



# Polyurethane Protective Tape

## Application Instructions

Technical Bulletin

December 2008

### Preparation

The performance of 3M™ Polyurethane Protective Tape as a rain erosion or sand erosion protective coating is very much dependent on the surface to which the tape is applied. The surface should be in a “smooth” and “clean” condition. Paint that has chips or other defects should be sanded to feather all edges so that a smooth, void-free surface is obtained. From the standpoint of tape adhesion, the surface can be topcoat paint, epoxy primer, bare composite, or aluminum. Follow the guidelines of the corrosion manual for what coating must be in place on the aircraft surface prior to protective tape installation.

**NOTE: Paint must be fully cured before applying 3M Polyurethane Protective Tape. Minimum of 24 hrs @ 72°F (22°C). The application of the tape can be accelerated by force-drying the paint for eight hours at 150° F. This can be done with infrared lights or by heat blankets.**

**NOTE: Temperature – The 3M Polyurethane Protective Tape can be applied when the air and application temperatures are above 60°F (16°C).**

**NOTE: Clean hands thoroughly before applying the tape. Hands must be kept clean at all times.**

### Application steps

1. Define the area to which the 3M™ Polyurethane Protective Tape will be applied using 3M™ Vinyl Tape 471. Cut a 1” long piece of the 3M Polyurethane Protective Tape that will be applied to the wing leading edge. Fold it in half and place the fold mark on the wing leading edge. Use a lead pencil to make a mark at the top edge. Do this at least at the tip and the root of the wing. Using these marks, stretch a length of 3M 471 Tape from the root to the tip span-wise. This creates a straight line that will be used as a guide in sanding.
2. Using an orbital sander, sand the defined area with 320 grit or finer paper.



3. Remove the 3M 471 Tape.

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### Application steps (continued)

**NOTE: Caution!! When using solvents, extinguish all ignition sources, including pilot lights, and follow the manufacturers precautions and directions for use.**

4. Use cheesecloth saturated with isopropyl alcohol\* to thoroughly clean the area from dust and other contaminates.



5. Measure back from the wing leading edge, a distance of  $\frac{1}{2}$  the width of the protective tape to be applied. In the case of the wing (12-inch wide 3M™ Polyurethane Protective Tape), it would be 6 inches. Make a mark at the root end and the tip end on the top of the wing. Stretch a length of 3M™ Vinyl Tape 471 above these marks to define a straight line. This will provide a guide for the top edge of the 3M Polyurethane Protective Tape.
6. Apply 3M™ Adhesion Promoter 86A to a 2" wide area around the outside edge of the surface to be taped. In the case of a supersonic fighter or helicopter rotorbalde, cover the entire area to which the tape will be applied. Apply only enough to wet the surface. **More is not better!** 3M 86A Adhesion Promoter is available in two forms. The preferred form is 3M 86A Adhesion Promoter wipes. 3M 86A Adhesion Promoter can also be applied from the pint can version using clean cheesecloth. Allow 3M 86A Adhesion Promoter to dry for approximately 10 minutes before installing 3M Polyurethane Protective Tape.
7. Measure and cut a piece of 3M™ Polyurethane Protective Tape 8681HS 1/2 inch less than needed length to allow for edge sealing. Place it below the 3M 471 Tape guide in Step 5 above. Use tabs of 3M 471 Tape about a foot apart to hold it in place. **Do not stretch the 3M 8681HS Tape when positioning it.** Lay down a strip of 1 inch wide 3M 471 Tape along the top edge of the 3M 8681HS Tape to act as a hinge. The 3M 8681HS Tape can now be folded back along the 3M 471 Tape hinge line and the liner removed.



