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Unravelling Polymers
The Definitive Blog on Polymers by Poly Fluoro Ltd.

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PTFE vs PEEK - A Comparison of Properties

Although both PTFE (https://polyfluoroltd.com/products/) and PEEK are well established within their respective fields, there are frequently questions around which would better suit a given application. OEMs typically have to make a choice based on technical suitability and hence need to be better informed as to how these materials match up against each other.

Below is a short comparison on properties between these two polymers and can be used a guide to aid new product development.

Parameter	PTFE	PEEK	Preferred material
Price	Moderately expensive	Very expensive	PTFE
Tensile Strength	25-35 Mpa	90-100 Mpa	PEEK
Elongation	350-400%	30-40%	PTFE
Compressive Strength	30-40 Mpa	140 Mpa	PEEK
Flexural Modulus	495 Mpa	3900 Mpa	PEEK
Coefficient of Friction	0.03-0.05	0.35-0.45	PTFE
Temperature resistance	Up to 250°C	Up to 250°C	NA
Dielectric strength	50-150 Kv/mm	50 Kv/mm	PTFE
Chemical resistance	Virtually inert	Affected by Sulphuric acid	PTFE
Coefficient of linear thermal expansion	14 x 10-5/K	5 x 10-5/K	PEEK
Machine-ability	Good	Very good	PEEK

In a nutshell, applications requiring strength and low levels of deformation would usually employ PEEK (https://polyfluoroltd.com/products/), whereas those requiring resistance to voltage or chemicals utilize PTFE. PTFE also rates highly in that it is self-lubricating. This makes it a preferred choice in high wear applications.

The biggest disadvantage of PEEK remains the price. It is roughly 10 times the price of PTFE and as a result has remained a niche polymer, used only in applications where it is absolutely necessary.

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