



## **THE PRESERVATION, ENHANCEMENT & “PREVENTIVE SOILING” OF SAND-BLASTED OR CHEMICALLY-ETCHED GLASS**

Glass is perhaps our most perfect building material. It provides light, clarity, beauty, insulation, strength and protection.

It is often desirable to chemically or mechanically etch glass to reduce visibility through it or to create art forms on its surface as decoration. Chemical etching is generally accomplished with the judicious use of hydrofluoric acid. The more popular mechanical etching is most commonly accomplished by professionally sand blasting the surface with aluminum oxide or silica sand.

Yet, whatever its form or composition, the natural surface of glass is hydrophilic, non-conductive and microscopically irregular. It attracts and holds moisture and water-borne soil on its surface; it permits static electrical charges to remain on the surface and attract dust and dirt: and it allows its microscopic pores to trap a myriad of reactive chemicals, particulate matter and atmospheric contaminants that ultimately lead to weathering, soiling, staining and erosion.

Compared to the smooth, highly polished surface of transparent glass, chemically etched or sand blasted glass surfaces contain literally millions of additional pores (as microscopic mountains, valleys and fissures) to which water, oil and soil can more readily adhere.

With its patented Invisible Shield® solvent-extended glass coating technology, Unelko Corporation established conclusively that water & soil repellent polymer coatings are extremely effective in maintaining the beauty and cleanliness of sand blasted windows and partition panels, decorated shower enclosures and the myriad of glass art forms.

As with most successful innovations in a highly competitive marketplace, Unelko's patented transparent polymer coating technology was infringed and imitated – but never equaled – by demonstrably inferior products for which rather extraordinary, but unsubstantiated, application and performance claims were made without specificity as to formulation, standards or environmental impact.

Recognizing certain inherent limitations in solvent-extended surface treatments, Unelko embarked on additional research & development that led to another breakthrough in surface coating technology...its patented Clean Shield® line of concentrated, but non-flammable, non-combustible, VOC-free, non-toxic and non-corrosive, creams and gels that chemically modify the surface of glass to make it hydrophobic, static-free and resistant to the adhesion and buildup of everyday water spots, fingerprinting, dust and soil.

Still further surface care challenges were met by Unelko with its newly-patented multi-functional, multi-surface Clean & Shield® (also marketed as Sani-Shield® for in-plant application) “spray & wipe” surface care technology that is VOC/Solvent-free and non-toxic. In 1-step, Clean & Shield cleans everyday spills & splatters of organic and inorganic soil...and simultaneously imparts an invisible water, soil & stain repellent barrier coating on which bacterial, mold & mildew will not grow...and that dramatically reduces the adhesion and buildup of hard water minerals, lime scale, rust and stains for easier removal.

Either Invisible Shield (liquid), Clean Shield (cream or gel) or Clean & Shield (spray) can be easily applied to sand blasted or chemically etched glass...either on-line, in the field (before or after installation) and by end-users to minimize maintenance and allow decorated glass to achieve its maximum potential. It should be emphasized that water & soil repellent coatings will dramatically **reduce** soiling and make cleaning infinitely easier, but that no such coating can **eliminate** soiling; particularly oil-laden fingerprints.



Surface Preparation: A newly sand blasted surface must be thoroughly cleaned to remove all loose glass particles and remaining grains of silica sand or aluminum oxide particles. For optimum treatment effectiveness, the surface should be washed with water (with mild scrubbing to agitate the surface and remove all glass particles) followed by thorough drying using towels and air pressure as needed.

Application Techniques: Solvent-extended polymer coatings (like Invisible Shield) can be applied by low-pressure spray, paint rollers, orbital buffers or by ordinary wiping & polishing depending on the size and configuration of the surface to be treated. Owing to the complexity of the sand-blasted glass surface and the solvent evaporation process, a two-coat application (with not less than 5 minutes of air drying following each application) is recommended; followed by a final rinse with clear water or a mild detergent solution to remove any excess polymer. The surface should then be wiped with a clean cloth or microfiber towel until clear and sparkling.

The new dry-film (Clean Shield®) cream or gel can be applied with rollers and/or by wiping & polishing. . Aside from the important features of being non-flammable, VOC-free, non-toxic, non-irritating and highly concentrated for much greater coverage on a per ounce basis, this technology yields durable water & soil repellent coatings that are more uniform and predictable from an applicator's standpoint; while retaining the non-yellowing, non-cracking, non-build up, durable attributes of the ideal non-stick coating. Again, owing to the complexity of the sand-blasted glass surface, some excess treatment material is likely to be present. Therefore, after treatment with Clean Shield Cream or Gel, it is recommended that the treated surface is rinsed with clear water or a mild detergent solution; followed by wiping with a clean cloth or microfiber towel until clear and sparkling.

