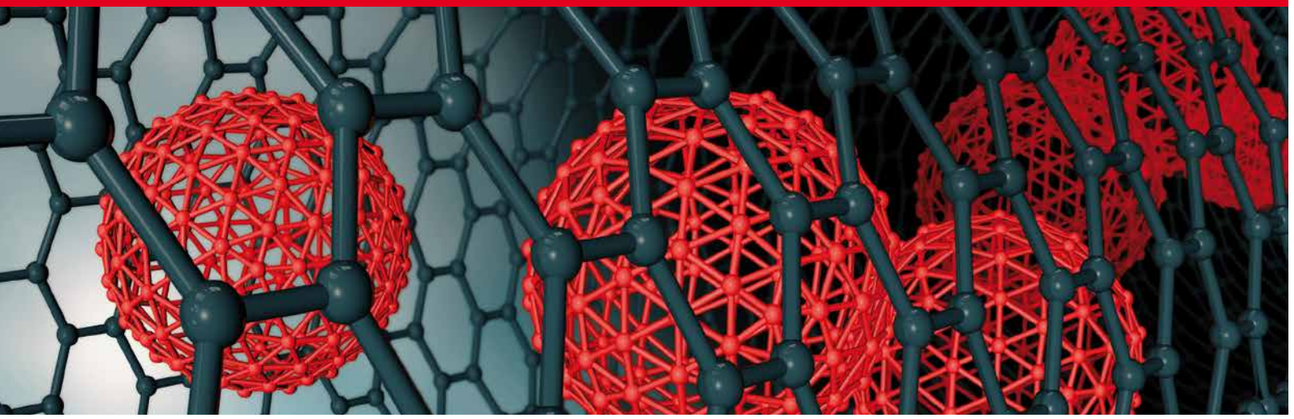
PERTEC® – The new generation of Angst+Pfister high-performance materials



The demands on materials for use in a variety of industries are becoming increasingly more challenging. The focus is not only on the longevity of the materials with respect to reliable performance when exposed to occasionally extreme conditions such as very high or low temperatures, aggressive fluids, gases or extreme physical loads, but the operational safety of machines and systems also has to be guaranteed. In addition, many of the materials must be legally approved. These materials are rightly referred to as high-performance compounds.

Anyone involved in international operations and markets continually faces new challenges and must be able to rely on the performance of their operational facilities. This necessitates longevity of the machines to avoid production stoppages through service down time and the resulting sales losses or costs.
It goes without saying that a machine's durability depends substantially on the quality of its components, whereby the materials used to manufacture these components are always being improved in order to fine tune their performance to changing requirements and deliver incremental improvements.

In this regard, compounding has become one of the key fields in engineering when it comes to high-performance elastomers, to the extent that it is very important for parts manufacturers to work together with specialist partners who can supply specially formulated compound and who are highly-skilled developers.

For many years now Angst+Pfister has understood the importance of compounding to its customers, particularly its increasing significance in the future, and can lay claim to significant experience in this area. Incorporating these competencies in the high performance portfolio was only the first step. It is first and foremost about growing this field of expertise and continually improving it, in order to be certain of providing customers with good customised solutions that keep pace with the latest technologies and meet the new challenging requirements. This means continual learning, research, investing, and testing.

A significant and important step for Angst+Pfister was the strategic alliance with TSF S.p.A from Italy, one of the global market leaders for the development and production of high-performance elastomers, because through the alliance the compounding capabilities of the Angst+Pfister Group are expanded and access is assured to the know-how of a company that is considered to be one of the global leaders in this area.

Compounding elastomers for sealing or anti-vibration parts is an artful and precise science. The skilful combination of polymers with additives and the correct kneading time not only result in the vulcanised elastomeric compound having the physical characteristics and performance values required by the final application, but also ensuring a raw material that can be efficiently used in injection or compression molds in such a manner as to minimise waste and ensure good flow properties. Angst+Pfister knows that access to material engineering know-how and competence in chemistry, combined with experience reflected in a stock of existing recipes, know-how in development are the basis for delivering the most effective and efficient solutions to our customers.

