

3M™ Marine Adhesive Sealant 5200:

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Technical Data

December 2014

Product Description

3M™ Marine Adhesive Sealant 5200 is a one-part polyurethane that chemically reacts with moisture to deliver strong, flexible bonds. It has excellent adhesion to wood, gelcoat, and fiberglass. It forms a watertight, weather-resistant seal on joints and boat hardware, above and below the waterline. In addition, its flexibility allows for dissipation of stress caused by shock, vibration, swelling or shrinking.

Features/Advantages

- Tough/flexible polyurethane polymer
- Long working time
- Non-shrinking
- One component, moisture curing
- Bonds dissimilar materials
- Adheres to a wide variety of substrates

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™ Marine Adhesive Sealant 5200
Tack-Free Time @ 73°F and 50% RH	12 Hour
Tack-Free Time @ 73°F and 90% RH	4 Hour
Rate of Cure @ 73°F and 50% RH	1/8" (3 mm) per 5 day
Shore A Hardness (ASTM C661)	68
Tensile Strength (ASTM D412)	700 psi (4.8 MPa)
Elongation at Break (ASTM D412)	> 700%
Service Temperature	-40°F - 190°F (-40°C - 88°C)
Density (lb/gal, appx.)	11.3
Consistency	Caulkable, non-sag paste
Solids Content (Appx.)	97%

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Typical Properties of 3M™ Marine Adhesive Sealant 5200

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Effect of Water Submersion

Dumbbell specimen with 1/8" length, 1/8" square cross section were tested at 2.0 inches/minute. All samples tested at 50% relative humidity and 70° F (21° C).

Environmental Conditions	Time	Tensile Strength psi (kg/cm ²)	Elongation %
50% R.H. / 70° F (21° C)	52 day	705 (49.6)	760
Fresh Water	52 day	630 (44.6)	800
Salt Water	52 day	630 (44.6)	800

Overlap Shear Strength*

One inch (2.54 cm) overlap specimens at 0.093 inch (0.2362 cm) thickness. Samples cured at 70°F (21°C), 50% Relative Humidity.

Substrate	Strength psi (kg/cm ²)
Fir	700 (49)
Teak	500 (35)
Pine	680 (48)
Oak	545 (39)
Maple	655 (46)
Mahogany	560 (40)
Cold-Rolled Steel	530 (38)
Stainless Steel	350 (25)
Aluminum	390 (28)
Brass	470 (33)
Bronze	250 (18)
Copper	200 (14)
Lead	100 (7.5)
Zinc (Galvanized)	480 (34)
Nylon	175 (12)
ABS	230 (16)
Acrylic	215 (15)
Polycarbonate	380 (27)
Fiber-Reinforced Plastic**	360 (26)

* Overlap shear strength values are approximate. Adhesion tests should always be performed on the specific substrates to be used in application.

** Resins used in fiber reinforced plastics often vary. To ensure strong bond, adhesion tests should always be performed on the specific substrates used in application.

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Directions for Use

Surface Preparation:

There are waxes, coatings, sealers, greases, oils and other contaminants used in the marine industry, making it very important to clean all surfaces to be bonded before applying 3M™ Adhesive Sealant 5200. Recommended procedures include cleaning with 3M™ General Purpose Adhesive Cleaner* 08984. Abrading the surface with 180- to 200-grit abrasive *before* cleaning will enhance the bond strength.

Cut the plastic nozzle tip to the desired bead size. Puncture the seal in nozzle end of the cartridge and screw the plastic nozzle in place. Remove the bottom end seal of cartridge and place the cartridge in a caulk gun dispenser. Apply 5200 to the seam or part to be bonded. Position parts and tool material to desired appearance. Tooling of adhesive can be accomplished by using a tongue depressor. If a finger is used, rubber gloves are recommended. Remove excess with General Purpose Adhesive Cleaner 08984 or suitable solvent.

***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.

Primer:

Use of a primer is an extra step and cost and will depend on 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. Pre-testing for adhesion is suggested to determine if a primer is needed. Contact your 3M Technical Service representative for primer recommendation and application advice.

Applications:

3M™ Adhesive Sealant 5200 is for permanent assembly of wood and fiberglass parts bonded together. If a non-permanent bond is desired, use 3M™ Marine Adhesive Sealant 4200.

Typical bonding applications include:

- Fiberglass deck to fiberglass hull
- Wood to fiberglass
- Portholes
- Deck fittings
- Moldings
- Trunk joints
- Between struts and planking
- Stern joints

Typical sealing applications include:

- Some plastics (test before assembly)
- Glass
- Metals (priming may be required)

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Limitations :

- Alcohol should not be used in preparation for bonding as it will interfere with the curing process, causing the adhesive to fail.
- Due to the decreased value in bond strength at elevated temperatures, use of this product is not recommended above 190°F (88°C).
- Do not apply at temperatures below 40°F (4°C) or on frost covered surfaces. Do not apply at surface temperatures above 100°F (38°C).
- Sealant should be used within 24 hours after inner seal is punctured, as product will start to cure in the cartridge and nozzle.
- At 90° F (32° C) and 90% relative humidity, bonds should be made within 15 minutes.
- Some one-part solvent-based Marine paints may not cure on top of cured 5200. It is strongly recommended to test all desired paints for suitability.
- 5200 has an elongation much greater than most paints. Most paints will not elongate to this extent before cracking or losing adhesion to the sealant. If the sealant is used in an application where it will elongate or flex to a high degree, it is best not to paint.
- 5200 is not recommended for use as a teak deck seam sealer. Extended exposure to chemicals (teak cleaners, oxalic acid, gasoline, strong solvents and other harsh chemicals) may cause permanent softening of the sealant.
- 5200 is not recommended for the installation of glass, polycarbonate, or acrylic windows that are not also mechanically fastened. Inconsistent adhesion of these unprimed substrates, specific design of the window and movement due to thermal expansion and flexing may cause application failure. Contact a Technical Service Engineer for help with these applications.
- When using 3M™ Marine Adhesive Sealant 5200 with metals it may be necessary to prime the surface to achieve adequate adhesion and durability of the bond. 3M Metal Primer P592 may be used for priming of most metals.

Cleanup:

For cleaning 3M™ Marine Adhesive Sealant 5200 before it is cured, use a dry cloth to remove the majority of sealant, followed by a cloth damp with 3M™ General Purpose Adhesive Cleaner 08984. Cured material can be removed mechanically with a knife, razor blade, piano wire, or sanding device.

Storage	Polyurethane sealants and adhesive sealants must be stored in a controlled environment to maximize shelf life. Store the products in the original unopened containers below 77°F (25C).
Shelf Life	When stored at the recommended conditions in the original, unopened container this product has a shelf life of 24 months from date of shipment.
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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