High-Performance Polymers for Medical Equipment
Solvay is a global specialty polymers company with over 30 years of experience as a leading materials supplier to the healthcare industry.

We offer the broadest selection of high performance plastics that meet a wide variety of requirements for medical equipment applications and components.
Broadest selection of high-performance thermoplastics for medical equipment.

Global technical and regulatory support tailored to meet the unique demands of your project.

One of the most important decisions OEMs must make is choosing the right material. At Solvay, we have the material expertise to help you select the polymer that best fits your requirements.

**Get the Performance You Need**

The Healthcare industry constantly strives to reduce hospital acquired infections (HAI) by using strong disinfectants. Only a handful of polymers have the chemical resistance to stand up to these new procedures, and they are quickly replacing lower performing polymers that are no longer able to perform as needed.

Our high-performance polymers offer best-in-class resistance to disinfectants and can:

- Prevent cracking and crazing
- Retain clarity and transparency
- Extend product life
- Reduce costs

Our global technical support teams can guide you every step of the way to help you bring your product to market as seamlessly as possible.

In addition to material and design recommendations, we provide:

- Moldflow® process modeling
- Finite Element Analysis (FEA)
- Fabrication and assembly techniques
- Product testing and failure analysis
- Materials training
- On-site processing support
**Partially Aromatic Polyamides**

Partially aromatic polyamides are high-strength, high-heat polymers with low moisture absorption and broad chemical resistance. They are compounded with glass or carbon fibers to significantly improve mechanical properties, making them suitable for structural applications.

**Kalix® HPPA**

**High-performance polyamides**

Kalix® HPPA products are highly glass-filled compounds that combine a good surface finish with strength, rigidity and dimensional stability.

**Typical applications:**

Housings, covers, chassis, and frames

**Key Features:**

- High strength and rigidity
- Good surface finish
- Compatible with modified PC/ABS molds
- UL 94 V–0 rating
- Colorability

**Ixef® PARA**

**Polyarylamide**

Ixef® PARA compounds deliver very high stiffness and strength with an exceptional surface finish, even with 50–60% glass fiber reinforcement.

**Typical applications:**

Hinges, latches, bag holders, and structural components of hemodialysis machines

**Key Features:**

- Very high stiffness and strength
- Broad chemical resistance
- High flow for complex shapes
- High gloss, glass-free surface finish
- Best candidate for metal replacement
- UL 94 V–0 rating

**Amodel® PPA**

**Polyphthalamide**

Amodel® PPA outperforms standard polyamides with higher strength and stiffness at elevated temperatures, better dimensional stability in high humidity, and greater resistance to a broader range of chemicals.

**Typical applications:**

Handles, latches and back panels of infusion pumps

**Key Features:**

- High-heat strength and stiffness
- Dimensional stability
- Broad chemical resistance
- High impact strength
- UL 94 V–0 rating
**Sulfone Polymers**

Sulfone polymers is a family of high-heat, transparent thermoplastics that offer more toughness, strength, and hydrolytic stability than other transparent plastics. Extraordinary, inherent flame retardancy and high transparency.

**Udel® PSU**

**Polysulfone**

Udel® PSU is known for its toughness, stability and strength at high temperatures, making it a superior replacement for polycarbonate.

**Typical applications:**
Equipment housings, connectors, couplings, humidifier housings and PEEP chambers

**Key Features:**
- Transparency
- Resistant to strong disinfectants
- Higher heat resistance and better hydrolytic stability than polycarbonate
- Low creep under sustained loads at high temperatures
- Transparent and opaque colors

**Veradel® HC PESU**

**Polyethersulfone**

Veradel® HC PESU offers the highest stiffness of all sulfone polymers and is particularly suited for high-temperature electrical applications.

