



## BALL VALVE SOFT MATERIAL OPERATION LIMIT

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### PRESSURE AND TEMPERATURE APPLICATION

MATERIAL	TEMPERATURE °C		PRESSURE CLASS		SIZE INCH	
	MIN.	MAX.	SEAT INSERT	SEAL	SEAT INSERT	SEAL
NYLONR-SMX	-60	140	2500	N/A	NPS 60	N/A
NYLON 12-G (LAURAMID)	-60	100	2500	N/A	NPS 60	N/A
NYLON 6(DEVLON-V API)	-100	140	2500	N/A	NPS 60	N/A
PEEK-VIRGIN	-100	250	2500	N/A	NPS 36	N/A
PEEK+CARBON/VESPEL	-20	300	2500	N/A	NPS 36	N/A
PTFE GLASS FILLED (25%)	-100	200	300	N/A	NPS 16	N/A
PTFE CARBON FILLED (25%)	-100	265	300	N/A	NPS 16	N/A
PCTFE	-196	150	2500	N/A	NPS 30	N/A
HNBR -Therban	-40	150	600	2500	NPS 60	NPS 60
FKM A/B (VITON A/B)	-29	180	600	2500	NPS 60	NPS 60
FKM GLT (VITON GLT)	-40	200	600	2500	NPS 60	NPS 60
PTFE+ELGILOY SPRING	-196	200	N/A	2500	N/A	NPS 36
GRAPHITE	-240	560	480	2500	N/A	NPS 60

### SEAT INSERT MATERIAL/ SEAT MATERIL

SEAL MATERIAL	TEMPERATURE RANGE		APPLICATION	RECOMENDATIONS	REMARK
	C	F			
REINFORCED PTFE 20%Carbon +5%Graphite	-196 to 250	-310 to 482	Medium pressure Low/High temperature	Higher temperature and Pressure than Virgin PTFE. Good for Steam Service	STANDARD
VIRGIN PTFE	-196 to 200	-319 to 392	Low pressure Low torque -Low temperature	All services subject to temperature limitation	STANDARD
REINFORCED PTFE+BRONZE	-196 to 250	-310 to 482	Medium pressure Low//High temperature	Auto lubricant properties -recommended for steam	STANDARD
DEVLON-V POLYAMIDE-NYLON	-100 to 155	-148 to 311	High pressure High temp-Low temperature	H2S and Hydrocarbons	HIGH PERFORMANCE
GRAPHITE	-90 to 360	-130 to 662	Low pressure High temperature	Not suitable for high cycles or automated valves	HIGH PERFORMANCE
DELRIN ACETAL RESIN	-70 to 95	-94 to 203	High pressure Low temperature	Hydrocarbons,NACE. Co2.Do not use for oxygen	HIGH PERFORMANCE
PEEK POLYETHER KETONE	-80 to 250	-62 to 482	High pressure High temperature	Hydrocarbons,Nace. For Tobacco and Nuclear Service	HIGH PERFORMANCE
VESPEL SP 21 POLYIMIDE	-200 to 260	-328 to 500	High pressure High temperature	Good Chemical Resistance.For Gas,Oil,Petroleum. Not for Steam	HIGH PERFORMANCE
UHMWPE POLYETHYLENE	-150 to 150	-240 to 300	Low pressure Low torque	Food and Tobacco industries. Nuclear Service.	HIGH PERFORMANCE
KELF PCTFE	-196 to 150	-319 to 302	High pressure Low temperature	Like virgin ptfе but improved resistance to nitric acid, hydrofluoric acid and liquid oxygen	HIGH PERFORMANCE
PFA	-60 to 250	-76 to 482	Medium pressure Low/Medium temperature	Lower porosity -Particularly Good to Avoid Polymerisation	HIGH PERFORMANCE
METAL SEAT (tungsten carbide or chrome carbide)	-196 to 500	-328 to 932	High pressure High temperature	Abrasion and high temperature applications	HIGH PERFORMANCE

### SEAL MATERIL

SEAT MATERIAL	CATETGORY	TEMPERATURE RANGE °C		APPLICATION	REMARK
NITRILE	NBR	-30	+120 CONTINUOUS +150 INTERMITTENT	Water, Wast Water	O-RINGS
HYDROGENATED NITRILE	HNBR	-46	+160 CONTINUOUS +180 INTERMITTENT	H2S,crude oil, hydrocarbons, small concentration of methanols	O-RINGS
MODIFIED HYDROGENATED NITRILE	HNBR-LT	-55	+160 CONTINUOUS +180 INTERMITTENT	H2S,crude oil, hydrocarbons, small concentration of methanols	O-RINGS
FLUROELASTOMERS (VITON B)	FKM	-20	+220 CONTINUOUS +230 INTERMITTENT	Sour gas, hydrocarbons	O-RINGS
FLUROELASTOMERS (VITON AED)	FKM	-29	+230 CONTINUOUS +250 INTERMITTENT	Sour gas, hydrocarbons	O-RINGS
FLUROELASTOMERS (VITON GLT)	FKM	-46 (-40 continuous)	+220 CONTINUOUS +250 INTERMITTENT	Sour gas, hydrocarbons	O-RINGS
PERFLUROELASTOMERS (CHEMRAZ 526)	FFKM	-25	+315 CONTINUOUS +350 INTERMITTENT	Sour gas, hydrocarbons, high %of methanol	O-RINGS

