

INDUSTRY BEST
PERFORMANCE & VALUE

INVISIBLE SHIELD

NANO-SCALE GLASS COATING
with UV INITIATOR TECHNOLOGY



 **Unelko**
Corporation



Free of Harsh
Chemicals

About Us



The Invisible Shield® Glass Coating was first invented and patented by Howard G. Ohlhausen of Unelko Corporation in Chicago, Illinois as a method for rendering nonporous surfaces water, soil and stain repellent. Following his acclaimed invention in 1971, Ohlhausen began to develop and market several innovative products. Through his service and experience in U.S. Air Force, he developed Repcon, a rain repellent and surface conditioner for military vehicles and aircraft. He then developed Rain-X®, the “Invisible Windshield Wiper” and glass treatment for “Improved Visibility and Driving Safety” on automotive glass, now sold worldwide.

Major Breakthroughs in Surface Care

Unelko has been a pioneer in the glass and surface care industry since it was originally launched in 1973 with the invention of the globally distributed, Original Rain-X® line of automotive products for improved visibility & driving safety. This patented technology was a method for protecting hard surfaces and rendering them water repellent.

Following the sale of its world-famous Rain-X® and Repcon® businesses to Quaker State Corporation in 1997, Unelko did not rest on its laurels and focused on advanced surface care technologies that provide new, practical solutions to old problems. As a result of this ongoing commitment to research & development, Unelko has new patents and patent-pending user-friendly surface care technologies that are non-flammable, VOC-free, non-corrosive and non-toxic.

Because of their unique features and performance benefits, these new technologies can transform a broad range of hard & soft surfaces into highly water, soil and stain repellent surfaces **for improved performance, appearance, reduced maintenance and easier cleaning!** Unelko's advanced surface care products improve visibility & driving/flying/water navigation safety...and can literally cut in half the cost and time devoted to cleaning and surface care in autos, homes and public buildings...while keeping surfaces sparkling, like new.

What is Invisible Shield

The Invisible Shield “Easy Clean” Glass Coating is a product that deserves attention and warrants serious consideration. It helps retain glass in a “like new” and pristine condition and should be a required feature on all residential and commercial glass. The Invisible Shield Glass Coating durably protects glass to make it remarkably water, soil, stain, mineral, corrosion, and scratch resistant. It reduces the impact to glass by exposure to environmental pollutants, reduces repairs, replacements and the ongoing cost of maintenance. The Invisible Shield protects glass through the construction process and for many years beyond, so it stays beautiful and transparent as it was intended. Fact: Invisible Shield reduces scratches up to 77.3%.

Why glass needs to be protected

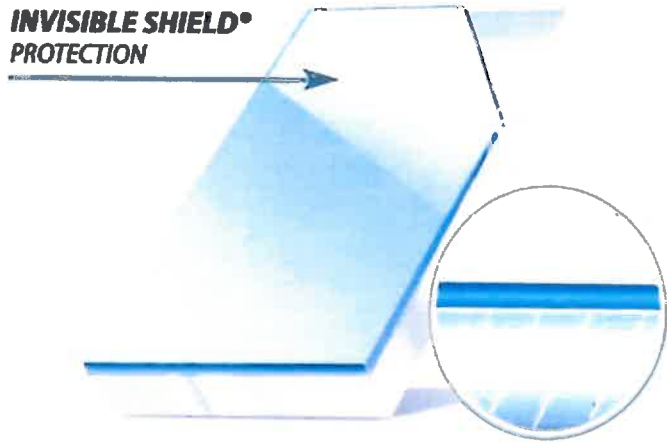
Glass is not corrosion resistant. Its very nature is hydrophilic or water, moisture, soil, and stain accepting. Its many irregular hills, peaks, and valleys trap and hold moisture, pollution and other inorganic contaminants that build-up if not maintained on a regular basis. The chemically active build-up attacks and weakens the glass causing stains, pitting etching and other permanent damage.

Invisible Shield has been proven most effective against the ongoing deterioration and degradation of residential and commercial glass.



How it work

**INVISIBLE SHIELD®
PROTECTION**



Invisible Shield durably seals the microscopic pores of the surface to actively repel water, soil & stains for easy removal.

Invisible Shield® Pro 15 is a complex polysiloxane coating that provides a **durable, monomolecular “barrier”** on the glass to protect it against wear and degradation resulting from use and environmental exposure. Invisible Shield Pro 15 **seals & protects glass to resist wear and provides continuous protection** under the most severe conditions. Invisible Shield Pro 15 preserves glass in an original “like new” and transparent condition and prevents the adhesion of inorganic soil & stains, scratching, pitting and corrosion. It **extends the aesthetic life of glass** including windows, walls & facades, partitions, balconies, balustrades, doors, ceilings, shower glass, mirrors, windshields, and photovoltaic panels for easier and less costly maintenance, reduced repairs & replacements.



Why Invisible Shield Glass Protection over other coatings

The Invisible Shield and New Pro 15 are the best glass coatings on the market. They represent the highest quality, performance and standard in protective coatings and have been widely used, tested and are proven to protect glass over many years in the field. The Invisible Shield Coatings keep the glass in a clean, clear and corrosion-free condition and are recommended by major glass manufactures, glaziers, distributors and end-users worldwide. Importantly, the Invisible Shield coatings are offered at competitive prices compared to other coatings, whose manufacturers market their products by charging high initial franchise fees, make exaggerated performance claims, over deceptive "fine print" warranties and charge exorbitant and unrealistic prices.

The New Invisible shield Pro 15 is a high performance, value-driven product that durable protects glass as low as pennies per square foot/meter for years of protection under the most extreme conditions. Please see the Invisible Shield and Pro 15 test data and 15 Year Performance Warranty.