# Technical Data Sheet

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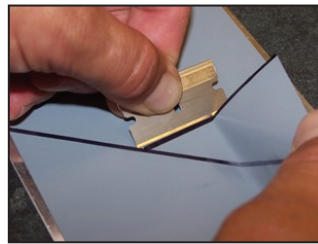
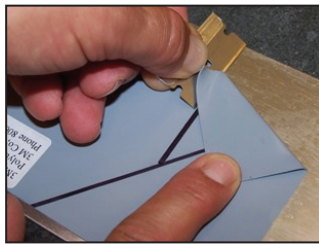
### Application steps (continued)

- 8.) Fold the 3M Polyurethane Protective Tape forward into position. Using a soft polyethylene squeegee, squeegee down the tape. If an air bubble is found, lift the tape up to that point, remove the bubble and reapply the tape. An assistant may be helpful in this step to keep the forward edge of the 3M Polyurethane Protective Tape up to prevent it from sticking down prematurely and causing air bubbles from being entrapped.



- 9.) Work carefully around the leading edge to squeegee the 3M Polyurethane Protective Tape into place without the inclusion of bubbles. Work back on the bottom side to finish the installation. Remove the hinge made of 3M™ Vinyl Tape 471 from the top edge and squeegee the tape into place.

**CUTTING AND SHAPING NOTE: Only NEW razor blades will work for this application. Hold a new razor blade on top of the polyurethane protective tape where the cut needs to be. Apply only enough pressure to hold the razor blade in place. Do not push down on the razor blade to cut the tape. Gently pull the tape up against the edge of the razor blade. Move the razor blade to the next location that needs to be cut and repeat process.**



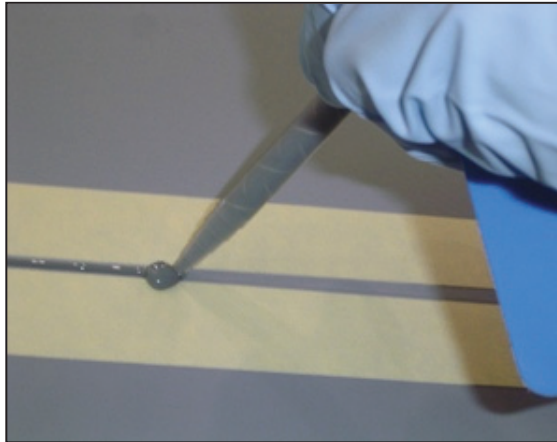
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### Application steps (continued)

10. Prepare the 3M Polyurethane Protective Tape for edge sealing by applying a strip of 3M™ Vinyl Tape 471 across the top of the polyurethane protective tape 1/32" back from the edge. Apply a second strip of 3M 471 Tape 1/8" from the edge of the 3M Polyurethane Protective Tape. This will provide a neat, defined area for the application of the epoxy edge sealant.



11. Fit a nozzle and position a 3M™ Scotch-Weld™ Epoxy Adhesive DP190 cartridge on a 3M™ EPX™ Applicator. Apply a bead of 3M DP190 Adhesive between the 3M 471 Tape that was applied in Step 12 above. With a fitted rubber glove, use a finger to spread and smooth the sealant bead between the strips of 3M 471 Tape.
12. Allow the 3M DP190 Adhesive to partially cure, approximately 30 minutes. Remove the 3M 471 Tape to allow the edges of the 3M DP190 Adhesive to flow smoothly on the surface and the protective tape to make a tapered edge. The 30 min cure time may be adjusted down if the shop temps are higher than 72°F (22°C) or up if the shop temps are below 72°F (22°C).
13. Allow the 3M DP190 Adhesive to cure a minimum of 8 hours at 72°F (22°C) before flight. Cure is complete after 24 hours at 72°F (22°C).

