

C 5.4.0.0 - Hard Water Staining [CAT-1]

APPROXIMATE TIME PER SQUARE FOOT: 7 - 12 minutes

Light hard water staining is a subtle yet persistent issue that arises when dissolved minerals in water achieve prolonged contact with glass surfaces. This prolonged exposure, particularly at certain concentrations, leads to the encapsulation of the underlying glass by these deposits. As a result, a robust chemical bonding occurs between the trace minerals within the glass and the residual dissolved minerals on its surface.

The hallmark of light staining is its appearance as a darker shadow or "stain" on the glass surface, which becomes evident after the surface deposits have been removed. This staining subtly permeates the outer layer of the glass, marking a change in its visual clarity. However, in cases of light staining, technicians can still observe areas of clear, unstained glass amidst the spots of deposit. This distinguishing feature is key to identifying the extent of the staining and formulating an appropriate restoration strategy. Addressing light hard water staining involves techniques that target both the removal of surface deposits and the mitigation of the underlying stains, to restore the glass to its original clarity.



Fig. 5400A



Fig. 5400B

IMPORTANT NOTE: During the glass restoration process, it's crucial to closely monitor the temperature of the glass pane. The heat generated from grinding or polishing can increase the risk of thermal stress, potentially leading to cracks or breakage. To effectively manage this risk, it is recommended to use a non-contact thermometer, a tool available at most hardware stores. This allows for accurate and safe temperature measurements without interrupting the workflow.

Regular monitoring of the temperature differential between the repair area and the rest of the pane is key to preventing thermal damage. Should the temperature in the work area rise significantly, pause the restoration and allow the glass to cool. Immediate cessation of work and allowing the pane to return to a normal temperature range is necessary if overheating occurs. For specific temperature guidelines and detailed procedures on managing thermal expansion, please refer to section C 3.1.1.0 - Thermal Expansion.

TEMPERATURE ADVISORY	Delta	Maximum Temperature
Annealed	+80°F Δ	N/A
Tempered	+120°F Δ	N/A
Laminate- Annealed	+80°F Δ	145°F
Laminate- Tempered	+120°F Δ	145°F
Mirrored	+80°F Δ	N/A

Fig. 5400C

Tool Checklist

- Corded, Variable Speed, Rotary Polisher (600-3000 RPM MINIMUM, 5/8-11 threaded spindle)
- Backing Pad
- Foam Finishing Disk(s)
- Cutting Compound
- Polishing Felt
- Polishing Compound
- Rasp
- IR Thermometer

Workspace Checklist

- Power Access
- Workbenches, ladders, scaffolding, lifts, etc. (If Applicable)
- Masking Tools
- Drop Clothes/ Tarps/ Waste Receptacles
- Temperature Control Tools (If Applicable)

Damage Assessment Checklist

- Confirm Glass Type
- Confirm Damage Type
- Inspect Glass System Integrity (Framing, Glazing, Etc.)
- Inspect Glass Pane Integrity (Cracks, Chips, etc.)
- Identify Damage Location(s)

Notes:

Hard Water Staining (Light)

C 5.4.1.0 - Step One: Cutting

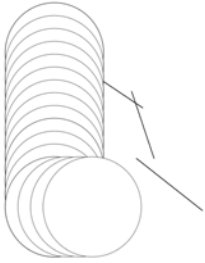


Fig. 5410A

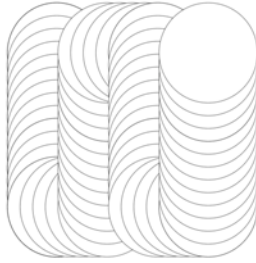


Fig. 5410B

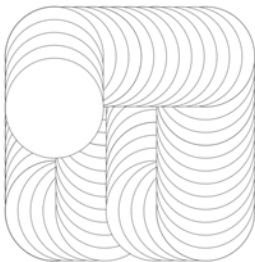


Fig. 5410C

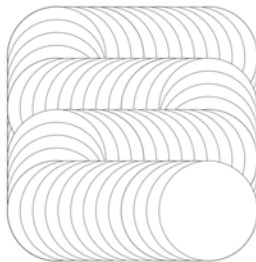


Fig. 5410D

C 5.4.1.0 - Step One: Cutting utilizes a Foam Finishing Disk to quickly remove target damage.

1. Secure a Foam Finishing Disk to the designated backing pad.
2. apply 1/4 - 1/2 oz. of Cutting Compound to the surface of the Foam Finishing Disk.
3. Adjust the polisher to operate at a rotational speed of 600 RPM.
4. Align the Foam Finishing Disk surface directly above the glass's damaged area, ensuring that the disk remains parallel to the glass pane.
5. Engage the polisher's power trigger, and trigger lock.
6. Employ a systematic cutting approach by guiding the RenuDisk in alternating horizontal and vertical paths across the damaged area. This action should form a precise cross-hatch pattern. Maintaining uniform pressure, continue cutting until all damage has been removed.
7. Disengage the Foam Finishing Disk from the glass pane.
8. Disengage the polisher's power trigger. Ensure the disk is stationary.
9. Detach the Foam Finishing Disk.
10. Continue to [Step Two: Polish].