The Invisible Shield Pro 15 offers up to 15 years limited warranty

Unelko guarantees that Invisible Shield Pro 15 - when used, applied and maintained as directed - will resist water, soil and stains on exterior glass for up to 15 years or longer from the date of application, and up to 3 years or longer from date of application on high contact/use interior glass such as shower enclosures, glass block or sand blasted glass. Invisible Shield Pro 15 can be infinitely renewed - for a lifetime of glass protection as and when needed - depending upon use and exposure, without removing the prior treatment or risk of buildup or discoloration.

ASK ABOUT OUR LIFETIME PERFORMANCE GUARANTEE for Shower Glass

The information contained in this catalogue is reliable and accurate, but Unelko makes no expressed warranty, representation or guarantee regarding the testing or information contained herein. Unelko assumes no liability arising out of the misapplication or suitability of its products or any of the products tested. The performance testing and specifications are believed to be reliable and accurate but have not all been verified by independent or third-party testing. It is recommended that the buyer conduct and complete its performance and compatibility testing of the products, alone and together with, or installed on any other end-use products.



Unelko Develops New “Architectural Grade” Pro 15 Glass Coating

The New Invisible Sheild Pro 15 Glass Coating represents a major breakthrough in glass coating technology. It is a proprietary formula, ultra-hydrophobic glass coating that was developed after years of research to ouer unmatched glass protection, durability, and performance. It should be specified by architects, builders, and owners for use on glass projects worldwide.

It was designed to be applied “in-line” by glass manufactures and covalently bonds to flat glass, quickly and eficiently, to preserve and maintain the glass and prevent costly corrosion, degradation and damage.



INVISIBLE SHIELD

ADVANCED SURFACE CARE PRODUCTS FOR EASIER & LESS COSTLY MAINTENANCE

Preserves High End/ High Contact Facility Surfaces



Hospitality & Healthcare



Travel Industry



Commercial Glass



Health Club & Spa



Public Facilities

CLEAN-X®
FAMILY OF PRODUCTS

*The Professional Choice for
“Easier Cleaning” and “Value Added” Surface Protection.*

INVISIBLE SHIELD

Complete Glass Restoration & Protection



Environmentally compliant/free of harsh chemicals

INVISIBLE SHIELD

Complete Glass Restoration & Protection

CLEAN

Glass Scrub Water Spot & Stain Remover

Ready to use - mildly abrasive, high-performance cream cleanser. Removes tough dirt, grime, minerals and other surfaces to a "like new" appearance. Safe on all glass, porcelain, ceramics, aluminium, and other metals.



Clean-X Lime Scale Remover

Superior acid based, spray bathroom cleaner & limescale remover liquid. Applications include the cleaning of all glass, porcelain, ceramics, stainless steel, aluminium, laminates and plastic surfaces.



Invisible Shield Pre-Cleaner/Restorer

Cuts through heavy stains and build up, cleans, degreases and descales older/stained glass prior to application of the Invisible shield Glass & Surface Coating. The product is a high performance restoration material. Versatile applications including cleaning/restoration of all glass, porcelain, ceramics, stainless steel, aluminium, laminates and plastics.



PROTECT

Invisible Shield Glass & Surface Coating

Standard ready to use, nanoscale hydrophobic glass & surface coating that is proven in the marketplace. It provides lasting protection on all glass, porcelain and ceramic surfaces to make them remarkably water, soil & stain repellent. Solvent-based and storage stable (unlimited shelf life). Safe on AR, laminated/insulated, and all other types of glass.



Sani-Shield 3 in 1 Surface Care

Cleans, deodorizes and protects in 1 step. Cleans organic soil & grime with the oxidizing power of hydrogen peroxide and applies an antimicrobial water, soil & stain resistant coating. It provides an invisible barrier on which odor-causing bacteria, mold & mildew will not grow and reduces time, labor & maintenance.



Invisible Shield Pro 15 Glass Coating

A new complex, high performance, nano scale hydrophobic glass coating with UV initiator technology. It provides superior water, soil & stain protection for glass, porcelain and ceramic surfaces that is unmatched worldwide. The Pro 15 prevents scratches up to 92.9% and applies an anti-stain and anti-corrosion barrier that is twice as durable as the standard Invisible Shield Glass & Surface Coating. Solvent-based, UV & IR curable and is storage stable (unlimited shelf life). Safe on all AR, laminated / insulated and other types glass. Offered with limited 15 year guarantee.



DUAL-ACTION

REPEL Glass & Surface Cleaner

Streak-free, 1-Step "Dual Action" Cleaning/Coating Technology. Low surfactant & VOC-free glass cleaning formula that offers easy "spray & wipe" glass cleaning & protection. Great on glass, porcelain, ceramics, stainless steel, stone, aluminium, laminates, acrylic and plastics for reduced soiling and maintenance. Ammonia & alcohol free - user and environmentally safe and storage stable. Makes glass almost self-cleaning.



Invisible Shield Repel 263

An aqueous, low surfactant & VOC-FREE glass coating technology that applies a hydrophobic coating with "value added" cleaning benefits. The patented technology also cleans glass and other surfaces while it bonds a durable nano-scale "invisible water, soil and stain repellent barrier" to the surface. Available in concentrate for use in automated glass washing systems. (mup manufacture use product)

