

## Description

Lexan\* EFR95-701 film is a black, one side fine matt, one side velvet Eco flame-retardant polycarbonate film with a UL94 V-0 listing at 0.38 mm and VTMO at 0.178mm. This film has formability, excellent mechanical and electrical properties, good dimensional stability at high temperatures and a high flammability rating, making it good for applications such as power supply insulation, disc drive insulation, bus-bar insulation, TV/monitor insulation, PC board insulation, business equipment insulation and has insulation and EMI/RFI shielding when laminated with metal foil.

## Typical Property Values♦

| Property                             | ASTM Test Method      | Units (USCS)                    | Value  | ISO Test Method | Units (SI)             | Value |
|--------------------------------------|-----------------------|---------------------------------|--------|-----------------|------------------------|-------|
| <b>Mechanical</b>                    |                       |                                 |        |                 |                        |       |
| Tensile Strength (0.43mm)            |                       |                                 |        |                 |                        |       |
| @ Yield                              | ASTM D882             | psi                             | 8507   | ISO 527         | MPa                    | 58.7  |
| Ultimate                             | ASTM D882             | psi                             | 9014   | ISO 527         | MPa                    | 62.2  |
| Tensile Modulus (0.43mm)             | ASTM D882             | psi                             | 376667 | ISO 527         | MPa                    | 2599  |
| Tensile Elongation at Break (0.43mm) | ASTM D882             | %                               | 114    | ISO 527         | %                      | 114   |
| Tear Strength                        |                       |                                 |        |                 |                        |       |
| Initiation                           | ASTM D1004            | lb/mil                          | 0.88   |                 | kN/m                   | 153   |
| Propagation                          | ASTM D1922            | g/mil                           | 37.9   |                 | kN/m                   | 14.65 |
| Puncture Resistance (Dynatup)        | ASTM D3763            | ft-lb/in                        | 405    |                 | J/mm                   | 21.3  |
| Fold Endurance (MIT)                 |                       |                                 |        |                 |                        |       |
| 0.017" (0.43 mm)                     | ASTM D2176-69         | double folds                    | 90.5   |                 |                        | 90.5  |
| 0.020" (0.508 mm)                    | ASTM D2176-69         | double folds                    | 91.1   |                 |                        | 91.1  |
| <b>Thermal</b>                       |                       |                                 |        |                 |                        |       |
| Coefficient of Thermal Conductivity  | ASTM D5470            | Btu-in/(hr-ft <sup>2</sup> -°F) | 1.24   |                 | W/m-°K                 | 0.18  |
| Coefficient of Thermal Expansion     | ASTM E831             | (x10 <sup>-5</sup> /F)          | 3.7    | ISO 11359       | (x10 <sup>-5</sup> /C) | 6.6   |
| Specific Heat @ 25°C                 | ASTM E1269            | Btu/lb/°F                       | 0.29   |                 | KJ/Kg-°C               | 1.23  |
| Glass Transition Temperature         | ASTM D3417/D3418      | °F                              | 307    | ISO 11357       | °C                     | 153   |
| Vicat Softening Temperature, B       | ASTM 1525-00 modified | °F                              | 303    |                 | °C                     | 151   |
| At 50N, 120 °C                       |                       |                                 |        |                 |                        |       |
| Heat Deflection Temp. by TMA         |                       | °F                              | 267    | ISO 75 modified | °C                     | 131   |
| at 1.8 MPa                           |                       |                                 |        |                 |                        |       |
| Shrinkage at 302°F (150°C/0.5h)      | ASTM D1204            | %                               |        |                 | %                      |       |
| MD                                   |                       |                                 | 1.25   |                 |                        | 1.25  |
| TD                                   |                       |                                 | 0.11   |                 |                        | 0.11  |
| Brittleness Temperature              | ASTM D746             | °F                              | <-58   |                 | °C                     | <-50  |

### UL Flammability Rating / Performance Levels

| Thickness                         | Rating  | HWI | HAI |
|-----------------------------------|---------|-----|-----|
| 0.007 " (0.178mm) -0.01" (0.25mm) | VTMO    |     |     |
| 0.015" (0.380mm) -0.021" (0.55mm) | V0      |     |     |
| CTI: 3                            |         |     |     |
| File Number                       | E205960 |     |     |

- These are typical properties and are not intended for specification purposes. If minimum certifiable properties are required, please contact your local SABIC Innovative Plastics, Specialty Film & Sheet representative or the Quality Services Department. Reported values are based on 0.250 mm (0.010" ) thickness film and are tested at machine direction unless otherwise noted.

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| Property  | ASTM Test Method       | Units (USCS)         | Value    | ISO Test Method | Units (SI)        | Value    |
|---|------------------------|----------------------|----------|-----------------|-------------------|----------|
| <b>Physical</b>   |                        |                      |          |                 |                   |          |
| Density   | ASTM D792              | slug/ft <sup>3</sup> | 2.36     | ISO 1183        | kg/m <sup>3</sup> | 1230     |
| Water Absorption, 24 hrs  | ASTM D570              | % change             | 0.34     | ISO 62          | % change          | 0.34     |
| Surface Tension   | Dyne Pens              | Dyne                 | 38-40    |                 |                   |          |
| <b>Optical</b>  |                        |                      |          |                 |                   |          |
| Refractive index @ 77°F (25 °C)                                       | ASTM D542A             | -                    | NA       |                 |                   |          |
| Light Transmission  | ASTM D1003             | %                    | NA       |                 |                   |          |
| Yellowness Index  | ASTM D1925             | %                    | NA       |                 |                   |          |
| Haze  | ASTM D1003             | %                    | NA       |                 |                   |          |
| Gloss over Flat Black @ 60°   | ASTM D523-60           | -                    | 52/3.8   | ISO 2813        |                   | 52/3.8   |
| <b>Electrical</b>   |                        |                      |          |                 |                   |          |
| Dielectric Strength in oil, short time @ 72°F (23°C), 17mils (0.43mm) | ASTM D149-97a Method A | kv/mil               | 1.2      | IEC 60243       | kv/mm             | 47       |
| Dielectric Constant   |                        |                      |          |                 |                   |          |
| @ 60 Hz   | ASTM D150              | -                    | 2.49     | IEC 60250       | -                 | 2.49     |
| @ 1 MHz   | ASTM D150              | -                    | 2.45     | IEC 60250       | -                 | 2.45     |
| Dissipation Factor  |                        |                      |          |                 |                   |          |
| @ 60 Hz   | ASTM D150              | -                    | 0.002    | IEC 60250       | -                 | 0.002    |
| @ 1 MHz   | ASTM D150              | -                    | 0.01     | IEC 60250       | -                 | 0.01     |
| Volume Resistivity  | ASTM D257              | Ω-cm                 | 1.17E+16 | IEC 60093       | Ω-cm              | 1.17E+16 |
| Surface Resistivity   | ASTM D257              | Ω/square             | 4.4E+15  | IEC 60093       | Ω/square          | 4.4E+15  |
| Arc Resistance, Tungsten Electrodes                                   | ASTM D495              | s                    | 51       |                 |                   |          |



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**Manufacturing Specifications**

| Nominal Gauge Range               | Min./Max Limit of Nominal |
|-----------------------------------|---------------------------|
| 0.007-0.01<br>(0.178 - 0.25mm)    | ± 10%                     |
| 0.017 - 0.021"<br>(0.43 - 0.55mm) | ± 5%                      |

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