Chemical resistance
FERMAPOR K31

The following list contains an assessment of the chemical resistance of the gaskets produced with

FERMAPOR K31

with respect to different chemical products and with respect to products contained in technical packaging.

After 2 weeks of action at room temperature of the substances tested, the swelling, softness, tensile strength and elongation at break of the gaskets were measured, and then compared with the initial values.

It should be noted that these tests were carried out under the so-called standard conditions, where chemicals have been used in the pure solution, which often does not reflect the values actually used in practice, which employ concentrations at % ...

Mixing the products, transforming them, working them etc. at variable temperatures and at variable conditions can also result different values from each other. Therefore the classification cannot be considered binding as it cannot hold account of all the possibilities of use of the products.

To check the use for an application, the duration and intensity of the contact with the chemical components, the concentration as well as the temperature of use must be evaluated.
As a rule it is essential to carry out a test under practical conditions of use. For this type of request, we are at your complete disposal with our Laboratory and Sonderhoff Technical Application Assistance

The evaluation in the attached list was performed with values ranging from 1 to 5, where 1 is equal to excellent and 5 equal to very bad, and in detail:

			Swelling (in volume)	**Hardness Loss of tensile strength**
1	=	Great	0 - 5%	0 - 10%
2	=	Good	5 - 30%	10 - 20%
3	=	Acceptable	30 - 100%	20 - 50%
4	=	poor	100 - 200%	over 50%
5	=	Destroyed		

The data on swelling and loss of mechanical strength are mostly reversible, when it comes to solvents and organic substances (Petrol, Ethyl alcohol etc.). After the evaporation of the solvents, the FERMAPOR K31 seals regain the old resistance values practically unchanged. The damage caused instead from Acids and Alkaline Solutions are not reversible (Nitric Acid, Caustic Soda solutions etc.)

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Test substances	Swelling (volume)	Loss of hardness and resistance
Ethylene glycol acetate	3	3
Butyl acetate	3	2
Ethyl acetate	4	3
Methyl acetate	4	4
Acetylene	1	1
Vinegar	2	1
Acetone	5	5
Benzoic acid	1	1
Boric acid	1	2
Citric acid 10 %	1	2
Hydrochloric acid 10 %	1	3
Chromic acid	5	5
Formic acid	5	4
Nitric acid 10 %	5	5
Oleic acid	1	1
Sulfuric acid, concentrated	5	5
Water	1	1
Seat water	1	1
Acrylates	2	1
Polymer emollient agents	1	1
Dodecyl alcohol	2	2
Ethyl alcohol	3	3
Carbon dioxide	1	1
Argon	1	1
Nitrogen	1	1
Petrol	3	2
Gasoline solvent	3	2
Butandiole	1	1
Butanol	3	3
Ammonium carbonate	1	1
Barium carbonate	1	1
Calcium carbonate	1	1
Cyclohexanone	4	4
Calcium clocide, aqueous	1	1
Ammonium hydrochloride	1	1
Chlorobenzene	4	3
Chloroform	4	3
Barium chloride	1	1
Methylene chloride	5	5
Paints and paints for painting	2	1

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Test substances	Swelling (volume)	Loss of hardness and resistance
Fuel for Diesel engines	2	2
Decaline, decahydronaphthaline	2	2
Detergents, detergents	1	1
Dibutylphthalate	3	4
Diethyl ether	3	2
DMF, dimethylformamide	5	5
Helium	1	1
Emulsifiers and humectants based on fatty alcohols	1	1
Heptane	2	1
Sulfur hexafluoride	1	1
Hexane	2	1
Esters of fatty acids, synthetic and natural	1	1
Esters of adipic acid	1	1
Phosphoric acid esters	1	1
Phthalic acid esters	1	1
Sebacic acid esters	1	1
Sulfonic acid esters	1	1
Epoxy esters	1	1
Ethanol	3	3
Ether	3	2
Ether of oil	3	2
Ammonium fluoride	1	1
Exhaust gases (containing carbon monoxide)	1	1
Exhilarating gas	1	1
Natural gas	1	1
Glycerine	1	1
Butyl glycol	2	1
Diethylene glycol	2	1
Ethylene glycol	2	2
Animal and vegetable fats and oils	2	1
Hydrogen	1	1
Aluminum hydroxide	1	1
Barium hydroxide	1	1
Printing inks based on pre-treated oils and phthalic resins	1	1
Ink	1	1
Synthetic latex	2	1
Natural latex	1	1
Brake fluid	5	4
MEC, methyl ethyl ketone	5	4

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Test substances	Swelling (volume)	Loss of hardness and resistance
Mercury	1	1
Methane	1	1
Methanol	3	3
Methyl isobutyl ketone	4	3
Acetylated monostearates	1	1
Glycerine monostearate	1	1
Neon	1	1
Aluminum nitrate	1	1
Lead nitrate	1	1
Butyl oleate	2	1
Mineral oils and products derived from mineral oils	1	1
Silicone oils and fats	1	1
Epoxidized oils	1	1
Etheric oils and their emulsions	1	1
Castor oil	1	1
Linseed oil	2	2
Osteocolla	1	1
Ozone	2	2
Paraffin and paraffin derivatives	1	1
Perchlorethylene	4	4
Polyglycol	1	1
Polyester polyols	1	1
Polyether polyols	1	1
Propanol	3	2
Alkyd resins	2	1
Formaldehyde urea resins, containing butanol	3	2
Exposure resins	1	1
Melamine resins, alcoholic solutions	2	1
Polyamide resins	1	1
Satune and unsaturated polyester resins	1	1
Polyurethane resins	1	1
Cooking salt	1	1
Magnesium salts	1	1
Potassium saltsi	1	1
Sodium salts	1	1
Anionic sulfates of fatty alcohol esters	1	1
Barium sulfate	1	1
Lauryl sulfate	1	1
Sulfonates of alkyl	1	1
Ammonium sulfide	1	1

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Test substances	Swelling (volume)	Loss of hardness and resistance
Caustic potash solution, 1N	1	4
Soap solution	1	1
Caustic soda solution, 1N	1	3
Aqueous, slightly acidic or detergent solutions alkaline (pH 5-9)	1	1
Cleaning solutions, watery, slightly acidic or alkaline (pH 5-9)	1	1
Solutions of alkyd resins in aliphatic hydrocarbons	2	2
Silicone resins solutions, diluted in hydrocarbons aliphatic	2	1
Solvent-naphtha	3	2
Detergents	1	1
Spirit to burn	3	3
Styrene, monomer	5	4
Sweat	2	1
Carbon tetrachloride, "Tetra"	4	4
Tetrahydrofuran	5	5
Tetrahydronaphthalene	3	3
Tetralin	2	1
Butyl Titanate	1	1
Toluene	4	3
Turpentine	3	2
Trichlorethylene, "Tri"	4	3
Urea, watery	1	1
Urine	1	1
Vaselline	1	1
Paint based on pretreated oils and synthetic resins with percentages of aliphatic and aromatic hydrocarbons	2	1
Paint based on alcohol soluble binder systems	3	2
Xenon	1	1
Xylene	4	3
Zeolite	1	1