

3M™ Scotch-Weld™ Repair Paste 2110 B/A Repair Bulletin

Introduction

This bulletin describes the recommended procedure for repairing a damaged polyurethane film or coating on the leading edge of a helicopter rotor blade using 3M™ Scotch-Weld™ Repair Paste 2110.

Materials Required

- 3M™ Scotch-Weld™ Repair Paste 2110 B/A (50 ml) [3M ID 87-2500-0475-8]
- 3M™ Scotch-Weld™ EPX™ Plus II Applicator with 2:1 and 1:1 Plunger Model 9170 [3M ID 62-9170-9930-1]
- 3M™ Scotch-Weld™ EPX™ Plus II Mixing Square Nozzle Gold, 5.3 mm [3M ID 62-9171-9153-8]
- 3M™ Single Step Primer 08682 [3M ID 60-4100-0940-5]
- 3M™ Repair Paste Release Liner [3M ID 70-2022-8095-7]
- 3M™ Polyester Tape 8403 Green, 2 in x 72 yd [3M ID 70-0061-0388-4]
- 3M™ Scotch-Brite™ General Purpose Hand Pad 7447, 6 in x 9 in [3M ID 61-5001-2323-9]
- 3M™ Aerospace Squeegee
- Lint Free Cloth
- Safety Glasses
- Micro-centrifuge Tube
- Cotton Tipped Applicators
- Silver Marker
- Utility Knife
- Isopropanol or Acetone*

All of the materials required with the exception of isopropanol/acetone and safety glasses are available in the 3M™ Scotch-Weld™ Repair Paste 2110 Repair Kit [3M ID 70-2022-8094-0]

***Note:** Please consult Federal, State and Local Regulations. State Volatile Organic Compound (VOC) regulations may prohibit the use of certain alcohol solutions or solvents. You should check with your state environmental authorities to determine whether use of a solution or solvent is restricted or prohibited. When using solvents, extinguish all ignition sources, including pilot lights, and follow the manufacturer's precautions and directions for use.

When handling any chemical products, read the manufacturers' container labels and the Safety Data Sheets (SDS) for important health, safety and environmental information. Local air quality regulations may regulate or prohibit the use of surface preparation and cleaning materials based on VOC content.



1. Prepare / clean polyurethane coating and substrate

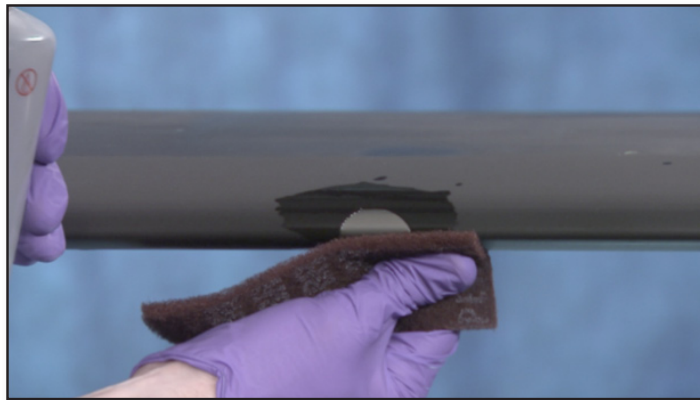
- A. Carefully remove any loose material from the rotor blade erosion coating using a utility knife or an appropriate tool.

Note: *The maximum recommended repair size is 3 inches in width, spanwise, and 6 inches in length, chordwise. The 3 inch width allows for the 3M Aerospace squeegee to be used to complete the repair and the 6 inch length fits within the width of the 3M Repair Paste Release Liner.*

- B. Clean the damaged area with isopropanol or acetone and a Scotch-Brite 7447 pad.* Wipe the surface clean with additional isopropanol or acetone and a lint free cloth.*

Note: *Either isopropanol or acetone is recommended for use with polyurethane coatings because it effectively cleans the surface of the erosion coating and activates the surface for better adhesion with the Repair Paste 2110.**