With PERTEC® Angst+Pfister has developed a new generation of high-performance elastomers with excellent material qualities for a range of industrial uses. The growing PERTEC® family has a whole range of high-performance elastomers that are specially designed for specific industries and internationally certified with all necessary approvals.

The first very successful ongoing projects, and satisfied customers, show that with PERTEC® Angst+Pfister has created a new high-performance material that fulfils individual needs for solutions in the area of sealing technology at the highest technological level.
And that is not the end of it. Angst+Pfister is continually determining the needs of the market and identifying the segments in which the new high-performance mixtures can offer significant improvements for industrial applications and also benefit the TCO of customers.

Please contact us for support in finding the specific solution for your requirements under engineering@angst-pfister.com

Current approvals

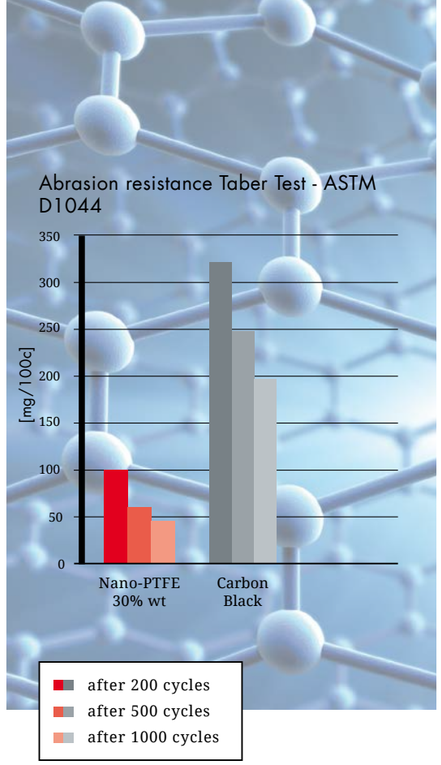
3-A Sanitary Standard Number 18-03 Class I	LFGB § 30/31
BfR XV (Silicone)	SR 817.023.21
BfR XXI (Natural and synthetic rubber) Category 4	USP Class VI Ch. <87> (in vitro) and Ch. <88> (in vivo) 121°C
DVGW EN 549 D2/H3	PAH Category 1 (AfPS GS 2014:01)
EC 1935/2004 article 3	PAHs requirements according Regulation (EU) No 1272/2013
FDA - CFR 21 - 177.2600 food a) - f)	
French Arrete 25.11.92 No 293	
GB 4806.11-2016	
KIWA NSF/ANSI 51 formulation	

PERTEC® NP FKM

In contrast to the conventional coating of materials to improve their performance, a new class of peroxide-cured PERTEC® NP FKM compounds has now been developed based on nano-PTFE, the qualities of which are extraordinary. It has very high abrasion resistance, is highly resistant to chemicals, and has a very low permeability. In spite of its high degree of hardness, it has very good tensile strength and contains no metal ions.

The advantage, in contrast to the standard methods using PTFE powder is that material accumulation can be avoided, dispersion is very homogeneous, and a degree of filling up to 40% (using PTFE powder max. 6%), is possible, as well as simultaneously achieving good mechanical qualities.

The Angst+Pfister products that are typically made of PERTEC® NP FKM, are O-rings, molded parts, and membranes, which are particularly suited for valves, pumps, and couplings for the pharmaceutical, food, and chemical industries.



