

RIEGER SEALING GUIDE

For Mix Proof
and Single Seat Valves



GENERAL TEMPERATURES AND CLEANING SPECIFICATIONS FOR SEAL MATERIALS

	EPDM	HNBR	FKM	XP40/XP41		TFM 1705	PEEK
				static	dynamic		
Continuous operating temperature product (temperatures <math><T_{\min}</math> available on request)	min. 1 °C / 33.8 °F max. 130 °C / 266 °F	min. 1 °C / 33.8 °F max. 110 °C / 230 °F	min. 1 °C / 33.8 °F max. 130 °C / 266 °F	min. 1 °C / 33.8 °F max. 200 °C / 392 °F	min. 10 °C / 50 °F max. 200 °C / 392 °F	min. 1°C / 33,8 °F max. 121 °C / 250 °F	min. 1°C / 33,8 °F max. 200 °C / 392 °F
Steam Temperature continuous short-time (max. 20 min.)	max. 130 °C / 266 °F max. 150 °C / 302 °F	max. 110 °C / 230 °F max. 130 °C / 266 °F	max. 130 °C / 266 °F max. 150 °C / 302 °F	max. 180 °C / 356 °F	max. 160 °C / 320 °F	max. 121 °C / 250 °F max. 135 °C / 275 °F	max. 160 °C / 320 °F
Sodium Hydroxide* Temperature	aqueous <math><5\%</math> min. 1 °C / 33.8 °F max. 80 °C / 176 °F	aqueous <math><3\%</math> min. 1 °C / 33.8 °F max. 80 °C / 176 °F	aqueous <math><5\%</math> min. 1 °C / 33.8 °F max. 80 °C / 176 °F	aqueous <math><5\%</math> min. 1 °C / 33.8 °F max. 80 °C / 176 °F	aqueous <math><5\%</math> min. 10 °C / 50 °F max. 80 °C / 176 °F	aqueous <math><5\%</math> min. 10 °C / 50 °F max. 80 °C / 176 °F	aqueous <math><5\%</math> min. 10 °C / 50 °F max. 80 °C / 176 °F
Nitric/Phosphoric/ Peracetic Acid* Temperature	aqueous <math><3\%</math> min. 1 °C / 33.8 °F max. 80 °C / 176 °F	aqueous <math><1,5\%</math> min. 1 °C / 33.8 °F max. 80 °C / 176 °F	aqueous <math><1,5\%</math> min. 1 °C / 33.8 °F max. 80 °C / 176 °F	aqueous <math><5\%</math> min. 1 °C / 33.8 °F max. 80 °C / 176 °F	aqueous <math><5\%</math> min. 10 °C / 50 °F max. 80 °C / 176 °F	aqueous <math><5\%</math> min. 10 °C / 50 °F max. 80 °C / 176 °F	aqueous <math><5\%</math> min. 10 °C / 50 °F max. 80 °C / 176 °F
Aqueous Disinfectants (based on peracetic acid)*	aqueous <math><0,7\%</math> min. 1 °C / 33.8 °F max. 80 °C / 176 °F	not advisable not advisable not advisable	aqueous <math><0,2\%</math> min. 1 °C / 33.8 °F max. 80 °C / 176 °F	aqueous <math><5\%</math> min. 1 °C / 33.8 °F max. 80 °C / 176 °F	aqueous <math><5\%</math> min. 10 °C / 50 °F max. 80 °C / 176 °F	aqueous <math><5\%</math> min. 10 °C / 50 °F max. 80 °C / 176 °F	aqueous <math><5\%</math> min. 10 °C / 50 °F max. 80 °C / 176 °F

* Keep contact times as short as possible. After the cleaning process, the product-touched and nearby surfaces (e.g. leakage space at Mix Proof Valves) have to be flushed with pure water. Long contact times, especially with disinfectants, have to be avoided.

All information and values mentioned in this chart are solely intended for orientation and are not obligatory for the use of our valves with the respective seal material. This sealing guide was created in close cooperation with our suppliers of seals. Further, our decade-long experience in diverse applications are considered therein. However, the life cycle of seals can be additionally influenced by factual conditions of use, such as temperature changes, mechanical stresses of the seals, or media concentration in the system on site. These factors can only be evaluated in a detailed examination.

