# Marine Adhesive/Sealant Fast Cure 4000 UV

05280 • 06580 • 06586

**Technical Data** **February, 2007**

## Product Description

3M™ Marine Adhesive/Sealant 4000 UV is a one-part adhesive sealant that cures to form a firm, rubbery waterproof seal. Its flexibility allows for the dissipation of stress caused by shock, vibration, swelling or shrinking. Designed for marine applications above and below the waterline. Its superior UV resistance properties makes this an ideal cosmetic adhesive sealant.

## Product Construction

| | |
|---|---|
| **3M™ Marine Adhesive/Sealant Fast Cure 4000 UV 05280** | 3 oz. tube (90 ml) |
| **3M™ Marine Adhesive/Sealant Fast Cure 4000 UV 06580** | 10 fl. oz. cartridge (295 ml) |
| **3M™ Marine Adhesive/Sealant Fast Cure 4000 UV 06586** | 400 ml Flex Pack (13.5 fl. oz.) |

## Features

- Superior UV resistance.
- Exceptional sealing properties.
- < 1% VOC's
- Low odor.
- Non-shrinking.
- Non-sagging.
- Non-corrosive.
- Non-cracking.
- Caulkable at low temperatures (>40°F [4°C]).
- Fast curing.
- Paintable (test for suitability).

## Typical Physical Properties

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

| | |
|---|---|
| **Container:** | 10 fl. oz. cartridge (295 ml)<br>3 fl. oz. tube (90 ml)<br>400 ml Flex Pack (13.5 fl. oz.) |
| **Base:** | Polyether |
| **Density lbs/Gallon (Approx.):** | 11.7 |
| **Color:** | White |
| **Consistency:** | Medium Paste |
| **Service Temperature:** | -40°F to 190°F (-40°C to 90°C) |
| **Coverage (10 oz. cartridge):** | 1/8 inch (0.3175 cm) bead = 120 lineal feet (36.6 m) |

## Product Uses

3M marine adhesive/sealant 4000 UV may be used in typical bedding and sealing applications including fiberglass hull, wood to fiberglass, porthole frames, deck fittings, moldings, thru hull and deck hardware.

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**Performance Properties**

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

**Sag:** < 3/8" Boeing Flow

**Shore A Hardness:** 38-39

**180° Peel Strength:** One inch (2.54 cm) wide specimen on canvas. Tested at 70°F (21°C), 50% relative humidity.

| Substrate | Strength lbs/inch width | Failure Mode* |
|---|---|---|
| Gelcoat | 8.8 | Cohesive |
| FIberglass | 8.2 | Cohesive |
| Aluminum | 5.3 | Cohesive |
| Teak | 8.7 | Cohesive |
| Teak (primed) | 8.0 | Cohesive |
| Mahogany | 9.4 | Cohesive |

**Overlap Shear Strength:** One inch (2.54 cm) overlap specimens (0.093 inch [0.2362 cm] thickness). Tested at 70°F (21°C), 50% relative humidity.

| Substrate | Strength psi ($kg/cm^2$) | Failure Mode* |
|---|---|---|
| **Woods:** | | |
| Fir | 226 (15.9) | 40/60 Coh/Adh) |
| Teak | 174 (12.2) | 40/60 Coh/Adh) |
| Teak (primed) | 196 (13.8) | 40/60 Coh/Adh) |
| **Metals:** | | |
| Aluminum | 329 (23.1) | Adhesive |
| **Plastics/Polymers:** | | |
| Gelcoat | 424 (29.8) | Cohesive |
| Fiberglass | 251 (17.6) | Cohesive |
| ABS | 279 (19.6) | 40/60 Coh/Adh) |

*Desirable failure mode is cohesive.

**Performance Properties *(continued)***

**Heat Resistance:** One inch (2.54 cm) overlap specimens (0.093 inch [0.2362 cm thickness]). Aged 500 hours @ 190°F (90°C). Tested at 70°F (21°C), 50% relative humidity.

| Substrate | Strength psi (kg/cm²) | Failure Mode* |
|---|---|---|
| **Woods:** | | |
| Fir | 213 (15.0) | 55/45 Coh/Adh) |
| Teak | 162 (11.4) | 85/15 Coh/Adh) |
| Teak (primed) | 232 (16.3) | Cohesive |
| **Metals:** | | |
| Aluminum | 313 (22.0) | Cohesive |
| **Plastics/Polymers:** | | |
| Gelcoat | 360 (25.3) | Cohesive |
| Fiberglass | 244 (17.2) | Cohesive |

***Desirable failure mode is cohesive.

**Tensile and Elongation Test:** A 1/8 inch (0.3175 cm) dumbbell specimen with a 1/8 inch (0.3175 cm) square cross section was tested at 2.0 inches/minute (5.08 cm/minute).