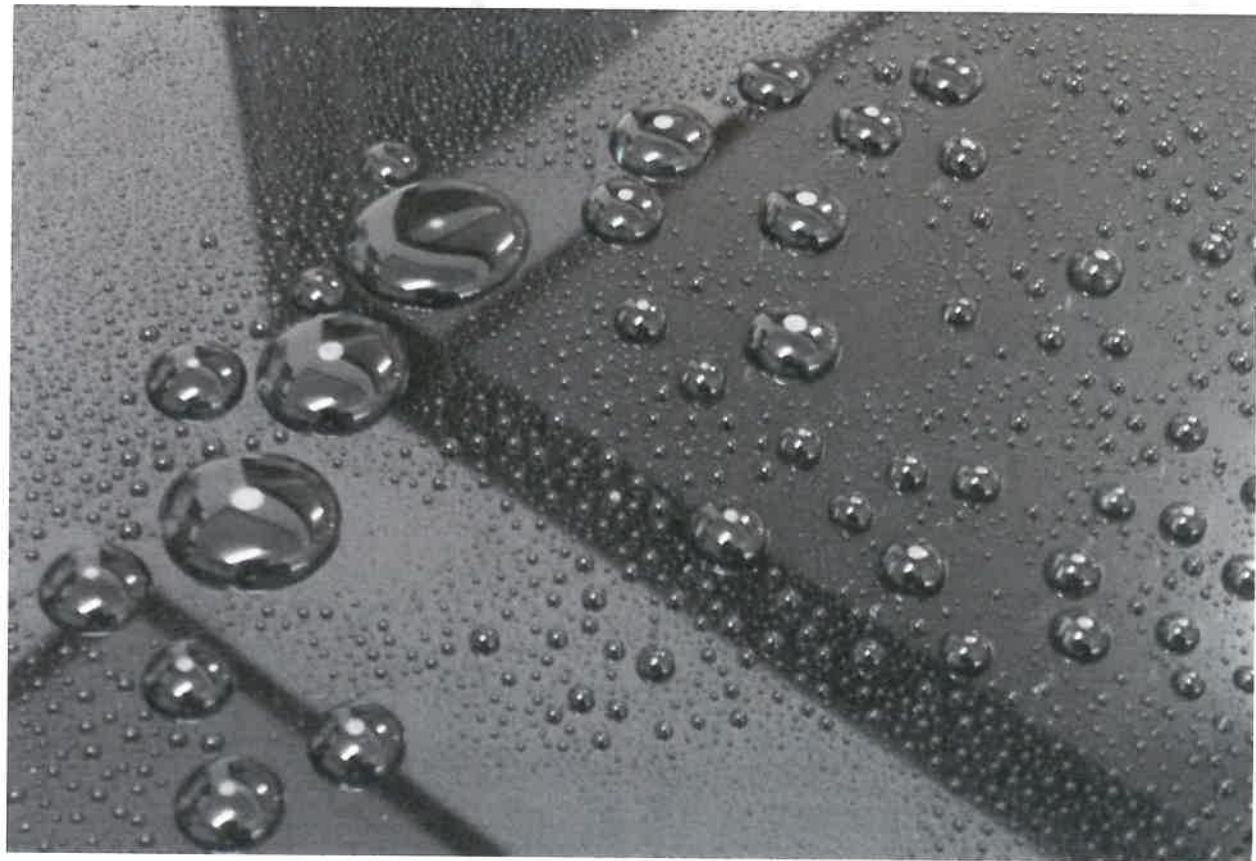


 Free of Harsh Chemicals

INVISIBLE SHIELD

What is Invisible Shield Nano-coating?

Invisible Shield is a nanocoating treatment that protects glass.

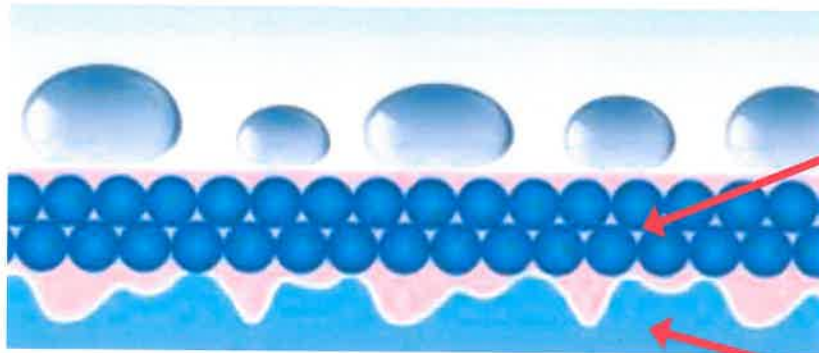


Works On: Façade Glass, Mirrors, Sand - Blasted/Acid- Etched Glass

INVISIBLE SHIELD

How Does Invisible Shield work?

Invisible Shield durably seals the glass.



Invisible Shield seals the pores of the glass from within

Normal glass always has microscopic imperfections.

Invisible Shield : Fills in the pores of glass from beneath the surface

What it Means : Prevents permanent staining

Why does Invisible Shield work?

Contaminants cannot penetrate glass treated by Invisible Shield



Before Treatment



After Treatment



**INVISIBLE
SHIELD**

Results



INVISIBLE SHIELD

Benefits of Invisible Shield Glass Protection

- » Lasting protection up to 15 years
- » UV, weather and abrasion resistant
- » Repels water, soil, minerals and contaminants
- » Makes glass 92.9% more scratch-resistant
- » Prevents unsightly stains, scratches and deposits
- » Easily applied and easily renewed
- » Improves glass appearance and clarity
- » Saves on works, repairs and replacements
- » Makes cleaning faster, easier and more efficient
- » Eliminates the need for harsh chemicals or abrasives
- » Saves time and labor, reducing cost of cleaning





Quantities of Invisible Shield Coatings

- » Complex solvent extended coatings - fast evaporating and drying
- » Fast acting, non curing and non-dusting - contains no waxes, plastics or resins
- » Ready to use - requires no mixing, dilution and catalysts
- » Has application on all glass, porcelain and ceramic surfaces
- » Indefinite shelf life - in storage stable containers
- » Invisible and non-distorting - monomolecular and optically clear
- » Spray or wipe-on treatments - offers versatility and ease of application
- » Coatings will not crack, peel or discolour
- » Multi-function - repels water, soil and stains - reduces friction and scratches

