

# DISCOVER ULTEM™ RESIN FAMILY OF HIGH HEAT SOLUTIONS

## AN INTRODUCTORY GUIDE TO ULTEM, SILTEM™ AND EXTEM™ RESIN



When selecting materials for high-performance components, our ULTEM resin family may offer a solution to your design and manufacturing challenges. Discover the benefits and applications of our ULTEM performance blends, ULTEM reinforced materials, and novel specialty materials like SILTEM and EXTEM resins.

### HIGH HEAT RESIN FAMILIES

#### ULTEM RESINS

**Amorphous, transparent, polyetherimide (PEI) resin**

- Long-term high heat capability
- Dimensional stability
- Strength and modulus at high temperatures
- Inherent low flame, smoke, and toxicity (FST)
- Non-halogenated FR solution
- Hydrolytic and chemical stability
- IR transparent
- Stable dielectric

#### SILTEM RESINS

**Copolymer of ULTEM resin and siloxane soft blocks**

- Non-halogenated flexible solution
- Low temperature performance
- Good elongation

#### EXTEM RESINS

**Amorphous, thermoplastic polyimide (TPI)**

Everything ULTEM resin offers plus:

- Extreme high temperature performance
- Withstands lead free solder reflow temperatures



## HIGH HEAT PRODUCT FAMILIES

Under the ULTEM resin family, you will find performance blends, reinforced products, and specialty materials. ULTEM 1000 and ULTEM 1010 standard unfilled high-performance resins serve as the base material for blends and reinforced grades.

Base Resins	1000, 1010: standard unfilled high-performance resins
<b>Performance Blends</b> <a href="#">Added Value Blending ▶</a>	<b>ATX series:</b> Higher flow and higher impact
	<b>DU242, DU262:</b> Low temperature impact
	<b>DT1810EV, DT1820EV:</b> High flow, high ductility, transparent
	<b>DH1004, HU1004:</b> Ductile, transparent, hydrostable
	<b>9085, 9075:</b> Aircraft FAA, OSU
<b>Reinforced Products</b> <a href="#">Strength/Dimensional Stability ▶</a> <a href="#">Filled and Blends ▶</a>	<b>2000 series:</b> Standard flow and high flow
	<b>2x12 series:</b> Improved isotropy
	<b>2xEPR series:</b> Enhanced electroplatability
	<b>3473, 3310TD, 3452, ATX3562R:</b> Dimensional stability
	<b>SF 2000 series:</b> Super high flow
	<b>4000 series:</b> Wear resistance
	<b>AR9000 series:</b> Aircraft FAA, OSU
<b>Specialty Materials</b>	<b>ULTEM CRS5000 series:</b> Chemical resistance
	<b>EXTEM™ series:</b> Higher heat performance
	<b>SILTEM™ STM series:</b> Flexible, elastomer

## ULTEM RESIN PERFORMANCE BLENDS

Our proprietary polyetherimide ULTEM blends deliver benefits that can help solve challenging product design and manufacturing requirements. They are well suited for applications in multiple industries like telecommunications, automotive, aerospace, medical device, and industrial. Versus the ULTEM base resins, these blends offer improvements in impact, flow, ductility, durability, and chemical resistance, among others.

	PERFORMANCE BLENDS			
	ATX100 ATX200 DU242, DU262	DT1810EV DT1820EV	DH1004 HU1004	9085 9075
<b>APPEARANCE:</b>	<b>OPAQUE</b>	<b>TRANSPARENT</b>	<b>TRANSPARENT</b>	<b>OPAQUE</b>
<b>PERFORMANCE ADDED VS. BASE RESIN</b>	<ul style="list-style-type: none"> <li>Improved impact</li> <li>Improved flow</li> <li>DU242: Cold temp ductility</li> <li>DU262: Cold temp ductility + high heat performance</li> </ul>	<ul style="list-style-type: none"> <li>Improved ductility (22°C / 73°F)</li> <li>Improved visible and near IR transparency (%T)</li> <li>Higher flow</li> <li>180°C / 356°F Tg</li> </ul>	<ul style="list-style-type: none"> <li>Improved ductility (22°C / 73°F)</li> <li>Autoclave durability</li> <li>Improved base resistance</li> </ul>	<ul style="list-style-type: none"> <li>Robust scribed impact</li> <li>Higher impact</li> <li>Improved Flow</li> <li>Robust OSU/FST properties</li> <li>Lot certified</li> </ul>
<b>BENEFITS</b>	<ul style="list-style-type: none"> <li>Broad color ability</li> </ul>	<ul style="list-style-type: none"> <li>Increased durability</li> <li>Color metallization</li> <li>Longer flow lengths</li> <li>Thinner walls, lower weight</li> </ul>	<ul style="list-style-type: none"> <li>Longer service life</li> <li>Enhanced chemical resistance (vs. PSU)</li> <li>Improved fluid compatibility</li> <li>Excellent sterilization capability including STERRAD™ Systems</li> </ul>	<ul style="list-style-type: none"> <li>Light weight</li> <li>Durable</li> <li>Improved impact</li> </ul>
<b>EXAMPLE MARKETS WHERE ULTEM RESIN IS USED</b>	<ul style="list-style-type: none"> <li>Telecom</li> <li>Industrial</li> <li>Automotive</li> </ul>	<ul style="list-style-type: none"> <li>Consumer electronics</li> <li>Telecom</li> <li>Industrial</li> </ul>	<ul style="list-style-type: none"> <li>Medical Devices</li> <li>Animal Cages</li> <li>Infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Aerospace interiors</li> <li>Ground transport</li> <li>Additive mfg.</li> </ul>

