



Adhesion Promoter/Primer

3MTM Adhesion Promoter AP596

3MTM All Purpose Primer P591

3MTM Metal Primer P592

Technical Data

April 2018

Product Description

3MTM Adhesion Promoter AP596 and 3MTM Primers P591, P592 are low viscosity adhesion promoters recommended for use with the 3MTM 500-Series Polyurethane Adhesives/Sealants and 3MTM 700-Series SMP Adhesives/Sealants, as well as the 3MTM Polyurethane Glass Adhesive Sealant 590 and Polyurethane Window Bonder Adhesive Sealant 595. 3M Adhesion Promoters and Primers are applied to a wide variety of materials including glass, acrylic/PMMA, polycarbonate, and many other materials prior to the adhesive/sealant use to assist in bonding.

Technical Data
representative

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

	3M TM Adhesion Promoter AP596	3M TM All Purpose Primer P591	3M TM Metal Primer P592
Color	Clear	Black	Clear
Viscosity	Water Thin		
Solids (%)	3	36.5	1.5
VOC (g/l)	798	613	790
Active Ingredient	Silane / Ethanol	Isocyanate / MEK	Silane / Ethanol

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986-650-380 | 981-175-599 | 942-780-265



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• Adhesion Promoter AP596 • All Purpose Primer P591 • Metal Primer P592

Performance Data

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. 3M™ Polyurethane Glass Adhesive Sealant 590 was used for this test unless noted.

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.

Overlap Shear Data

Substrate	Primer				Failure Mode	Max load at Failure psi/MPa
	None	P591	P592	AP596		
Acrylic	X				Adhesive	107/0.7
Acrylic		X			Substrate	474/3.3
Acrylic				X	Adhesive	36/.3
Polycarbonate	X				Adhesive	167/1.2
Polycarbonate		X			Substrate	1065/7.3
Polycarbonate				X	Mixed	767/5.3
Glass	X				Adhesive	361/2.5
Glass		X			Substrate	332/2.3
Glass				X	Substrate	455/3.1
Aluminum	X				Adhesive	72/.5
Aluminum		X			Mixed	136/.9
Aluminum				X	Adhesive	86/.6
Cold Rolled Steel	X				Adhesive	56/.4
Cold Rolled Steel		X			Mixed	179/1.2
Cold Rolled Steel				X	Adhesive	112/.8
Cold Rolled Steel w/3M 540	X				Adhesive	84/.5
Cold Rolled Steel w/3M 540			X		Cohesive	107/.7
Stainless Steel	X				Adhesive	100/.7
Stainless Steel		X			Cohesive	340/2.3
Stainless Steel				X	Adhesive	128/.9
Stainless Steel w/3M 540	X				Adhesive	96/.6
Stainless Steel w/3M 540			X		Cohesive	101/.7

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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	
Steel, anodized aluminum, galvanized		X	XX
Polycarbonate	XX		
PVC	X		
PMMA	XX	XX	
Polyester	XX	XX	

X = Good

XX = Best Choice

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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™ 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

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Directions for Use

(continued)

- 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.

Application Equipment for 3M™ Primer

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.

Storage

3M™ Adhesion Promoter AP596 and 3M™ Primers P591 and P592 must be stored in an appropriate climate controlled space suitable for flammable materials. Store the products in the original unopened containers below 77°F (25°C) to maximize shelf life.

Shelf Life

When stored at recommended conditions, the shelf life is 12 months from the date of manufacture. After opening, the 3M AP596 Adhesion Promoter must be used within 30 days.

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Industrial Adhesives and Tapes
Division

3M Center, Building 225-
3S-06 St. Paul, MN 55144-
1000

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