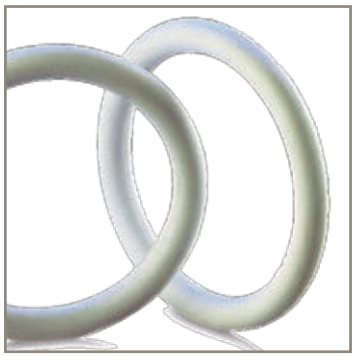


HiFluor®

Resistance and resilience

aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

Parker Prädifa

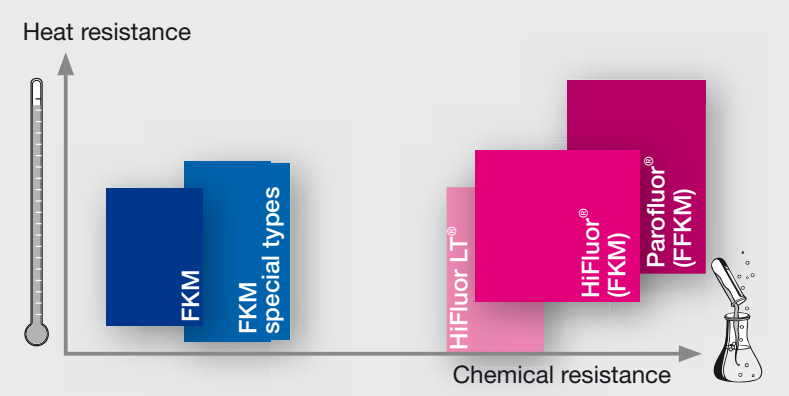
ENGINEERING YOUR SUCCESS.

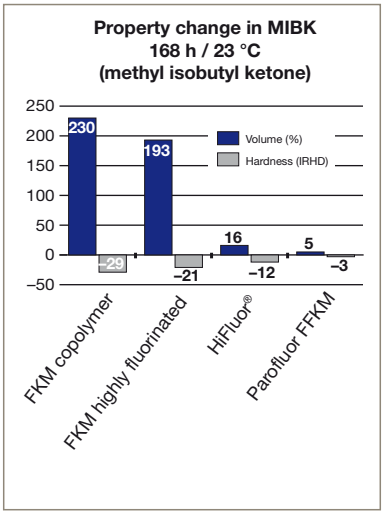
HiFluor® sealing compounds

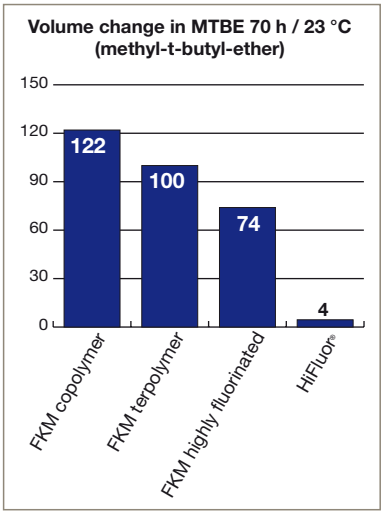
combining resistance with resilience

Test results have shown that even highly fluorinated fluorocarbon elastomers (FKM) are incompatible with solvents like methyl isobutyl ketone (MIBK) used in the paints and lacquers industry for example. While perfluorinated elastomers (FFKM) offer excellent chemical resistance to virtually all media, their elastic properties usually are clearly inferior to those of fluorocarbons. The consequences for seals: relatively large, permanent deformations and often insufficient low-temperature flexibility.
As an alternative, Parker has developed a new type of elastomer compound, which combines the elastic properties of fluorocarbon compounds with a level of chemical resistance nearly matching that of perfluorinated elastomers: HiFluor®

HiFluor® owes its outstanding chemical and physical properties to a highly flexible element that has been incorporated into the main chain of the perfluorinated elastomer polymer. Thanks to its excellent chemical resistance, outstanding elastic properties and favourable price/performance ratio, the **HiFluor®** product family offers a number of application benefits.





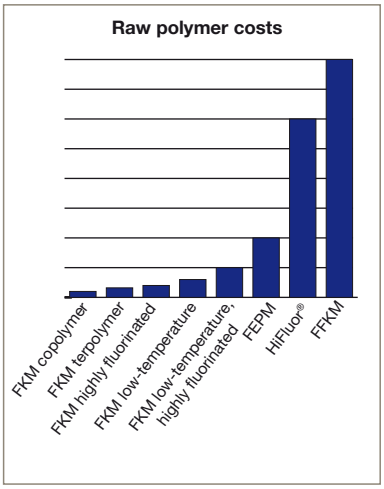


Chemical resistance

In virtually all media HiFluor® compounds offer a level of chemical stability comparable to that of perfluorinated elastomers. Particularly in polar solvents HiFluor® outperforms FKM compounds, even highly fluorinated variants. The figures show the results of comparative measurements between HiFluor® V3819-75, FKM and FFKM in methyl isobutyl ketone (MIBK) and methyl butyl ether (MTBE).

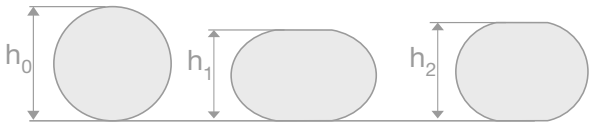
Overview of HiFluor® benefits

- Temperature resistance from –60 to +250 °C
- Very low compression set
- In-house compound development and mixing, engineering design, tooling and production
- Quality management system according to DIN EN ISO 9001:2000 and ISO/TS 16949



Elasticity

HiFluor® compounds have a very low compression set and are therefore extremely reliable materials.
Compression set is the permanent deformation that remains after relieving the load from a standard sample or finished part that has been deformed under specified conditions. It is a measure for an elastic material's loss of resilience. In practical terms, a high compression set means a considerable loss of sealing force and increased risk of leakage.