PROTECTED

UNPROTECTED



Summary of Invisible Shield Products

<u>Product</u>	<u>Purpose</u>	<u>Size</u>	<u>Approximate Coverage</u>
Glass Scrub	Special glass cleaning chemical to <u>RESTORE</u> glass before applying coating	16 fl oz	80 m2
Lime Scale Remover	Chemical cleaner that is used on NEW GLASS to remove manufacturing oils BEFORE applying nanocoating	1 Liter	100 m2
Pre-Cleaner & Restorer	Cleans, degreases and descales stained shower glass and other surfaces prior	1 Liter	100 m2
Invisible Shield	1-Step Nanocoating treatment to seal, protect, and enhance glass (covalent bonding).	1 Liter	120 m2

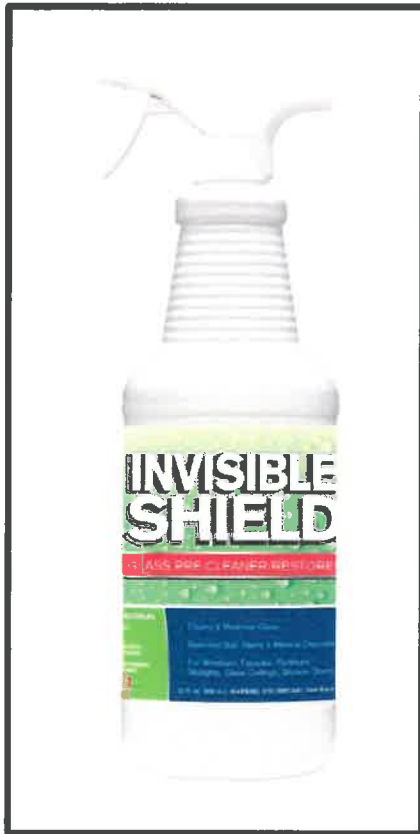


Summary of Invisible Shield Products

<u>Product</u>	<u>Purpose</u>	<u>Size</u>	<u>Approximate Coverage</u>
Sani-Shield	Cleans, deodorizes and protects in 1 step	1 Liter	110 m2
Invisible Shield Pro 15	Superior water, soild & stain protection for glass pocelain and ceramic surfaces that is unmatched	1 Liter	120 m2
Repel	Streak-free, 1-step "Dualaction" Cleaning/Coating Technology	1 Liter	110 m2
InvisibleShield Repel 263	Concentrate is designed to be used in automated glass washing systems	1 Liter	Varied

INVISIBLE SHIELD

CLEAN (Heavy Duty) : Pre-Cleaner/Restorer



Product Details

<u>Purpose:</u>	Cleaning Soiled glass from oil and other contaminants. Effective acid based liquid Pre-Cleaner and Restorer for all types of glass and other surfaces. Can be used prior to applying Invisible Shield Coatings
<u>Container Size:</u>	1 Liter
<u>Coverage:</u>	1000 sq ft (100 m2)

The Result:



Before



After

INVISIBLE SHIELD

CLEAN (Heavy Duty) : Glass Scrub



Product Details

<u>Purpose:</u>	Remove tough dirt, grime, minerals and other stains and pollutants
<u>Container Size:</u>	16 fl oz (480 mL)
<u>Coverage:</u>	860 sq ft (80 m2)

The Result:



Before



After

INVISIBLE SHIELD

PROTECT (Interior): Sani-Shield



Product Details

<u>Purpose:</u>	Provides an invisible barrier on which odor-causing bacteria, mold & mildew will not grow and reduces time, labor & maintenance. Available in concentrate & perfect for high volume use touch surfaces
<u>Container Size:</u>	1 Liter
<u>Coverage:</u>	1100 sq ft (110 m2)

The Result:



