



Product information

Business Case – Compounds to meet mechanical, tribological and chemical demands

The tribologically optimised Ensinger compounds based on aliphatic polyketone stand out for their versatility: the polymer is very tough, has good sliding and tribological behaviour – even when paired with the same kind of material – and also high chemical resistance. Thanks to the special combination of mechanical, tribological and chemical properties, the modified TECACOMP PK TRM compounds are particularly suited to technical components in the automotive sector. However, with this comparatively new polymer Ensinger is also offering the oil, gas and chemical industries a cost-effective alternative to high-temperature plastics.

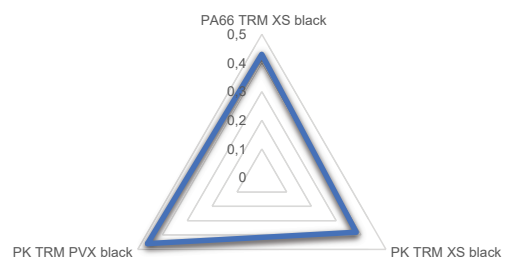
Three TECACOMP PK TRM compounds

The Ensinger range includes three compounds optimised with additives. TECACOMP PK TRM CF20 is reinforced with carbon fibres and achieves optimised mechanical properties along with high wear resistance. The compounds TECACOMP PK TRM PVX and TECACOMP PK TRM XS are additionally modified with solid lubricants for improved sliding properties. In model testing, the XS variant demonstrates around 50 percent less wear and tear than polyamide 66 and has a longer useful life. And processing-wise, too, TECACOMP PK TRM compounds have significant advantages: Since polyketone crystallises comparatively quickly during injection moulding, cycle times can be reduced – and productivity in manufacture increased.

Optimum sliding and tribological behaviour

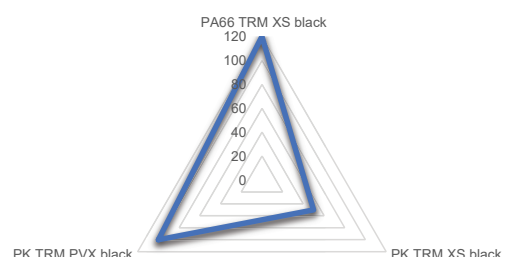
Ensinger compounds based on polyketone have special tribological properties. Usually, sliding partners made from similar types of plastic demonstrate poor wear behaviour. Polyketone has the unusual feature of also functioning well in a pairing of two similar types of plastic. But the PK compounds display good tribological behaviour towards metals, too.

Dynamic friction coefficient



Sphere (100Cr6), prism (compound), rotating, room temperature, ISO 7148/2

Average wear (µm)



Mechanical properties

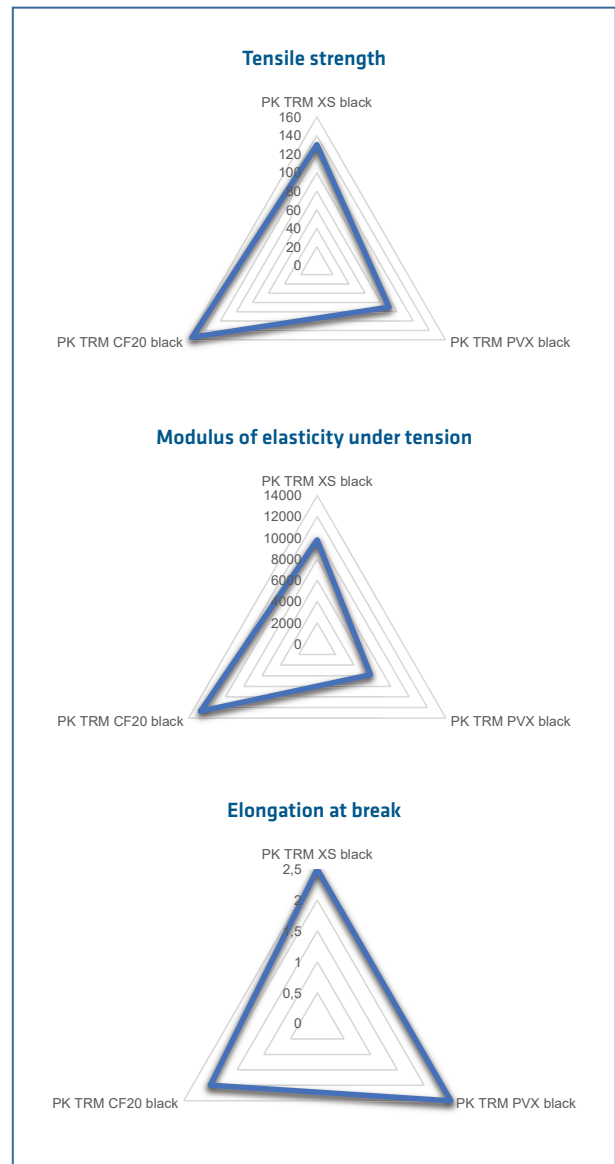
Compared with other engineering plastics, polyketone stands out for high impact strength. Freshly injection-moulded polyketone has the highest elongation at break of all semi-crystalline thermoplastics ($\epsilon_B > 200\%$). Thanks to low moisture absorption, materials made from polyketone achieve high dimensional accuracy and constant mechanical properties. TECACOMP PK TRM compounds can also be used for all components exposed to moisture over a long period.

Resistances and barrier effect

A further particular advantage of polyketone is its resistance to several chemicals. The polymer is resistant to weak acids, bases and lubricants which polyamides do not normally withstand. Such chemical resistance is otherwise only known in high-temperature plastics in the higher price segments, for example PEEK or PPS. Another property of polyketone is a very good barrier effect against many media of low molecular weight such as oxygen, hydrogen and fuels. What is more, the material has good hydrolysis resistance.

Features

- very tough
- high chemical resistance
- good sliding and tribological behaviour



Summary

The TECACOMP polyketone TRM formulations are reinforced with additives. Consequently, they offer optimised mechanical properties and high wear resistance and/or improved sliding properties, depending on the product. Polyketone offers many advantages in production and/or application with regard to productivity and when comparing prices.

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