Johnson® Window Films

Manufactured by Johnson Laminating & Coating, Inc.
Carson, California • USA

www.johnsonwindowfilms.com

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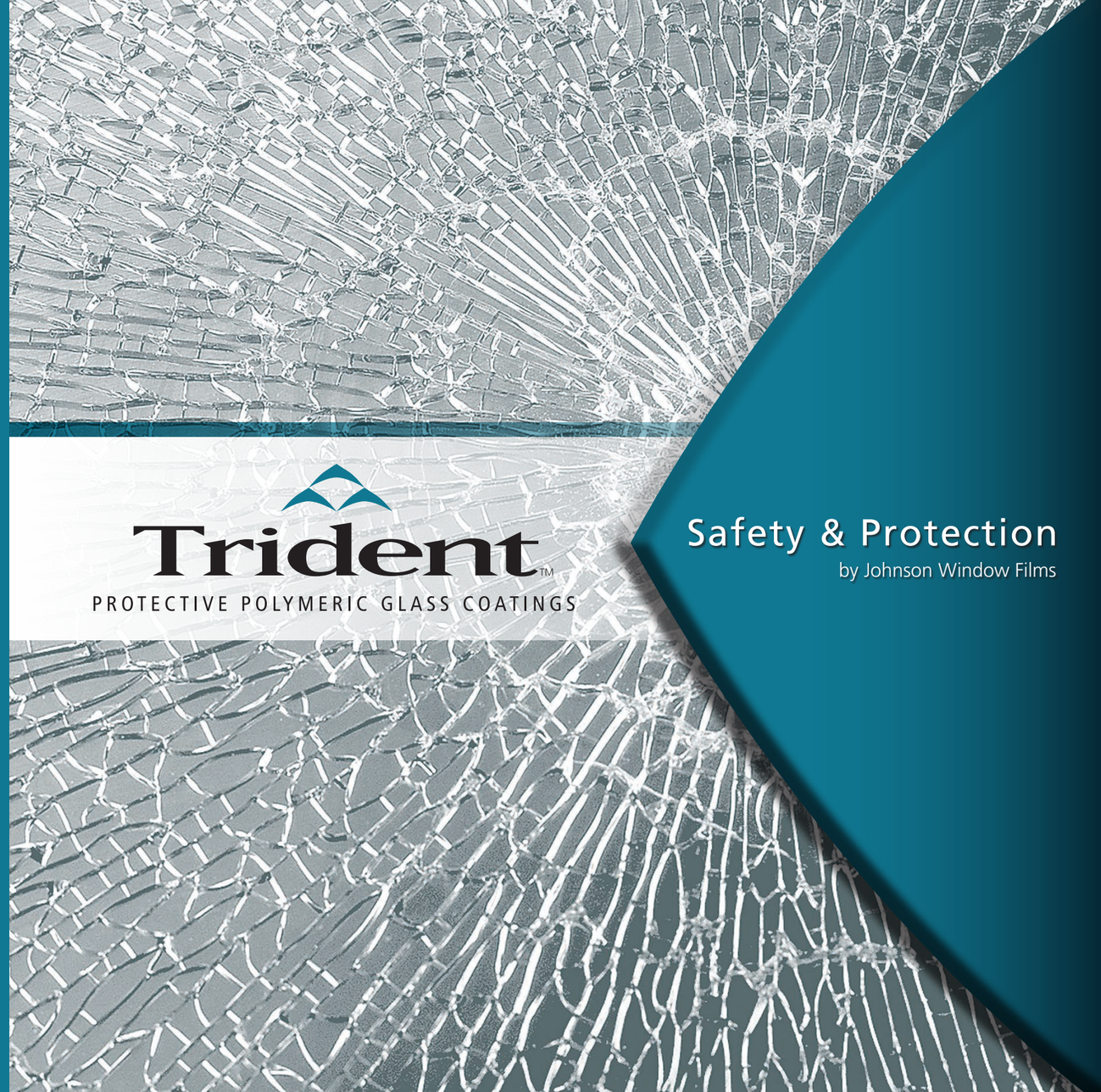


Trident™

PROTECTIVE POLYMERIC GLASS COATINGS

Safety & Protection

by Johnson Window Films

Trident™
PROTECTIVE POLYMERIC GLASS COATINGS

Protect Your World

Glass is one of the most common building materials used today. When left unprotected, glass can pose a real threat. It can break into dangerous shards

leading to serious injuries such as piercing cuts & lacerations that can be fatal. The potential danger of glass breakage is often overlooked, even though it is present in our everyday lives.

