

Type of Damage or Scratch

3M Glass Defect Repair Suggested Sequence

3M Glass Defect Repair Suggested Sequence	Can feel with fingernail \geq 200 microinch	Scratch is visible not easily felt with fingernail <200 microinch	Coating Removal (Sputtered or Spin coated)	Scuffs, Acid Marks, Silica Coating Defects
A35 3M 268XA	Step 1 Scratch Removal <ul style="list-style-type: none"> • Use more water for deep scratches, less for shallow scratches • Concentrate on scratch area 			
	A10 3M 268XA	Step 2 Refine A35 Scratch <ul style="list-style-type: none"> • Use medium amount of water • Concentrate on scratch overlapping slightly into unworked area 	Step 1 Scratch Removal <ul style="list-style-type: none"> • Use medium amount of water • Concentrate on scratch area 	
A5 3M 268XA		Step 3 Refine A10 Scratch optional <ul style="list-style-type: none"> • Use when large areas are being repaired • When repairing tempered or harder glass 	Step 2 Refine A10 Scratch optional <ul style="list-style-type: none"> • Use when large areas are being repaired • When repairing tempered or harder glass 	Step 1 Coating Removal <ul style="list-style-type: none"> • Use medium amount of water • Work entire surface of the glass
	Polish 3M 568XA	CHANGE TO BACK-UP PAD USED ONLY IN FINAL POLISH STEP		
Step 4 Polish <ul style="list-style-type: none"> • Use very small amount of water (approximately 1" diameter puddle) • Using firm pressure, polish until dry • Clean surface, inspect and repeat as necessary (usually 2-3 times) 		Step 3 Polish <ul style="list-style-type: none"> • Use very small amount of water (approximately 1" diameter puddle) • Using firm pressure, polish until dry • Clean surface, inspect and repeat as necessary (usually 2-3 times) 	Step 2 Polish <ul style="list-style-type: none"> • Use very small amount of water (approximately 1" diameter puddle) • Using firm pressure, polish until dry • Clean surface, inspect and repeat as necessary (usually 2-3 times) 	Step 1 Polish <ul style="list-style-type: none"> • Use very small amount of water (approximately 1" diameter puddle) • Using firm pressure, polish until dry • Clean surface, inspect and repeat as necessary (usually 2-3 times)

Note:

- Clean surface completely with water and clean towel between each step
- Apply water as necessary to keep glass cool
- Glass repair operations differ widely. Call 3M at 1-800-533-6419 for help in optimizing your operation

OVERVIEW

Trizact™ is a new coated abrasive polishing system for glass. Four stages of films are available. Three are aluminum oxide and the fourth is cerium oxide. The abrasive particles in the aluminum oxide are imbedded in repeated pyramidal shapes produced by a special process known as 3M's microreplication technology. The result is a product that continues to expose more abrasive as the points wear off, exposing the bases of the pyramids.

For most glass applications, Trizact is used wet, which provides cooler working conditions, eliminates dust and allows the flushing action of the water to rinse away used abrasives. Some edging applications can be done dry.

The four stages are carefully graded and sequenced to allow ground glass to be restored to a crystal clear finish. Trizact is also a great choice for repairing scratches and defects from flat and curved glass surfaces. The severity of the defect determines the required number of stages to be used.

Most Trizact applications are Pressure Sensitive Adhesive (PSA) backed, allowing quick easy changes between stages.

TRIZACT™ ABRASIVE FILMS

STAGE 1	STAGE 2	STAGE 3	STAGE 4
A35	A-10	A-5	CERIUM

APPLICATIONS

Trizact can be used on edges, interior cutouts and flat or curved glass surfaces. On edges and interior cutouts, Trizact can perform final finishing with the ability to go to high polish clear if all stages are used.

Scratches, scuffs, coatings, wiper marks and other defects can be removed from flat or curved glass surfaces.

IMPORTANT SAFETY INSTRUCTIONS

The following instructions will take you step by step through Amazing Glazing's Scratch Removal Process. Please take the time to read the instructions thoroughly before beginning. Be sure to use basic safety precautions to reduce the risk of injury to persons or property, including, but not limited to the following:

- Wear appropriate eye protection.
- For maximum operator safety when using water with an electric power tool, always use a Ground Fault Interrupt (GFI) Circuit.
- Locate the GFI where it will not get wet.
- When working with individual pieces of flat glass, to avoid breakage, secure (block) and support glass properly on a flat surface before beginning the scratch removal process.
- When working on large installed glass, do not exert high pressure or allow excessive heat build-up, which could cause the glass to break or fall on operator.
- When working on vertical surfaces, provide a non-slip, standing surface.
- Maintain tools with care and inspect periodically.
- Maintain a clean, uncluttered work area.

