

Scotchshield Ultra Safety and Security Window Films

Product Specification Guideline- S20SIAR400

- 1.0 Scope:** 1.1 This specification is for an abrasion resistant, optically clear micro-layered, metallized, safety and security window film called 3M Scotchshield **S20SIAR400**. Once applied to the interior window surface, it will provide shatter resistance protection, reduce transmitted ultra-violet rays and infrared radiation. The film shall be manufactured using micro-layered technology to provide superior tear and penetration resistance and improve personal/property safety from flying shards of glass in the event of glass breakage. It will also deter “smash and grab” crime.
- 2.0 Reference:** 2.1 The American National Standards Institute ANSI Z97.1 Specification for Safety Glazing used in buildings:
- Sec. 5.1 Impact Test: 100 ft. lbs. (135J) Minimum
 - Sec. 5.3 Intensified Weathering using Carbon Arc.
- 2.2 Consumer Product Safety Commission Publications CPSC 16 CFR, for Category I and II used in buildings:
- Sec. 16 CFR Impact Test: 150 ft. lbs. (202J) Minimum, Category I.
400 ft. lbs. (538J) Maximum, Category II.
 - Sec. 1201.4 Accelerated Weathering using Xenon Lamp.
- 2.3 The American Society for Testing and Materials (ASTM) Publications:
- 2.3.1 ASTM D882-95a Tensile Properties of Plastic Film and Sheeting - Tensile, Elongation, Break and Flexibility (Young’s Modulus).
 - 2.3.2 ASTM D1004-94a Initial Tear Resistance of Plastic Film and Sheeting - Initial Force to Tear (Graves Area).
 - 2.3.3 ASTM D2582-93 Puncture-Propagation Tear Resistance of Plastic Film and Sheeting.
 - 2.3.4 ASTM E903 Standard Test Method of Solar Absorbance, Reflectance and Transmittance of Materials using Integrating Spheres.
 - 2.3.5 ASTM D1044 Standard Method of Test for Resistance of Transparent Plastics to Surface Abrasion.
 - 2.3.6 ASTM E84-94 Surface Burn Characteristics of Building Materials.

3.0 Materials: 3.1 Optically clear polyester safety and security window film with metallized coating. Factory applied adhesives, abrasion resistant coating and release liner.

SPEC NOTE: All of the following attributes or physical properties must be considered together, since they define the overall performance of a given film.

SPEC NOTE: To enhance performance, use optional anchoring system to secure the window film to the frame.

3.2	Number of Laminated Micro Layers	26 layers
3.3	Film Thickness (inches and mm)	0.004 inches nominal (0.10mm)
3.4	Nominal Tensile Strength (ASTM D882-95a in PSI)	30,000 PSI (2.07×10^8 Pa)
3.5	Nominal Elongation (ASTM D882-95a in stretch %)	140%
3.6	Nominal Break Strength (ASTM D882-95a in lbs./inch width)	120 lbs. (21.4 kg/cm)
3.7	Minimum Young's Modulus (ASTM D882-95a in PSI)	>500k PSI ($>3.45 \times 10^9$ Pa)
3.8	Minimum Graves Area Tear (ASTM D1004-94a in lbs.%)	>780 lbs.% (>355 kg %)
3.9	Minimum Puncture Propagation Tear (ASTM D2582-93 in lbs.)	7.5 lbs. (.32 kg)
3.10	Safety Impact Test (ANSI Z97.1)	Unlimited 1/8"-1/4" (3mm-6mm) glass
3.11	Safety Impact Test (CPSC 16 CFR)	Category II 400 ft. lbs. 1/8"-1/4" (3mm-6mm)
3.12	Adhesive Peel Strength (ANSI Z97.1)	>2,500 gr/in. (>984 gr cm)
3.13	Adhesive after Intensified Weathering (CPSC 1201.4)	>3,500 gr/in. (>1,378 gr/cm)
3.14	Abrasion Resistance Test (ASTM D-1044 in % change of haze)	<6%
3.15	Surface Burn Characteristics (ASTM E84)	Class A Interior Use
3.16	Flame Spread Index, Smoke Developed (ASTM E84)	Class A Interior Use
3.17	Shading Co-efficient on Single Clear _" (6mm) Glass	0.26
3.18	Visible Light Reflected on Single Clear _" (6mm) Glass	58%
3.19	Visible Light Transmitted on Single Clear _" (6mm) Glass	19%
3.20	Glare Reduction on Single Clear _" (6mm) Glass	78%
3.21	UV Blocked on Single Clear _" (6mm) Glass	99%

4.0 Warranty 4.1 Manufacturer's warranty for a period of at least 10 years, to include:

4.1.1 Maintain adhesion properties without blistering, bubbling or delamination from the glass.

4.1.2 Maintain appearance without discoloration.

4.1.3 In the event the product is found defective under above points, the seller will provide removal and reapplication free of charge.* See warranty for detail

5.0 Manufacturer: Film to be manufactured by: 3M Specified Construction Products Department
3M Center Building 225-4S-08
St. Paul, MN 55144-1000

6.0 Applicator: Window films shall be installed by an authorized 3M Dealer/Applicator to obtain 3M warranties. Allow up to 30 days before washing windows.

7.0 Application: According to the Manufacturer's instructions.