SECURITY SPECIFICATIONS & TESTS

										IMPACT TESTS					COMBUSTION TESTS ASTM E84-98 Surface Burning Test			
FILM TYPE	FILM GAUGE	PLIES	VISIBLE LIGHT TRANSMISSION	UV LIGHT REDUCTION	ASTM D882 TENSILE AT BREAK	ASTM D3330 PEEL STRENGTH	ASTM D2582 AVG. PUNCTURE STRENGTH	ASTM D1044 % HAZE CHANGE	ANSI Z97.1 2004 TEST	16 CFR 1201 US GOV. STANDARD TEST	BS 6206: 1981	EN12600 PENDULUM TEST	SMOKE DENSITY	FLAME SPREAD RATING-S	TIME TO IGNITE (seconds)	FLAME FRONT (mins. burn)	RATE OF BURNING (inches per minute)
SEC 02	0.002	1	88%	98%	50 pli	>5lbs/in.	>30 lbs	<4.4%	–	–	–	–	20	NFPA Class A•UBC Class 1	205	1	0.1
SEC 04	0.004	1	88%	98%	100 pli	>5lbs/in.	>65 lbs	<4.4%	Class B	CAT I	Class B	Class 2B	20	NFPA Class A•UBC Class 1	205	1	0.1
SEC 07	0.007	1	87%	98%	175 pli	>5lbs/in.	>110 lbs	<4.4%	Class B	CAT I	Class A	Class 2B	20	NFPA Class A•UBC Class 1	205	1	0.1
SEC 08	0.008	2	87%	99%	200 pli	>5lbs/in.	>130 lbs	<4.4%	Class A	CAT II	Class A	Class 2B	35	NFPA Class A•UBC Class 1	92	2	0.1
SEC 11	0.011	2	86%	99%	275 pli	>5lbs/in.	>175 lbs	<4.4%	Class A	CAT II	Class A	Class 1B	35	NFPA Class A•UBC Class 1	92	2	0.1
SEC 12	0.012	3	86%	99%	300 pli	>5lbs/in.	>215 lbs	<4.4%	Class A	CAT II	Class A	Class 1B	35	NFPA Class A•UBC Class 1	92	2	0.1
S4DN35	0.005	2	37%	99%	100 pli	>5lbs/in.	>65 lbs	<4.4%	Class B	CAT I	Class B	Class 2B	20	NFPA Class A•UBC Class 1	205	1	0.1
S4DN20	0.005	2	22%	99%	100 pli	>5lbs/in.	>65 lbs	<4.4%	Class B	CAT I	Class B	Class 2B	20	NFPA Class A•UBC Class 1	205	1	0.1
S4SS35	0.005	2	37%	99%	100 pli	>5lbs/in.	>65 lbs	<4.4%	Class B	CAT I	Class B	Class 2B	20	NFPA Class A•UBC Class 1	205	1	0.1
S4SS20	0.005	2	22%	99%	100 pli	>5lbs/in.	>65 lbs	<4.4%	Class B	CAT I	Class B	Class 2B	20	NFPA Class A•UBC Class 1	205	1	0.1

SOLAR SPECIFICATIONS

FILM TYPE	SOLAR ENERGY REJECTION	VISIBLE LIGHT REFLECTANCE (exterior)	VISIBLE LIGHT REFLECTANCE (interior)	SOLAR ABSORPTION	SOLAR REFLECTANCE	SOLAR TRANSMISSION	SHADING COEFFICIENT	SOLAR HEAT GAIN COEFFICIENT	U-FACTOR NFRC
CLEAR GLASS	18%	8%	8%	16%	7%	77%	.94	.82	1.03
S4DN35	50%	17%	15%	51%	14%	35%	.58	.50	1.04
S4DN20	62%	26%	26%	58%	22%	20%	.44	.38	1.03
S4SS35	60%	33%	33%	41%	30%	29%	.47	.40	0.97
S4SS20	72%	50%	51%	41%	43%	16%	.32	.28	0.96

Physical and solar specifications represent film mounted to 1/4 inch (6mm) clear glass.
Tests, equipment and methods are in accordance with ASTM, ANSI and NFRC standards. Values expressed hereof are typical and provided for comparative purposes only.

All Trident Films are protected by CST™ scratch resistant hardcoat.

FIRE SAFETY PROPERTIES (Applies to all JWF Trident films)

ASTM E84
This fire-test response standard for the comparative surface burning behavior of building materials is applicable to exposed surfaces such as coated windows. This test is conducted in a rectangular fire observation chamber, a tunnel roughly 25 ft. long, which provides a linear area for fire and smoke to propagate after ignition and be analyzed. The purpose of this test is to determine the relative burning behavior of polyester film by observing combustion characteristics that are defined, such as: Smoke Generation, Time to Ignite, Rate of Burn and Flame Front.

SMOKE DENSITY
Used for characterization of smoke density that may be generated by the materials upon exposure to heat and flame under fire conditions.

TIME TO IGNITE
Measures the time it takes for the film to catch fire depending on the temperatures it's exposed to.

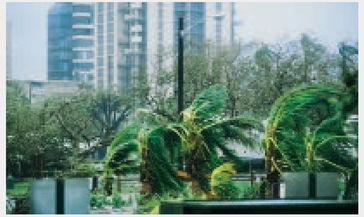
RATE OF BURN
The speed at which the film burns once ignited.

FLAME FRONT
The narrow combustion zone (only several microns thick) where the chemical reaction in certain flames occur.

PERSONAL SAFETY GLAZING	BLAST HAZARD MITIGATION
ANSI Z97.1 2004 TEST CPSCa 16 CFR 1201 BS 6206: 1981 JIS A5759 GB 9962-88 EN 12600	GSA Glazing Systems Subject to Airblast Loading
PHYSICAL TESTING	
ASTM 1929 (Self-ignition temp.) ASTM D 635 (Rate of Burn) ASTM E 84 (Surface Burning char.) ASTM E 162 (Surface Flammability) ASTM D 1922 / 1004 (Tear Resistance)	ASTM D 1044 / 1003 (Surface Abrasion test) ASTM D 882 (Tensile Strength) ASTM D 3330 (Peel Strength) ASTM D 4830 (Puncture Strength) ASTM D 662 (Smoke O.D.)

All Trident films conform to and have been tested to the above internationally recognized standards.

Trident protective films offer increased levels of safety and peace of mind. Made with custom acrylic bonding technology, these extra thick films are anchored directly to the glass surface providing long-term protection by rigorously holding glass in place if broken. This "safety net" barrier greatly reduces the chance of injury from dangerous glass shards and protects window treatments and furnishings from costly property damage.



Trident films are professionally applied to the windows of homes, commercial buildings, retail stores, government facilities and even automobiles. They are safe to install on many types of glass at a fraction of the cost of upgrading window systems. Installation is convenient and non-intrusive to most work environments. Manufactured in the USA, Trident films are available in multiple layers and strengths.

TRIDENT FILMS:

- Available in 2–12 mil optically clear and 4 mil solar control choices
- Blocks 98% or more of the harmful UV rays that pose health risks and cause premature fading

ACCIDENTS

Everyday, accidents cause glass breakage in homes and buildings worldwide. Johnson Window Films' Trident plays an important role in preventing property damage and serious injuries. In the home, simple accidents can turn into life threatening incidents such as a child running through a sliding glass door, a stone thrown from a lawn mower or a ball smashing though a plate glass window. When ordinary glass is broken, protective films act as a powerful net holding glass fragments to the film and shielding the surrounding area from harm. With the film and glass intact, clean-up takes less time and reduces the chance of injury.