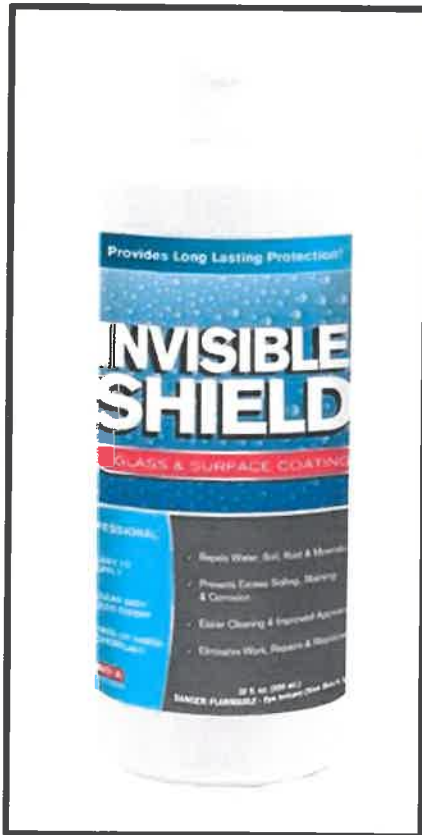
Protected



Unprotected

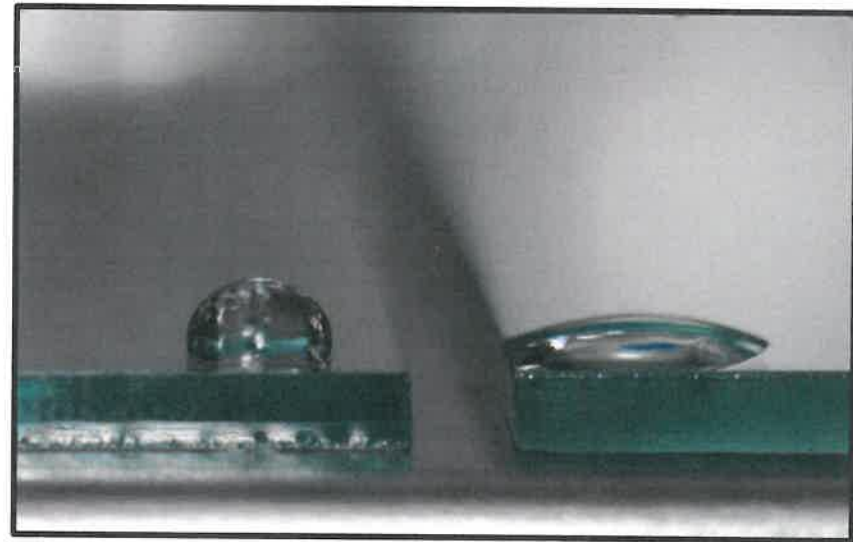
INVISIBLE SHIELD

PROTECT (Interior) : Invisible Shield



Product Details	
<u>Purpose:</u>	1-Step Nanocoating treatment to seal, protect, and enhance glass (covalent bonding).
<u>Container Size:</u>	1 Liter
<u>Coverage:</u>	A minimum of 1200 sq ft (120 m2)

The Result:



INVISIBLE SHIELD

PROTECT (Exterior) : Invisible Shield Pro15



Product Details	
<u>Purpose:</u>	A new complex, high performance, nano scale hydrophobic glass coating with UV initiator Technology.
<u>Container Size:</u>	1 Liter
<u>Coverage:</u>	A minimum of 1200 sq ft (120 m2)

The Result:



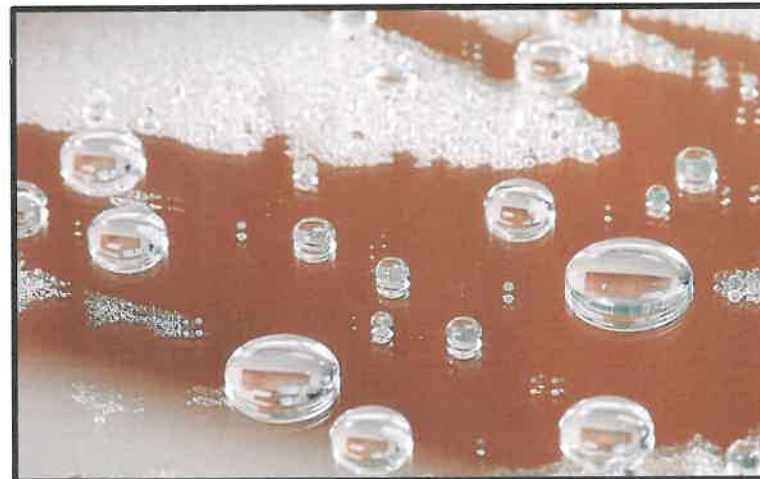
INVISIBLE SHIELD

DUAL-ACTION: Repel



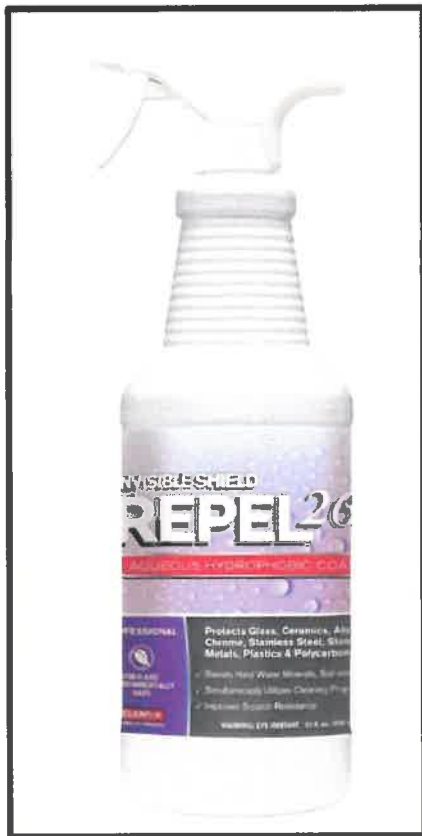
<u>Purpose:</u>	Streak-free, 1-step "Dual action" Cleaning/Coating Technology. Perfect for post Invisible Shield treatment to care for surfaces ongoing.
<u>Container Size:</u>	1 Liter
<u>Coverage:</u>	1100 sq ft (110 m2)

The Result:



INVISIBLE SHIELD

DUAL-ACTION: Repel263



<u>Purpose:</u>	Designed to be used in automated glass washing systems ouered in concentrate. VOC free, aqueous coating that also cleans glass.
<u>Container Size:</u>	1 Liter
<u>Coverage:</u>	Varied

The Result: (After Wash)



INVISIBLE SHIELD

Project References



AGCGlass; Southport. AU



NYC highline



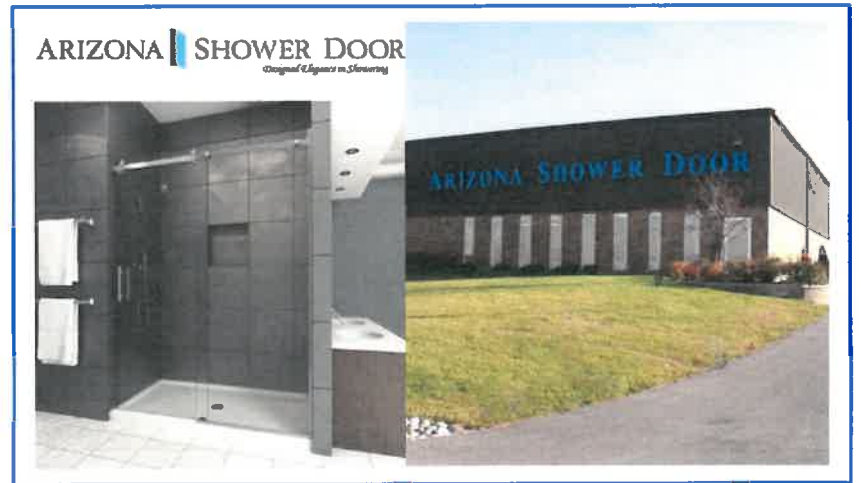
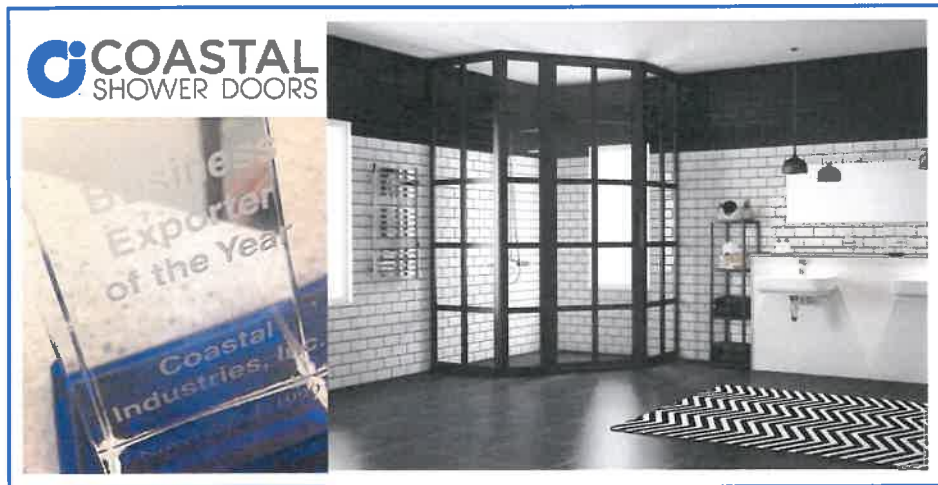
Smithsonian Institute D.C.



Apple Store, NYC



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U.S. ALUMINUM.
PART OF THE C.R. LAURENCE FAMILY OF COMPANIES



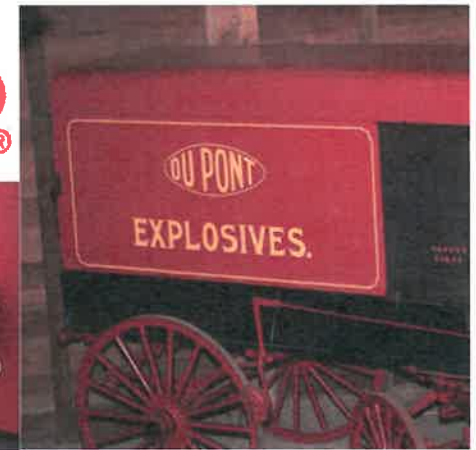
Trulite
GLASS & ALUMINUM SOLUTIONS



pyrex

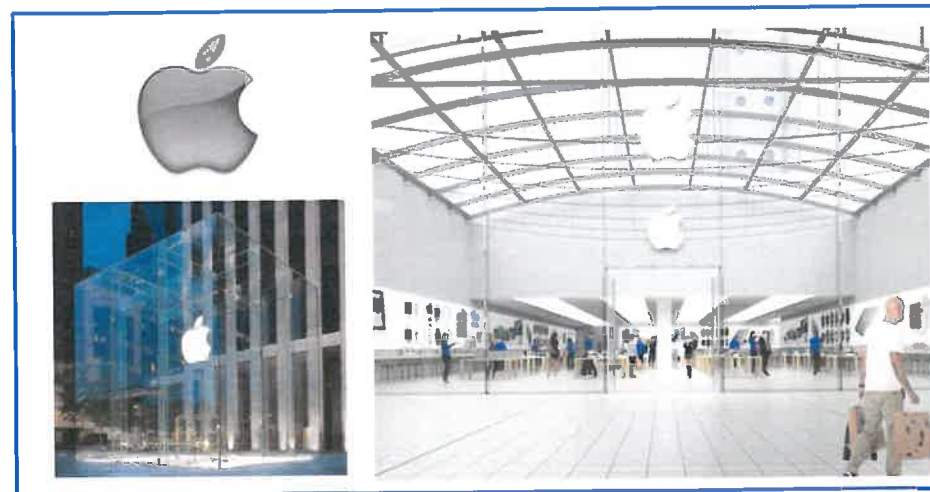
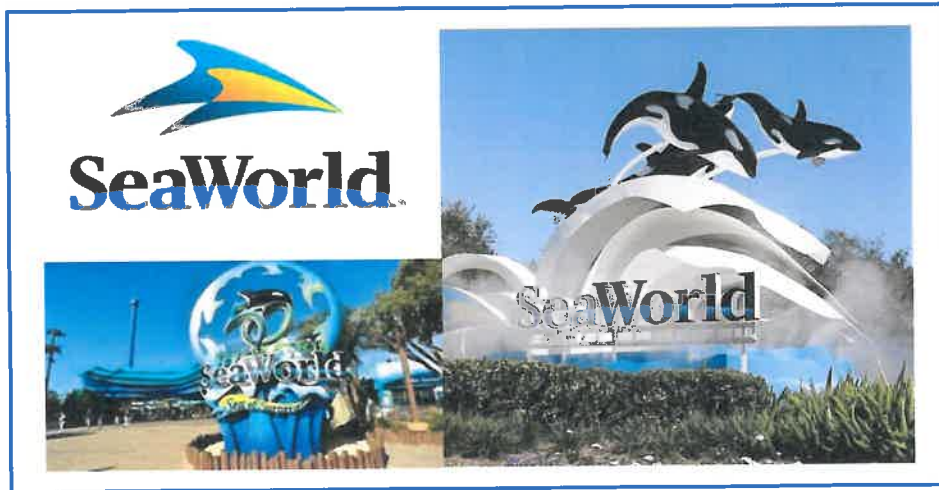


