

1. Why ClearShield Treated Glass?

2. The Problem

New glass is bright and sparkling, easy to see through and easy to clean and keep clean. After exposure to contaminants, the surface of ordinary, unprotected glass is attacked both chemically and physically.

The surface of glass is not completely smooth. Under a microscope (as illustrated in Figure 1) weathered glass has a rough surface of peaks and potholes. Contaminants attach to the microscopically rough surface. Some substances are tenacious and difficult to clean. Others bond chemically to the surface because the surface of unprotected glass is chemically reactive with many substances, and are impossible to remove completely using conventional methods (refer to table 1).

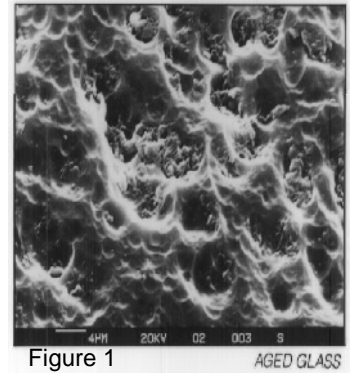


Figure 1

For example, finger marks and nicotine are tenacious and difficult to remove completely, but do not bond to the surface. Other contaminants such as limescale, metal oxides and unburned hydrocarbons react chemically and firmly bond to the glass.

| Type of Contaminants | | Source of contamination | |
|----------------------|---------------------------|--------------------------------------|--|
| | | Marine environment | Land based environment |
| Inorganic | Limescale / mineral salts | Seawater Salt spray | - Hard water - Building materials Cement dust, Mortar - Building run-off from Concrete, brick- & stonework |
| | Metal oxides | Rust (iron oxide) from framework | - Aluminium, lead, and iron oxides from framework - Metal dust (iron oxide) from rails & brake pads |
| Organic | Hydrocarbon pollution | Deposits from ship funnel exhaust | - Traffic film & other atmospheric pollution - Jet engine exhaust at airports |
| | Silicone sealants | | Run-off from sealants |

Table 1 These substances are commonly found in moisture (liquid & vapour) and other contaminants (both air- & water-borne) often coming into contact with glass.

Glass is easily damaged by moisture and alkalinity, its two biggest enemies, and behaves like a metal because it is subject to corrosion. Moisture can be liquid or vapour the latter being more aggressive to glass. Alkalinity comes from various sources including seawater, hard tap water, construction materials, building run-off and cleaning products.

New glass is hydrophilic, or moisture attracting. This property makes the surface more susceptible to corrosion. Corrosion by moisture, particularly in combination with alkalinity, attacks the surface of glass and makes it appear dull and unattractive. The surface becomes even rougher and can suffer irreparable damage.

As a result of its own properties and exposure to contaminants, glass becomes stained and discoloured, difficult to see through and difficult to clean and keep clean. Unless protected, glass can lose its original clarity, visibility and cleanliness.

Why ClearShield Treated Glass?

The solution

ClearShield Glass is low-maintenance (Low-M), always easier to clean and keep clean, and provides lasting protection against contaminants that can quickly and easily cause surface damage. It resists both organic and inorganic substances that chemically bond to unprotected glass preventing losses in clarity, visibility and cleanliness.

This protection is strong and durable because ClearShield Glass has an ultra-thin but hard-wearing layer of polymeric resin that is applied as a liquid but when cured bonds chemically to the glass surface creating an invisible, 'non-stick' barrier.

To the **end user** this means glass that:

- **is always much easier to clean**
... saving time and effort
- **is easier to keep clean**
... saving money
- **resists staining**
... maintaining visibility, clarity & appearance
- **does not support adhesion or growth of bacteria**
... for a more hygienic environment



To **glass manufacturers, fabricators and processors**, ClearShield Glass means:

- **added-value proven through years of successful track records**
- **unique selling points and competitive advantages**
- **safe and easy methods of application**
- **high service through technical and marketing support**