SCRATCH REMOVAL

Before You Begin, You Should Understand:

Our scratch removal systems and the new 3M Trizact discs will remove scratches and can restore glass surfaces to optical clarity. But you should also understand that the process of scratch removal is a matter of finessing the glass and takes considerable practice to have optimum results. Minor (hardly visible) marks could remain and, depending on the depth of the initial scratch, optical distortion can occur.

Hints on Successful Use of Your New Scratch Removal System

1. Read all instructions carefully before starting and practice the process on scrap glass first.
2. Be sure to hold the disc pad at a slight angle on the glass for all stages, except the final Cerium stage, at which point the pad should be held almost flat.
3. Stop often. Rinse glass, wipe dry and inspect progress from time to time.
4. Touch glass often to judge heat build-up. Do not overheat glass. Add water as necessary.
5. Keep work area very clean between stages. Do not mix supplies.
6. Technique is important. Practice is necessary for the best results.
7. Keep in mind that the type of glass can affect the time required to repair.

INSTRUCTIONS

Step One: Initial Preparation

Examine Your Amazing Glazing Scratch Removal System

Check your scratch removal system to make sure you have all the necessary parts. (See Systems and Parts List in back of booklet.)

Check the thickness of the glass. The glass should be at least 3mm (1/8") thick.

Determine the severity of damage. Trizact discs are available in four separate sequenced grades. The severity of the damage and finish requirements will determine how many stages need to be used. (See the 3M Glass Defect Repair Process Guide for suggested steps.) If the scratch is deep enough to hook a fingernail, you'll want to start with the green A35 disc, the most coarse Trizact disc. For shallower scratches or scuffs, you might be able to start with the finer blue A10 or A5 discs. Acid marks and coatings can be removed using Cerium alone. **Note: Some trial and error may be necessary to choose your starting abrasive grade. If you begin with too coarse of a grade, you will have an unnecessary, long process time. If you begin with too fine a grade, you won't be able to remove all of the scratches.**

Prepare the surface and the pads. Thoroughly clean the entire glass surface with a soft clean towel and an ample amount of clean sediment-free water from either the spray bottle (when using the Amazing Glazing Starter Kit or any other system with an external water supply) or from the center water-feed (CWF) of the

Amazing Glazing Professional System. Then wipe the area dry with soft paper towels. (You can also use a squeegee first to remove excess water and then wipe with towel.)

Wipe the face of the backup disc pad clean and dry. Self-adhesive discs will not bond to wet or moist surfaces. Remove the liner backing from the selected grade of disc and apply firmly to the backup disc pad. Slightly roll the inner and outer edges of the disc toward the disc pad to prevent sharp disc edges from scratching the glass. Insert the disc pad into your scratch removal system. (At this point, you might want to prepare the other disc pads by applying one of each of the remaining grades of Trizact to its own disc pad. Using separate disc pads for each stage helps you fully use Trizact and prevents cross-contamination.)

Step Two: Beginning Scratch Removal Process

Use Most Abrasive Disc First

Locate defect or scratch area and mark a small circle around the defect with the provided marker. Apply a small amount of water to the clean glass surface. With the sander running at the proper RPM for the size disc being used, tilt pad slightly, at about a 10 degree angle, and gently contact the surface, applying light but evenly-spread pressure. (Be sure machine is running before touching surface.)

SELECT THE CORRECT RPM FOR THE DISC SIZE

Ideal speeds for 3" discs range from 2800 rpm to 3500 rpm.

Ideal speeds for 5" discs range from 1800 rpm to 2200 rpm.

step. Use a clean, soft paper towel each time.

