



**MICRO-SURFACE**  
FINISHING PRODUCTS INC.

## PLEXIGLASS LENSE REPAIR KIT

### List of Contents:

3" x 4" Soft Touch Pads: 120/220, 400/**1500-Bronze**, **2400-Black/3600-Brown**, **4000-Teal/12000-Gray**, 1 oz. Bottle Micro-Gloss®, and 2 cotton flannel wipes. Note: Micro-Mesh grades are color-coded, refer to enclosed color chart.

### Determine Type and Extent of Damage and Starting Point

Crazing - A series of very fine lines, stars, or haze when viewed at an angle in bright light. Crazing is below the surface and usually cannot be felt with the fingernail and requires aggressive sanding to remove. Begin with the 120 pad.

Deep Scratches - Easily felt with the fingertip. Begin with the 220 pad.

Minor Scratches - Readily detected with fingernail. Begin with the 1500-Bronze pad. If the scratch is not easily removed use the 400 pad followed by the 1500-Bronze pad.

Hairline Scratches & Light Scuffs - Light scratches and hazing - Begin with the 2400-Black or 3600-Brown pad.

Very Fine Scratches - Usually caused by improper cleaning methods. Begin with the 4000-Teal pad.

### Step 1 - Damage Removal

1. Determine your starting point. The Soft Touch Pads can be used wet or dry, but best results are obtained if used wet. This will also help keep the surface cool and the pads free of abraded particles. Clean, fresh water is an excellent lubricant and coolant. Water may be sprayed or misted onto the pad's surface or dip pads in fresh water occasionally during use. A drop of mild dish detergent can be added to water for lubrication if needed.

2. **DO NOT SAND IN A CIRCULAR PATTERN.** Spot sanding in a localized area is not recommended. Using firm pressure, sand evenly over the entire area in a vertical motion, until the damaged layer has



been totally removed. Sand the entire surface before going onto the next step. This damage removal step is **CRITICAL!** If it is incomplete, the final results will not be satisfactory. After 3-5 minutes check your progress. If it seems the damage is not being removed at an acceptable rate, you may want to go to a coarser pad. In the case of crazing, the time needed to remove the damage will be longer. Since more material will be removed to eliminate damage, you may want to alternate with vertical and horizontal straight line motion. Once the damage has been removed, end with a vertical sanding pattern.

3. Clean the surface by flushing with water, or blowing with air.

4. Proceed to the next finer Soft Touch Pad. Pads range from coarse to fine:

120, 220, 400, 1500-Bronze, 2400-Black, 3600-Brown, 4000-Teal and 12000-Gray. Sand at a 90° angle



from the previous step.

Continue sanding until the previous sanding pattern has been completely removed. If water is being used, it will be necessary to dry the surface completely to determine that the previous pattern has been removed. The use of 100% cotton flannel is recommended. Avoid synthetics and paper towels, as these both tend to cause scratches in plastic.

## Step Two - Surface Restoral

1. After the surface has been sanded with the 400 pad, begin with the 1500-Bronze pad, and sand at a 90° angle from the previous sanding pattern. Continue until the previous pattern is again removed.

2. Proceed as above through all Soft Touch Pads included in the kit. Be sure to change the sanding direction 90° with each step and check for total removal of each scratch pattern. If coarser scratches remain at any step, they will probably still be visible at the end leaving an incomplete restoral and a hazy finish.

3. When you have finished with the 12000-Gray Soft Touch Pad, and are satisfied with the surface appearance, clean the surface thoroughly.

4. Once the surface has been sufficiently cleaned, flush with water. Using one of the flannel cloths included in this kit, wipe the lense. Dampen the flannel with water and apply a dime size drop of Micro-Gloss to the flannel. Rub briskly over a square foot area. Work in a straight line pattern. Use firm pressure for 1 to 2 minutes, until Micro-Gloss has almost disappeared. Water may be added to extend working time. Continue in 1 foot areas, overlapping slightly until the entire surface has been worked. Rinse the surface with water and wipe clean. Dry with the second flannel cloth.

**Note: Keep the flannel clean and you can use it many times. Rinsing is needed to remove dirt and abrasive particles that are trapped in the flannel. Rinse and dry the Micro-Mesh Soft Touch Pads and store for reuse in the future. Keep the Micro-Gloss from freezing temperatures.**

**Clean lenses on a regular basis with Micro-Gloss to keep them looking like new.**

**Contact Micro-Surface Finishing Products, Inc. with any questions at 800-225-3006 and 563-732-3240, or check out our website for kits using power tools, at [www.micro-surface.com](http://www.micro-surface.com).**

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10/2007

LLLRK Instructions

## HOW TO ACHIEVE THE BEST FINISH USING MICRO-MESH® Soft Touch Pads

The polishing of surfaces can be very exacting. Success or failure depends on the technician's knowledge of, and his ability to follow, an established sequence.

