

3M Ultra Safety and Security Window Films

Product Specification - ULTRA600

1.0 Scope:

This specification is for an abrasion resistant, optically clear micro-layered, safety and security window film manufactured by 3M called 3M **ULTRA600**. Once applied to the interior window surface, it will provide shatter resistance protection and reduce transmitted ultra-violet rays. 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 and bomb blast. It will also help deter “smash and grab” crime.

2.0 Performance Specification:

The 3M ULTRA600 Safety and Security film will meet all of the following performance specifications.

- 2.1 Number of Laminated Micro Layers **42 layers**
- 2.2 Film Thickness (inches and mm) **0.006 inches nominal (0.152mm)**
- 2.3 Nominal Tensile Strength (ASTM D882-95a in PSI) **30,000 PSI (2.07 x 10⁸ Pa)**
- 2.4 Nominal Elongation (ASTM D882-95a in stretch %) **140%**
- 2.5 Nominal Break Strength (ASTM D882-95a in lbs./inch width) **180 lbs. (32.1 kg/cm)**
- 2.6 Minimum Young's Modulus (ASTM D882-95a in PSI) **>500k PSI (>3.45 x 10⁹ Pa)**
- 2.7 Minimum Graves Area Tear (ASTM D1004-94a in lbs.%) **>1150 lbs.% (>523 kg %)**
- 2.8 Minimum Puncture Propagation Tear (ASTM D2582-93 in lbs.) **18.5 lbs. (8.4 kg)**
- 2.9 Safety Impact Test (ANSI Z97.1) **unlimited on 1/8"-1/4" (3mm-6mm) glass**
- 2.10 Safety Impact Test (CPSC 16 CFR) **Category II 400 ft. lbs. 1/8"-1/4 (3mm-6mm)**
- 2.11 Safety Impact Test (AS/NZS 2208) **'Grade A' Impact Safety (3mm-6mm)**
- 2.12 Large Scale Explosive Open-air Test (ASTM F1642-96) **Level C, 3b or better**
- 2.13 Adhesive Peel Strength (ANSI Z97.1) **>2,500 gr/in. ((>984 gr/cm)**
- 2.14 Adhesive after Intensified Weathering (CPSC 1201.4) **>3,500 gr/ in. (>1,378 gr/cm)**
- 2.15 Abrasion Resistance Test (ASTM D-1044 in % change of haze) **<6%**
- 2.16 Surface Burn Characteristics (ASTM E84) **Class A Interior Use**
- 2.17 Flame Spread Index, Smoke Developed (ASTM E84) **Class A interior Use**
- 2.18 Visible Light Reflected on Single Clear 1/4" (6mm) Glass **10%**
- 2.19 Visible Light Transmitted on Single Clear 1/4" (6mm) Glass **84%**
- 2.20 UV Blocked on Single Clear 1/4" (6mm) Glass **99%**

3.0 Application:

The 3M ULTRA600 Safety and Security film will be applied by a 3M licensed Installer to 3M guidelines.

4.0 Warranty

When applied by a 3M licensed installer 3M will warrant the product for a period of 12 years, and will include:

- 4.1 Maintain adhesion properties without blistering, bubbling or delaminating from the glass.
- 4.2 Maintain appearance without discoloration.
- 4.3 In the event the product is found defective under above points, the seller will provide removal and reapplication free of charge. * See warranty for details.

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