

TUFFAK OP polycarbonate sheet

OPTICAL QUALITY

TUFFAK OP sheet is a polished surface, UV stabilized, transparent polycarbonate product. Designed for use in applications requiring improved optical quality, it features outstanding impact strength, superior dimensional stability, high temperature resistance, and high clarity. This lightweight thermoflexible sheet is also easy to fabricate and decorate. TUFFAK OP sheet is offered with a five (5) year Limited Product Warranty against breakage. The terms of the warranty are available upon request.

APPLICATIONS

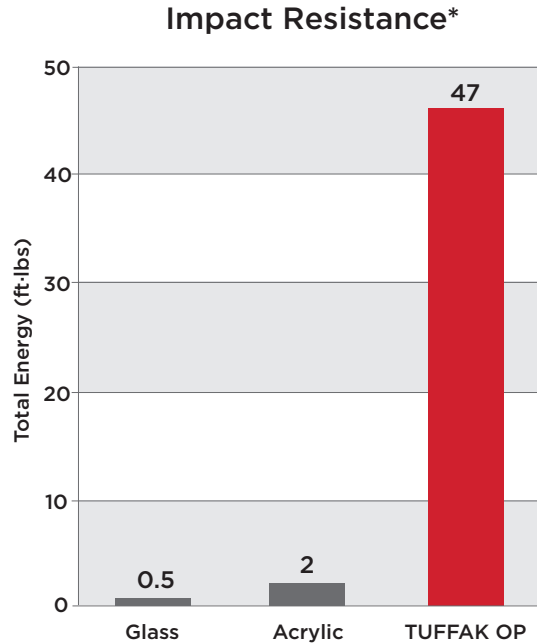
Recreational vehicle windscreens, face shields, laminates

Typical Properties*

| Property | Test Method | Units | Values |
|--|---------------|-------------------------------|-------------------------|
| PHYSICAL | | | |
| Specific Gravity | ASTM D 792 | - | 1.2 |
| Refractive Index | ASTM D 542 | - | 1.586 |
| Light Transmission, Clear @ 0.118" | ASTM D 1003 | % | 88 |
| Light Transmission, I30 Gray @ 0.118" | ASTM D 1003 | % | 50 |
| Light Transmission, K09 Bronze @ 0.118" | ASTM D 1003 | % | 50 |
| Light Transmission, I35 Dark Gray @ 0.118" | ASTM D 1003 | % | 18 |
| Water Absorption, 24 hours @ 73°F | ASTM D 570 | % | 0.15 |
| Poisson's Ratio | ASTM E 132 | - | 0.38 |
| MECHANICAL | | | |
| Tensile Strength, Break | ASTM D 638 | psi | 9,500 |
| Tensile Strength, Yield | ASTM D 638 | psi | 9,000 |
| Tensile Modulus | ASTM D 638 | psi | 340,000 |
| Elongation | ASTM D 638 | % | 110 |
| Flexural Strength | ASTM D 790 | psi | 13,500 |
| Flexural Modulus | ASTM D 790 | psi | 345,000 |
| Compressive Strength | ASTM D 695 | psi | 12,500 |
| Compressive Modulus | ASTM D 695 | psi | 345,000 |
| Izod Impact Strength, Notched @ 0.125" | ASTM D 256 | ft-lbs/in | 18 |
| Izod Impact Strength, Unnotched @ 0.125" | ASTM D 256 | ft-lbs/in | 60 (no break) |
| Instrumented Impact @ 0.125" | ASTM D 3763 | ft-lbs | 47 |
| Shear Strength, Break | ASTM D 732 | psi | 10,000 |
| Shear Strength, Yield | ASTM D 732 | psi | 6,000 |
| Shear Modulus | ASTM D 732 | psi | 114,000 |
| Rockwell Hardness | ASTM D 785 | - | M70 / R118 |
| THERMAL | | | |
| Coefficient of Thermal Expansion | ASTM D 696 | in/in/°F | 3.75 x 10 ⁻⁵ |
| Coefficient of Thermal Conductivity | ASTM C 177 | BTU-in/hr-ft ² -°F | 1.35 |
| Heat Deflection Temperature @ 264 psi | ASTM D 648 | °F | 270 |
| Heat Deflection Temperature @ 66 psi | ASTM D 648 | °F | 280 |
| Brittleness Temperature | ASTM D 746 | °F | -200 |
| Shading Coefficient, Clear @ 0.236" | NFRC 100-2010 | - | 0.97 |
| Shading Coefficient, Gray or Bronze @ 0.236" | NFRC 100-2010 | - | 0.77 |
| U factor @ 0.236" (summer, winter) | NFRC 100-2010 | BTU/hr-ft ² -°F | 0.85, 0.92 |
| U factor @ 0.375" (summer, winter) | NFRC 100-2010 | BTU/hr-ft ² -°F | 0.78, 0.85 |
| FLAMMABILITY | | | |
| Ignition Temperature, Self | ASTM D 1929 | °F | 1022 |
| Ignition Temperature, Flash | ASTM D 1929 | °F | 824 |
| Flame Class @ 0.060" | UL 94 | - | HB |
| Flame Class @ 0.394" | UL 94 | - | V-0 |

*Typical properties are not intended for specification purposes

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*Instrumented Impact per ASTM D 3763, sample thickness 0.125" nominal

Agency and specification compliance

| | | |
|---|-------------|--------------------|
| Architectural Flat Glass Clad polycarbonate | ASTM C 1349 | Appendix X1 Type 1 |
| Polycarbonate sheet classification | A-A-59502 | Type 1 Class 1 |
| Polycarbonate resin classification | ATSM D 3935 | PC0136 |
| Flammability - Plastic component | UL 94 | UL File #E351891 |
| Suitability - Plastic component | UL 746C | UL File #E351891 |

These suggestions and data are based on information we believe to be reliable. They are offered in good faith, but without guarantee, as conditions and methods of use are beyond our control. We recommend that the prospective user determine the suitability of our materials and suggestions before adopting them on a commercial scale.

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