



SOLVAY

asking more from chemistry®



High-Performance Polymers for
Medical Equipment

**SPECIALTY
POLYMERS**



Advanced Polymer Solutions 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



**Infusion Pump
Handles, Latches,
Back Panels**
Amodel® PPA

Housings
Kalix® HPPA

**Hemodialysis Machine
Structural Components**
Ixef® PARA

**Pump Housings and Other
Internal Components**
Udel® PSU, Veradel® PESU,
Radel® PPSU



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



High Pressure Impeller
Radel® PPSU

Surgical Light Handle
Radel® PPSU



Equipment Housing
Udel® PSU



Sensor Housing
Veradel® PESU



Bar Code Scanner Housing
Radel® PPSU



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

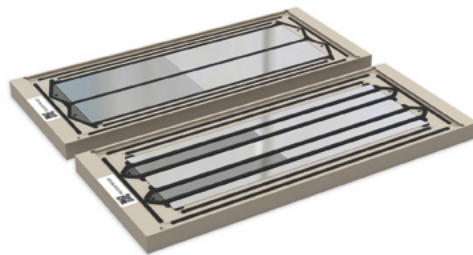
KetaSpire® PEEK

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

	Kalix® HPPA	Ixef® PARA	Amodel® PPA	Udel® PSU	Veradel® HC PESU	Radel® PPSU	AvaSpire® PAEK	KetaSpire® PEEK
Performance Properties								
Compatibility with disinfectants	●●	●●	●●	● ⁽¹⁾	●	●●●	●●●	★
Impact strength	●	●	●●	●●	●●	★	●●●	●●●
High stiffness	●●	●●●	●●	●	●	●	●●	●●
Aesthetics, surface finish	●●	★	●	●●●	●●●	●●●	●●	●●
Transparency	n/a	n/a	n/a	●●●	●●●	●●●	n/a	n/a
Colorability	●●	●●	●	●●●	●●●	●●●	●	●
Metal replacement (strength & stiffness)	●●●	★	●●●	●	●●	●	●●●	★
UL 94 V-0	— ⁽²⁾	— ⁽²⁾	yes	— ⁽²⁾	yes	yes	yes	yes
Low dielectric constant	—	●●	●●	●●	●●	●●	●●	●●
ISO 10993 compliant grades	no	yes	no	yes	yes	yes	yes	yes
Ease of Processing								
Molding	●●●	●●●	●●●	●●	●●●	●	●●●	●●●
Extrusion	n/a	n/a	●	●●●	●●●	●●●	●●	●●
Thermoforming	n/a	n/a	●●	●●	●●	●●	★	●

⁽¹⁾ Outperforms polycarbonate (PC)

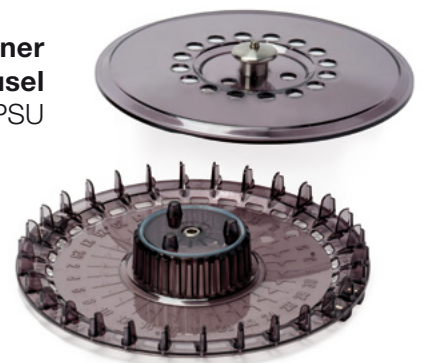
⁽²⁾ Can be formulated to meet V-0

● Good ●● Better ●●● Best ★ Best n/a Not applicable

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



**Slider Stainer
Carousel**
Radel® PPSU





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