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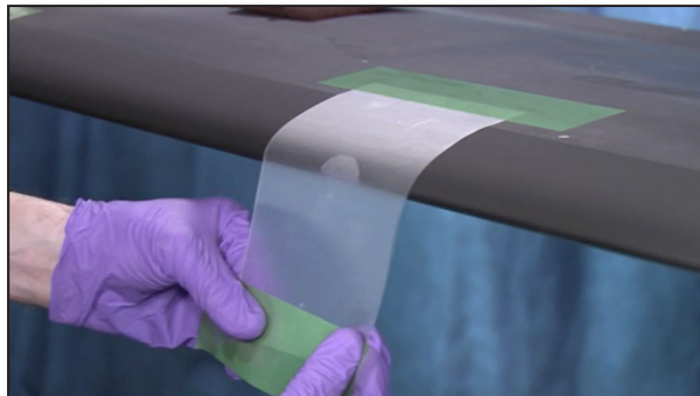


2. Align 3M Repair Paste Release Liner

- A. Cut a sheet of the 3M Repair Paste Release Liner to fit over the damaged area. The liner should be cut larger than the damaged area. Ensure that the liner is clean and free of debris.

- B. Using 3M Polyester Green Tape 8403, anchor the top of the 3M Repair Paste Release Liner above the damaged area of the polyurethane coating and apply another piece of tape to the bottom of the 3M Repair Paste Release Liner.

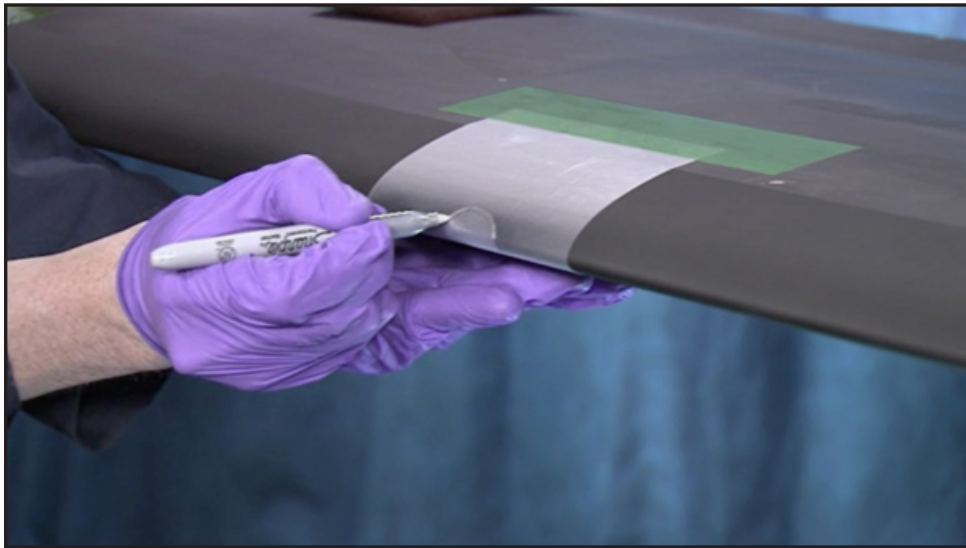
Note: *The 3M Repair Paste Release Liner has a glossy side and a matte side. Position the liner such that the desired surface appearance is face-down toward the erosion coating.*



3. Identify damaged area with silver marker

- A. Pull the 3M Repair Paste Release Liner over the damaged area and use a silver marker to outline the damaged area on the 3M Repair Paste Release Liner. This will help to identify the damaged area during the repair.
- B. Position the 3M Repair Paste Release Liner back out of the way.

Note: *The top piece of masking tape will act like a hinge when the 3M Repair Paste Release Liner is applied to the polyurethane coating.*