NOTE: Over the course of cutting, it may be necessary to reapply Cutting Compound to the Foam Finishing Disk. If the Cutting Compound has been fully worked into the glass, or if the Cutting Compound becomes dry on the pane:

- Disengage the polisher, ensuring the disk is stationary.
- apply 1/4 - 1/2 oz. of Cutting Compound to the surface of the Foam Finishing Disk.



Fig. 5410E



Fig. 5410F



Fig. 5410G

Notes:

C 5.4.2.0 - Step Two: Polish utilizes the Polishing Felt and Polishing Compound to restore glass to full luster.

1. Secure the polishing felt to the designated backing pad.
2. Using the rasp file, abrade the polishing felt surface gently. This helps elevate the natural fibers of the felt for enhanced polishing ease and efficiency.
3. Vigorously agitate the bottle prior to each application to ensure homogeneous distribution of the polishing compound. Apply Polish Compound directly to the felt's surface.
4. Adjust the polisher to operate at a rotational speed of 600 RPM.
5. Align the polishing felt surface to overlap the top left corner of the established work area by approximately $\frac{1}{2}$ the diameter of the polishing felt, ensuring that the disk remains parallel to the glass pane.
6. Engage the polisher's power trigger, and trigger lock.
7. Disperse the polish uniformly across the entirety of the work area.
8. Employ a systematic polishing approach by guiding the polishing felt in alternating horizontal and vertical paths, expanding the established work area created in Step Two by approximately $\frac{1}{2}$ the diameter of the RenuDisk. This action should form a precise cross-hatch pattern. Maintain uniform pressure. Continue the polishing process until all of the Polishing Compound has been worked into the glass.
9. Inspect the entire work area, checking for any remnants of haze from multiple angles. Pay particular attention to the edges and corners of the work area. If any remnants remain, begin Step Three again.
10. When the pane has been adequately restored, clean the glass using any standard glass cleaning technique to remove excess Polishing Compound.

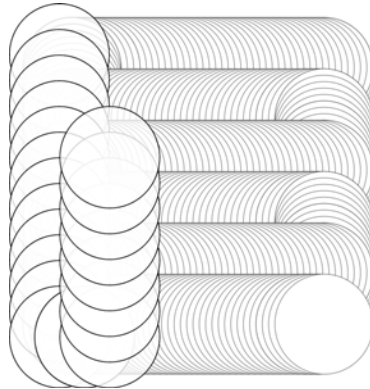


Fig. 5420A

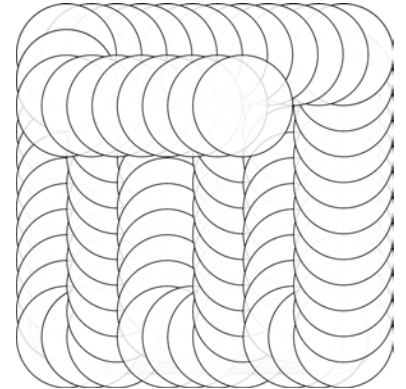


Fig. 5420B

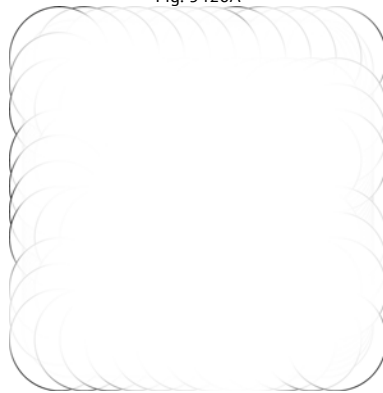


Fig. 5420C

Fig. 5420D



Fig. 5420E

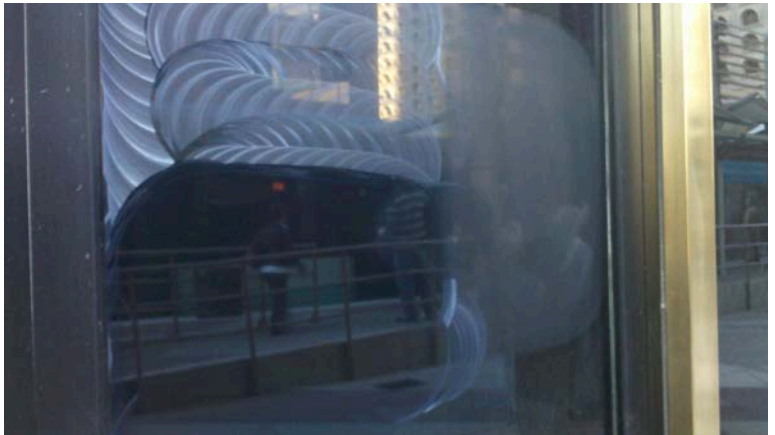


Fig. 5420F

Notes:
