victrex



Advancing aerospace connectors.

With VICTREX™ PEEK and PAEK Polymer Solutions

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With VICTREX™ PEEK polymer solutions

High-performance thermoplastic solutions for advanced and sustainable air mobility

The evolving aerospace connector landscape

Aerospace connectors face unprecedented demands. More Electric Aircraft (MEA) systems require connectors capable of handling 270-540VDC while reducing overall weight.

Urban air mobility and eVTOL platforms experience 3-5x more vibration cycles than traditional aircraft. Meanwhile, sustainability mandates drive PFAS restrictions and demand recyclable materials.

As the industry pushes toward electrification, miniaturisation, and net-zero targets, traditional connector materials like LCP and PPS reveal critical limitations – from brittle weld lines to narrow temperature ranges.

VICTREX™ PAEK polymers – including new ultra-high purity PEEK grades, **VICTREX LMPAEK™** with lower melting point options and controlled crystallinity, and cryogenic solutions like **VICTREX CT™ polymers**– offer the expanding portfolio of properties needed to meet these converging challenges, with the added benefit of full recyclability to support circular economy goals.



Extreme temperature cycling

Thermal shock from -55°C cold to +260°C causes material fatigue and connector failure



Energy efficiency targets

Every gram saved translates to fuel efficiency and reduces environmental impact, supporting ESG goals



Sustainability requirements

Recyclability and longer service life increasingly mandated, PFAS alternatives required Low smoke and toxicity emissions



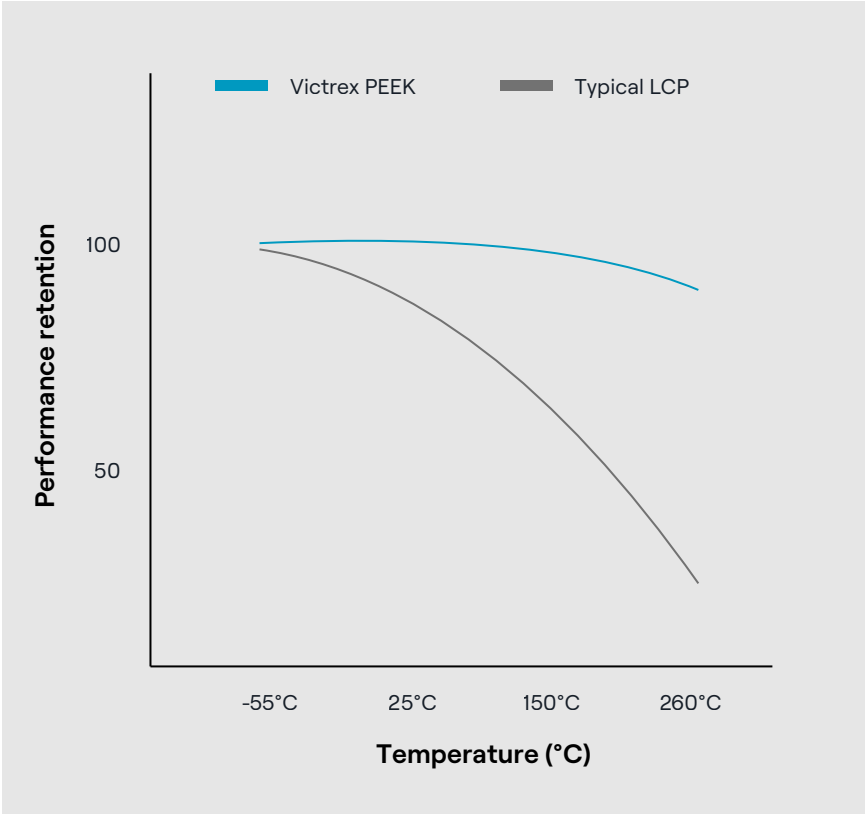
Increased power demands

Higher voltages and currents in more compact spaces require optimised part designs with reliable performance

Solving tomorrow’s connector challenges.

With VICTREX™ PEEK polymer solutions

With its inherent and unique combination of material properties, VICTREX PEEK and PAEK solutions can outperform traditional materials such as LCP, metals and others, enabling enhanced component designs and reliable performance. Our PFAS-free, halogen-free formulations meet today's technical demands while ensuring compliance with tomorrow's environmental regulations and supporting your circular economy goals.



Representative comparison showing typical property retention trends.
Actual performance varies by specific grade and application.
Consult technical data sheets for detailed specifications.

