





# SÜDMO VALVE SEALING GUIDE

SINGLE SEAT VALVES

GENERAL CONSISTENCY	EPDM	HNBR	FKM	P³-DIAPHRAGM	PEEK (in combination with P³ diaphragm)	PTFE BELLOW
	+ very good hot water and steam resistancy + very good low temperature performance + good ozone resistancy (light resistance) + very high elasticity + very good durability (long tifetime)	+ suitable for animal fat contents (e.g. milk) + suitable for vegetable fat contents (e.g. olive oil) + long lifetime + aliphatic, aromatic and chlorinated hydrocarbons (e.g. mineral oil, crude oil)	+ very good chemical resistancy + very good heat and weather resistancy + hardly flammable + suitable for low molecular weight, organic acids (e.g. formic acid and acetic acid) + good swelling resistancy	+ extremely high chemical resistancy + very good temperature resistancy + good form stability + high mechanical capacitance	+ very good heat resistancy + very good chemical resistancy + suitable for animal fat contents (e.g. milk) + suitable for vegetable fat contents (e.g olive oil) + high stiffness	+ high chemical resistancy + low adhesive factor + low sliding coefficient
	- vegetable and animal oils - aliphatic, aromatic and chlorinated hydrocarbons (e.g. mineral oil, crude oil) - citron juices and flavors	- overheating steam - susceptible to certain detergents and disinfectants (nitric acid, formic acid or peracetic acid) - strongly swelling in polar solvents (acetone, methylcetone, ethylacetate, diethylether)	- non rubber-elastic material - aliphatic, aromatic and chlorinated hydrocarbons (e.g. mineral oil, crude oil) - critical at very cold temperatures (-20°C/-4°F) - high heat expansion co-efficient	- fluorine	- Tight grooveness for sticky media (e.g. straw-berries) not guaranteed in PEEK-ring execution - expensive	- limited temperature stability - limited form stability
TYPICAL APPLICATION AREAS	• First choice for a multitude of applications	• Dairy • Gyle area in breweries	• Chemical processes • Special cleaning procedures • Processes with H <sub>2</sub> O <sub>2</sub> (hydrogen peroxide) • Coke concentrate	• Aseptic process applications	• Aseptic processes with very high temperatures (e.g pudding), so no additional elastomeric sealing element is required	• Aseptic process applications



DOUBLE SEAT VALVES

GENERAL CONSISTENCY	EPDM	HNBR	FKM
	+ very good hot water and steam resistancy + very good low temperature performance + good ozone resistancy (light resistance) + very high elasticity + very good durability (long tifetime)	+ suitable for animal fat contents (e.g. milk) + suitable for vegetable fat contents (e.g. olive oil) + long lifetime + aliphatic, aromatic and chlorinated hydrocarbons (e.g. mineral oil, crude oil)	+ very good chemical resistancy + very good heat and weather resistancy + hardly flammable + suitable for low molecular weight, organic acids (e.g. formic acid and acetic acid) + good swelling resistancy
	- vegetable and animal oils - aliphatic, aromatic and chlorinated hydrocarbons (e.g. mineral oil, crude oil) - citron juices and flavors	- overheating steam - susceptible to certain detergents and disinfectants (nitric acid, formic acid or peracetic acid) - strongly swelling in polar solvents (acetone, methylcetone, ethylacetate, diethylether)	- non rubber-elastic material - aliphatic, aromatic and chlorinated hydrocarbons (e.g. mineral oil, crude oil) - critical at very cold temperatures (-20°C/-4°F) - high heat expansion co-efficient
TYPICAL APPLICATION AREAS	• First choice for a multitude of applications	• Dairy • Gyle area in breweries	• Chemical processes • Special cleaning procedures • Processes with H <sub>2</sub> O <sub>2</sub> (hydrogen peroxide) • Coke concentrate

PLEASE NOTE

The resistance figures shown here are based on averages and are given as a guideline, in coordination with our seal suppliers. Due to variable factors, such as temperatures, mechanical forces, media concentrations, and plant-specific operating parameters, the actual seal service life may vary. The information provided is for general orientation only and Pentair Südmo does not guarantee. Please contact us for application specific cases or complex operating conditions.

