

Industry Standards Downloadable Guides

# BALL VALVE SEAT GUIDE

Allvalves Online Technical Support



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Technical Support Document

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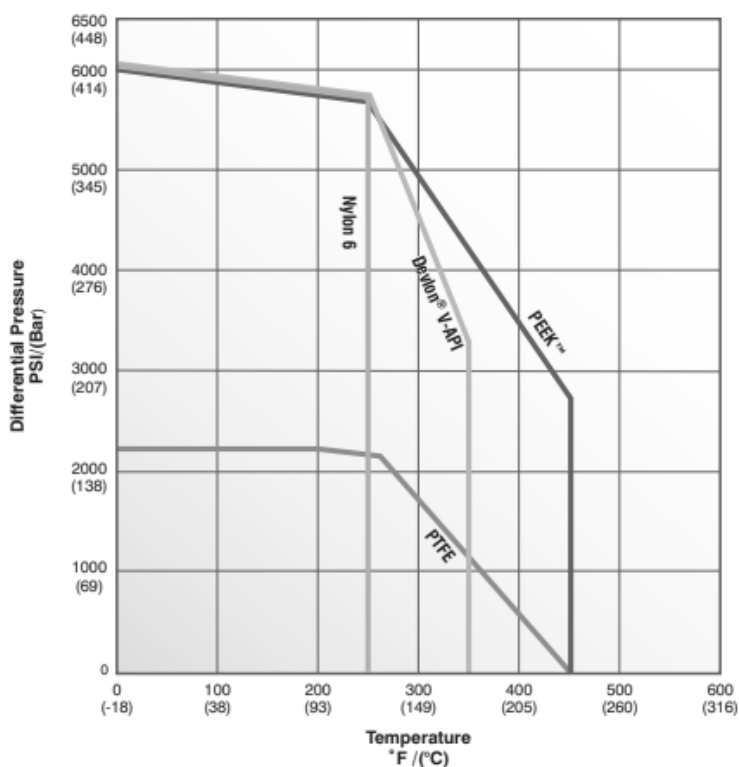


## VALVE SEAT MATERIAL

Selecting the right ball seat and stem seal for your valve is very important. Understanding the chemical compatibility is one side of things, understanding the temperature limitations and the life expectancy of the seats and seals is another.

Here we have some useful information on the different materials typically available within valves and their key features, colour so that you can identify which seats and seals your valve has and the temperature rating. We also give details on the materials within the seat, for example RPTFE is a re-enforced PTFE which typically will have % of the material makeup as glass filled, typically 25% or 50%.

Pressure / temperature performance comparison



Extensive testing carried out at the University of Leeds in the UK and by leading global valve OEMs, compared the performance of Devlon® V-API against a range of the most common thermoplastic materials used in valve seat applications.

Devlon® V-API offers better performance than standard polyamides or PTFE and is significantly more cost-effective than PEEK™





## Valve Seat Guide

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Seat Code	Material	Technical Description	Colour	Effect on Valve Torque
<b>F</b>	TFM	TFM offers all the properties of reinforced TFE with greater strength , toughness, and improved thermo-mechanical properties offering lower coefficient of friction for lower torques and less permeability, reduced cold flow deformation and enhanced deformation recovery. Temperature rating is – 45°C to +287°C	Off-White	+10% less than RPTFE
<b>R</b>	Reinforced TFE	15% Glass Reinforced TFE rated, suitable for temperatures – 46°C to +232°C , chemical resistance is compatible to virgin TFE with improved cycle life and greater pressure-temperature rating than TFE.	Off-White	Nil
<b>T</b>	Virgin TFE (PTFE)	This material is the basic seat material used in most Ball Valves. Its chemical compatibility is excellent for almost all media service applications. Temperature range – 46°C to +204°C.	White	Nil
<b>X</b>	Reinforced TFM	Glass Filled TFM-25% Glass Reinforced with 75% TFM, is good for temperatures ranging from –196°C to +300°C. This material offers a wide temperature range with better cycle life than TFM. Ideal for steam, hot gases, thermal fluids and a variety of process chemicals.	Off-White	+25%
<b>S</b>	Stainless Filled TFE	Combines the strength of metal with the lubricity of TFE. 50% 316 powder combined with 50% TFE. This offers the abrasion resistance of metal with higher pressure and temperature ratings than RPTFE. –29°C to +288°C / Steam rating 250 SWP.	Grey	+50%
<b>N</b>	Nylon	Special nylon seats are offered for higher pressure and lower temperature service. They can be used in high-pressure air, oil, and other gas media's but are not suited for strong oxidizing agents. Temperature rating –34°C to +93°C	Translucent White	+35%
<b>U</b>	UHMWP 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 an excellent resistance to abrasive media. Temperature range is –56°C to +93°C	Opaque White	+35%
<b>M</b>	Metal (Stellite)	Recommended for use with severe flashing of hydraulic shock, abrasive media or where possible trapped metal may exist.	Metallic	+60%
<b>P</b>	Peek	Polyetheretherketone high temperature semi rigid elastomer. Best suited for high pressure and temperature applications. Also offers very good corrosion resistance. Temperature rating is –56°C to +287°C	Brown	+50%
<b>C/F</b>	Cavity Filled	Designed to reduce the possibility of contamination by entrapment of process fluids in the void normally found behind the ball between the valve body in conventionally designed ball valves. Ideal for application where cross contamination is a concern, such as paints and dyes.	White	+50%