PERFLUROELASTOMERS (KALREZ)	FFKM	25	325	Sour gas and corrosive fluids	O-RINGS
AFLAS	FEPM	5	200	Amine /Methanol service	O-RINGS
SILICON+PFA	/	-60	250	Low temperature applications/Good Chemical Resistance	O-RINGS
EXPANDED GRAPHITE	/	-240	680	Used on Metal Seated High Temperature valves	O-RINGS
LIP SEALS	/	-196	260	Good for Chemical Resistance	SPECIAL
GRAPHITE	/	-200	400	All-excluding clean services	FIRE SAFE

### Reinforced PTFE

This material is offered as the standard seal in class150 and class300 ball valves. 15%glass reinforced PTFE rated suitable for temperatures -60 °C to 232 °C, chemical resistance is compatible to Virgin TFE with improved cycle life and greater pressure/temperature rating than PTFE.RPTFE seats are furnished with RPTFE body seals and PTFE packing except on firesafe models which are furnished with graphoil packing and body seals.

### Virgin PTFE

This material is the basic seat material used in most floating ball valves. It's chemical compatibility is excellent for almost all media service applications. Temperature range -60 °C to 204 °C .

### Carbon Filled PTFE

Carbon filled TFE -25%Carbon Graphite with 75%TFE-is good for temperature ranging from -55 °C to 270 °C.This material offers a wide temperature range with better cycle life than RTFE.

### Stainless Steel Filled PTFE

Combines the strength of metal with the lubricity of TFE.50%316 powder combined with 50% TFE. Offers abrasion resistance of metal with higher pressure rating than RTFE.-29 °C to 288 °C .

### Delrin (POM)

Special Delrin seats offered for higher pressure and lower temperature service. They can be used in high pressure air, oil and other gas media but are not suited for strong oxidizing. Temperature rating -50 °C to 100 °C . Delrin seats are usually furnished complete with 90 durometer Viton B body seals.

### PEEK

Polyetheretherketone -high pressure semi-rigid elastomer. Best suited or high pressure and temperature service.Also offers very good corrosion resistance.Temperature rating -56.6 °C to 288 °C

### Nylon/Devlon

Nylon (polyamide) seats are offered for higher pressure and lower temperature service. They can be used in high temperature air, oil and other gas media but are not suited for strong oxidizing. Not recommended for water. Temperature rating -100 °C to 150 °C .

### UHMW Polyethylene

Ultra-high molecular weight Polyethylene, ideal for use in low level radiation service.This seat also meets the requirements of the tobacco industry where TFE is prohibited and it offers excellent resistance to abrasive media.Temperature range -56.6 °C to 93 °C

### Kel-F

Recommended for cold service with good resistance to violent temperature fluctuations. It is good for cryogenic service down to -198 °C and has higher deformation rating and density than PTFE

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### Ball Valve

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[Trunnion Mounted Ball Valve](#)  
[Top Entry Ball Valve](#)  
[Metal Seated Ball Valve](#)  
[Heating System Ball Valve](#)  
[V Type Ball Valve](#)  
[Anti-Abrasive Ball Valve](#)  
[Orbit Type Ball Valve](#)  
[Lined Ball Valve](#)  
[Oxygen Ball Valve](#)  
[Cryogenic Ball Valve](#)

### Butterfly Valve

[Triple Eccentric Metal Seat Butterfly Valve](#)  
[Triple Offset Laminated Seat Butterfly Valve](#)  
[High Performance Butterfly Valve](#)  
[Double Eccentric Rubber Seat Butterfly Valve](#)  
[Full Lining Butterfly Valve](#)  
[Half Lining Butterfly Valve](#)  
[PTFE Lining Butterfly Valve](#)  
[Oxygen Butterfly Valve](#)  
[Cryogenic Butterfly Valve](#)

### Gate Valve

[Wedge Gate Valve](#)  
[Stainless Steel Gate Valve API603](#)  
[Through Conduit Gate Valve](#)  
[Bellow Seal Gate Valve](#)  
[Pressure Bonnet Gate Valve](#)  
[Non Rising Stem Gate Valve](#)  
[Knife Gate Valve](#)  
[PTFE Lining Gate Valve](#)  
[Cryogenic Gate Valve](#)

### Globe Valve

[Bolted Bonnet Globe Valve](#)  
[Pressure Bonnet Globe Valve](#)  
[Stop Valve](#)  
[Angle Globe Valve](#)  
[Bellows Stop Valve](#)  
[Non Rising Stem Gate Valve](#)  
[Oxygen Globe Valve](#)  
[Cryogenic Globe Valve](#)

### Check Valve

[Lift Check Valve](#)  
[Swing Check Valve](#)  
[Vertical Lift Check Valve](#)  
[Dual Plate Check Valve](#)  
[PTFE Lining Check Valve](#)  
[Oxygen Swing Check Valve](#)  
[Axial Check Valve](#)  
[Silent Duty Non-Return Valve](#)  
[Silent Lift Check Valve](#)  
[Butterfly Type Check Valve](#)  
[Hammer Check Valve](#)  
[Tilting Check Valve](#)

### Forged Valve

[Forged Gate Valve](#)  
[Forged Globe Valve](#)  
[Forged Swing Check Valve](#)  
[Forged Lift Check Valve](#)  
[Forged Ball Valve](#)

### Control Valve

[Single Seat Control Valve](#)  
[Double Seat Control Valve](#)

### Strainer

[Y Strainer](#)  
[T Strainer](#)  
[Basket Strainer](#)