Application Instructions: The following specific application instructions should be observed for the treatment of properly prepared sand blasted or chemically etched surfaces:

- A. Liquid Coatings: The cloth, roller or buffing pad should be well saturated, but not dripping wet. The product should be allowed to "wet out" (penetrate) the surface, and should be allowed to "dry" for at least five (5) minutes before being re-treated to ensure complete and uniform coverage. After five (5) minutes, or when a slight haze has formed, the surface should be buffed with a dry cloth, roller or pad – or washed with clear water and air blown to dryness – to remove all excess coating material. A smooth, uniform, water & soil repellent surface will result.
- B. Cream & Gel Coatings: These are highly concentrated products and should be used sparingly.
  1. Small Surface Applications: When treating relatively small surfaces, it is best to apply the cream or gel directly to the surface at the rate of several drops per approximately one (1) square foot of surface. Then, using a microfiber cloth or pad, a short nap wool pad or felt pad, the material should be "massaged" into the surface, using a firm, circular and overlapping motion until clear.
  2. Large Surface Applications: Apply the cream or gel to a sponge, short nap wool or synthetic cloth roller, microfiber cloth or suitable buffing pad. The applicator should be to well dampened, but not saturated. Using the applicator, wipe the cream or gel into the surface using a firm, circular and overlapping motion. Continue "massaging" the surface with the saturated applicator until the surface clears. Then, using a dry cloth, felt pad, buffer or strong paper towels, wipe the surface to remove any excess. The treated surface will exhibit a degree of uniformity and performance that is simply not available from solvent-extended liquid coatings.



C. Spray & Wipe Coatings: These RTU (ready-to-use) compositions should be (1) sprayed on the surface, (2) spread with a microfiber cloth until the surface is saturated, (3) allowed to penetrate the pores for a minute or two, and (4) wiped up using a fresh microfiber towel until the surface is dry to the touch.

Testing Water & Soil Repellent Coatings: Any quality solvent-extended, cream, gel or “spray & wipe” coating – when properly applied – will be resistant to removal by any soap, solvent or detergent that would not otherwise etch or damage a similar, untreated surface. Invisible Shield, Clean Shield or Clean & Shield water & soil repellent coatings can be deteriorated by abrasion and the abrasive effects of many commercial abrasive cleansers. However, there should be no need to ever wash a treated surface with an abrasive cleanser since the water & soil repellent treatment dramatically restricts the adhesion and build-up of virtually all foreign matter including ambient soil, fingerprints, food spills etc. It is the intensity and uniformity of the beading when sprayed with clear water (contact angle) that ultimately determines the quality and application of the coating. The more intense and uniform the beading, the better the treatment.

Durability of Water & Soil Repellent Coatings on Sand-Blasted Surfaces: Most typically, sand-blasted glass panels are employed in interior environments ranging from decorative dividers in public buildings and offices to tables, shelves and shower enclosures in homes. Thus, exposure to outdoor weather elements is not an issue. They can, however, be exposed to hard and soft water, and an array of cleaning chemicals. Since, with Invisible Shield, Clean Shield or the new CLEAN & SHIELD, the treated surface has been made uniquely “non-stick”, food spills, fingerprints, ambient soil, soap scum, lime scale and hard water mineral deposits can all be easily cleaned by periodic washing with plain water, ordinary (non-ammoniated) glass cleaners, mild detergent solutions or Clean & Shield Spray. Under such circumstances, the useful life expectancy of a properly applied treatment can range from a minimum of one year to five years or more. Even the proper treatment of a sand blasted glass shower door, used daily (and if squeegeed or wiped dry after use at least weekly) should last for over one year. Significantly, Invisible Shield, Clean Shield and Clean & Shield coatings are infinitely renewable, and can be reapplied as needed or desired without build up.

Appearance of Sand-Blasted Surfaces When Protected by Water & Soil Repellent Coatings: The “active” component of water & soil repellent coatings are hydrophobic polymers that have been bonded to the surface with proper application. The polymers, while totally invisible, will provide an exceptionally uniform surface appearance compared to untreated sand-blasted or chemically-etched glass. In order of increasing density...the “spray & wipe” Clean & Shield provides the least amount of densification, then the liquid Invisible Shield, followed by the Clean Shield Gel and the Clean Shield Cream; that leaves the brightest/most dense finish. Any of the coatings will remain uniform and will not change appearance throughout their useful life span; even when wet or subject to soiling and fingerprinting.

Cleaning/Maintenance of Sand-Blasted Surfaces When Protected by Water & Soil Repellent Coatings: Unelko’s coatings are uniquely resistant to removal by any soap, solvent or detergent that would not damage or etch untreated glass. Water & soil repellent surfaces can be easily cleaned/maintained by washing the surface with nothing more than plain water or diluted rubbing alcohol (isopropanol), as and when needed to clean the occasional fingerprint, spill or splatter. Common glass cleaners or mild detergent solutions can also be employed.

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