BUTTERFLY VALVES

GENERAL CONSISTENCY	EPDM	HNBR	FKM	VMQ	PTFE LAMINATED
	+ very good hot water and steam resistancy + very good low temperature performance + good ozone resistancy (light resistance) + very high elasticity + very good durability (long tifetime)	+ suitable for animal fat contents (e.g. milk) + suitable for vegetable fat contents (e.g. olive oil) + long lifetime + aliphatic, aromatic and chlorinated hydrocarbons (e.g. mineral oil, crude oil)	+ very good chemical resistancy + very good heat and weather resistancy + hardly flammable + suitable for low molecular weight, organic acids (e.g. formic acid and acetic acid) + good swelling resistancy	+ high thermal stability + good low temperature flexibility + good dielectric prooporties + good resistancy against oxygen, ozone and ultraviolet radiation + extremely high chemical resistancy, when usual EPDM is no longer sufficient	+ very good chemical resistancy + very good durability (long lifetime) + good swelling resistancy in almost all parts
	- vegetable and animal oils - aliphatic, aromatic and chlorinated hydrocarbons (e.g. mineral oil, crude oil) - citron juices and flavors	- overheating steam - susceptible to certain detergents and disinfectants (nitric acid, formic acid or peracetic acid) - strongly swelling in polar solvents (acetone, methylcetone, ethylacetate, diethylether)	- non rubber-elastic material - aliphatic, aromatic and chlorinated hydrocarbons (e.g. mineral oil, crude oil) - critical at very cold temperatures (-20°C/-4°F) - high heat expansion co-efficient	- hot temperatures over 80°C/ 176°F	- poor temperature flexibility - non rubber-elastic material - difficult to maintain
TYPICAL APPLICATION AREAS	• First choice for a multitude of applications	• Dairy • Gyle area in breweries	• Chemical processes • Special cleaning procedures • Processes with H <sub>2</sub> O <sub>2</sub> (hydrogen peroxide) • Coke concentrate	• Aromatics	• Concentrate lines

SINGLE SEAT VALVES

PRODUCTION PARAMETERS	EPDM	HNBR	FKM	P <sup>3</sup> -DIAPHRAGM	PEEK (in combination with P <sup>3</sup> diaphragm)	PTFE BELLOW
Product						
Max. operation temperature	95°C / 203°F	95°C / 203°F	80°C / 176°F	160°C / 320°F	160°C / 320°F	120°C / 248°F
Min. operation temperature	1°C / 33.8°F	1°C / 33.8°F	1°C / 33.8°F	1°C / 33.8°F	1°C / 33.8°F	1°C / 33.8°F
Steam						
Temperature max. (continously)	130°C (± 2.7 bar) / 266°F (± 39.1 psi)	121°C (± 1.9 bar) / 250°F (± 27.5 psi)	not advisable for FKM	160°C (± 6.3 bar) / 320°F (± 91.3 psi)	160°C (± 6.3 bar) / 320°F (± 91.3 psi)	120°C (± 1.8 bar) / 248°F (± 26.1 psi)
Temperature max. (short-time 15-20 min)	150°C (± 4.7 bar) / 302°F (± 68.1 psi)	140°C (± 3.6 bar) / 284°F (± 52.2 psi)	121°C (± 1.9 bar) / 250°F (± 27.5 psi)	160°C (± 6.3 bar) / 320°F (± 91.3 psi)	160°C (± 6.3 bar) / 320°F (± 91.3 psi)	135°C (± 3.2 bar) / 275°F (± 46.4 psi)
Caustic (caustic soda)*						
Diluted cleaning solution	< 5%	< 3%	< 5%			
Temperature min.	1°C / 33.8°F	1°C / 33.8°F	1°C / 33.8°F	Resitant to business specific detergent and cleaning concentrations!	Resitant to business specific detergent and cleaning concentrations!	Resitant to business specific detergent and cleaning concentrations!
Temperature max.	80°C / 176°F	80°C / 176°F	80°C / 176°F			
Acid (Nitric/Phosphoric/Peracetic acid)*						
Diluted cleaning solution	< 3%	< 1,5%	< 1,5%			
Temperature min.	1°C / 33.8°F	1°C / 33.8°F	1°C / 33.8°F	Resitant to business specific detergent and cleaning concentrations!	Resitant to business specific detergent and cleaning concentrations!	Resitant to business specific detergent and cleaning concentrations!
Temperature max.	40°C / 104°F	40°C / 104°F	60°C / 140°F			
Disinfection*						
Diluted disinfectant (based on peracetic acid)	< 0,7%	Not advisable for HNBR	< 0,2%			
Temperature min.	1°C / 33.8°F	Not advisable for HNBR	1°C / 33.8°F	Resitant to business specific detergent and cleaning concentrations!	Resitant to business specific detergent and cleaning concentrations!	Resitant to business specific detergent and cleaning concentrations!
Temperature max.	30°C / 86°F	Not advisable for HNBR	30°C / 86°F			