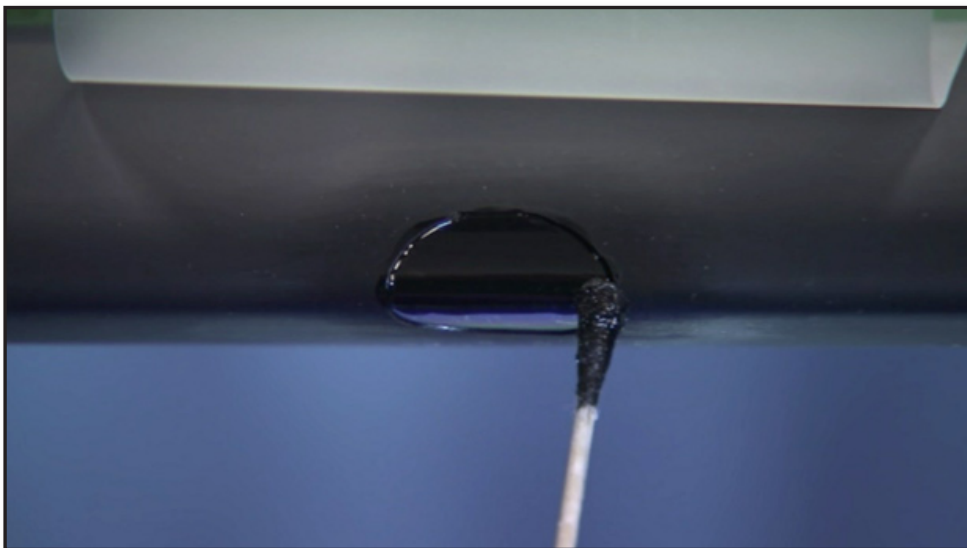


4. Apply 3M Single Step Primer to Metal Surfaces

- A. If there is exposed metal in a damaged area, apply 3M Single Step Primer to the metal using a cotton-tipped applicator. If metal is not exposed, the 3M Single Step Primer is not necessary for the repair.

Note: *When using the 3M Single Step Primer, shake the primer container until the metal ball inside the container is free and continue to shake the contents for 30 seconds.*

Note: *When applying the Repair Paste 2110 onto the 3M Single Step Primer, apply the paste immediately after the primer has dried, approximately one minute after primer application.*



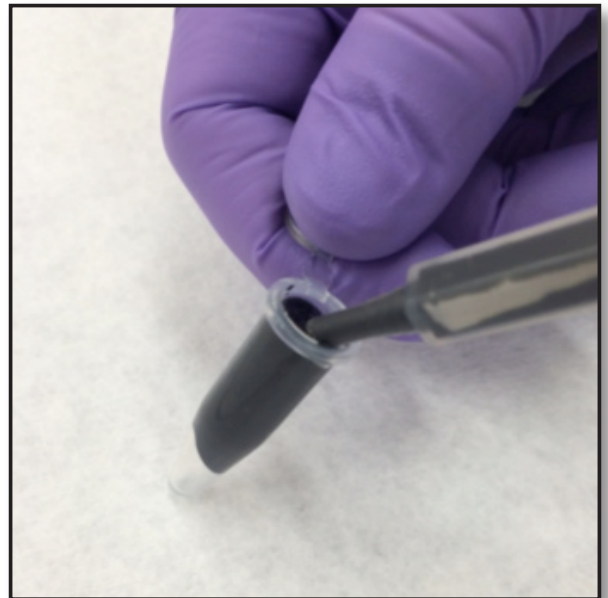
5. Dispense initial Repair Paste 2110

- A. Insert the 3M Scotch-Weld Repair Paste 2110 duo-pak cartridge into the EPX applicator and remove the duo-pak cartridge cap. Start the plunger into the cylinders using light pressure on the trigger and expel a small amount of Repair Paste 2110 to ensure the cylinders are aligned. Attach the static mixer.
- B. With the static mixer attached, expel enough material to completely fill a microcentrifuge tube or a one inch diameter circle, ensuring both sides of the duo-pak cartridge are flowing evenly and freely.

Note: *It is critical that the pistons are properly aligned prior to application of the static mixer. If the pistons are not aligned, the Repair Paste 2110 will not mix at the proper ratio and the Repair Paste 2110 may not cure properly.*

Note: *When dispensing the Repair Paste 2110, push the plunger slowly. This will ensure proper mixing of the paste. Applying excess force can result in improperly mixed paste.*

Note: *The Repair Paste 2110 cartridge may be warmed to 100°F to make it easier to dispense.*

