

## MATERIAL SPECIFICATIONS - BALL VALVES

### BODY AND TRIM MATERIAL

#### CARBON STEEL

- ASTM A105

#### LOW TEMPERATURE CARBON STEEL

- ASTM A350 LF2

#### LOW ALLOY STEEL

- AISI 4140
- ASTM A694 F60
- API 6A 60K (A694 F60 MOD)
- ASTM A694 F65
- ASTM A694 F52

#### MARTENSITIC STAINLESS STEEL

- ASTM A182 F6A
- ASTM A182 F6NM

#### AUSTENITIC STAINLESS STEEL

- ASTM A182 F316
- ASTM A182 F316LN
- ASTM A182 F44 (6% MOD)
- ASTM A182 F316 FXM-19

#### PRECIPITATION HARDENING STAINLESS STEEL

- ASTM A564 Gr. 630 H1150M (UNS S17400)

#### FERRITIC-AUSTENITIC STAINLESS STEEL

- ASTM A182 F51 - UNS S31803/S32205 (22Cr DUPLEX)
- ASTM A182 F53 - UNS S32750 (25Cr SUPER DUPLEX)
- ASTM A182 F55 - UNS S32760 (25Cr SUPER DUPLEX)

#### NICKEL ALLOY

- INCOLOY 825 – UNS N08825
- INCONEL 625 – UNS N06625
- INCONEL 750 – UNS N07750
- MONEL K-400 – UNS N04400
- MONEL K-500 – UNS N05500

### BOLTS & NUTS

ASTM A193 B7 & A194 Gr. 2H

ASTM A193 B7M & A 194 Gr. 2HM

ASTM A320 L7 & A 194 Gr. 7 or Gr. 4

ASTM A320 L7 & A 194 Gr. 7M

ASTM A320 L43 & A 194 Gr. 7M

ASTM A193 B8 Cl. 2 & A 194 Gr. 8

ASTM A193 B8M Cl. 2 & A 194 Gr. 8M

ASTM A453 B8 Gr. 660 Cl. a & A453 Gr. 660 Cl. a

UNS S31803 & UNS S31803 (DUPLEX SS)

### NACE

On request, our trunnion-mounted side-entry ball valves can be supplied in accordance with NACE MR0175/ ISO 15156 requirements.

## SEAT INSERTS & SEAL MATERIAL OPERATING LIMITS

MATERIAL	TEMPERATURE °C		PRESSURE CLASS*		SIZE*	
	MIN.	MAX.	SEAT INSERT	SEAL	SEAT INSERT	SEAL
NYLON®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		NPS 60

\* As size increases pressure/temperature ratings can decrease especially seat insert materials. Similarly, with lower temperatures and larger sizes, the pressure/temperature ratings of elastomers and seat inserts is effected. Different brands and grades of seals and elastomers have different temperature ratings.

## SEAL MATERIALS

### ELASTOMERS

- HBNR: Low temperature & AED
- FKM: Viton® grades B, GF, GLT & AED
- AFLAS compounds
- Elast-O-Lion®: HNBR - 985

### THERMOPLASTIC

- VPTFE® (Virgin)
- RPTFE® (Carbon Graphite & Glass Fibre)
- NYLON grades: Lauramid®, SMX®, Devlon®
- PCTFE: KEL-F®
- PEEK: Virgin & Carbon Filled grades
- VESPEL®

### STATIC & DYNAMIC SEALS

- Lip Seal (radial & face-seal, U & O type springs)
- Chevron type (PFTE, RPTFE & PEEK rings)
- Graphoil® Packing (Low Emission type)
- Spiral Wound Gaskets (Graphite & PTFE filled)
- Solid Metal Seals (T seal ring, RTJ, BX type)

## PLATING/COATING

- ELECTROLESS NICKEL PLATING: 25 µ, 75 µ
- TUNGSTEN CARBIDE COATING: 150 µ
- CHROME CARBIDE COATING: 150 µ
- WELD OVERLAY: AISI 316L, ALLOY 625
- STELLITE

## SEAT MATERIALS



### Reinforced PTFE

This material is offered as the standard seal in 150 and 300 class ball valves. 15% glass reinforced PTFE rated suitable for temperatures  $-45.6^{\circ}\text{C}$  to  $232^{\circ}\text{C}$ , 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  $-45.5^{\circ}\text{C}$  to  $204^{\circ}\text{C}$ .



### Carbon Filled PTFE

Carbon filled TFE -25% Carbon Graphite with 75% TFE - is good for temperature ranging from  $-45.5^{\circ}\text{C}$  to  $270^{\circ}\text{C}$ . 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.  $-29^{\circ}\text{C}$  to  $288^{\circ}\text{C}$ .



### Delrin

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  $-1^{\circ}\text{C}$  to  $93^{\circ}\text{C}$ . Delrin seats are usually furnished complete with 90 durometer Viton B body seals.



### PEEK

Polyetheretherketone - high pressure semi-rigid elastomer. Best suited for high pressure and temperature service. Also offers very good corrosion resistance. Temperature rating  $56.6^{\circ}\text{C}$  to  $288^{\circ}\text{C}$ .



### NYLON

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  $-34.4^{\circ}\text{C}$  to  $93^{\circ}\text{C}$ .



### 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  $-56.6^{\circ}\text{C}$  to  $93^{\circ}\text{C}$ .



### Kel F

Recommended for cold service with good resistance to violent temperature fluctuations. It is good for cryogenic service down to  $-198^{\circ}\text{C}$  and has higher deformation rating and density than PTFE.



### Filled Cavity

Designed to reduce the possibility of contamination by entrapment of process fluid in the void normally found behind the ball and the valve body in conventionally designed ball valves, ideal for applications where cross contamination is a concern, such as food, paints and dyes.

*Note: Australian Pipeline Valve seat code shown is for floating flanged ball valves.*

*For trunnion ball valves seat code numbers see catalogue. Other seat material like Viton, Tefzel etc. are also available.*

*~ Short lead time valve manufacturer, supplying world wide ~*