## ULTEM™ REINFORCED RESIN SERIES

The addition of glass fiber reinforcement to the ULTEM base resin enhances tensile strength, stiffness, and overall dimensional stability. These materials can meet performance requirements in such markets as E&E, automotive, aerospace, and industrial.

	REINFORCED SERIES					
	2000 Series	2x12 Series	3473, 3452, 3310TD, ATX3562R	SF2000 Series	4000 Series	AR9000 Series
<b>APPEARANCE:</b>	OPAQUE	OPAQUE	OPAQUE	OPAQUE	OPAQUE	OPAQUE
<b>FILLER, %</b>	<ul style="list-style-type: none"> <li>10–40% GF</li> </ul>	<ul style="list-style-type: none"> <li>20, 30% milled glass</li> </ul>	<ul style="list-style-type: none"> <li>30-50% GF/mineral</li> </ul>	<ul style="list-style-type: none"> <li>20–30% GF</li> <li>Super flow series</li> </ul>	<ul style="list-style-type: none"> <li>20–25% GF + PTFE</li> <li>Unfilled 7-10% PTFE</li> </ul>	<ul style="list-style-type: none"> <li>10-30% GF</li> </ul>
<b>BENEFITS</b>	<ul style="list-style-type: none"> <li>Highest strength</li> <li>Strength/stiffness vs. weight</li> <li>High dimensional stability</li> </ul>	<ul style="list-style-type: none"> <li>Moderate strength</li> <li>Improved isotropy</li> <li>Dimensional stability</li> <li>EPR grades available</li> </ul>	<ul style="list-style-type: none"> <li>Dimensional stability</li> <li>Low CTE</li> <li>Weight reduction vs metal</li> <li>3310TD is near IR transparent</li> </ul>	<ul style="list-style-type: none"> <li>Highest flow</li> <li>2x higher spiral flow in thin wall applications vs. 2x12EPR series</li> </ul>	<ul style="list-style-type: none"> <li>Wear resistance</li> <li>Maintains mechanical strength and dimensional stability</li> </ul>	<ul style="list-style-type: none"> <li>Meets FAR 25.853 and OSU 65/65</li> <li>Low FST</li> <li>ECO conforming</li> </ul>
<b>EXAMPLE MARKETS WHERE ULTEM RESIN IS USED</b>	<ul style="list-style-type: none"> <li>Fiber optic &amp; electrical connectors</li> <li>Bracketry in aerospace and auto</li> </ul>	<ul style="list-style-type: none"> <li>Industrial</li> <li>Connectors</li> </ul>	<ul style="list-style-type: none"> <li>RF filter</li> <li>Duplexer</li> <li>Waveguide</li> </ul>	<ul style="list-style-type: none"> <li>Electric and electronic connector</li> <li>Burn in test socket</li> </ul>	<ul style="list-style-type: none"> <li>Electrical</li> </ul>	<ul style="list-style-type: none"> <li>Aerospace</li> </ul>

## SPECIALTY HIGH HEAT MATERIALS

These novel high heat materials are well suited for potential use in extreme chemical environments, wire coatings, and onboard optics.