**Typical applications:**
Pump housing components for hemodialysis machines and transparent sensor housings

**Key Features:**
- Better transparency than PEI
- Higher heat resistance than PSU
- Resistant to strong disinfectants
- High flow rate for intricate geometries
- Excellent electrical properties
- Transparent and opaque colors

**Radel® PPSU**

**Polyphenylsulfone**

Radel® PPSU is an incredibly tough, transparent plastic that delivers the highest performance of our sulfone polymers.

**Typical applications:**
Mobile device housings, connectors, impellers, reagent trays, racks and vial holders for in-vitro diagnostics

**Key Features:**
- Transparency
- Superior toughness and impact strength
- Resistant to strong disinfectants
- Compatible with ultrasonic welding and silicon overmolding
- Inherently flame retardant
- Good electrical properties
- Transparent and opaque colors
Ultra Polymers

Ultra polymers are ultra high-performance plastics that thrive in extreme environments. They are characterized by exceptional performance properties, including superior chemical, thermal, creep, fatigue and wear resistance along with inherent flame retardant properties.

**AvaSpire® PAEK**
Polyaryletherketone

AvaSpire® PAEK is a family of customized high-performance polyketones tailored to fill cost-performance gaps between PEEK and other high-performance polymers. For example, ductility and toughness can be significantly improved versus comparable grades of PEEK, delivering 20% higher tensile elongation at yield and doubled tensile elongation at break values.

Depending on the grade, AvaSpire® PAEK outperforms comparable grades of PEEK.

**Key Features:**
- Higher stiffness from 150–190°C (302–374 °F)
- Improved ductility and toughness
- Equal or better chemical resistance
- UL 94 V-0 rating at 0.8 mm
- Comparable strength and stiffness at up to 30 % lower cost
- Excellent aesthetics and colorability

**KetaSpire® PEEK**
Polyaryletherketone

KetaSpire® PEEK offers the best combination of fatigue resistance and chemical resistance. It can operate at high temperatures and retains its excellent mechanical properties at continuous-use temperatures up to 240 °C (464 °F), allowing it to replace metal in severe end-use environments. Glass fiber-reinforced and carbon fiber-reinforced grades provide a wide range of performance options.

**Key Features:**
- Retains excellent mechanical properties at high temperatures
- Exceptional chemical resistance
- Best-in-class fatigue resistance
- Superior wear resistance
- Excellent dimensional stability

**Flow Cell Chip Holder for Genome Sequencers**
KetaSpire® PEEK

**Autoclavable Battery Housing**
AvaSpire® PAEK

**Hemodialysis Machine Heat Exchanger**
KetaSpire® PEEK
# Advanced Polymer Solutions for Medical Equipment

## Performance Properties

<table>
<thead>
<tr>
<th></th>
<th>Kaltix® HPPA</th>
<th>Ixef® PARA</th>
<th>Amodel® PPA</th>
<th>Udel® PSU</th>
<th>Veradel® HC PESU</th>
<th>Radel® PPSU</th>
<th>AvaSpire® PAEK</th>
<th>KetaSpire® PEEK</th>
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<tbody>
<tr>
<td>Compatibility with disinfectants</td>
<td>•••</td>
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<td>Impact strength</td>
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<td>High stiffness</td>
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<td>Aesthetics, surface finish</td>
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<td>Colorability</td>
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<td>Metal replacement (strength &amp; stiffness)</td>
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<tr>
<td>UL 94 V–0</td>
<td>–(2)</td>
<td>–(2)</td>
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<td>–(2)</td>
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<td>Low dielectric constant</td>
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## Ease of Processing

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<th>Molding</th>
<th>Extrusion</th>
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</table>

(1) Outperforms polycarbonate (PC)
(2) Can be formulated to meet V–0

- Good
- Better
- Best
- Best
- n/a
- Not applicable

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** Bubble CPAP Machine**  
**Humidifier Housing and PEEP Chamber**  
**Udel® PSU**

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** Slider Stainer Carousel**  
**Radel® PPSU**
Safety Data Sheets (SDS) are available by emailing us or contacting your sales representative. Always consult the appropriate SDS before using any of our products.

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