To determine a selection of seals for applications without existing experience, please contact us and please check all parameters in detail.

Gebr. Rieger cannot be held liable for the published values.

GENERAL RESISTANCE OF SEAL MATERIALS

	EPDM	HNBR	FKM	XP40/XP41	TFM 1705	PEEK
suitable for	<ul style="list-style-type: none"> / excellent resistance against hot water and steam / milk with fat content <20% at max. 20 °C / Applications on low temperatures / for applications in conjunction with Ozon 	<ul style="list-style-type: none"> / animal fats (e.g. milk) / vegetable fats (olive oil) / aliphatic, aromatic and chlorinated hydrocarbons (e.g. mineral oil, crude oil) 	<ul style="list-style-type: none"> / a wide range of chemical applications / heat and weather condition / low-molecular, organic acids (e.g. formic acids and acetic acids) / animal fats 	<ul style="list-style-type: none"> / mineral oils and fats / nonpolar media like e.g. hexane / animal and vegetable fats, oils and waxes / aliphatic and aromatic hydrocarbons / essential oils and flavouring substances / high temperature ranges / CIP-/SIP-media for continuously runned systems in the food and pharma industry 	<ul style="list-style-type: none"> / almost all before mentioned media (e.g. milk, diverse acids and lyes, animal and vegetable oils) / adhesive media -> flat surface prevents adhesion of residues / chemical applications -> better resistance than all other elastomers 	<ul style="list-style-type: none"> / excellent heat resistance / excellent chemical resistance / suitable for animal and vegetable fats / high stiffness / very high erosion resistance against solid particles / extreme wear resistance
not suitable for	<ul style="list-style-type: none"> / vegetable and animal fats / aliphatic, aromatic and chlorinated hydrocarbons (e.g. mineral oil, crude oil) / citrus juice and flavours 	<ul style="list-style-type: none"> / overheated steam / certain cleaning and disinfecting agents (nitric acid, formic acid, peracetic acid) / polar solvents (acetone, methylketones, ethyl acetate, diethyl ether) -> strong swelling -> mechanical damage 	<ul style="list-style-type: none"> / aliphatic, aromatic and chlorinated hydrocarbons (e.g. mineral oil, crude oil) / very cold temperatures (<0 °C/32 °F) / limited suitability for hot water/ steam 	<ul style="list-style-type: none"> / oxidizing media (e.g. hypochlorite), respectively polar organic solvents (e.g. acetic acid) / concentrated acids (e.g. nitric acid, formic acid) / concentrated oxidizing media (e.g. peracetic acid) 	<ul style="list-style-type: none"> / hydraulic oil / general radioactive radiation / high temperatures (>135 °C or 135 °C for more than 20 minutes) / condensate drops in steam / high steam velocity 	<ul style="list-style-type: none"> excellent resistance against diverse organic solvents, oils, weak acids and lyes not resistant against UV radiation combined with atmospheric oxygen
				<ul style="list-style-type: none"> / isolated polar solvents (e.g. ethylenediamine) and ketones (e.g. methyl ethyl ketone) 		

Possible Application Areas

<ul style="list-style-type: none"> / first choice for a wide range of application areas 	<ul style="list-style-type: none"> / dairies / beer wort in breweries 	<ul style="list-style-type: none"> / chemical processes / special cleaning procedures / processes with H₂O₂ (hydrogen peroxide) / lemonade concentrate (e.g. Cola) / for higher fat contents in dairies without use of hot SIP 	<ul style="list-style-type: none"> / for flavourings / for dairy products with high fat content (also applicable for high SIP temperatures) 	<ul style="list-style-type: none"> / aseptic and non-aseptic processes in dairy and pharmacy / in the chemical industry against aggressive media / processes with H₂O₂ (hydrogen peroxide) 	<ul style="list-style-type: none"> / in processes with highly viscous and adhesive media / for products with grains, fibers or solids / will be applicable in hygienic and aseptic processes
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