AIRCRAFT INTERIORS
Advanced Composite Materials Selector Guide

BEAUTY IS ON THE INSIDE

TORAY
Toray Advanced Composites
The Toray Cetex® brand of differentiated reinforced thermoplastic laminates (RTL) and uni-directional (UD) tapes are used in a wide variety of aircraft interior applications, ranging from flooring and cabin seating, to stowage bins and galleys. Thermoplastic composites, reinforced with glass or carbon fibers provide:

- Extremely low FST and OSU properties (OSU < 25/25)
- High-quality surface finishes, substantially reducing the need for filling and sanding before application of decorative trims or sublimation printing
- Excellent moisture resistance leading to improved durability
- Very tough surfaces for improved impact and wear performance, enabling long-term durability
- Fast manufacturing cycles, providing press forming in minutes
- Part count reduction: Overmolding thermoplastics enables consolidation of parts and integration of mechanical fixtures
- Component coloring: An option to deliver "base color" for applications

Tailored to your application needs, Toray Cetex® laminates are consolidated as a single or multi-ply construction to maximize functionality. The RTL semi-finished product incorporates tailored fiber lay-ups, color, and a surface finish ready for service.

For more product information such as product data sheets, case studies, or technical papers, please use the following resources:

- Search for the Toray TAC Product Selector
- Go to our online resource center for product data sheets and technical resources.

...it’s an important seat – because you’re in it.

Donald Burr
STORAGE BINS: In an industry where weight and impact performance is paramount, Toray Cetex® is the ultimate solution. Exceptionally durable and lightweight for hardwearing bin surfaces and linings, we also offer an embedded color, eliminating secondary painting and finishing requirements.

CABIN LININGS: Offering high impact resistance and exceptional durability, Toray Cetex® offers near-perfect demold performance, maximizing efficiency for trim by minimizing post-processing (sand/sweep) operations.

CARGO LININGS: With excellent FST performance and exceptional durability, Toray Cetex® thermoplastics offer near-perfect demold performance, maximizing efficiency for large surfaces by minimizing post-processing (sand/sweep) operations.

SERVICE CARTS: Toray Cetex® thermoplastics are the ultimate solution in an industry where weight and impact performance are paramount. Exceptionally durable and lightweight for hard-wearing cart surfaces, graphics can also be sublimated into the surface, eliminating secondary painting and finishing requirements.

DUCTING: For ultimate flow rate performance, Toray Cetex® thermoplastics offer the lowest porosity levels in the lightest materials available. Used in low-pressure systems across the world, our laminates are rolled and seam welded for maximum efficiency.

CEILING LININGS: Lightweight and stiff, Toray Cetex® thermoplastics offer near-perfect demold performance, maximizing efficiency for large surfaces by minimizing post-processing (sand/sweep) operations.

GALLEYS: High-volume and wear applications such as galleys and dividers demand resilient low-maintenance performance. With Toray Cetex® thermoplastics in-color and high moisture barrier technology, your workspace now has new possibilities.

FLOORING: Manufactured in high volumes and prone to abuse, aircraft flooring demands exceptional resilience. Our hybrid system combines the best of lightweight thermoplastic and thermoset technology to deliver exceptional durability and longer service life, withstanding carpet changes without surface degradation.

SERVICE CARTS: Toray Cetex® thermoplastics are the ultimate solution in an industry where weight and impact performance are paramount. Exceptionally durable and lightweight for hard-wearing cart surfaces, graphics can also be sublimated into the surface, eliminating secondary painting and finishing requirements.
## Thermoset

<table>
<thead>
<tr>
<th>RESIN MATRIX</th>
<th>PEAK Tg</th>
<th>PROCESSING TEMPERATURE</th>
<th>KEY PRODUCT CHARACTERISTICS</th>
<th>DURABILITY/</th>
<th>TOUGHNESS</th>
<th>CHEMICAL RESISTANT</th>
<th>OEM QUALIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC925 FST</td>
<td>PC</td>
<td>153°C (307°F)</td>
<td>280°C (536°F)</td>
<td>Good FST performance, GSU (&lt; 26/26)</td>
<td>+</td>
<td>+</td>
<td>ABS 5046</td>
</tr>
<tr>
<td>TC1000 Premium</td>
<td>PEI</td>
<td>215°C (419°F)</td>
<td>315°C (603°F)</td>
<td>Excellent FST performance, GSU (&lt; 15/15)</td>
<td>+</td>
<td>+</td>
<td>ABS 5036, ABS 5814</td>
</tr>
<tr>
<td>TC1000 Design</td>
<td>PEI</td>
<td>215°C (419°F)</td>
<td>315°C (603°F)</td>
<td>Excellent FST performance, GSU (&lt; 15/15)</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>TC1100</td>
<td>PPS</td>
<td>90°C (194°F)</td>
<td>280°C (536°F)</td>
<td>Achieves 35/35 for OSU performance</td>
<td>+</td>
<td>+</td>
<td>ABS 5046</td>
</tr>
<tr>
<td>TC1125</td>
<td>PAEK</td>
<td>147°C (297°F)</td>
<td>325-350°C (615-662°F)</td>
<td>Outstanding structural and thermal performance</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