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<b>Safety and Regulatory</b>	<ul style="list-style-type: none"><li>• Polyurethane Protective Tape is <b>100%</b> solids and contains no hazardous air pollutants (HAPs), volatile organic component (VOC's). Respiratory protection is not required under normal use conditions.</li><li>• Polyurethane Protective Tape meets US Federal and California regulations for landfillable materials. The product is potentially recyclable.</li><li>• Packaging materials meet US Federal and California regulations for landfillable materials and are recyclable or reusable.</li><li>• This product is considered to be an article that does not release or otherwise result in exposure to a hazardous chemical under normal use conditions.</li></ul>																
<b>Shipping and Storage</b>	<p>No special/hazardous labeling or packaging required or regulations for air, ground or water shipment for this product.</p> <p>Keep film in a clean area, away from excessive moisture and out of direct sunlight. Store rolls in the shipping carton. Return partially used rolls to the shipping carton.</p> <p><b>Shelf life:</b> Two (2) years from date of manufacture.</p>																
<b>Precautionary Information</b>	Refer to Product Label and Material Safety Data Sheet for health and safety information before using this product. For additional health and safety information, visit <a href="http://www.3M.com/msds">www.3M.com/msds</a> or call 1-800-364-3577 or (651) 737-6501.																
<b>For Additional Information</b>	<p>In the U.S., call toll free 1-800-235-2376, or fax 1-800-435-3082 or 651-737-2171. For U.S. Military, call 1-866-556-5714. If you are outside of the U.S., please contact your nearest 3M office or one of the following branches:</p> <table><tr><td><b>Australia</b> 61-2-498-9711 tel 61-2-498-9710 fax</td><td><b>Austria</b> 01-86686-298 tel 01-86686-229 fax</td><td><b>Brazil</b> 55 19 3838-7876 tel 55 19 3838-6892 fax</td><td><b>Canada</b> 800-410-6880 ext. 6018 tel 800-263-3489 fax</td></tr><tr><td><b>China</b> 86-21-62753535 tel 86-21-62190698 fax</td><td><b>Denmark</b> 45-43-480100 tel 45-43-968596 fax</td><td><b>France</b> 0810-331-300 tel 30-31-6195 fax</td><td><b>Germany</b> 02131-14-2344 tel 02131-14-3647 fax</td></tr><tr><td><b>Italy</b> 02-7035-2177 tel 02-7035-2125 fax</td><td><b>Japan</b> 03-3709-8245 tel 03-3709-8743 fax</td><td><b>Korea</b> 02-3771-4114 tel 02-786-7429 fax</td><td><b>Netherlands</b> 31-71-5-450-272 tel 31-71-5-450-280 fax</td></tr><tr><td><b>South Africa</b> 11-922-9111 tel 11-922-2116 fax</td><td><b>Spain</b> 34-91-321-6000 tel 34-91-321-6002 fax</td><td><b>Switzerland</b> 01-724-9114 tel 01-724-9068 fax</td><td><b>United Kingdom</b> (0) 161-237-6174 tel (0) 161-237-3371 fax</td></tr></table>	<b>Australia</b> 61-2-498-9711 tel 61-2-498-9710 fax	<b>Austria</b> 01-86686-298 tel 01-86686-229 fax	<b>Brazil</b> 55 19 3838-7876 tel 55 19 3838-6892 fax	<b>Canada</b> 800-410-6880 ext. 6018 tel 800-263-3489 fax	<b>China</b> 86-21-62753535 tel 86-21-62190698 fax	<b>Denmark</b> 45-43-480100 tel 45-43-968596 fax	<b>France</b> 0810-331-300 tel 30-31-6195 fax	<b>Germany</b> 02131-14-2344 tel 02131-14-3647 fax	<b>Italy</b> 02-7035-2177 tel 02-7035-2125 fax	<b>Japan</b> 03-3709-8245 tel 03-3709-8743 fax	<b>Korea</b> 02-3771-4114 tel 02-786-7429 fax	<b>Netherlands</b> 31-71-5-450-272 tel 31-71-5-450-280 fax	<b>South Africa</b> 11-922-9111 tel 11-922-2116 fax	<b>Spain</b> 34-91-321-6000 tel 34-91-321-6002 fax	<b>Switzerland</b> 01-724-9114 tel 01-724-9068 fax	<b>United Kingdom</b> (0) 161-237-6174 tel (0) 161-237-3371 fax
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