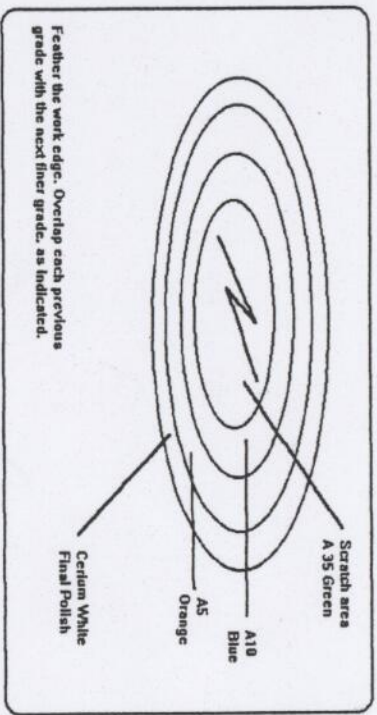
Do not tilt the pad too much and don't dwell too long in one area. Work within marked area in small circular, clockwise, sanding motions with small overlapping strokes. Concentrate in a very small area. Work in one direction, then in the opposite direction. Add water as needed to keep area slightly wet. Touch glass occasionally to make sure the glass is not getting too hot.

Remember: If the glass gets too hot, lift the pad off the glass. Apply more water and fan the glass with the pad running 1" - 2" above the surface. When finished processing the marked area, stop, rinse area thoroughly and wipe surface dry. Inspect the surface to see that the scratch has been removed or "bottomed out." You should see an even scratch pattern over the entire processed area. If so, you are ready to move on to the next stage.

Step Three: Refining Scratch with Remaining Stage or Stages

Enlarge Process Area for Each Subsequent Stage

Draw a new circle approximately 1" larger than the previously worked area. Remove the disc pad and replace with the next grade of Trizact. If you used the green A35 grade of Trizact for the first stage (depending on depth of scratch), use the next less abrasive grade, the blue A10. If you started with the blue A10, step down to the orange A5 grade. In other words, always start with the more abrasive grade and work down to the least abrasive, with the white Cerium disc as the last disc for final polishing. Work the marked area the same as in Stage One, in one direction and then the other, keeping surface wet and working long enough to completely replace the first scratch pattern with the finer scratch pattern. You must spend more time with each succeeding stage to



remove all scratch marks from the previous stage. Use water as needed. Always remember to overlap the previous area, with the finer area. Rinse, wipe with paper towel and inspect your work. The damaged area should have a consistent hazy or cloudy appearance with no deeper scratches remaining. If satisfied, mark a larger circle again and move on to the next grade, blending the repair into the surrounding area. Follow the same instructions used for Stages One and Two. Fully rinse and dry repair area.

Step Four: Final Polishing Stage - Clean Area and Tools

Cleanliness is very important in the final polishing stage! Any loose abrasive from previous stages that enter the Cerium pad will turn it into a scratching pad, resulting in micro scratches in your finish work. First clean the surface, using generous amounts of water. Wipe the area dry with soft paper towels. Use a glass cleaning agent to ensure that all dust and debris has been removed. Apply a clean, uncontaminated cerium disc to a new dedicated

back-up disc pad. Check again to ensure that machine, disc, glass surface and surrounding areas are clean and free of residue, paying special attention to the area around the sander shaft.

Begin Polishing Process

Apply only a small amount of water to the area to be polished - approximately a 1" to 2" puddle. With the sander running at the proper RPM, bring the pad down flat onto the surface. With the pad flat, move slowly in a clockwise circular motion, working from the outside to the inside of the repair area. After a few seconds, a white slurry will be formed. (Following the scratch pattern of the previous stage helps release the white Cerium.) If you still have difficulty releasing Cerium, add a few drops of our Glass Polishing Compound to your Cerium pad. Do not leave the fringe areas to polish last. **Remember: Jerking of the sander as you polish can cause scratches. Avoid this by maintaining firm pressure.** Stop often, judging the heat build-up and rinsing and drying the area to judge your progress. If you see a thick build-up of Cerium that is hard to remove or small Cerium burns, go over again with more water flow and they will dissolve and disappear. Cerium can react chemically with surrounding surfaces. It's a good idea to mask off areas that are not being worked with thin plastic sheeting to prevent damage and make final clean-up easier.

Repeat Process as Needed

Continue polishing until dry. Remove the "dry" slurry by continuing to polish. Watch your heat build-up. The Cerium stage generates the most heat. Spray more water onto slurry and repeat process two, three or more times, as necessary. Always use up all the abrasive on the Trizact film before discarding. When the abrasive is gone, you can see through the film backing to the

dark color of the disc pad. Wipe the surface clean using water and soft paper towels. Examine the results. Repeat process if necessary. The glass should now be clear and scratch free.

