GE Advanced Materials
Specialty Film & Sheet

# LEXAN* HPFAF Film

## Product Datasheet

## DESCRIPTION

LEXAN* HPFAF film is a one-side coated polycarbonate film offering long-term anti-fog performance, abrasion resistance, formability, impact resistance, dimensional stability, and good optical clarity. LEXAN HPFAF film also provides chemical resistance, tintability, and anti-static properties. It has been specifically developed to offer very good performance in the visor/eye protection industries and a variety of other applications. LEXAN HP FAF film accepts commercial ophthalmic dyes even at ambient temperature on the coated side. Both sides of the film can be printed for graphic applications.
Typical applications include: Industrial visors and goggles, Sunglasses, Sports eyewear, Instrument lenses & display panels, Motorcycle visors, Mirrors, Windows, Face shields and wind shields, Appliance fascias, and Telecom lenses.

## Typical Property Values[1]

| Property | ASTM Test Method | Units (USCS) | Value | ISO Test Method | Units (SI) | Value |
|---|---|---|---|---|---|---|
| **Mechanical** | | | | | | |
| Tensile Strength | | | | | | |
| @ Yield | ASTM D882 | psi | 9000 | ISO 527 | MPa | 62.5 |
| Ultimate | ASTM D882 | psi | 10400 | ISO 527 | MPa | 71.4 |
| Tensile Modulus | ASTM D882 | psi | 318000 | ISO 527 | MPa | 2190 |
| Tensile Elongation at Break | ASTM D882 | % | 100-160 | ISO 527 | % | 100-155 |
| Gardner Impact Strenght at 0.03 in. (0.75 mm) | ASTM D3029 | ft-lb | 23 | ISO 6603-1 | J | 31 |
| Tear Strength | | | | | | |
| Initiation | ASTM D1004 | lb/mil | 1.59 | | kN/m | 278 |
| Propogation | ASTM D1922 | g/mil | 43.4 | | g/mil | 43.4 |
| Puncture Resistance (Dynatup) | ASTM D3763 | ft-lb | 9 | | J | 12 |
| Fold Endurance (MIT) | | | | | | |
| 0.010 inch (0.25 mm) | ASTM D2176-69 | double folds | 130 | | | |
| 0.020 inch (0.50 mm) | ASTM D2176-69 | double folds | 35 | | | |
| **Thermal** | | | | | | |
| Coefficient of Thermal Conductivity | ASTM D5470 | Btu/hr/ft²/°F/in | 1.35 | | W/m°K | 0.2 |
| Coefficient of Thermal Expansion | ASTM E831 | (x $10^{-5}$/°F) | 3.4 | ISO 11359 | (x $10^{-5}$/°C) | 6.2 |
| Specific Heat @ 40 °F (4 °C) | ASTM E1269 | Btu/lb/°F | 0.3 | | KJ/Kg-°C | 1.14 |
| Glass Transition Temperature | ASTM D3417/D3418 | °F | 307 | ISO 11357 | °C | 153 |
| Vicat Softening Temperature, B | ASTM 1525-00 Modified | °F | 311 | | °C | 155 |
| Heat Deflection Temp. by TMA at 1.8 MPa | | °F | 295 | ISO 75 Modified | °C | 145 |
| Shrinkage at 302 °F (150 °C) | ASTM D1204 | % | 1.80% | | % | 1.80% |
| Brittleness Temperature | ASTM D746 | °F | -211 | | °C | -135 |

**Manufacturing Specifications**

| Nominal Gauge Ranges | Min./Max Limit of Nominal |
|---|---|
| 0.007" (0.175 mm) | ± 10% |
| 0.010-0.015" (0.250-0.375 mm) | ± 5% |
| 0.020-0.030" (0.500-0.750 mm) | ± 3% |

1 These are typical properties and are not intended for specification purposes. If minimum certifiable properties are required, please contact your local GE Advanced Materials, Specialty Film & Sheet representative or the GE Advanced Materials, Specialty Film & Sheet Quality Services Department. Reported values are based on 0.010" (0.250 mm) thickness unless otherwise noted.

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| Property | ASTM Test Method | Units | Value | ISO Test Method | Units | Value |
|---|---|---|---|---|---|---|
| **Physical** | | | | | | |
| Density | ASTM D792 | $slug/ft^3$ | 75 | ISO 1183 | $kg/m^3$ | 1200 |
| Water Absorption, 24 hrs. | ASTM D570 | % change | 0.51 | ISO 62 | % change | 0.51 |
| Surface Energy (1st surface / *2nd surface*) | ASTM D5946-01 | - | 45/34 | | | |
| Surface Tension (1st surface / *2nd surface*) | Dyne Pens | Dyne | 32-34 / *38-40* | | | |
| Pencil Hardness (1st surface / *2nd surface*) | ASTM D3363 | - | b-hb / *4h-5h* | | | |
| Taber Abrasion (coated surface) | ASTM D1044 | delta Haze | 5 | | | |
| Bayer Abrasion (coated *surface*) | Colt Labs test | Ratio | 12.13 | | | |
| Steel Wool Abrasion Haze Gain (coated surface) | Colt Labs test | Haze Gain | 10.83 | | | |
| Steel Wool Abrasion Ratio Gain (coated surface) | Colt Labs test | Ratio | 0.12 | | | |
| **Optical** | | | | | | |
| Refractive Index @ 77 °F (25 °C) | ASTM D542A | - | 1.5 | | | |
| Light Transmission | ASTM D1003 | % | 92 | | | |
| Yellowness Index | ASTM D1925 | % | 0.6 | | | |
| Haze | ASTM D1003 | % | 0.9 | | | |
| Gloss over Flat Black min/max @ 60° | ASTM D523-60 | - | 172 | ISO 2813 | - | 172 |
| UV %Transmission at 380 nm | UV/Visual Spectroscopy | % | 73 | | | |


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