SciCron Technologies

*Product Information*

# StatiCon® Glazing

## PC-300™ Polycarbonate for Cleanroom Construction

### Description

**StatiCon® Glazing** is a family of transparent plastic sheet products designed to control static electricity in cleanroom construction applications. **PC-300™ Polycarbonate**, a member of this family, is a premium quality polycarbonate sheet which has been coated with SciCron Technologies proprietary, clear, C-300™ static dissipative coating. This unique technology prevents charge generation on the sheet surfaces, thereby controlling particulate attraction and preventing electrostatic discharge (ESD) events. This performance is permanent and totally independent of humidity. **PC-300 Polycarbonate** offers the cleanroom builder exceptional design versatility since it fabricates simply with field tools, has 250 times greater impact resistance than tempered glass, is less than half the weight of glass for the same thickness sheet, and is available in large sheet sizes. It also exhibits superior flame spread properties, plus excellent clarity and chemical resistance.

### Applications

**PC-300 Polycarbonate** resists tribocharging under all circumstances and cannot generate a charge when properly grounded. This makes it ideal for use in manufacturing and assembly operations for charge sensitive electronic components where it can help prevent both immediate and latent ESD caused defects. Since it resists charge build-up it does not attract contaminants, so it can also help prevent contamination-related rejects in ultra-clean manufacturing operations. Consequently, it is suitable for use in cleanrooms for the semi-conductor, electronic, micro-manufacturing, pharmaceutical, and bio-medical industries. Applications include panels and fabricated items which require high impact strength or improved flame spread properties, including; perimeter and door windows, transparent room partitions, light weight floor-to-ceiling window walls, laminar flow air containment screens, mini-environment glazing panels, pass-thru modules, and equipment covers and enclosures.

### Fabrication

**PC-300 Polycarbonate** is easily fabricated into flat surface configurations using the same equipment and fabrication techniques generally employed with uncoated polycarbonate sheet products. It should not be used for heat formed bent configurations since the hard, cured C-300 coated surface is not designed for heat bending. For more information on fabrication, refer to SciCron Technologies Technical Information Bulletin No. SP-01.

### Features and Benefits

- *Cannot be tribocharged when properly grounded*

Prevents build-up of static charge and accumulation of harmful contamination.

- *Electrostatic decay in less than 0.05 second per Federal Test Standard 101C, Method 4046.1*

Results in rapid static dissipation without arcing.

- *Surface resistivity of $10^6$ - $10^8$ ohms per square*

Provides for ESD control without the need for ionization.

- *Permanence in static dissipation performance*

Avoids cost of application of temporary topical anti-stats.

- *Humidity independent static charge control*

Avoids inconvenience of maintaining high levels of humidity and damage caused by such humidity.

- *Advanced technology, uniform surface treatment*

Avoids charged “hot spots” often found with non-uniform, temporary topical anti-stats.

- *Superior Impact resistance*

Provides exceptional shatter resistance for safety.

- *Superior flame spread properties*

Provides additional protection for equipment in a fire.

- *Inherently light weight material with large sheet sizes*

Allows much greater design and installation flexibility than heavy, fragile, conventional glazing.

- *Hard, mar resistant, durable surface*

C-300 surface, harder than the base plastic, reduces risk of damage to the sheet surfaces.

- *Superior chemical resistance*

Reduces risk of solvent or chemical surface damage.

- *Excellent clarity*

Premium optical quality polycarbonate with clear C-300 surface minimizes visible distortion.

- *PC-300™ Polycarbonate is not designed for exposure to direct sun light and is not warranted for external applications.*

### Availability

**PC-300 Polycarbonate** is available in clear and transparent gray and bronze tints. Other colors are available by special order.

### Standard Dimensions

Thickness: 3mm (1/8”), 4.5mm (3/16”), 6mm (1/4”), 9mm (3/8”), 12mm (1/2”) – plus films 10-90 mils

Standard Sheet Size: 48” x 96” - Other sizes and thicknesses available upon request.