CRIMINAL ACTS

Acts of crime can also pose threats to our personal safety and property. An effective deterrent to thieves and intruders, Trident films work by holding smashed glass panes in place, preventing easy access. Once an alarm system is triggered, every second counts. Protective window film acts as a barrier and can allow the sufficient delay needed to catch a thief or stop a crime.

STORMS

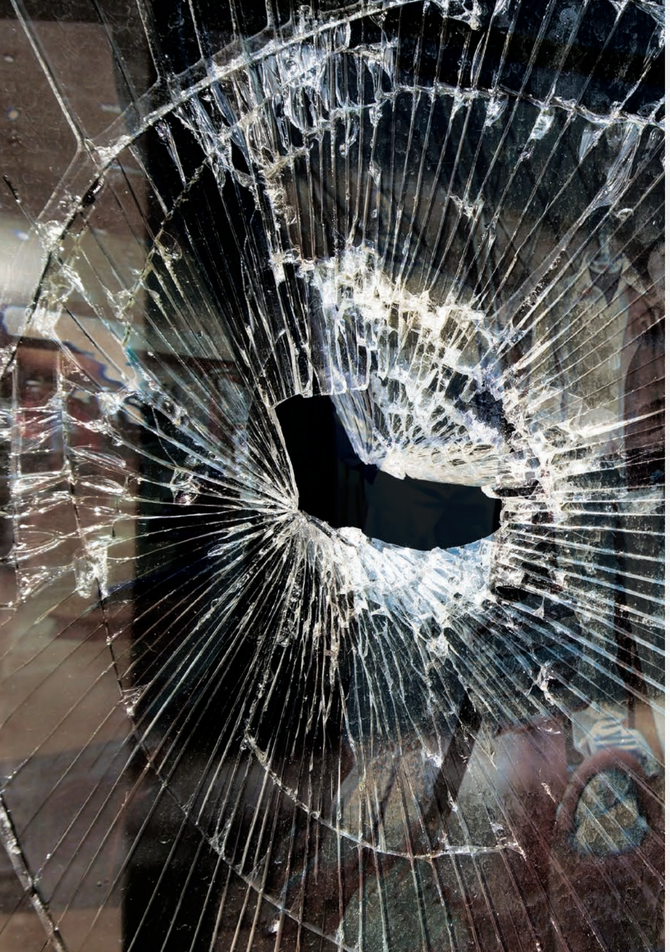
Extreme weather causes major structural damage to buildings and can be potentially lethal. Research indicates that protective films can save lives and reduce property damage by mitigating the hazards of shattered unprotected glass. Trident works when you need it most, acting as a shield against wind and rain and prevents broken glass from becoming dangerous flying shards.

EARTHQUAKES

Each year seismic activity is reported and tracked all over the world. Earthquakes cause buildings to shake and twist. This motion can shatter windows in their frames creating hazardous conditions during and after the earthquake. Studies confirm that windows with safety film installed substantially reduce injuries suffered from broken glass. Professional installation coupled with an anchoring retention system will help provide increased protection during and after a seismic event.

EXPLOSIONS

Whether from the efforts of terrorists or an industrial accident, explosions can pose a threat to glass on site and cause damage to property located miles away. Trident's thickest films can offer protection in the event of these devastating catastrophies. Tests confirm that thick film with multi-ply construction and ultra strong adhesive bonding can hold window glass together when hit by the concussive blast created by an explosion. No window film can stop an explosion, but protective window films can help increase survivability while decreasing injuries broken glass can cause. When installed in conjunction with an anchoring retention system, these thicker protective films are an excellent defense for glass hazard mitigation.



Protect Your Glass Against:

ACCIDENTS

CRIMINAL ACTS

STORMS

EARTHQUAKES

EXPLOSIONS

Trident
PROTECTIVE POLYMERIC GLASS COATINGS

BENEFITS

- Glass hazard protection
- Long-lasting durability
- Blocks 98% or more of harmful UV rays
- Optically clear
- Protected by CST™ scratch-resistant hard coat
- Backed by a comprehensive factory warranty

Johnson Window Films offers a full line of highly effective Automotive, Commercial, Residential and Protective films.