

Window Cleaning Network Group
Scratched Glass Seminar
July 27, 2002
Location: Oconomowoc, Wisconsin

1. Introduction : FIELDS CONSTRUCTION SERVICES

Construction Window Cleaning. We do post construction cleaning on 400+ houses per month. (Also, pressure washing and carpet cleaning.)

Glass Consultation

We represent insurance companies, builders and window cleaning companies to determine liability on causes for scratched glass.

SPECIAL SERVICES

Glass Restoration - Scratch Removal.
Window frame repair.
Tub and shower repair.
Stainless steel repair.
Marble repair.

2. SEMINAR TOPIC: Scratched Glass, their causes and their possible prevention.

A. *Window protection during construction*

B. *Window cleaning procedure to remove construction debris*

C. *The quality of tempered glass used in new windows.)*

A. Interior protection methods. 6" to 8" around perimeter only.
Exterior protection methods. Plastic film on glass (2 types) and taped frames.
Works fairly well, if plastic film doesn't stick to glass over time or cut open by others.

B. Window cleaners must be qualified and experienced in CONSTRUCTION window cleaning. They must know their ability and have the knowledge to removed construction debris from glass without possible damage.

C. Defective tempered glass has been the leading cause for scratched glass for the last several years. And, the popularity of Low-E coatings hasn't helped anyone cause.

Note: This seminar will only cover the leading cause for scratched glass, defective tempered glass and will not be covering all the other possible causes for scratched glass. Such as sandpaper from the painter or texture crew, floor scrapers, dry scarping plaster or texture off glass or unqualified window cleaners.

3. UP TO NOW the plasters and the window cleaners have taken the blame for most of the Scratched glass.

WE HAVE ALWAYS HEAR, IT DEPENDS ON WHERE THE SCRATCHES ARE.

If scratches are on the inside glass, the Window Cleaner did it and if the scratches are on the outside glass, the Plaster did it.

I'm here to help change that and try to eliminate scratches all together.

4. AFTER EXTENSIVE RESEARCH ON SCRATCHED GLASS FIELDS CSI has added a Scratched glass clause to all our contracts.

“THE CLAUSE” SIMPLY STATED IT SAYS:

Fields Construction Services, Inc. WILL NOT be liable for any scratches on tempered glass. PERIOD!

(This clause is added to ALL our contracts or we do not do work for that contractor.)
No Exceptions!

This clause is not for all glass, just tempered glass.

WHY?

POOR quality tempered glass Scratches when standard window cleaning techniques are employed. While QUALITY tempered glass and annealed glass will not scratch using the same cleaning techniques.

5. What is Tempered Glass

Myths about tempered glass. See flyer.

(Tempered glass is harder, softer, rougher, smoother, wrong side facing out on IG.

unit, only one side is tempered, tempered glass is different than annealed glass and on and on and on.

FACTS about tempered glass.

Tempered glass is 4-5 times stronger than annealed glass.

Tempered glass breaks in very small pieces, which makes it safer, if it should break.

Locations Tempered Glass in houses. Areas that expose high risk of human contact.

All doors (French doors and patio doors).

Side windows (within 24" of opening or door).

Stair landing window within 4' from the floor.

Bathroom windows, within 5' of from the floor.

Tub & Shower enclosures (all).

Windows within 18" from the floor.

Note: Tempered glass is not always installed in the proper location. (Sometimes with so many windows being the same size, they are mistakenly installed in the wrong locating, so check for the tempering stamp to be sure.)

6. Why does "some" tempered glass scratch? #1 reason for scratched glass.

Some tempered glass has Poor surface quality.

Show samples of both QUALITY tempered glass and DEFECTIVE tempered glass.

Demonstrate on each glass sample with a NEW razor blade. Sounds different? IT IS!

Show photos of new razor blade, fabricating debris and resulting scratching. Each scratch is created from a glass defect and photos show the scratch originates at that defect.

The surface quality of tempered glass has a direct effect if the glass will scratch during the cleaning process.

When glass scratches are noticed, observe the directions of the scratches. Are they identical in direction as the scrapers path used to clean the glass? This could be misleading and tend to encourage the belief that scrapers scratch glass, which is not true. Upon closer examination you will notice that the scratches DO NOT extend from the beginning of the scrapers path to the end of the scrapers path. WHY? As the scraper passes over each glass defect, it dislodges the defect and creates a scratch as it is dragged across the glass surface.

Plastic Scrapers - Just a suggestion.

At one time, members of the glass industry thought metal scrapers were suspect for causing scratches on glass and suggested using plastic scrapers to clean glass. After testing showed that plastic scrapers also scratched defective tempered glass, that idea was quickly abandoned. Especially after evidence showed the plastic scraper now had fabricating debris embedded in the scraper, which would now be used on quality glass, resulting in scratching every window it touches.

Fabricating Debris

Fabricating debris is the major factor in causing glass scratching.