**Pressure Should be Light.** Remember the cushioned abrasive cuts with the abrasive crystal tips. The sharp cutting edges are floating on a resilient matrix. Extreme pressure pushes the tips back into the matrix rendering them ineffective and resulting in surface smearing, burning, and possible orange peel and distortion.

**KEEP EVERYTHING YOU USE CLEAN.** This includes equipment, sandpapers, MICRO-MESH®, and all wiping materials. A minor scratch here or there is not a crisis situation, but picking up a piece of metal or other contaminate from the top of a work area can be a disaster. Watch where you set things down.

### **Acceptable Cleaning and Maintenance Materials:**

- 100 % cotton flannel
- Genuine chamois, not synthetic or imitation
- Biodegradable liquid detergent
- MICRO-MESH® Anti-Static cream
- MICRO-GLOSS® polish and cleaner
- WinBRIGHT Spray plastic cleaner
- Bug Blaster Spray bug remover

### **Unacceptable Cleaning and Maintenance Materials:**

- Paper towels or other paper products
- Shop towels or synthetic fiber fabrics
- Commercial window cleaners
- Any product containing ammonia or solvents or alcohol

**Clean the Work Surface** between each step, especially in cracks and crevices. Flush surface several times with clean water to remove dust and dirt before touching it with anything. Clean abraded particles from the work piece by rinsing and then dry and inspect.

**Inspect the Work Piece** between steps with a bright light to ensure you are removing the previous scratch pattern before continuing on.

**Keep the Abrasives Clean.** Keeping them clean will improve performance and extend life.

**To Avoid Scratching the Surface,** do not wear watches, rings, or bracelets. Long fingernails should be covered with gloves.

**For Superficial and Light Surface Damage,** use MICRO-GLOSS® liquid abrasive following the directions on the label of the bottle.

**For Deep Damage and Crazeing,** you will be required to remove the damage firstly with sandpaper and then restore the surface to its original state using MICRO-MESH®. After damage is removed by using sandpaper in a succession of steps from coarse to fine, ie: 120 grit, 220 grit, 400 grit wet/dry, then begin the MICRO-MESH® series with MICRO-MESH® 1500 and proceed through the series to 12000 or until the original surface is matched.

**Use a Straight-line Crossing Pattern.** Do not use a circular pattern except in the final hand buffing or anti-static operations.

**Using MICRO-MESH® with Water** and a few drops of detergent will generally result in a less effort having to be used and a slightly better finish. Only use enough water to provide lubricity to the surface, but not so much that poor contact is made with the work piece.

**DO NOT** wear out one of the meshes by trying to make it do too much work on your first step. If your estimated damage is not readily removed, go immediately to the next coarser mesh. Removing the initial damage with the sandpaper series will take up 85% of the restoral time. The MICRO-MESH series and the buffing procedures will take as little as 15% of the time. **DO NOT** skip steps in either the sandpaper or the MICRO-MESH® series.

**Work an area slightly larger with each step to blend.** Working one small area on a highly curved section could create flat spots or distortion.

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## GUIDELINES FOR ACRYLIC FINISHING USING SOFT TOUCH PADS

To avoid scratching the surface, do not wear watches, rings, or bracelets. Long fingernails should be covered with gloves.

MICRO-MESH® will remove surface discoloration, but not tinting that is throughout the plastic. If unsure, test in a small inconspicuous area.

Keep MICRO-MESH® clean; contamination can cause scratches. When your restoral is complete, rinse MICRO-MESH® pieces, air dry, and return them to their original packaging. MICRO-MESH® is reusable!

Use only 100% cotton flannel for wiping. Keep it clean, wash in warm soapy water, rinse, dry and return to the kit box.

MICRO-MESH® is numerically graded. The higher the number, the finer the cutting action.

**Do not work in a circular pattern.** Cross your sanding pattern at 90 degree angles from one step to the next to be sure of total removal of the previous sanding pattern. Incomplete removal will result in an incomplete restoral! Damage not removed with the beginning step will most likely remain after the process is complete.

To remove heavy damage from highly curved surfaces, it may be beneficial to sand in an alternating pattern of diagonally, horizontally and vertically, in a straight line motion. This will assist in achieving an even removal of material over the entire surface.

Thin plastic (1/8" or less) may develop surface distortion if sanding the surface creates heat. Work the surface slowly and work wet.