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Major Media - Enterprise Protected



**INVISIBLE
SHIELD**

Major Hotels Protected



INVISIBLE SHIELD

Major Manufacturers Protected



Authorized Retailer



INVISIBLE SHIELD

The Proof of Confidence

Test Analysis	Invisible Shield®	Invisible Shield® PRO 15	Notes
Reflection/Color	Pass	Pass	not affected on AGC low iron Glass or Uncoated Glass
Reflection/Glare	Pass	Pass	No Color Change or Impact on Glare
Chemical/Alkalinity	Pass	Pass	72 hour test
Coefficient of Friction/Angle	Pass	Pass	68% less friction- normal/friction force test
Min. Contact Angle – Dist. Water	Pass	Pass	108 to 110° ASU
Freeze/Thaw Stable	Pass	Pass	(15°C to > 20°C)/ 40 cycles
Humidity	Pass	Pass	ASTM D4585-Condensation/Chamber 100 hour test
Salt Spray	Pass	Pass	Over 100 hour test
Weather Meter	Pass	Pass	2000 hour test
Numerous Mechanical Abrasion	Pass	Pass	Taber Machine Use
Windshield Abrasion	Pass	Pass	500,000 wiper cycles
Algae/ Mineral Deposits	Pass	Pass	Non-Bonding
Salt Spray /Fog	Pass	Pass	ASTM B117-Corrosion Resistant
Migration	Pass	Pass	Non-migrating
Thermal Shock/IR Radiation	Pass	Pass	Autoclave chamber ISO 4802
Scratch-Resistant	Pass	Pass	77.3% More Scratch Resistant/200x magnification ASTM G99, E 2546, D7027
Glass Stress/Strength	Pass	Pass	Over 31.2% less stress on IS coated glass compared to uncoated
Light Transmission	Pass	Pass	No Distortion/Reduction to Optical Properties of Glass
Safety	Pass	Pass	Solvent extented. Eye irritant. Flammable.
Paint Abrasion/Graffiti	Pass	Pass	Permanent Ink/Marker
Pencil Test	Pass	Pass	6H - no visible wear

INVISIBLE SHIELD

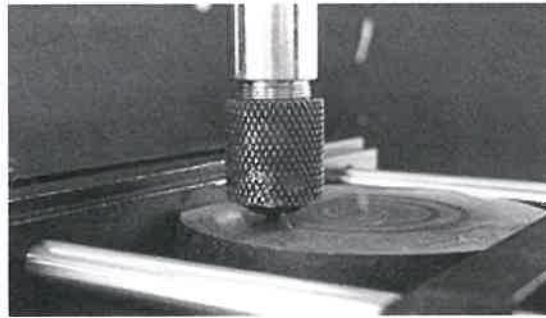
The Proof of Confidence



SALT SPRAY TEST

ASTM B117

Exposure 504 hours
Result Treated glass surface did not fade, peel, haze, chip, or yellow. Glass surface remained more water repellent than untreated glass surface



SCRATCH-RESISTANT TEST

ASTM G99

Result 92.9% More Scratch
Resistant /200x
magnification ASTM G99,
E 2546, D7027



WEATHER METER TEST

ASTM G115

Result Pass 2000 hour test

INVISIBLE SHIELD

The Proof of Confidence



**PHYSICAL
DURABILITY TEST**

ASTM D1044

Result -Pass
Paint Abrosion Test BS 3900
Mechanical Abrasion Test



**ALKALINITY /
CHEMICAL TEST**

ASTM D5146

Result -Pass
ASTM D5146 - pH test -
chemical durability
(ph 9 - 12)

INVISIBLE SHIELD

The Proof of Confidence



The criteria for BioDetek Laboratory procedure for ASTM tests conducted for Unelko Polymer Coating was Pass/Fail. Tests were reported on 03-09-2017.

Test	Method	
Chemical /Alkalinity Test	ASTM D5146- pH test- chemical durability (pH 9-12)	Pass
Coefficient of Friction Angle Test (60-70 less friction)	Slope roll	Pass
Paint Abrasion Test BS 3900	ASTM D1044 - Physical durability	Pass
Mechanical Abrasion Tests	ASTM D1044 Physical durability	Pass
Humidity Test (Pass/Fail and quantitative data)	ASTM D4585- Cleveland condensation test	Pass
Salt Spray Test 100 Hours	ASTM B117- Salt fog test—corrosion resistant	Pass
Algae/Mineral Deposit Test	ASTM customized	Pass
Migration Test (Zone of Repellency)	ASTM zone of inhibition	Pass
Thermal Shock /IR Radiation Test- Auto Clave ISO 4802	ASTM F520	Pass
Freeze Thaw Test (-15C to Plus 20C) 20 cycles	ASTM D2243	Pass
Weather Meter Test (2000 hours)	ASTM G155	Pass