7. How is Tempered Glass made?

Glass must be cut to size, prior to tempering. (Tempered glass can not be cut after it's been tempered, it will break into hundreds of tiny pieces if you try.)

After the glass is cut to size, the edges are belt seamed or diamond ground. (This is done to square off the edges and remove sharp edges.)

The glass is then sent through a glass washer to clean off all fabricating debris.

After the glass is cleaned it enters the tempering furnace, which will heat the glass to around 1200 degrees.

As the glass exits the furnace it is flash quenched with cool air, which produces the temper.

8. THE PROBLEM - Fabricating Debris fused to the glass surface will result in a surface defect.

Why does some tempered glass have fabricating debris fused to the surface?

It all starts with the glass washer and the lack of maintenance to that washer. If the glass washer is not properly maintained, fabricating debris will still remain on the glass surface after the glass exits the washer.

When this glass and any remaining fabricating debris enters the tempering furnace, the 1200 degree furnace fuses the fabricating debris to the roller side surface of the glass and the furnace rollers.

It's this fabricating debris that causes the scratching on tempered glass. When a window cleaner removes construction debris from the glass surface, they also remove these defects, which scratch the glass when they're moved across the glass surface.

Also, over time the tempering furnace also becomes contaminated with fabricating debris and must be serviced to remove fabricating debris from the furnace rollers.

9. Identifying and Tracking Defective Tempered Glass

1. Scratching is observed over a large area of tempered glass.
2. Scratching will occur on the roller side of the tempered glass only. Any defective surface will be located on the roller side of the glass. This is the surface in contact with the furnace rollers during the tempering process.
3. The side facing up in the tempering furnace is defect free and scratch free. (opposite the furnace rollers) This side will not scratch when cleaned with the same window cleaning techniques.
4. The location of the Tempering Stamp will help to identify the roller side of the glass and any contaminated surface.

A sand blasted stamp is located on the roller side of the glass and will identify the defective surface, if present.

A porcelain stamp is located on the surface facing up in the furnace, away from the furnace rollers and identifies the higher quality surface.

How to determine if the tempering stamp is sandblasted or porcelain:

By passing a razor blade over the tempering stamp you can determine the type of stamp on each glass sample, which will identify the location of that surface in the furnace (roller surface or air surface). If the razor blade passes over the stamp without any drag, it's a sand blasted stamp and is the defective surface, if present. If a drag is present, it's the quality surface.

10. Where do we go from here?

Educate the BUILDERS on QUALITY Tempered Glass.

Builders must be educated on this issue for everybody's benefit.

- a. Would a builder accept a window from the supplier with paint all over it?

I DON'T THINK SO.

- b. Would a builder accept a window from the supplier with plaster all over it?

- c. Why does a builder accept defective tempered glass that scratches when cleaned?

Because they didn't know about it. UNTIL NOW!

SUGGESTION: Builders should know what they are buying and buy only windows with Quality Tempered Glass.

- 11. GANA's (Glass Association of North America) position on this matter.**
- a. No Standard for washing tempered glass at all.
 - b. No Standard for detecting or rejecting glass with this type of defect.
 - c. Stop window cleaners from using any scrapers on glass.
 - d. Unable to duplicate Particle surface on tempered glass. (Unknown source?)
 - e. Stimulated a dialogue with the IWCA (International Window Cleaning Association) regarding cleaning Guidelines.

IG (Insulated Glass) manufactures

- a. Do not usually track tempering stamps on tempered glass, unless requested.
I DON'T THINK SO.

12. High Quality applications requiring only quality, defect free, tempered glass. Glass fabricators insure these applications only get quality tempered glass to minimum customer rejects.

Mirrors - SILVERING PROCESS will show debris.

Laminating will show fabricating debris between glass layers.

Low-E coatings will show fabricating debris without the aid of magnification.

Recent Years-Becoming very popular in our area.

They must have a clean surface for all these products.

If there is any chance of a surface having fabricating debris, NOW that surface is faced towards the outside of the IG unit, for us to deal with.

IDENTIFY EACH SIDE OF IG UNIT. 1 through 4

(applied to side 2 hot areas or 3 cold areas.)

13. THE PLASTER TAKES THE HIT

This points the blame for the scratches towards the plasters in this area, since the low-e coating is on surface #2, which has to be a clean surface and that puts the blemished surface facing out, in the #1 position.

14. THE WINDOW CLEANER TAKES THE HIT

And, in colder parts of the country, the window cleaners takes the hit. Here the low-e coating is on surface #3 and the blemished surface is facing inside the house.

15. OUR ONLY OPTIONS:

Educate the builder, so they know exactly what they are buying and refuse to except any defective tempered glass that can't be cleaned, without scratching.

After builders know the different between HIGH-QUALITY and POOR QUALITY tempered glass, most large builders will REJECT all defective tempered glass.
PERIOD!!

16. Conclusion and One last note:

SCRAPERS DO NOT SCRATCH GLASS

FABRICATING DEBRIS DOES

17. Question and answer session.