| Relative Humidity | Temperature | Tensile Strength psi (kg/cm²) | Elongation (%) |
|---|---|---|---|
| 50% | 70°F (21°C) | 253 (17.8) | 790 |

**UV Resistance:** ASTM references: D412 and G-26 Type B, BH.

| Hours | Appearance | Tensile Strength psi (kg/cm²) | Elongation (%) |
|---|---|---|---|
| 500 | No Chalking | 306 (21.5) | 804 |
| 1000 | Slight Chalking | 299 (21.0) | 723 |

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**Performance Properties** ***(continued)***

**Environmental Submersion Exposure Tests:**

**Overlap Shear Strength:** One inch (2.54 cm) overlap specimens (0.093 inch [0.2362 cm] thickness). Tested at 70°F (21°C), 50% relative humidity.

| Substrate | Initial Strength psi (kg/cm²) | Failure Mode | Salt Water Immersion 500 hours psi (kg/cm²) | Failure Mode* |
|---|---|---|---|---|
| **Plastics/Polymers:** | | | | |
| Gelcoat | 424 (29.8) | 95/5 (Coh/Adh) | 359 (25.2) | Cohesive |
| Fiberglass | 251 (17.6) | Cohesive | 284 (20.0) | Cohesive |
| Nylon | 311 (21.9) | 50/50 (Coh/Adh) | 135 (9.5) | 25/75 (Coh/Adh) |
| **Metals:** | | | | |
| Stainless Steel | 584 (41.1) | 95/5 (Coh/Adh) | 675 (47.5) | Cohesive |
| Bronze | 590 (41.5) | 90/10 (Coh/Adh) | 542 (38.1) | Cohesive |
| Copper | 509 (35.8) | Cohesive | 457 (32.1) | 75/25 (Coh/Adh) |
| Aluminum | 329 (23.1) | 5/95 (Coh/Adh) | 381 (26.8) | 55/45 (Coh/Adh) |

*****Desirable failure mode is cohesive.

**Application Information**

**Directions for Use**

**Application Temperature: 40°F - 100°F (4°C - 38°C)**

1. **Surface Preparation**
   Surface should be clean, dry and free of contaminants. New surfaces should be solvent wiped with 3M™ General Purpose Adhesive Cleaner 08984*****, or equivalent. Other than new surfaces should be sanded with a fine grade abrasive to enhance bond strength.
2. **Sealing and bedding application**
   Apply 3M™ Marine Adhesive/Sealant 4000 UV to the seam or part to be bonded. Position parts. Tool and squeeze out material to desired appearance. Remove excess with 3M general purpose adhesive cleaner 08984.*****
3. **Cleanup**
   For cleaning 3M marine adhesive/sealant 4000 UV before it is cured, use a dry cloth to remove the majority, followed by a cloth damp with 3M general purpose adhesive cleaner, toluene, acetone, or other good cleaning solvent.*****
   Cured 3M marine adhesive/sealant 4000 UV can be removed mechanically with a knife, razor blade, piano wire or by sanding.

***Note:** When using solvents, extinguish all ignition sources, including pilot lights, and follow the manufacturer's precautions and directions for use.

**Cure:**

| Cure | Relative Humidity | Temperature | Time | Cure Depth |
|---|---|---|---|---|
| Tack Free | 50% | 70°F (21°C) | 22 minutes | N/A |
| Full Cure | 50% | 70°F (21°C) | 24 hours | 1/8 inch (0.3175 cm) |

*****Higher temperature and humidity conditions will accelerate the tack free time and cure. Please plan accordingly.

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**Applications**

**Typical Marine Adhesive Sealant Applications:**

| | |
|---|---|
| Portlights | Wood |
| Hatches | Teak |
| Thru-hulls | Fiberglass |
| Rails | Gelcoat |
| Metal Hardware | Porthole Frames |
| Moldings | |

**Storage**

Store product at 60-80°F (16-27°C) for maximum storage life. Higher temperatures can reduce normal storage life. Lower temperatures can cause increased viscosity of a temporary nature. Rotate stock on a "first in-first out" basis.

**Shelf Life**

When stored at the recommended conditions in the original, unopened container this product has a shelf life of 12 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.

**Product Use**

All statements, technical information and recommendations contained in this document are based upon tests or experience that 3M believes are reliable. However, many factors beyond 3M's control can affect the use and performance of a 3M product in a particular application, including the conditions under which the product is used and the time and environmental conditions in which the product is expected to perform. Since these factors are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for the user's method of application.

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ISO 9001:2000

This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9001:2000 standards.

**Industrial Business**
**Industrial Adhesives and Tapes Division**
**3M Marine**

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