DOUBLE SEAT VALVES

PRODUCTION PARAMETERS	EPDM	HNBR	FKM
Product			
Max. operation temperature	95°C / 203°F	95°C / 203°F	80°C / 176°F
Min. operation temperature	1°C / 33.8°F	1°C / 33.8°F	1°C / 33.8°F
Steam			
Temperature max. (continously)	130°C (± 2.7 bar) / 266°F (± 39.1 psi)	121°C (± 1.9 bar) / 250°F (± 27.5 psi)	not advisable for FKM
Temperature max. (short-time 15-20 min)	150°C (± 4.7 bar) / 302°F (± 68.1 psi)	140°C (± 3.6 bar) / 284°F (± 52.2 psi)	121°C (± 1.9 bar) / 250°F (± 27.5 psi)
Caustic (caustic soda)*			
Diluted cleaning solution	< 5%	< 3%	< 5%
Temperature min.	1°C / 33.8°F	1°C / 33.8°F	1°C / 33.8°F
Temperature max.	80°C / 176°F	80°C / 176°F	80°C / 176°F
Acid (Nitric/Phosphoric/Peracetic acid)*			
Diluted cleaning solution	< 3%	< 1,5%	< 1,5%
Temperature min.	1°C / 33.8°F	1°C / 33.8°F	1°C / 33.8°F
Temperature max.	40°C / 104°F	40°C / 104°F	60°C / 140°F
Disinfection*			
Diluted disinfectant (based on peracetic acid)	< 0,7%	Not advisable for HNBR	< 0,2%
Temperature min.	1°C / 33.8°F	Not advisable for HNBR	1°C / 33.8°F
Temperature max.	30°C / 86°F	Not advisable for HNBR	30°C / 86°F

PLEASE NOTE

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\* Keep contact times as short as possible.  
After the cleaning cycle, all contacted wetted and product-related surfaces (e.g. leakage chamber in the double seat valve) must be rinsed with pure water. Long contact times with disinfection solutions in particular have to be avoided.

BUTTERFLY VALVES

PRODUCTION PARAMETERS	EPDM	HNBR	FKM	VMQ	PTFE LAMINATED
Product					
Max. operation temperature	95°C / 203°F	95°C / 203°F	80°C / 176°F	90°C/ 194°F	80°C/ 176°F
Min. operation temperature	1°C / 33.8°F	1°C / 33.8°F	1°C / 33.8°F	0°C/ 32°F	5°C/ 37°F
Steam					
Temperature max. (continously)	130°C (± 2.7 bar) / 266°F (± 39.1 psi)	121°C (± 1.9 bar) / 250°F (± 27.5 psi)	not advisable for FKM	not advisable for VMQ	not advisable for PTFE-laminated gaskets
Temperature max. (short-time 15-20 min)	150°C (± 4.7 bar) / 302°F (± 68.1 psi)	140°C (± 3.6 bar) / 284°F (± 52.2 psi)	121°C (± 1.9 bar) / 250°F (± 27.5 psi)	not advisable for VMQ	not advisable for PTFE-laminated gaskets
Caustic (caustic soda)*					
Diluted cleaning solution	< 5%	< 3%	< 5%	< 2,5%	100%
Temperature min.	1°C / 33.8°F	1°C / 33.8°F	1°C / 33.8°F	0°C / 32°F	5°C / 37°F
Temperature max.	80°C / 176°F	80°C / 176°F	80°C / 176°F	60°C / 140°F	80°C / 176°F
Acid (Nitric/Phosphoric/Peracetic acid)*					
Diluted cleaning solution	< 3%	< 1,5%	< 1,5%	< 1,2%	100%
Temperature min.	1°C / 33.8°F	1°C / 33.8°F	1°C / 33.8°F	0°C / 32°F	5°C / 37°F
Temperature max.	40°C / 104°F	40°C / 104°F	60°C / 140°F	60°C / 140°F	80°C / 176°F
Disinfection*					
Diluted disinfectant (based on peracetic acid)	< 0,7%	Not advisable for HNBR	< 0,2%	< 0,7%	100%
Temperature min.	1°C / 33.8°F	Not advisable for HNBR	1°C / 33.8°F	0°C / 32°F	5°C / 37°F
Temperature max.	30°C / 86°F	Not advisable for HNBR	30°C / 86°F	80°C / 176°F	80°C / 176°F



**SÜDMO COMPONENTS GMBH**

INDUSTRIESTRASSE 7, 73469 RIESBÜRG, GERMANY [WWW.SUEDMO.DE](http://WWW.SUEDMO.DE)

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