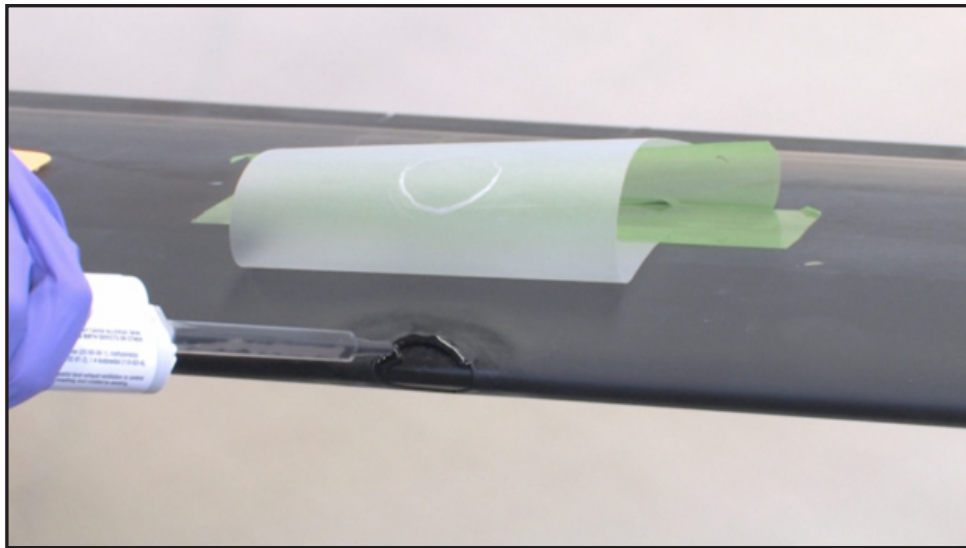


6. Fill in damaged areas using Repair Paste 2110

- A. Immediately fill in large damage areas directly with the Repair Paste 2110. Fill in the area starting from the top, working down.

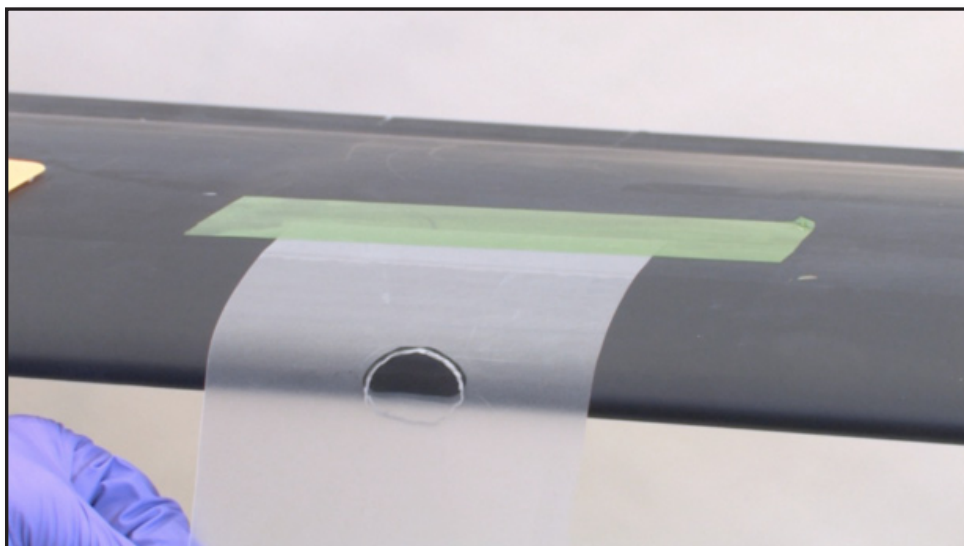
Note: *Depending on the size of the damaged area and the thickness of the film, each repair will require a different amount of material. Typically, filling about half of the area is sufficient to completely fill the entire damaged area after the 3M Repair Paste Release Liner has been secured in place over the repair.*

- B. For minor damage spread out over a larger area, apply a bead of Repair Paste 2110 over the entire damaged area.



7. Pull 3M Repair Paste Release Liner over Repair Paste 2110

- A. Slowly, pull the 3M Repair Paste Release Liner tightly down and around the damaged area.
- B. Adhere the 3M Polyester Green Tape 8403 on the bottom of the liner to the underside of the rotor blade.