	ULTEM™ CRS	SILTEM™	EXTEM™
	CRS5000 Series	STM Series	VH1003 XH1015UCL RH1016UCL
<b>APPEARANCE:</b>	TRANSPARENT	TRANSPARENT	TRANSPARENT
<b>PERFORMANCE ADDED VS. BASE RESIN</b>	<ul style="list-style-type: none"> <li>Improved chemical resistance in elevated temperature or immersed applications</li> </ul>	<ul style="list-style-type: none"> <li>Higher flexibility</li> <li>Improved low temperature performance</li> <li>Improved elongation</li> </ul>	<ul style="list-style-type: none"> <li>Improved high temperature performance</li> <li>VH: TG = 247°C</li> <li>XH: TG = 267°C</li> <li>RH: TG = 277°C</li> <li>Optical IR transparency</li> </ul>
<b>BENEFITS</b>	<ul style="list-style-type: none"> <li>Designed for demanding environments</li> <li>Broad agency compliance</li> <li>Also available as 10-30% GF reinforced</li> </ul>	<ul style="list-style-type: none"> <li>Abrasion resistance</li> <li>Non-halogenated flexible solution</li> <li>High elongation</li> </ul>	<ul style="list-style-type: none"> <li>High strength, stiffness and creep resistance at elevated temperatures</li> <li>XH, RH maintain optical performance after solder reflow</li> <li>XH also available as GF reinforced</li> </ul>
<b>EXAMPLE MARKETS WHERE THESE RESINS ARE USED</b>	<ul style="list-style-type: none"> <li>Aerospace</li> <li>Military &amp; defense</li> <li>Performance films</li> <li>Battery components</li> </ul>	<ul style="list-style-type: none"> <li>Wire and cable coating, conduits, jacketing</li> <li>Flexible components</li> </ul>	<ul style="list-style-type: none"> <li>IR transparent lens</li> <li>Mirrored Reflectors</li> <li>On-board optics</li> <li>Connectors</li> </ul>



## WE'RE ALWAYS HERE FOR YOU

Reach out to us for one-on-one support to ensure you have all the information and insights you need to choose the best-fit materials for your applications. Did you know that SABIC Specialties Business offers all these services and more?

- Product recommendations and samples
- Design and predictive engineering
- COLORXPRESS color matching services
- Teardowns and prototyping
- Processing technical support
- Application testing guidance
- Industry regulatory information

## CONTACT INFORMATION

### SABIC SPECIALTIES BUSINESS

#### AMERICAS

E: [Specialties.Americas@sabic-hpp.com](mailto:Specialties.Americas@sabic-hpp.com)  
T: +1 800 845 0600

#### ASIA PACIFIC

E: [Specialties.Asia@sabic-hpp.com](mailto:Specialties.Asia@sabic-hpp.com)  
T: +86 400 833 1033

#### EUROPE

E: [Specialties.EMEA@sabic-hpp.com](mailto:Specialties.EMEA@sabic-hpp.com)  
T: +36 1 288 3040



**SABIC MATERIAL FINDER**  
Find the right Specialties material  
for your application ▶



ULTEM, SILTEM, EXTEM  
RESINS

DISCLAIMER: ANY SALE BY SABIC, ITS SUBSIDIARIES AND AFFILIATES (EACH A "SELLER"), IS MADE EXCLUSIVELY UNDER SELLER'S STANDARD CONDITIONS OF SALE (AVAILABLE UPON REQUEST) UNLESS AGREED OTHERWISE IN WRITING AND SIGNED ON BEHALF OF THE SELLER. WHILE THE INFORMATION CONTAINED HEREIN IS GIVEN IN GOOD FAITH, SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY AND NONINFRINGEMENT OF INTELLECTUAL PROPERTY, NOR ASSUMES ANY LIABILITY, DIRECT OR INDIRECT, WITH RESPECT TO THE PERFORMANCE, SUITABILITY OR FITNESS FOR INTENDED USE OR PURPOSE OF THESE PRODUCTS IN ANY APPLICATION. Each customer must determine the suitability of seller materials for the customer's particular use through appropriate testing and analysis. No statement by seller concerning a possible use of any product, service or design is intended, or should be construed, to grant any license under any patent or other intellectual property right. SABIC and brands marked with <sup>TM</sup> are trademarks of SABIC or its subsidiaries or affiliates, unless otherwise noted.

© 2023 Saudi Basic Industries Corporation (SABIC). All Rights Reserved. Any brands, products or services of other companies referenced in this document are the trademarks, service marks and/or trade names of their respective holders.