## SECURITY SPECIFICATIONS & TESTS

### FIRE SAFETY PROPERTIES

<table>
<thead>
<tr>
<th>FIREFRONT</th>
<th>TIME TO IGNITE</th>
<th>RATE OF BURN</th>
<th>SMOKE DENSITY</th>
<th>CLEAR GLASS</th>
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</thead>
<tbody>
<tr>
<td>SEC 02</td>
<td>0.002</td>
<td>1</td>
<td>85%</td>
<td>98%</td>
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<tr>
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<td>85%</td>
<td>98%</td>
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<tr>
<td>S4D020</td>
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<td>2</td>
<td>85%</td>
<td>98%</td>
</tr>
<tr>
<td>S4S20</td>
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<td>2</td>
<td>85%</td>
<td>98%</td>
</tr>
<tr>
<td>S4S35</td>
<td>0.095</td>
<td>2</td>
<td>85%</td>
<td>98%</td>
</tr>
</tbody>
</table>

### SOLAR SPECIFICATIONS

<table>
<thead>
<tr>
<th>FILM TYPE</th>
<th>TENSILE AT BREAK</th>
<th>PEEL STRENGTH</th>
<th>PUNCTURE STRENGTH</th>
<th>REFLECTANCE</th>
<th>SOLAR ABSORPTION</th>
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<tr>
<td>S4DN20</td>
<td>10.8</td>
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<td>1.04</td>
<td>0.1</td>
<td>0.47</td>
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<tr>
<td>S4DN35</td>
<td>10.3</td>
<td>0.94</td>
<td>1.04</td>
<td>0.1</td>
<td>0.47</td>
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<tr>
<td>S4SS20</td>
<td>11.5</td>
<td>0.94</td>
<td>1.04</td>
<td>0.1</td>
<td>0.47</td>
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<tr>
<td>S4SS35</td>
<td>11.5</td>
<td>0.94</td>
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<td>0.1</td>
<td>0.47</td>
</tr>
</tbody>
</table>

### COMBUSTION TESTS

- **FIRE SAFETY PROPERTIES**
  - **FIREFRONT**
  - **TIME TO IGNITE** (seconds)
  - **RATE OF BURN** (inches/second)
  - **SMOKE DENSITY**

- **CLEAR GLASS**

- **SOLAR SPECIFICATIONS**
  - **TENSILE AT BREAK**
  - **PEEL STRENGTH**
  - **PUNCTURE STRENGTH**
  - **REFLECTANCE**
  - **SOLAR ABSORPTION**

- **COMBUSTION TESTS**
  - **ASTM D3330** (Peel Strength)
  - **ASTM D882** (Tensile Strength)
  - **ASTM D1044** (Surface Abrasion test)
  - **ASTM D2582 AVG.** (ASTM E1922 / 1924 (Tear Resistance))
  - **ASTM D662 (Smoke O.D.)**
  - **ASTM E84-98 Surface Burning Test**
  - **ASTM D1922 / 1924 (Tear Resistance)**
  - **ASTM D635 (Rate of Burn)**
  - **ASTM D1044 / 1003 (Surface Abrasion test)**
  - **ASTM E84-98 Surface Burning Test**
  - **ASTM D 662 (Smoke O.D.)**
  - **ASTM D 4830 (Puncture Strength)**
  - **ASTM D 882 (Tensile Strength)**
  - **ASTM D 1044 / 1003 (Surface Abrasion test)**
  - **ASTM E84-98 Surface Burning Test**
  - **ASTM D 662 (Smoke O.D.)**
  - **ASTM D 4830 (Puncture Strength)**
  - **ASTM D 882 (Tensile Strength)**
  - **ASTM D 1044 / 1003 (Surface Abrasion test)**

- **PHYSICAL TESTING**
  - **PENDULUM TEST**
  - **U-FACTOR**
  - **STANDARD TEST**
  - **FIRE SAFETY PROPERTIES**
  - **Blast Hazard Mitigation**

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**Physical and solar specifications represent film mounted to 1/4 inch thick clear glass.**

Physical and solar specifications are in accordance with ASTM, NFRC and NFPA standards. Values presented herein are typical and provided for comparative purposes only.

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

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**Fire Safety Properties**

Narrow combustion zone (only several microns thick) where the chemical reaction in certain flames occurs.

**Fire Front**

The speed at which the film burns once ignited.

**Rate of Burn**

The time it takes for the film to reach its maximum rate of burning.

**Smoke Density**

The density of smoke at the end of the test.

**Fire Safety Tests**

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**Physical Properties**

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  - **Physical Properties**

**Blaze Mitigation**

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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 often overlooked, even though it is present in our everyday lives.

- **Protect Your World**
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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 offers 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

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 catastrophes. 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.

Information at a Glance
All Trident protective films are...
• 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.

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.
Protect Your Glass Against:
ACCIDENTS
CRIMINAL ACTS
STORMS
EARTHQUAKES
EXPLOSIONS

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.