**Made in USA**



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# StatiCon® Glazing - PC-300™ Polycarbonate

## Typical Physical Properties (Typical but not guaranteed values for 0.25 inch material)

| Property | Test Method | Units | PC-300 Polycarbonate |
|---|---|---|---|
| **Physical** | | | |
| Specific Gravity | ASTM D792 | -- | 1.20 |
| **Mechanical** | | | |
| Tensile Strength | | | |
| Ultimate | ASTM D638 | psi | 9,500 |
| Elongation | ASTM D638 | % | 100 |
| Tensile Modulus | ASTM D638 | psi | 340,000 |
| Flexural Strength | ASTM D790 | psi | 13,500 |
| Flexural Modulus | ASTM D790 | psi | 340,000 |
| Compressive Strength | ASTM D695 | psi | 12,500 |
| Izod Impact Strength (milled notch) | ASTM D256 | ft-lb/inch of notch | 16 |
| **Thermal** | | | |
| Deflection Temperature (264 psi load) | ASTM D648 | °F | 270 |
| Vicat Softening Point | ASTM D1525 | °F | 310 |
| Maximum Continuous Service Temperature | -- | °F | 180 |
| Coefficient of Thermal Expansion | ASTM D696 | in/in/°F | $3.5 \times 10^{-5}$ |
| Coefficient of Thermal Conductivity | Cenco-Fitch | BTU•in/hr•ft$^2$•°F | 1.35 |
| **Flammability** | | | |
| Horizontal Burn (Flame Spread) | ASTM D635 | in/min | Less than 1.0 |
| UL 94 Rating of the Uncoated Substrate | UL 94 | UL Classification | V-2 0.118 - 0.236 in<br>V-0 $\geq$ 0.236 in |
| **Optical** | | | |
| 3mm Transparent Clear Transmittance - Total | ASTM D1003 | % | 75 |
| Haze | ASTM D1003 | % | Less than 5.0 |
| **Electrical** | | | |
| Surface Resistivity | ASTM D257 | ohms/sq | $10^6$ - $10^8$ |
| Surface Resistance | EOS/ESD S11.11 | ohms | $10^5$ - $10^7$ |
| Electrostatic Decay | FTS 101C, Method 4046.1* | sec | Less than 0.05 |

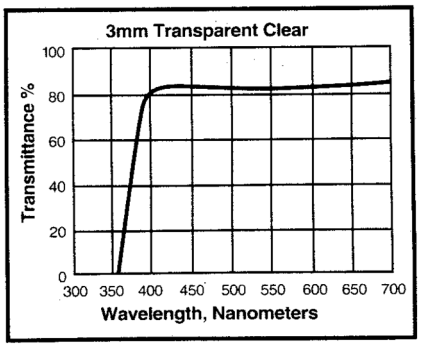
* Federal Test Standard 101C, Method 4046.1 as described in EIA-541, Appendix F, Measurement of Electrostatic Decay Properties of Dissipative Planar Materials

## Chemical Resistance ASTM D543

Samples immersed in the specified chemicals for 24 hours at room temperature and visually examined.

| Chemical | Surface Attack | Visual Evaluation |
|---|---|---|
| Deionized Water | None | Clear |
| 30% Sodium Hydroxide | None | Cloudy |
| 30% Sulfuric Acid | None | Clear |
| 30% Nitric Acid | Some Pitting | Clear |
| 48% Hydrofluoric Acid | Pitted Coating | Clear |
| Methanol | Slight Pitting | Clear |
| Ethanol | None | Clear |
| Isopropyl Alcohol | None | Clear |
| Acetone | Severe Pitting | Opaque |

## Light Transmission Spectral Analysis




**Precautions:**

1. Polycarbonate plastic is a combustible thermoplastic. Avoid exposure to flame and excessive heat. Observe fire precautions appropriate for comparable forms of wood and paper.
2. For building applications, comply with applicable code regulations.
3. Clean with soap and water. Do not use abrasives. Avoid inappropriate contact with solvents.