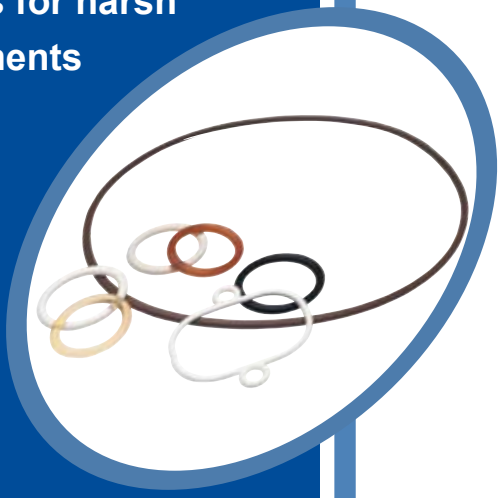
Fluorocarbons for harsh environments



Fluorocarbons (FKM's) are synthetic rubbers developed to provide superior levels of resistance to high temperatures and aggressive chemicals such as fuels, mineral oils, ozone and organic solvents.

Because of these characteristics, FKM's are particularly suitable for applications in automotive, oil and gas, chemical processing and semi-conductor industries, as well as applications in any market segment that requires an elastomeric material to function in harsh conditions.

The chemical resistance and heat stability of fluorocarbons are due to the levels of fluorine content within the recipe of the material. Varying levels of fluorine content and cure method will determine the elastomers compatibility with aggressive chemicals and working temperature range.

Ceetak offer a range of fluorocarbon materials with various levels of fluorine content (as shown overleaf). The technical information demonstrates the range of materials and brands of fluorocarbons available. Depending on the application criteria, our technical engineers can recommend a cost effective fluoroelastomer to meet your application requirements.

Ceetak can supply fluorocarbon materials in a wide range of sealing solutions, including:- o-rings, quad seals, moulded shapes, ground rubber balls and metal/elastomer bonded parts.

Benefits to customer:-

- Good chemical compatibility
- High service temperature (up to 320°C)
- Various cost effective versions for application requirements
- Range of shore hardness

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Shown below is a summary of available fluorocarbon polymers and some of their characteristics (please note; the following designations i.e. A, B, GF are based on widely recognised classifications established by Dupont Dow Elastomers)

A or E type FKM – The oldest and most common, these FKM's typically have a fluorine content of 66%. These grades are considered a "general-purpose" FKM and exhibit low compression set, but are not resistant to flex fuels containing high levels of alcohol or MTBE.

B Type FKM – Generally have a fluorine content of 67%, and developed to offer better fluid resistance to acids and flex fuels than A or E type FKM's.

GF or F Type FKM – An extension of the B Type FKM technology with an increase in fluorine content (70%) to provide improved solvent and fuel resistance. They are generally used in flex fuel and agricultural applications where a variety of aggressive chemicals are routinely used.

GLT Type FKM – Developed to improve low temperature flexibility compared with traditional A or E type FKM's. Their low temperature flexibility normally reaches -40°C, but they are not suitable for flex fuels or aggressive solvents.

GFLT Type FKM – Developed to balance fluid resistance with improved low temperature flexibility compared to GLT type FKM's. They generally have a fluorine content of 69% and are suitable for flex fuel applications whilst rated at approximately -35°C.

69% Fluorine FKM – Generally containing 69% fluorine content, these materials were designed to improve the balance of mechanical properties with improved fluid resistance. These materials offer excellent resistance to agricultural chemicals and flex fuels, as well as dramatically improved compression set resistance compared to other high fluorine content materials.

AFLAS™ - This is the trademark name for a copolymer of tetrafluoroethylene and propylene (TFE/P) manufactured by Asahi Glass. Developed to provide resistance to strong bases, amines, steam and polar solvents such as acetone and methyl ethyl ketone (MEK). They generally have 60% fluorine content and are typically used in chemical process and energy, oil and gas industries.

Viton® Extreme - Viton® is a trademark name of Dupont Elastomers. Chemically, Viton ® Extreme is a terpolymer of Ethylene, Tetrafluoroethylene and Perfluoro Methyl Vinyl Ether. The first letters of these three components form the acronym "ETP" that is sometimes used to describe this product. These materials generally have 73.5% fluorine content and offer improved resistance to aggressive solvents.

AFLAS™ is a trade name of Asahi Glass
Viton® is a tradename of Dupont Dow Elastomers
Hifluor™is tradename of Parker Hannifin Corp

Hifluor™ - This material generally contains 74.5% fluorine which further improves chemical resistance. Hifluor™ is an attractive alternative in the chemical processing industry where very good chemical resistance is required without the 320°C heat resistance of a perfluoroelastomer.

FFKM's (Perfluoroelastomers) – With a fluorine content of 75% FFKM's are formulated specifically for use in the most demanding sealing applications. Perfluoroelastomers offer a temperature range of up to 320°C and ensures the best overall resistance to aggressive chemicals and solvents.

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Ceetak Ltd Head Office:
Fraser Road, Priory Business Park,
Bedford, MK44 3WH
Tel: 01234 832200
Fax: 01234 832299

Web: www.ceetak.com
Email: info@ceetak.com

Ceetak Aberdeen:
Block 1, Unit 13,
Souterhead Rd,
Altens Industrial Estate,
Aberdeen, AB12 3LF
Tel: 01224 249690
Fax: 01224 249691