December, 2014

3M™ Marine Adhesive Sealant 5200: 06500 • 05203 • 05206 • 21463 • 06504 • 05205 • 06502

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.

Product Features

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

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 Uncured Physical Properties

Property	Values
Density	11.3 lb/gal
Consistency	Caulkable, non-sag paste

Typical Mixed Physical Properties

Property	Values	Test Condition
Tack Free Time	4 h	@ 73°F(23°C) and 90% RH
Tack Free Time	12 h	Room Temperature

Typical Cured Characteristics

Shore A Hardness: 68

Methods
ASTM C661

Typical Performance Characteristics

Property	Values		Method	Test Condition
Tensile Strength	4.8 MPa	700 lb/in²	ASTM D412	
Service Temperature Range	-40 to 88 °C	-40 to 190 °F		
Rate of Cure	3 mm per 5 day	1/8 in per 5 day		Room Temperature

Overlap Shear Strength		Dwell/Cure Time	Substrate	Substrate Notes	Notes	Test Condition
35 kg/cm²	500 lb/in²	Room Temperature	Teak	Woods	One inch (2.54 cm) overlap specimens (0.093 inch [0.2362 cm] thickness) Cohesive – Adhesive/Sealant fails before adhesive/sealant releases from substrate. This is the desired mode. Adhesive Failure – Adhesive/Sealant releases from substrate. Desirable failure mode is cohesive.	

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Typical Performance Characteristics (continued)

Overlap Shear Strength		Dwell/Cure Time	Substrate	Substrate Notes	Notes	Test Condition
48 kg/cm²	680 lb/in²	Room Temperature	Pine	Woods	One inch (2.54 cm) overlap specimens (0.093 inch [0.2362 cm] thickness) Cohesive – Adhesive/Sealant fails before adhesive/sealant releases from substrate. This is the desired mode. Adhesive Failure – Adhesive/Sealant releases from substrate. Desirable failure mode is cohesive.	
39 kg/cm²	545 lb/in²	Room Temperature	Oak	Woods	One inch (2.54 cm) overlap specimens (0.093 inch [0.2362 cm] thickness) Cohesive – Adhesive/Sealant fails before adhesive/sealant releases from substrate. This is the desired mode. Adhesive Failure – Adhesive/Sealant releases from substrate. Desirable failure mode is cohesive.	
46 kg/cm²	655 lb/in²	Room Temperature	Maple	Woods	One inch (2.54 cm) overlap specimens (0.093 inch [0.2362 cm] thickness) Cohesive – Adhesive/Sealant fails before adhesive/sealant releases from substrate. This is the desired mode. Adhesive Failure – Adhesive/Sealant releases from substrate. Desirable failure mode is cohesive.	
49 kg/cm²	700 lb/in²	Room Temperature	Fir	Woods	One inch (2.54 cm) overlap specimens (0.093 inch [0.2362 cm] thickness) Cohesive – Adhesive/Sealant fails before adhesive/sealant releases from substrate. This is the desired mode. Adhesive Failure – Adhesive/Sealant releases from substrate. Desirable failure mode is cohesive.	
40 kg/cm²	560 lb/in²	Room Temperature	Mahogany	Woods	One inch (2.54 cm) overlap specimens (0.093 inch [0.2362 cm] thickness) Cohesive – Adhesive/Sealant fails before adhesive/sealant releases from substrate. This is the desired mode. Adhesive Failure – Adhesive/Sealant releases from substrate. Desirable failure mode is cohesive.	
25 kg/cm²	350 lb/in²	Room Temperature	Stainless Steel	Metals	One inch (2.54 cm) overlap specimens (0.093 inch [0.2362 cm] thickness) Cohesive – Adhesive/Sealant fails before adhesive/sealant releases from substrate. This is the desired mode. Adhesive Failure – Adhesive/Sealant releases from substrate. Desirable failure mode is cohesive.	

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Typical Performance Characteristics (continued)

Overlap Shear Strength		Dwell/Cure Time	Substrate	Substrate Notes	Notes	Test Condition
28 kg/cm²	390 lb/in²	Room Temperature	Aluminum	Metals	One inch (2.54 cm) overlap specimens (0.093 inch [0.2362 cm] thickness) Cohesive – Adhesive/Sealant fails before adhesive/sealant releases from substrate. This is the desired mode. Adhesive Failure – Adhesive/Sealant releases from substrate. Desirable failure mode is cohesive.	
33 kg/cm²	470 lb/in²	Room Temperature	Brass	Metals	One inch (2.54 cm) overlap specimens (0.093 inch [0.2362 cm] thickness) Cohesive – Adhesive/Sealant fails before adhesive/sealant releases from substrate. This is the desired mode. Adhesive Failure – Adhesive/Sealant releases from substrate. Desirable failure mode is cohesive.	
18 kg/cm²	250 lb/in²	Room Temperature	Bronze	Metals	One inch (2.54 cm) overlap specimens (0.093 inch [0.2362 cm] thickness) Cohesive – Adhesive/Sealant fails before adhesive/sealant releases from substrate. This is the desired mode. Adhesive Failure – Adhesive/Sealant releases from substrate. Desirable failure mode is cohesive.	
14 kg/cm²	200 lb/in²	Room Temperature	Copper	Metals	One inch (2.54 cm) overlap specimens (0.093 inch [0.2362 cm] thickness) Cohesive – Adhesive/Sealant fails before adhesive/sealant releases from substrate. This is the desired mode. Adhesive Failure – Adhesive/Sealant releases from substrate. Desirable failure mode is cohesive.	
7.5 kg/cm²	100 lb/in²	Room Temperature	Lead	Metals	One inch (2.54 cm) overlap specimens (0.093 inch [0.2362 cm] thickness) Cohesive – Adhesive/Sealant fails before adhesive/sealant releases from substrate. This is the desired mode. Adhesive Failure – Adhesive/Sealant releases from substrate. Desirable failure mode is cohesive.	
34 kg/cm²	480 lb/in²	Room Temperature	Zinc (Galvanized)	Metals	One inch (2.54 cm) overlap specimens (0.093 inch [0.2362 cm] thickness) Cohesive – Adhesive/Sealant fails before adhesive/sealant releases from substrate. This is the desired mode. Adhesive Failure – Adhesive/Sealant releases from substrate. Desirable failure mode is cohesive.	