Absar Alum, Ph.D.
Managing Director
BioDetek Laboratory



Contact Angle Measurements 8/21/12

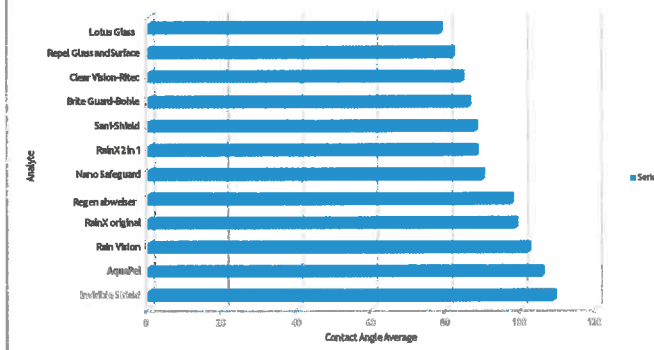
Analyte	Invisible Shield	Repel Glass and Surface	Lotus Glass	Sani-Shield
Test 1	100.1	77.4	70.8	66.7
Test 2	107.2	78.8	70	65.6
Test 3	106.8	80.8	73.5	67.3
Test 4	106.3	81.6	73.2	61.4
Test 5	106.3	82.1	80.3	63.7
Test 6	107.3	82.7	80.1	67.4
Test 7	106.8	82.8	80.2	61.8
Test 8	107	83.3	79.8	65.3
Average	106.3	81.3	78.1	67.4

This data was collected using the Kruss DSA-20 contact angle goniometer which was professionally calibrated prior to use. All analyses were applied per manufacturer's instructions to identical hydrophobic glass microscope slides. Each test consisted of a 4 microliter drop of deionized, ultra pure water in the middle of the slide. Contact angle was measured using Kruss computer software. The control, an untreated glass slide, produced no measurable contact angle or a contact of zero degrees.

Analyte	Regen abwasser	RainX 2 in 1	RainX original	Brite Guard-Bohle	AquaPel	Rain Vision	Clear/Vision-Riboc	Nano Safeguard
Test 1	102	84.7	103.2	85.7	104.3	103.1	88.7	88.5
Test 2	98.8	82.8	104.8	82	111.7	100.3	87.8	83.8
Test 3	98.4	85.8	103.5	82.1	106.7	100.1	83.4	87.8
Test 4	83.4	87.8	87.8	85.4	103.4	102.3	83	84.8
Test 5	87	87.1	81.8	88.1	104.2	100.2	82.4	84.5
Test 6	84.7	88.8	85.2	88.4	102.3	102	78	87.7
Test 7	88.4	88.5	81.6	83.7	102.3	101.5	74	87
Test 8	101.3	83.9	88.2	81.8	88.8	102.8	83.1	82.4
Average	96.9	87.7	98	85.6	103.1	101.5	83.8	89.3

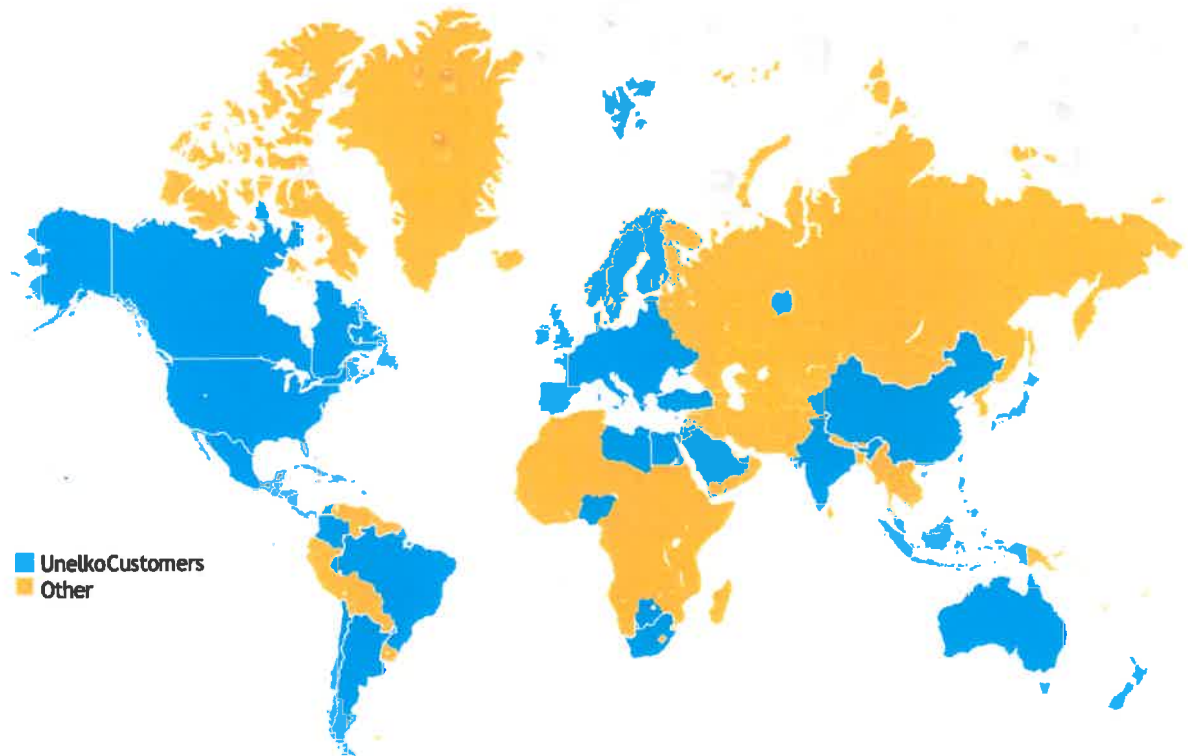


Contact Angle Measurements



INVISIBLE SHIELD

The Proof of Confidence



“United States Patent” Invisible Shield has Patents and Patents-Pending over worldwide.

-(U.S. 3,578,488 & 3,579,540, U.K. 1,344,661 and Japan 805,376 & 805,377)

-(U.S. 6,432,181, U.S. 6,676,733, U.S. 6,994,890 and 7,704,313 and 7,754,004)

INDUSTRY BEST
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INVISIBLE SHIELD

NANO-SCALE GLASS COATING
with UV INITIATOR TECHNOLOGY

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