8. Spread Repair Paste 2110 with squeegee

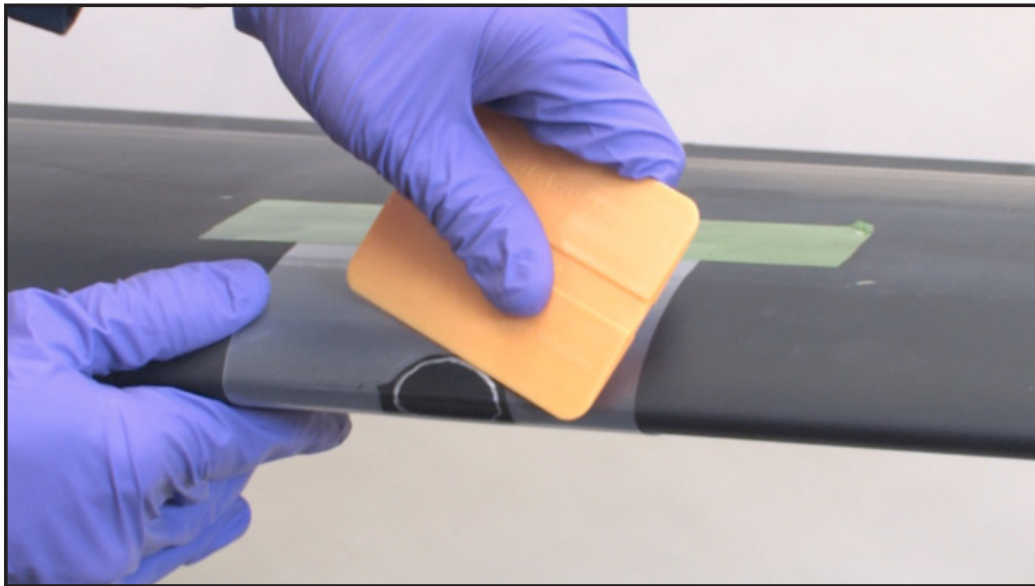
For damage isolated to one large location:

- A. Using the squeegee, spread the Repair Paste 2110 under the 3M Repair Paste Release Liner toward the trailing edges and sides of the damaged area.

Note: *Be careful not to press too hard on the damaged locations. This may cause the Repair Paste 2110 to squeeze out, creating a thin coating region. The silver marker used during Step 3 will allow for the damaged areas to be identified during the repair.*

For damage spread over large area:

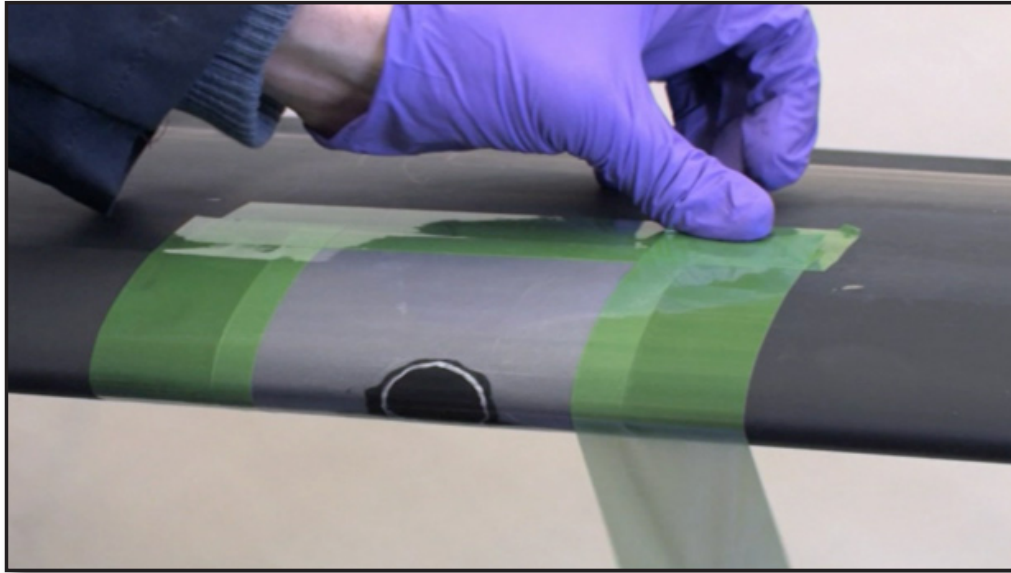
- A. Firmly, slide the squeegee down the 3M Repair Paste Release Liner, working the Repair Paste 2110 toward the leading edge.
- B. Continue working the Repair Paste 2110 over the leading edge and then back toward the trailing edge on the underside.
- C. Taper all edges of the repaired area by pressing the Repair Paste 2110 back toward the trailing edges or sides.



