

LCL-2100-XSR

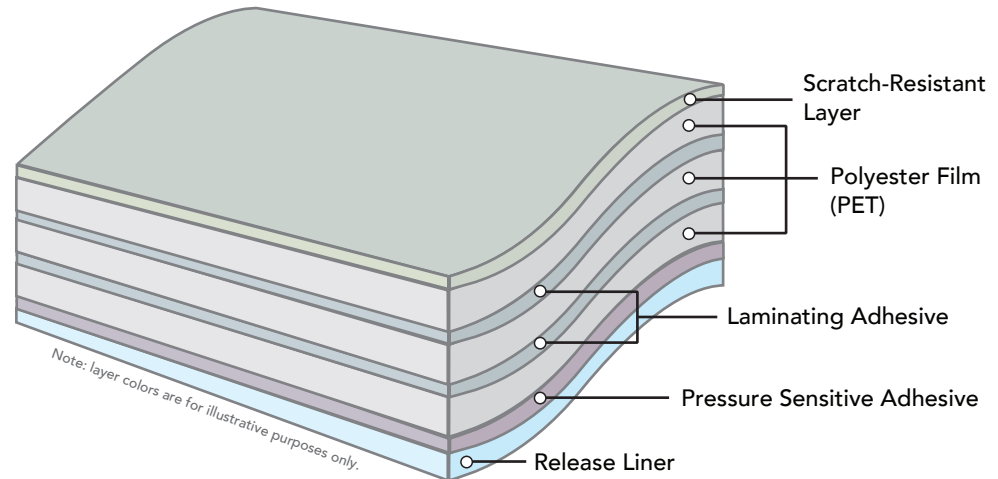
Madico's LCL-2100-XSR film is an OEM product designed primarily to enhance the impact resistance of glass doors, windows, and insulated glass units (IGU's). Utilizing a dry bond laminating system, film can effectively and efficiently be bonded to glass in a high-volume manufacturing environment.

LCL-2100-XSR offers high optical clarity, 99% ultraviolet rejection and 85% visible light transmission making it nearly invisible. LCL-2100-XSR is highly effective for protecting glass from environmental hazards, accidental breakage and everyday wear.

Material Construction:

- Scratch-resistant layer
- Multi-layer polyester film laminate
- Pressure-sensitive adhesive
- Silicone release liner
- Total film thickness of 23 mil

All thicknesses are based on nominal data.



Film Characteristics:

- Meets Cat II safety glazing standard
- $\geq 99\%$ UV Rejection
- Peel strength: 5 - 6 pounds per inch
- Pencil hardness: $\geq 3H$

Applications:

- Casinos, hospitals, hotels
- Schools and libraries
- IG units in residential and commercial buildings

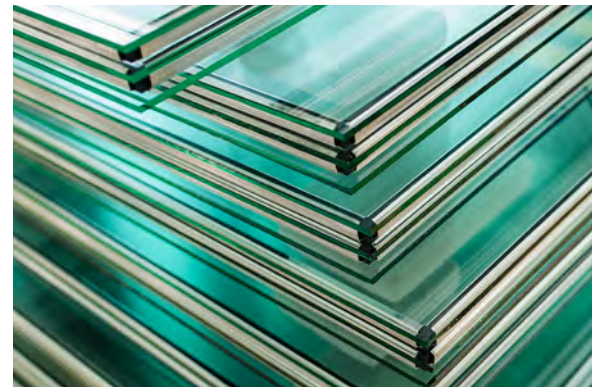
Benefits:

- Invisible impact resistance layer
- Anti-spall for increased safety and security
- Slows fading of fabrics and flooring
- Multi-layered construction for added strength

Chemical and Stain Resistance:

Chemical resistance: Alcohol, aldehydes, hydrocarbons, chlorinated solvents, diluted acids, and alkalines.

Stain resistance: Resistant to most food, chemical and medicinal staining agents.



LCL-2100-XSR

Technical Performance

Visible Light:

| | |
|---|--------|
| Transmitted (VLT) % | 85.0 |
| Reflected Exterior % | 10.0 |
| Reflected Interior % | 10.0 |
| Glare Reduction % | 4.0 |
| Solar Heat Gain Coefficient (SHGC)..... | 0.77 |
| Shading Coefficient | 0.89 |
| Luminous Efficacy | 0.96 |
| Total Solar Energy Rejection %..... | 23.0 |
| Infrared Rejection %* | 43.0 |
| Infrared Energy Rejection% | 16.0 |
| Light to Solar Gain..... | 1.10 |
| U Factor | 1.07 |
| Emissivity | 0.90 |
| Ultraviolet Rejection % | > 99.0 |

Total Solar Energy:

| | |
|---------------------|------|
| Transmitted % | 71.0 |
| Reflected % | 8.0 |
| Absorbed % | 21.0 |

Read in accordance with National Fenestration Rating Council (NFRC) standards on 6mm clear glass.

* Near IR range (780-2500nm) Technical specification definitions can be found at www.madico.com

Physical Properties:

| | |
|-----------------------------------|-----------------------------|
| Film Thickness | 0.023" |
| Structural Component..... | 0.021" |
| Structure | Multi-Ply Laminate |
| Adhesive Type | Acrylic Pressure Sensitive |
| Long. Tensile Strength | 28,000 PSI MD |
| Traverse Tensile Strength | 36,000 PSI TD |
| Break Strength | 630 Pounds Per Inch (Width) |
| Long. Elongation at Break | 150% |
| Traverse Elongation at Break..... | 100% |
| Yield Strength | 14,000 PSI Avg. MD/TD |
| Elongation at Yield | 120% |
| Peel Strength | 5 to 6 Pounds Per Inch |
| Elongation at Break | 150% MD / 100% TD |

Testing Methods:

| | |
|---------------------------|-------------------|
| Total Solar Energy..... | ANSI/NFRC 100,200 |
| Visible Light..... | ANSI/NFRC 100,200 |
| Ultraviolet Light | ANSI/NFRC 100,200 |
| Tensile Strength | ASTM D - 882 |
| Break Strength | ASTM D - 882 |
| Peel Strength | ASTM D - 3330 |
| Abrasion Resistance | ASTM D - 1044 |

LCL-2100-XSR Performance on Installed Windows as Certified by the National Fenestration Rating Council (NFRC)

| Type | Default Glazing Reference | SHGC Without Film | SHGC With Film | VLT Without Film | VLT With Film | U factor |
|--------------------------|---|-------------------|----------------|------------------|---------------|----------|
| Residential | 3 mm (1/8in.) clear | 0.72 | 0.68 | 0.74 | 0.70 | 1.09 |
| Residential † | 3 mm (1/8in.) clear 3 mm (1/8in.) clear | 0.64 | 0.63 | 0.67 | 0.64 | 0.71 |
| Industrial/Engineering | 6 mm (1/4in.) clear | 0.73 | 0.71 | 0.78 | 0.75 | 1.03 |
| Industrial/Engineering | 6 mm (1/4in.) grey | 0.52 | 0.52 | 0.39 | 0.38 | 1.03 |
| Industrial/Engineering † | 6 mm (1/4in.) clear 6 mm (1/4in.) clear | 0.63 | 0.64 | 0.69 | 0.67 | 0.59 |
| Industrial/Engineering † | 6 mm (1/4in.) grey 6 mm (1/4in.) clear | 0.41 | 0.42 | 0.35 | 0.34 | 0.59 |

† Dual pane window

The representations of performance and suitability for use contained in this datasheet are guidelines. Since only the user is aware of the specific conditions in which the product is to be used, responsibility to determine whether the product is suitable for that intended need belongs to the purchaser.

