



MILWAUKEE VALVE

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TECHNICAL BULLETIN

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Ball Valve Seat Selection Guide

This bulletin releases a generalized chart showing ball valve seat material properties for various seat materials currently offered in Milwaukee Valve Company commercial and industrial valve products, as presented on sheet 2 & 3 of this bulletin. For materials and/or applications not shown on this chart, contact Milwaukee Valve Engineering.

Users of this information are reminded that the pressure and temperature limitations of the valves in service are based primarily on the valve structure, metallurgy, and end connections. This seat chart is to be used in conjunction with Milwaukee Valve catalogs, chemical compatibility charts, and industrial standards, (e.g. ASME/ANSI B16.34, ASME/ANSI B16.5, API 608, etc.), to aid in the selection of valve configurations. Final selection of valve configurations and materials, including seat materials, remains the responsibility of the end user (see note at the bottom of this technical bulletin).

Milwaukee Engineering is refreshing our data on valve torques versus temperature and pressure for various seat materials and valve styles. For assistance in sizing of actuators, and to address other questions regarding seat material selection in particular or in general, contact the inside sales team at Milwaukee Valve Company.

Seat Selection Guide

Seat Code	Material	Temperature Range ° F	Chemical Resistance	Valve Series Available	Application Notes
01	Virgin Teflon® Polytetrafluorethelene (PTFE)	-430 to 450	<ul style="list-style-type: none"> • Excellent • Not Recommended for Molted alkali metals, Liquid or gaseous fluorine and a few fluoro-chemicals 	20, 30, 35, 41, F90/F91, & F20	<ul style="list-style-type: none"> • Highly Inert • Limited toughness; therefore not always first choice for high cycles • Very soft, can be forgiving of particle contamination • Good low temperature / Cryogenic material
02	Glass Filled TFE Reinforced Teflon® (RPTFE)	-40 to 450	<ul style="list-style-type: none"> • Similar to 01 • Not for use in concentrated caustic service 	20, 30, 35, 41, F90/F91, & F20	<ul style="list-style-type: none"> • Industry workhorse, generally good for most services • Not recommended for steam, concentrated caustics, or high cycles at elevated temperatures
03	Multifil Carbon Graphite Reinforced Teflon® (C-RPTFE)	-100 to 500	<ul style="list-style-type: none"> • Similar to 01 • Check compatibility of fluid media with carbon 	20, 30, 35, 41, F90/F91, & F20	<ul style="list-style-type: none"> • Tougher material for high cycle and reduced creep in moderate temperatures • Good for low pressure steam (< 250 psi) shut-off service
04	UHMWPE Ultra High Molecular Weight Polyethylene	-435 to 180	<ul style="list-style-type: none"> • Attacked by aromatic or halogenated hydrocarbons and strong oxidizing agents (Nitric Acid, Oleum, & Halogens) 	20, 30, 35, 41, & F90/F91	<ul style="list-style-type: none"> • Tobacco Processing, Nuclear applications where TFE is not allowed • High chemical and abrasion resistance services • Limited temperature range
06	Endurofil Polyetheretherketone (PEEK)	-100 to 550	<ul style="list-style-type: none"> • Broad chemical and radiation resistance • No susceptibility to hydrolysis (Steam/Hot Water) • Strong acids and bases at high concentrations and temperature will effect material 	30, 35, 41, & F90/F91	<ul style="list-style-type: none"> • Very tough material suitable for high cycles, moderate steam service, and other demanding applications • Best performing high temperature plastic • Used in paper mills, chemical processes, and other similar service (such as sugar mills and vegetable processors)

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Seat Code	Material	Temperature Range ° F	Chemical Resistance	Valve Series Available	Application Notes
07	Delrin®	-20 to 180	<ul style="list-style-type: none"> • Good for Hydraulic Oil, Natural Gas, & Agricultural Chemicals 	41	<ul style="list-style-type: none"> • Good for certain high pressure service where temperature is ambient or moderate • Limited chemical resistance
N1	Loperm Teflon® (NXT)	-430 to 475	<ul style="list-style-type: none"> • Similar to 01 	30, 35, F90/F91, & F20	<ul style="list-style-type: none"> • Improved permeation resistance (Phosgene, Butadiene, etc.) • Less creep than PTFE • Smoother, less porous surfaces

* For pressures, temperatures, and/or other materials outside the chart please consult factory.

** These are material temperature ratings, Valve material and design need to be taking into account when establishing valve ratings.

The technical data provided is for general information only. While Milwaukee Valve may make recommendations from time to time regarding valve applications, product suitability should be the responsibility of the end user's knowledge and experience.