Other Important Things to Know Before You Start

Use of Water

It is very important to avoid generating too much heat. A carefully controlled water flow will keep the glass cool and reduce the chance of breakage. Water also helps to start the cutting action of the aluminum oxide grades and to form the slurry for the final polishing step. However, too much water on the final polishing step will wash away the cerium oxide particles that form the slurry and no polishing action will occur.

Cleanliness, Cleanliness, Cleanliness!

Amazing Glazing's Scratch Removal Systems utilize a sequence of progressively finer grades of abrasive. Contamination from abrasive particles left over from previous grades can cause micro-scratches that are visible after the polishing steps. Cleanliness is the key to scratch prevention.

To Prevent Scratching:

- Keep tools and work area clean. When not in use, set the sander on its side so dirt is not picked up on the working surface.
- Use an ample amount of water from the tool or spray bottle and a soft paper towel to thoroughly remove any residue and loose particles from the entire glass surface between each abrasive

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- Wipe the debris off the sander frequently. Pay special attention to the center hole area, the sander shaft and the casing.
- Always designate a separate back-up pad for the final polishing step (white Cerium). Residual abrasive and glass particles from previous grades may contaminate the pad and cause scratching.
- Always use pure filtered water.

Proper Technique is Essential

There are a few polishing techniques that should be followed for optimal results.

- Always begin polishing by applying a small amount of water on the surface. With the sander running, gently contact the surface.
- Apply firm, even pressure sufficient to comfortably maintain surface contact.
- Sanding should be done with small overlapping strokes of the tool. Moving the sander in a clockwise circular pattern helps reduce jerking.
- Do not dwell in one area. Maintain continuous contact with the glass. Avoid lifting the abrasive off and on the glass surface.
- Lift the sander off the glass before stopping it.
- Controlled water flow helps reduce the heat and keeps the glass cooler. If the glass gets hot, lift the pad off the glass. Apply more water and fan the glass with the pad running 1" - 2" above the surface.

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- Feather the edge work. Overlap each previous grade with the next finer abrasive grade as indicated.

EDGING

Edge work that has been ground to a 400 to 800 grit fine ground finish can be processed to completely clear, using each of the four Trizact stages. The current product recommendation is in disc form, used wet. Sharp edges must be removed prior to using Trizact. Use our 800 grit disc or diamond handpad to provide a smooth chip-free flat surface before beginning with Trizact.

For edging, use the green A-35 first, keeping the grinding area wet. Work the edge back and forth with the disc pad at a slight angle to the work. Then, turn the polisher 90° and continue to work edge back and forth at a slight angle. This will create a cross hatch pattern which helps blend the final finish.

After you have worked the edge, stop, rinse down, wipe with paper towel and allow to dry. Inspect your work. If the scratch pattern is uneven, repeat the process, using the A-35 disc again or scratches will show in your final work. If you see small burn spots, you are running too dry. Usually it is best to go back to the 800 grit diamond to remove small burn marks, then go to the green A-35, using more water.

Once you have achieved a consistent finish, move on to the next stage which is the blue A-10 disc. Use as above, stopping occasionally to dry your work and inspect progress. You must spend more time with each successive stage to remove all scratch marks from the previous stage.

Continue on through stage three orange A5 and, if a high polish is needed, to the fourth stage which is white Cerium. Remember the Cerium stage uses less water and finishes dry for final polish. Occasionally touch the glass edge to make sure it is not getting too hot. Always support or block the glass properly to allow moderate pressure to be used without stressing the glass.

INTERIOR CUTOUT POLISHING

Trizact is a pressure sensitive adhesive (PSA) backed material which can be easily cut and wrapped around form tools such as drum rolls for interior polishing. These drum rolls can be used in a hand held drill with water supplied by a spray bottle. Drum type rolls with pre-mounted Trizact will be available in the future. Three inch and five inch diameter discs may also be used for working on cut-outs. Trizact may also be mounted to orbital sanders with PSA or Velcro-type systems.

Please see our catalog or website for further product information. Glass repair operations differ widely. If you have a specific question on using Trizact, please call a technical support specialist at Amazing Glazing.