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Typical Performance Characteristics (continued)

Overlap Shear Strength		Dwell/Cure Time	Substrate	Substrate Notes	Notes	Test Condition
15 kg/cm²	215 lb/in²	Room Temperature	Acrylic (PMMA)	Plastics/Polymers	One inch (2.54 cm) overlap specimens (0.093 inch [0.2362 cm] thickness) Cohesive – Adhesive/Sealant fails before adhesive/sealant releases from substrate. This is the desired mode. Adhesive Failure – Adhesive/Sealant releases from substrate. Desirable failure mode is cohesive.	
12 kg/cm²	175 lb/in²	Room Temperature	Nylon	Plastics/Polymers	One inch (2.54 cm) overlap specimens (0.093 inch [0.2362 cm] thickness) Cohesive – Adhesive/Sealant fails before adhesive/sealant releases from substrate. This is the desired mode. Adhesive Failure – Adhesive/Sealant releases from substrate. Desirable failure mode is cohesive.	
16 kg/cm²	230 lb/in²	Room Temperature	ABS	Plastics/Polymers	One inch (2.54 cm) overlap specimens (0.093 inch [0.2362 cm] thickness) Cohesive – Adhesive/Sealant fails before adhesive/sealant releases from substrate. This is the desired mode. Adhesive Failure – Adhesive/Sealant releases from substrate. Desirable failure mode is cohesive.	
38 kg/cm²	530 lb/in²		Cold Rolled Steel	Metals	One inch (2.54 cm) overlap specimens (0.093 inch [0.2362 cm] thickness) Cohesive – Adhesive/Sealant fails before adhesive/sealant releases from substrate. This is the desired mode. Adhesive Failure – Adhesive/Sealant releases from substrate.	Room Temperature
27 kg/cm²	380 lb/in²		Polycarbonate (PC)	Plastics/Polymers	One inch (2.54 cm) overlap specimens (0.093 inch [0.2362 cm] thickness) Cohesive – Adhesive/Sealant fails before adhesive/sealant releases from substrate. This is the desired mode. Adhesive Failure – Adhesive/Sealant releases from substrate.	Room Temperature
26 kg/cm²	360 lb/in²		Fiber-Reinforced Plastic	Plastics/Polymers	One inch (2.54 cm) overlap specimens (0.093 inch [0.2362 cm] thickness); 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. Cohesive – Adhesive/Sealant fails before adhesive/sealant releases from substrate. This is the desired mode. Adhesive Failure – Adhesive/Sealant releases from substrate.	Room Temperature

Property: Overlap Shear Strength

Typical Performance Characteristics (continued)

Effect of Water Submersion:

Environmental Conditions	Time	Tensile Strength psi (kg/cm²)	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

Conditions
Test Condition : Room Temperature
Additional Information

Notes: Dumbbell specimen with 1/8” length, 1/8” square cross section were tested at 2.0 inches/minute.

Typical Physical Properties

Solids Content by Weight: 97 %

Handling/Application Information

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 3MTM Adhesive Sealant 5200. Recommended procedures include cleaning with 3MTM 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 clean up 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:
Applications:
3MTM Adhesive Sealant 5200 is for permanent assembly of wood and fiberglass parts bonded together. If a non-permanent bond is desired, use 3MTM 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)

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).

Handling/Application Information (continued)

- 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 90o F (32o 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 3MTM 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 3MTM Marine Adhesive Sealant 5200 before it is cured, use a dry cloth to remove the majority of sealant, followed by a cloth damp with 3MTM General Purpose Adhesive Cleaner 08984. Cured material can be removed mechanically with a knife, razor blade, piano wire, or sanding device.

Storage and Shelf Life

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).
When stored at the recommended conditions in the original, unopened container this product has a shelf life of 24 months from date of manufacture.

Trademarks

References

Property	Values
3m.com Product Page	https://www.3m.com/3M/en_US/company-us/all-3m-products/~/3M-Marine-Adhesive-Sealant-5200?N=5002385+3293241623&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=5200

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

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