Stable performance

- -55°C to +260°C continuous use
- Resists aerospace fluids & fuels
- Minimal moisture absorption
- Maintains properties in all conditions

Design efficiency

- Excellent specific strength
- Enables thinner walls (0.1mm capability)
- Wide processing window reduces scrap
- Simplified part consolidation

Safety & compliance

- FAR 25.853 compliant grades
- UL 94 V-0 at 0.8mm thickness
- PFAS-free formulations available
- Proven aerospace heritage

Sustainable performance

- Fully recyclable material
- No halogenated flame retardants
- Long service life reduces replacements
- Weight savings lower fuel consumption

Performance comparison.

The transition to miniaturised, high-density aerospace connectors has exposed critical limitations in traditional high-performance polymers.

- While LCP offers excellent flow for thin-wall moulding, its weld-line strength is poor (typically retaining only 30-40% of base properties) and can potentially lead to high reject rates and field failures in multi-gated parts.
- PPS provides good chemical resistance but suffers from brittleness, poor impact resistance, and lacks the temperature range needed for engine-zone applications.
- PA66, though lightweight, suffers from moisture absorption that compromises dimensional stability.
- VICTREX PEEK's excellent weld-line strength retention, combined with its -55°C to +260°C operating range and moisture resistance, enables reliable miniaturised connectors that meet the demanding requirements of next-generation aircraft while reducing total lifecycle costs through improved yields and extended service life.

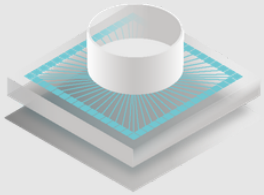
Material property	VICTREX™ PEEK*	LCP	PPS	PA66
Operating temperature range (°C)[2]	-55 to +260[1]	-40 to +240[2]	-40 to +200[2]	-30 to +80
Weld-line strength retention[3]	Excellent	Poor	Average	Good
Density (g/cm^3)	1.30	1.4-1.7	1.35	1.14
Moisture absorption (%)	0.1-0.2	0.02	0.02	2.5-3.0

*Typical values for unfilled grades at 23°C.
[1]VICTREX CT™ family available for cryogenic applications down to -260°C.
[2]Temperature ranges are typical values from material suppliers' published data. Actual performance depends on specific grades, duration of exposure, and mechanical loading. Please verify with specific technical data sheets for your application.
[3] Victrex internal assessment



Typical application areas.

Potential benefits of VICTREX PEEK



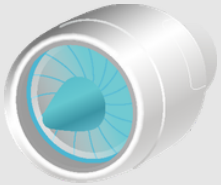
Power distribution

- MEA systems
- Weight reduction
- Higher reliability



Signal & data

- Stable signals
- Miniaturisation Potential
- EMI protection



Engine zone

- No degradation
- Less cooling
- Longer service life



Structural

- EMI shielding
- Easy installation
- No corrosion

From power-hungry eVTOL platforms to extreme engine environments, our high-performance thermoplastic PEEK and PAEK polymers enable connector solutions across every aircraft zone. They are designed to not just meet specifications – but to continuously unlock new design possibilities that reduce weight, extend service intervals, and eliminate common failure modes.

Whether replacing brittle LCP in miniaturised signal connectors or enabling metal-to-plastic conversion in power distribution systems, VICTREX PEEK delivers measurable improvements in yield, reliability, and total cost of ownership across all aerospace platforms – from traditional commercial aircraft to next-generation urban air mobility vehicles.

#1

PEEK expert.

40+

years of experience.

Why Victrex?

From the commercialisation of PEEK over 40 years ago, Victrex has continually pioneered new PAEKbased polymer solutions that have transformed markets, delivering global impact in the toughest environments. Trusted by leading OEMs and Tiers, our solutions have been specified in some of the most critical application spaces.

Supporting our customers' productivity

- Custom formulations optimised for your specific requirements.
- Expert 'On-site or remote' processing support.
- Security of supply with #1 global capacity for PEEK and PAEK.

Accelerating innovation

- Faster innovation and product scale up through PEEK - dedicated R&D and manufacturing facilities.
- Supporting ESG goals.

Proven performance

Watch here ↗

Proven performance the world relies on.

Innovating beyond traditional PEEK

VICTREX continues to expand the boundaries of PAEK technology. From ultra-high purity grades to cryogenic materials, from enhanced electrical insulation properties to controlled crystallinity rates and advanced joining techniques – we're developing solutions for evolving industry challenges.

Our expanding portfolio and technical expertise help you achieve improved processing efficiency and lower total component costs with materials optimised for your applications.

Connector reliability can be transformed. Whether you're battling LCP brittleness in miniaturised designs or seeking more sustainable alternatives for high-temperature applications, discover how leading aerospace manufacturers eliminate field failures with VICTREX PEEK and PAEK solutions.

Contact our aero team directly



victrex



Contact us for more information

I need help selecting products

Click here

I want a quote

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Contact Victrex

Click here

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