Check your scratch pattern frequently. It is helpful to set a bright light on the side opposite your restoral side. For better viewing on non-transparent surfaces, place the light at an angle.

### **DISTORTION**

It is always easier to prevent distortion than to remove it! There are two types of distortion that can be caused by the use of improper restoral methods, localized and surface. Localized distortion is caused by working one small spot and not blending the damage removal over a large enough area.

Surface distortion is almost always a sign of incomplete restoration. This could be the result of:

1. the incomplete removal of one sanding pattern before proceeding to the next step
2. not working a larger area with each new step
3. heat build-up
4. skipping steps
5. not cleaning the surface between steps

### **HINTS FOR POLYCARBONATE RESTORAL (LEXAN, TUFFAK, ETC.)**

Polycarbonates have one very serious and unredeeming feature. They are easily scratched and next to impossible to restore without leaving haziness. Unlike acrylic, which is hard and can be almost rubbery. Some scratches and other damage can be removed, but the final polishing is not truly effective. MICRO-MESH will produce a "better-than-anything else" finish on polycarbonates, but does leave a slight haze.

If restoring polycarbonates, it is important that each step in the process can be an improvement to the quality of the surface. For this reason, sandpaper and coarser abrasives should be avoided.

In most cases it is better to minimize the damage than to attempt to totally remove it. Sandpaper may leave scratches that are more objectionable than original damage. Begin with 2400 or 3600 MICRO-MESH and follow the basic procedure. Extra time and effort may be required to obtain best results. Upon completion of the MICRO-MESH steps the surface will still appear less than optically clear. The use of MICRO-GLOSS (available where MICRO-MESH is sold) will improve the finish, and may be used for an extended period of time to obtain desired results. In many cases the use of MICRO-GLOSS will improve the original damage to the point of acceptability, without the work involved in the sanding procedure.

### **CARE AND MAINTENANCE OF ACRYLIC AND PLASTIC SURFACES**

Use clean fresh water with a drop of detergent and flannel for cleaning. Avoid paper towels, napkins and tissue.

Keeping the surface clean and smooth helps prevent scratching and crazing.

Never use rubbing compound, polishing cleaner or auto waxes on acrylic. These materials contain abrasive and solvents that damage the surface or accelerate crazing.

MICRO-GLOSS is a liquid abrasive. It contains no waxes or silicones. MICRO-GLOSS is used to remove very minor surface scratches. It contains a uniformly graded abrasive grain in suspension.

MICRO-GLOSS may be used to remove superficial damage and maintain polished surfaces. It is used to shorten the final finishing process for plastics and other soft materials. It can be applied by hand with a clean damp flannel cloth, or it can be used with a buffer and a natural wool buffing pad.

Note: Keep the flannel clean and you can use it many times. Rinsing is needed to remove dirt and abrasive particles that are trapped in the flannel.

Please contact our restoral department Monday - Thursday between the hours of 8 a.m. and 4 p.m. CST for an explanation on how to remove distortion.

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04/01/04

Guidelines for Acrylic Finishing By Hand

## HOW TO DETERMINE IF YOU ARE WORKING ON ACRYLIC OR POLYCARBONATE

### REQUIREMENTS:

1. 3-WAY MICRO-MESH BUFFER; GRADES 2400 (PINK); 4000 (WHITE); 12000 (GRAY)
2. SPRAY BOTTLE OF WATER
3. LIGHT SOURCE

### PROCEDURE:

Work on an approx. 2" x 2" inconspicuous area of the window

Set a light behind the window so inspection can be easily done

Spray the area with a mist of water

Using the buffing stick - pink 2400, make 6 back and forth, using **light** strokes. Sand in a horizontal motion.

Now, sanding in a vertical motion, use the 4000 white side of the buffer to cross over and remove the 2400 scratch pattern you put in the window.

Stop and assess your progress. You should notice a white, milky slurry forming from the sanding action. This is a combination of the water and small abraded particles of acrylic. Did you remove the 2400 sanding pattern? If so and you have a slurry forming - the window is acrylic.

If not, the window is most likely polycarbonate. Making sure the repair area is wet, continue sanding, but this time use the 12000 MICRO-MESH side of the buffer and sand in a horizontal pattern to try the 4000 sanding pattern.

Using a soft flannel or cotton cloth only, put a dime's worth of MICRO-GLOSS on the repair area and polish and wipe clean.

If your window is polycarbonate ask about our restoral products for POLYCARBONATE.

There are many different grades of both acrylic and polycarbonate, so testing is imperative. In some cases, with polycarbonate, less is best and optical clarity may not be possible. Polycarbonate is much softer than acrylic and is more difficult to repair. It's like sanding on rubber.