



Scrapers & Fabricating Debris

Tempered glass quality issues - a Window Cleaning Network bulletin

2/10/13 © By Gary Mauer - gmauer@window-cleaning.net

Images: Dan Fields and Gary Mauer

Research: www.scratched-glass.net www.thefieldsco.com www.iwca.org www.mwcoa.org www.window-cleaning.net

Window cleaners throughout the world use metal scrapers because their markets require efficient, effective, environmentally preferable cleaning methods.

Scrapers do not scratch uncoated glass, and have long been the world's standard and most practical method for removal of material such as paint, adhesives, or stickers from uncoated glass, not only during construction cleaning, but throughout the useful life of a window.

Less desirable alternatives are typically expensive, labor intensive, and may harm seals or surrounding surfaces. Inefficient methods may create ergonomic hazards for workers. Hazardous chemicals pose health and environmental concerns.

Poor quality tempered glass often gets scratched. Microscopic surface defects known as fabricating debris, may be dislodged and trapped by a scraper during window cleaning. Issues of profit, liability and customer satisfaction arise as a result of scratches caused by fabricating debris defects.

Fabricating debris defects are created in contaminated tempering furnaces when abrasive microscopic debris such as glass fines becomes stuck (impinged/adhered/fused) to the roller (bottom) side of the glass. This is a known tempering quality control issue that can be minimized when fabricators adhere to recommended operating and maintenance procedures for washers, furnaces and other equipment.

Fabricating debris scratches are typically lighter than scratches caused by common abrasives such as sandpaper. Often they are hard to see without the aid of direct sunlight. Solitary scratches caused by solitary defects are of little concern; numerous scratches caused by excessive defects are a major concern.

Millions of dollars have been lost due to poor quality tempered glass. Many professional window cleaners now refuse to do post construction window cleaning. Many will no longer work without proper liability waivers.

A scratch liability waiver, reviewed by legal counsel, should be part of every contract. Waivers typically state that the client agrees to scraper use on all uncoated glass and will not hold the window cleaner liable for any scratches in heat treated glass. Waiver should say "heat treated" rather than "tempered".



Even if initially protected, poor quality tempered glass presents maintenance issues for the client, requiring their vigilance for the life of the window, to be sure the common scraper is never needed, or alternatives are always used.

There is no reliable field test to confirm the absence of these defects. Microscopic fabricating debris defects are usually invisible to the naked eye. Window cleaners should never assume liability for detecting these microscopic defects. While quality control testing for heat treated glass may be attempted prior to installation by responsible parties, such testing is best done at the production level by the fabricator.

Clients who need efficient, safe, practical cleaning should agree to sign a liability waiver; builders should insist on quality heat treated glass from suppliers. Every effort should be made by fabricators, window suppliers and builders to assure only quality tempered glass.

Tempered Glass Quality Resources

Quality test for uncoated tempered glass surfaces

Glass Performance Days 2011

www.glassfiles.com/search?author=1&search=Mauer

A simple surface quality test for tempering facilities. During tempered glass production, samples are scraped, to simulate cleaning. Glass is checked with a shop microscope, and records kept. Intended to predict performance of tempered glass during cleaning and promote the early detection and resolution of bottom surface defects.

Maximizing Ceramic Furnace Roll Performance

Glass Processing days 1999

www.glassfiles.com/search?author=1&search=Maximizing+Ceramic

Classic glass industry article emphasizing sound tempering practices. Intended to promote critical thinking on tempering furnace roller use and maintenance. Operating practices, cleanliness of the factory, furnace and glass are essential. "Defects in tempered glass can usually be identified, isolated, and resolved through the use of optical microscopy, scanning electron microscopy, and energy dispersive spectroscopy."

The Fields Company - Dan Fields

www.thefieldsco.com

Articles and information on tempered glass quality and construction window cleaning. Sample scratched glass waivers.

