well as the 3M™ OEM Polyurethane Glass Adhesive Sealant 590. 3M Adhesion Promoter and Primers are applied to a wide variety of materials including glass, acrylic / PMMA, polycarbonate, and many other materials prior to adhesive/sealant use to assist in bonding.

3M™ All Purpose Primer P591

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		Notes
Color	Black		
Solids Content by Weight	36.5 %		
VOC	613 g/L	5.12 lb/gal	
Viscosity	2021-12-15 00:00:00 s		Ford Cup
Active Ingredient	Isocyanate / MEK		

Typical Performance Characteristics

Primer Selection Chart:

Substrate Priming Suggestions	3M™ Adhesion Promoter AP596	3M™ All Purpose Primer P591	3M™ Metal Primer P592
Tinted Glass	XX		
Fritted Glass	XX	XX	
Steel, anodized aluminum, galvanized metal		X	XX
Polycarbonate	XX		
PVC	X		
PMMA	XX	XX	
Polyester	XX	XX	

Additional Information

Notes: X = Good
XX = Best Choice

Typical Performance Characteristics (continued)

Overlap Shear Strength:

	3M™ OEM Polyurethane Glass Adhesive Sealant 590	
Substrate	Failure Mode	Max Load at Failure psi / MPa
Acrylic	Adhesive	107 / 0.7
Acrylic with P591	Substrate Broke	474 / 3.3
Acrylic with P592	Adhesive	106 / 0.7
Acrylic with AP596	Adhesive	36 / 0.3
Polycarbonate	Adhesive	167 / 1.2
Polycarbonate with P591	Substrate Broke	1065 / 7.3
Polycarbonate with P592	Mixed	317 / 2.2
Polycarbonate with AP596	Mixed	767 / 5.3
Glass	Adhesive	361 / 2.5
Glass with P591	Substrate	332 / 2.3
Glass with P592	Substrate	328 / 2.3
Glass with AP596	Substrate	455 / 3.1
Aluminum	Adhesive	72 / 0.5
Aluminum with P591	Mixed	136 / 0.9
Aluminum with AP596	Adhesive	86 / 0.6
CRS	Adhesive	56 / 0.4
CRS with P591	Mixed	179 / 1.2
CRS with AP596	Adhesive	112 / 0.8
SST	Adhesive	100 / 0.7
SST with P591	Cohesive	340 / 2.3
SST with AP596	Adhesive	128 / 0.9
Alum with PU540	Mixed	103 / 0.7
Alum with PU540/P592	Cohesive	105 / 0.7
SST with PU540	Adhesive	96 / 0.6
SST with PU540/P592	Cohesive	101 / 0.7
CRS with PU540	Adhesive	84 / 0.5
CRS with PU540/P592	Cohesive	107 / 0.7

Conditions
Substrate: Acrylic (PMMA)
Additional Information

Notes: The following table shows the impact in terms of adhesion strength of bonding common window substrates with and without 3M™ Adhesion Promoter AP596 / 3M™ Primer P591 & P592. 3M™ OEM Polyurethane Glass Adhesive Sealant 590 was used for this test.

Note: The following data represents the overlap shear results of a 17 mil bond line. All substrates were abraded and solvent wiped prior to bonding, then cured for 30 days. Actual values will vary, as the final bond strengths are dependent upon many variables such as substrate type, substrate uniformity, and environmental conditions. The following data should be considered representative or typical only and should not be used for specification purposes.

Handling/Application Information

Application Equipment

Wool dauber is recommended for applying 3M Primers. Use of a paint brush or other method of application is not recommended because there will be voids in the coating after application. Any voids will cause a defect in the coating and will affect bond quality. Contact your 3M Sales Representative for information on ordering Wool Daubers.

Handling/Application Information (continued)

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, methyl ethyl ketone (MEK), isopropyl alcohol (IPA) or acetone.*
*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 of polyurethane and extra care must be taken when using alcohol as a cleaning solvent to prevent any contact with the sealant.
Primer:
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.
Use of a 2-step surface preparation is recommended for certain substrates. Surface prep consists of applying 3M™ Adhesion Promoter AP596 followed by the appropriate 3M™ Primer to both bonding surfaces prior to using adhesive sealant. In areas with VOC restrictions, it is imperative that bonding surfaces are clean of contaminants. It may be acceptable to bond certain substrates without primer if the bonding area is abraded with 3M™ Scotch-Brite™ abrasive to improve adhesion. Contact 3M for technical support.
Do not apply 3M™ Adhesion Promoter and Primer on frozen nor wet surfaces. Do not apply over silicone nor in the presence of curing silicone.
Application:
Supplies:
- 3M Adhesive Sealant in cartridges or 600 ml sausage packs
- 3M AP596 Adhesion Promoter
- Appropriate 3M Primer matched to the substrate(s)
- Soft lint-free cloths for 3M AP596 Adhesion Promoter and/or 3M P592 Metal Primer application
- Wool dauber(s) for 3M Primer application
- Applicator gun
- Nozzle(s)
- Substrates
- Personal protective gear (safety glasses, powder-free gloves, etc)

Clean entire surface of substrates using a solvent or non-greasy cleaner.
Apply 3M™ Adhesion Promoter AP596 to both substrates: Pour 3M AP596 Adhesion Promoter onto a soft lint-free cloth folded in quarters. Wipe the bonding area, flipping the cloth at regular intervals to reveal a clean section. With a new clean folded cloth, wipe off the 3M AP596 Adhesion Promoter in the same manner, flipping the cloth at regular intervals to reveal a clean section. Wait 15 minutes to dry.
Apply appropriate 3M™ Primer to both substrates: 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. Refer to the Instructions for Use for the appropriate adhesive/sealant chosen and proceed accordingly.
Cleanup: Use a solvent such as MEK to clean up any excess primer.

Storage and Shelf Life

3M™ Primer P591 must be stored in an appropriate climate controlled space suitable for flammable materials. Store the product in the original unopened container below 77°F (25°C) to maximize shelf life.
When stored at recommended conditions, the shelf life is 12 months from the date of manufacture. After opening the 3M Primer P591, it must be used within 7 days (the viscosity will increase with each exposure to air).

Trademarks

References

Property	Values
3m.com Product Page	https://www.3m.com/3M/en_US/company-us/all-3m-products/~/3M-All-Purpose-Sealant-Primer-P591/?N=5002385+3293193903&rt=rud
Safety Data Sheet SDS	https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&msdsLocale=en_US&co=ptn&q=P591

Family Group

	AP596	P591
Color	Clear	Black
Solids Content by Weight (%)	3	36.5

ISO Statement

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

Information

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