9. Secure 3M Repair Paste Release Liner in place

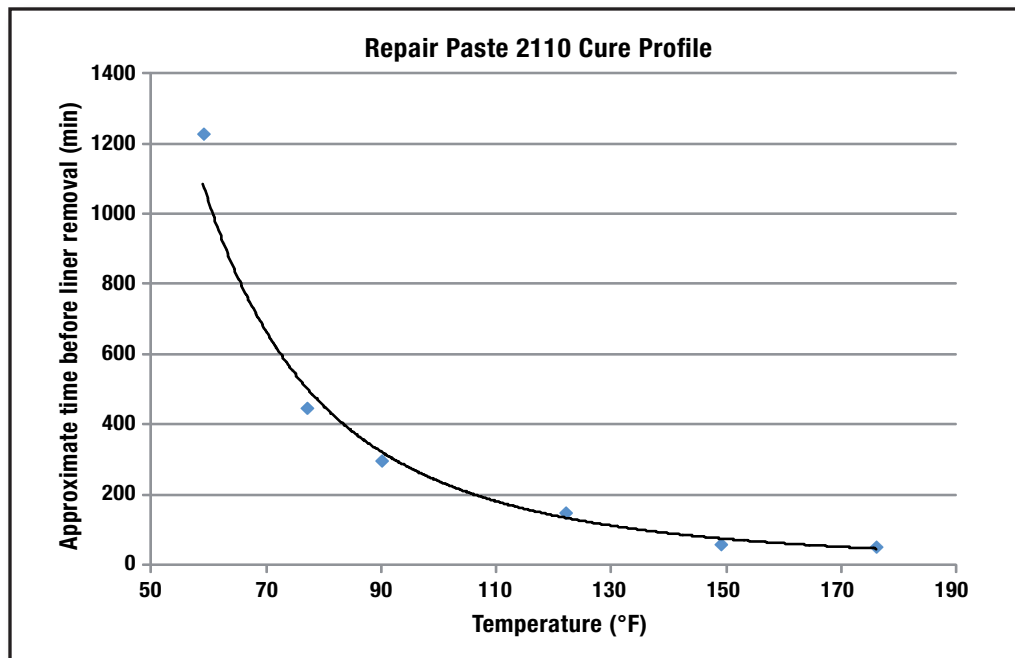
- A. Use 3M Polyester Green Tape 8403 to adhere the sides of the 3M Release Liner, effectively sealing the repair under the 3M Release Liner.

Note: *The 3M Repair Paste Release Liner will allow the Repair Paste 2110 to cure in a clean environment and prevent dripping or contamination.*



10. Remove 3M Repair Paste Release Liner

- A. After sufficient cure time, remove the 3M Repair Paste Release Liner. See chart below for approximate cure time/temperature relationship.



Approximate minimum time required as a function of temperature before the 3M Repair Paste Release Liner can be removed from curing Repair Paste 2110.



10. Remove 3M Repair Paste Release Liner (*continued*)

B. Inspect the repaired area for anomalies including voids, uncured or tacky material, thin regions, or ridges.

- If voids are present in the repaired section, a second repair may be completed using the same process as described above.
- If there is uncured or tacky material, re-adhere the 3M Repair Paste Release Liner and allow the Repair Paste 2110 more time to cure. If this problem still persists, the tacky sections can be removed with isopropanol or acetone and a 3M 7447 Scotch-Brite Pad.* Complete a second repair using the same process as described above.
- If there are thin regions in the repair, a second repair may be completed using the same process described above.
- If ridges are present along the edges of the repair, lightly sand the area using an orbital sander with 180 - 320 grit sandpaper to feather the ridges into the base polyurethane coating. If hand sanding is required, wet sand the area with 120 to 180 grit sandpaper. Use of isopropanol or water may facilitate sanding.

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Precautionary Information

Refer to Product Label and Safety Data Sheet (SDS) for health and safety information before using this product. Always wear personal protection equipment, such as half or full face piece air purifying respirator suitable for organic vapors and particulates.

For Additional Information

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:

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