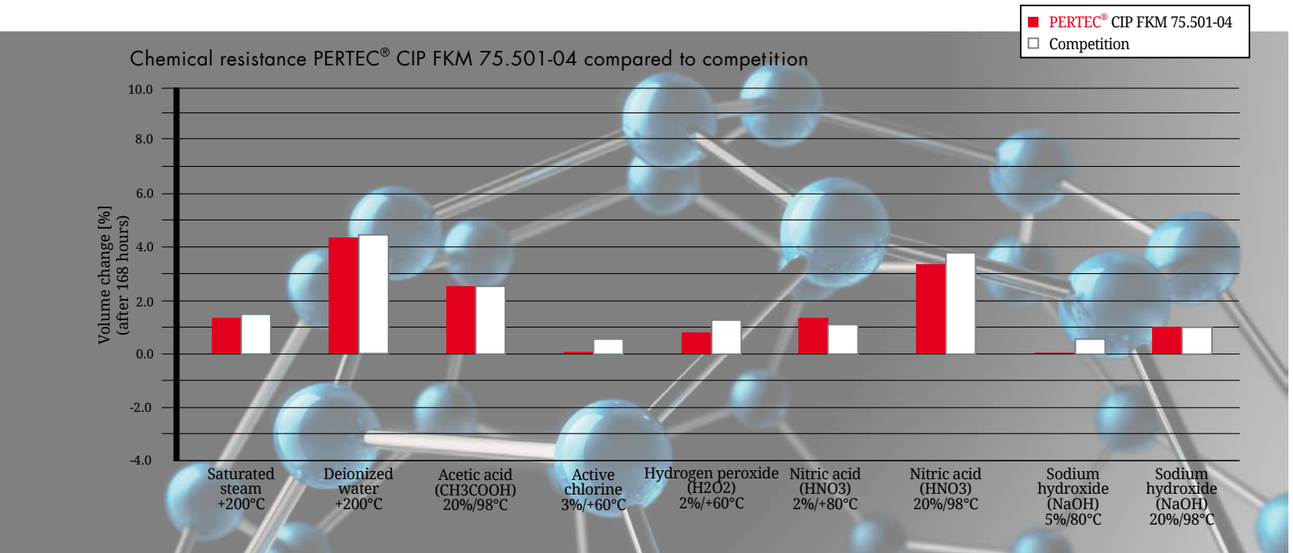
PERTEC® CIP/SIP FKM

With PERTEC® CIP/SIP FKM a new special high-performance elastomer has been developed for use in CIP (Cleaning In Place) and SIP (Sterilisation In Place), systems that are in use where a very high level of hygiene is mandatory, such as in the food, pharmaceutical, medical, and chemical industries. In these systems, the application components and materials are exposed to aggressive chemicals (e.g. nitric acid or hypochlorite) in cleaning materials, as well as high concentrations of grease and extreme temperatures.

PERTEC® CIP/SIP FKM complies with all the regulations relevant for these industries, see page 5.

Thanks to the very high fluorine content, PERTEC® CIP/SIP FKM has very good chemical resistance and is resistant to very high temperatures up to +200°C. It shows very good abrasion resistance and very low permeability.

Angst+Pfister produces mainly O-rings, molded parts, membranes, and dynamic sealings from PERTEC® CIP/SIP FKM for use in the pharmaceutical, food, medical, and chemical industries.