Calculation of compression set

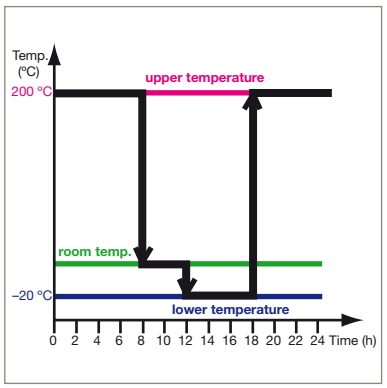
$$DVR = \frac{h_0 - h_2}{h_0 - h_1} \cdot 100\ (\%)$$

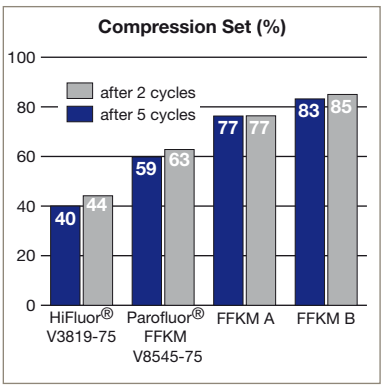
h_0 = O-ring cross-section or original height of test specimen
h_1 = Height of test specimen in deformed state
h_2 = Height of test specimen after a specified period of relaxation

The Parker temperature cycle test

There is a clear difference between compression set at constant temperatures and changing or cyclical temperatures. Sealing problems with perfluorinated elastomers at changing temperatures inspired the development of a cycle test performed on an o-ring under field-like conditions.
The test run involves five cycles at temperatures between –20 and +200 °C. The original compression is 15 %. The test specimen is relaxed at room temperature within 30 minutes. The measurements are made afterwards.

HiFluor® V3819-75 shows the lowest compression set, followed by Parofluor® (FFKM) V8545-75, which is still clearly better than other conventional perfluorinated elastomers.
The low compression set of the HiFluor® compound preserves a high level of sealing force in service conditions.





The low-temperature specialist

HiFluor LT® is primarily used in extremely low-temperature processes involving aggressive media requiring the level of chemical resistance typically offered by perfluorinated elastomers but exceeding the low-temperature flexibility of perfluorinated elastomers. The incorporation of silicon into the perfluorinated polymer chain achieves outstanding low-temperature properties (down to –60 °C).
This compound is particularly well suited for use with fuels, additives, solvents as well as water and water vapour.

Products for painting and printing

We offer finished products, such as sealing elements for printing systems and painting lines, which are free from any substances that inhibit paint or varnish wetting.

Clean room production

On request, we incorporate clean room production into our processes to manufacture UHP (Ultra High Purity) products for contamination-critical applications, such as medical technology, semiconductors and high-tech research.
Our UHP manufacturing process guarantees maximum purity across the whole process chain – from compounding through to packaging the finished seal.

- Exclusive use of selected, ultra-pure raw materials.
- Moulding tools for UHP products are made from a special steel with an additional coating.
- While processing UHP products critical manufacturing data (dimensional and process data) are recorded and evaluated, using statistical process control (SPC).
- UHP products are subject to 100 % inspections based on tolerances smaller than those specified by DIN 3771. This standard defines the permissible deviations for o-rings regarding dimensions, shape and surface.
- Various grades of packaging are available for UHP products: combined packs, single packs, cleaning with an isopropanol-water mixture, all the way to packing in a class 100 clean room.

HiFluor® product solutions

HiFluor® offers versatile application solutions in all industrial disciplines – from the conventional o-ring in standard dimensions (imperial or metric), available within one to two weeks, to diaphragms and engineered components based on customer drawings.
HiFluor® compounds can be processed in rubber-metal composites as well. Composites can be created with a wide range of metals.

Our in-house tooling and prototyping department assures flexible sampling of pre-production parts with short lead times.

Parker HiFluor® compounds

HIFLUOR
FLUOROELASTOMER

Standard compounds

Compound designation	Hardness (Shore A)	Colour	Temperature range (°C)	Properties / applications
V3819-75	75	black	–25 / +250	Extremely low compression set at cyclical temperatures. Excellent availability in Parker standard dimensions.
V8534-90	90	black	–25 / +250	Improved resistance to explosive decompression and gap extrusion. Off-shore and petrochemical applications.

Special compounds

Compound designation	Hardness (Shore A)	Colour	Temperature range (°C)	Properties / applications
V8730-70	70	white	–25 / +250	Food industry applications. Meets FDA CFR21 No. 177.2600 requirements. Particularly suitable for use with high processing temperatures and aggressive media.
V3852-65	65	black	–25 / +250	Preferably used for moulded functional components and membranes/diaphragms.
V8789-55	55	black	–25 / +250	Sealing applications with reduced deformation force.

HIFLUOR LT
FLUOROELASTOMER

Compound designation	Hardness (Shore A)	Colour	Temperature range (°C)	Properties / applications
V8752-65	65	black	–60 / +200	Low-temperature high-performance elastomer with broad chemical resistance.

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