### THERMOSET

- **E721-FR**
  - Resin: Epoxy
  - Tg: 120°C (248°F)
  - Cure Time: 60 minutes at 120°C (248°F)
  - Fire retardant under FAR 25.853 Appendix F
  - Vertical burn material test criteria (ii)
  - Core bondable

- **TC264-1**
  - Resin: Epoxy
  - Tg: 124°C (255°F)
  - Cure Time: 90 minutes at 118-127°C (245-260°F)
  - Flame retardancy applications e.g., ducting, decorative enclosures, and composite panel assemblies

- **BT260E-1FR**
  - Resin: Epoxy
  - Tg: 125°C (257°F)
  - Cure Time: 60 minutes at 121°C (250°F)
  - Self-adhesive to honeycomb and foam core
  - Outstanding surface finish with OOA

### Toray CETEX® Thermoplastic

- **TC1000**
  - Resin: PEI
  - Tg: 215°C (419°F)
  - Cure Time: 315°C (603°F)
  - Fire resistant and self-extinguishing to FAR 25.853
  - High-temperature strength up to 180°C (356°F)
  - High strength-to-weight ratio and easily formable to shape
  - Nomex® paper sheets are coated and bonded together with a high-modulus phenolic resin

- **TC1100 PPS**
  - Resin: PPS
  - Tg: 90°C (194°F)
  - Cure Time: 280°C (536°F)
  - Achieves 35/35 for OSU performance
  - Outstanding solvent resistance for structural applications
  - High impact resistance
  - Ideal for beams and floor panels

- **TC1225 PAEK**
  - Resin: PAEK
  - Tg: 147°C (297°F)
  - Cure Time: 325-350°C (615-662°F)
  - Outstanding structural and thermal performance
  - Compatibility to PEEK for injection overmolding and welding

### Toray Microply™ Film Adhesives

- **TC283**
  - Resin: Epoxy
  - Tg: 110°C (230°F)
  - Cure Time: 2 hours at 121°C (250°F)
  - Fire retardant under FAR 25.853 Appendix F
  - Core bondable

### Nomex® Honeycomb® Aerospace Grade

<table>
<thead>
<tr>
<th>CONFIGURATIONS</th>
<th>CELL SIZE &amp; DENSITY</th>
<th>SHEET SIZE</th>
<th>KEY PRODUCT CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANA-3.2-29</td>
<td>3.2 mm 29 kg/m³</td>
<td>1250 x 2500 mm</td>
<td>Fire resistant and self-extinguishing to FAR 25.853</td>
</tr>
<tr>
<td>ANA-3.2-48</td>
<td>3.2 mm 48 kg/m³</td>
<td>1250 x 2500 mm</td>
<td>High strength-to-weight ratio and easily formable to shape</td>
</tr>
<tr>
<td>ANA-3.2-64</td>
<td>3.2 mm 64 kg/m³</td>
<td>1220 x 2440 mm</td>
<td>Nomex® paper sheets are coated and bonded together</td>
</tr>
</tbody>
</table>

* Cut to customer thickness specifications +/- 0.125 mm.

Additional grades can be sourced upon request, subject to minimum order quantities.

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Toray CETEX® TC1000 can also be supplied as part of a patented hybrid panel solution, benefiting from the surface properties of the Reinforced Thermoplastic Laminate (RTL) capping a traditional Toray thermoset epoxy prepreg/Nomex® honeycomb core structure.
LOCATIONS AND CAPABILITIES

SOLUTIONS
- Thermoset composites
- Thermoplastic composites
- Thermoplastic laminates
- Carbon-free manufacturing
- Parts manufacture
- Sales office

CERTIFICATIONS
- ISO 9001:2015
- AS9100D
- ISO 14001:2015
- ISO 45001:2018

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