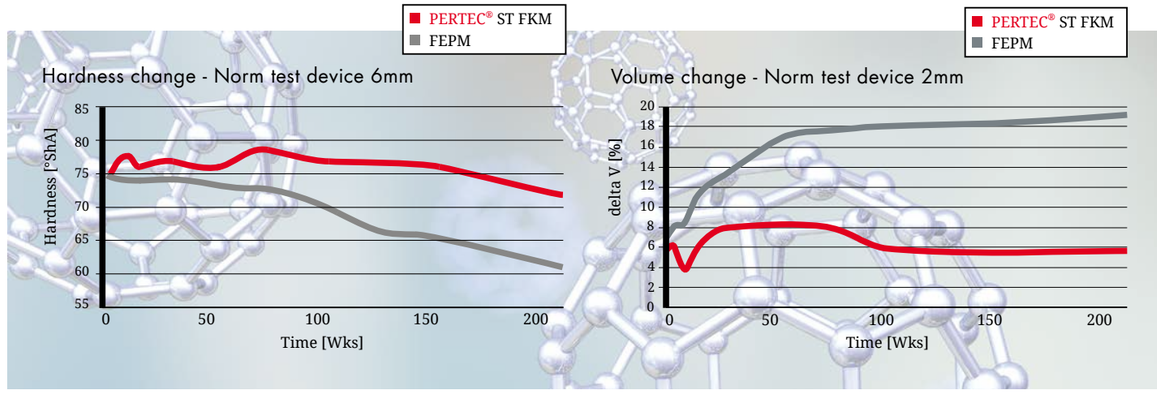
PERTEC® ST FKM

PERTEC® ST FKM is a high-performance elastomer which is particularly suited for use in contact with steam and hot water, not least because of its high resistance at temperatures from -15°C to +200°C. It has been developed by Angst+Pfister to be resistant to a multitude of aggressive chemicals, mineral oils, and grease as well as ozone, weather, aging, and is oxygen compatible with very low permeability.

The special mix makes very economical processing possible for both compression (CM) and injection methods (IM), which in turn offers very high flexibility with regard to the optimal, tailor-made production. This results not just in very high quality, but also has a beneficial effect on the price.

The high fluorine concentration ensures exceptionally high resistance to very high temperatures, making it particularly suitable for steam applications such as steam heating units, steam turbines, steam jet pumps, gas atomisers (gas flares) or steam cleaning.

The main application of PERTEC® ST FKM is for O-rings, molded parts and membranes for couplings, turbines, pumps, and valves for the chemical industry.

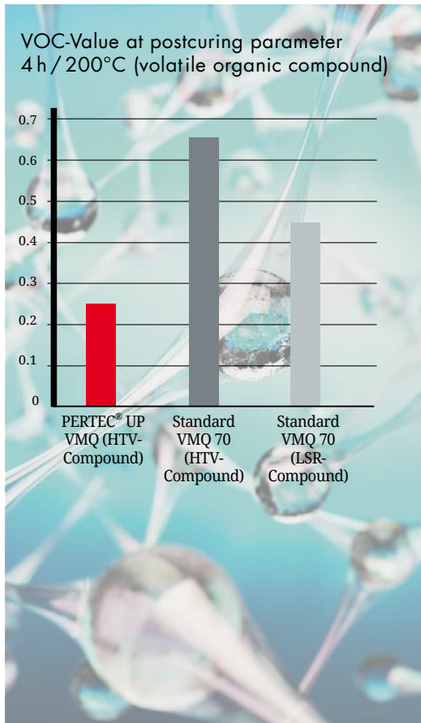


PERTEC® UP VMQ

PERTEC® UP VMQ is a new high-performance elastomer specially developed for uses in which absolute material cleanliness is mandatory. The name itself says this - UP stands for ultra-pure. The focus lies on uses for the food, pharmaceutical, and medical industries, where complete material sterility is the most important requirement. In these sectors there can be no contamination of the environment by the materials in use. The specific requirements are prescribed in various international regulations. PERTEC® UP VMQ complies with all global food contact regulations, see page 5. Furthermore, all substances used in the compound are listed in the EU as well as the US food industry regulations.

PERTEC® UP VMQ is also characterised by very good mechanical qualities in a temperature spectrum from -60°C to +200°C. It has very good resistance to a multitude of aggressive chemicals, has very good tensile strength, and low VOC (Volatile Organic Compounds) content.

Typical Angst+Pfister products made of PERTEC® UP VMQ are O-rings, molded parts, and membranes for drinking water applications and for uses in the pharmaceutical, medical, and chemical industries.



* This information is based on our available data. These values are measured on standard test specimens and are within the normal tolerance range of material properties and do not represent guaranteed property values. Therefore they shall not be used for specification purposes.