

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 |
|---|---|
| Performance Blends Added Value Blending ▶ | ATX series: Higher flow and higher impact |
| | DU242, DU262: Low temperature impact |
| | DT1810EV, DT1820EV: High flow, high ductility, transparent |
| | DH1004, HU1004: Ductile, transparent, hydrostable |
| | 9085, 9075: Aircraft FAA, OSU |
| Reinforced Products Strength/Dimensional Stability ▶ Filled and Blends ▶ | 2000 series: Standard flow and high flow |
| | 2x12 series: Improved isotropy |
| | 2xEPR series: Enhanced electroplatability |
| | 3473, 3310TD, 3452, ATX3562R: Dimensional stability |
| | SF 2000 series: Super high flow |
| | 4000 series: Wear resistance |
| | AR9000 series: Aircraft FAA, OSU |
| Specialty Materials | ULTEM CRS5000 series: Chemical resistance |
| | EXTEM™ series: Higher heat performance |
| | SILTEM™ STM series: 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 |
| APPEARANCE: | OPAQUE | TRANSPARENT | TRANSPARENT | OPAQUE |
| PERFORMANCE ADDED VS. BASE RESIN | <ul style="list-style-type: none"> Improved impact Improved flow DU242: Cold temp ductility DU262: Cold temp ductility + high heat performance | <ul style="list-style-type: none"> Improved ductility (22°C / 73°F) Improved visible and near IR transparency (%T) Higher flow 180°C / 356°F Tg | <ul style="list-style-type: none"> Improved ductility (22°C / 73°F) Autoclave durability Improved base resistance | <ul style="list-style-type: none"> Robust scribed impact Higher impact Improved Flow Robust OSU/FST properties Lot certified |
| BENEFITS | <ul style="list-style-type: none"> Broad color ability | <ul style="list-style-type: none"> Increased durability Color metallization Longer flow lengths Thinner walls, lower weight | <ul style="list-style-type: none"> Longer service life Enhanced chemical resistance (vs. PSU) Improved fluid compatibility Excellent sterilization capability including STERRAD™ Systems | <ul style="list-style-type: none"> Light weight Durable Improved impact |
| EXAMPLE MARKETS WHERE ULTEM RESIN IS USED | <ul style="list-style-type: none"> Telecom Industrial Automotive | <ul style="list-style-type: none"> Consumer electronics Telecom Industrial | <ul style="list-style-type: none"> Medical Devices Animal Cages Infrastructure | <ul style="list-style-type: none"> Aerospace interiors Ground transport Additive mfg. |

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

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



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

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for your application ►



ULTEM, SILTEM, EXTEM
RESINS

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