

SEAT APPLICATIONS —

All of the following application information should be used in conjunction with the pressure temperature rating graph and the corrosion chart.

- B** Buna “N” (also known as Nitrile) is rated to 300 psi from -20°F to 180°F. It is excellent for use on petroleum products. The material is black in color, and may have one red dot.
- N** Neoprene seats are also rated to 300 psi from -20°F to 180°F. Neoprene is excellent for use with refrigerants such as Freon®, and for use on oxygen or nitrous oxide. Seats are color coded with one yellow mark.
- T** TFE seats, made from virgin TFE, are suitable for -50°F to 450°F at pressures to 1000 psi. TFE is the most common sealing material and is excellent for almost all media. TFE has excellent chemical resistance and is white in color.
- R** Reinforced TFE seats, rated suitable for temperatures from -50°F to 450°F, at pressures to 1500 psi, are made from glass reinforced TFE. They are harder than virgin TFE and have higher pressure-temperature ratings. Chemical resistance is the same as virgin TFE (except for hot strong caustics). These seats can be identified as being white with green speckles.
- P** Polyfill®, which is a filled TFE material (fillers are carbon and graphite), is good for temperatures ranging from -450°F to 650°F at pressures to 1500 psi. It is an excellent seat material for steam and thermal fluid (hot oil) services, and is a good material for difficult applications. It also has better cycle life than other materials. These seats are black in color.
- Y** Delrin® AF is a high pressure seat material. These seats are rated at various pressures (up to 5000 psi), depending on valve size and style, and the temperature range is -70°F to 180°F. This material should not be used on oxygen service. They are made from a Dupont® Acetal homopolymer and are filled with Teflon® and glass fiber. Delrin AF seats are off white in color.
- U** UHMWPE, Ultra High Molecular Weight Polyethylene, is rated to 1500 psi at temperatures from 0°F to 200°F. Material is Hercules® UMW 1900 or equal. This can be in low to medium level radiation service and in applications where fluorocarbons cannot be tolerated. Abrasion resistance is quite good. UHMWPE seats are opaque (more translucent than TFE). 1/4", 3/8", 1/2" and 3/4" UHMWPE seats may be injection molded.
- X** High-per Fill® is rated to 5000 psi dependant on size, and to temperatures from -70°F to 600°F. High-per Fill has very good pressure capability at elevated temperatures. It is PEEK (PolyEtherEtherKeton) filled with carbon and graphite to give excellent abrasion resistance, and is resistant to most medias except sulfuric and other strong oxidizing acids and halons. It is black in color with a white streak or I.D. Mark, and feels (and sounds when tapped) much harder than polyfill.
- A** Alpha, suitable for -20°F to 600°F at 1000 psi; 316L metal matrix, filled with TFE, this material combines the strength and abrasion resistance of metal with the lubricity of TFE. The seat is grey in color, has a seal groove in the back face, and is noticeably heavier than plastic seats. Alpha seats do not have relief slots.
- G** Gamma - The benefits and features of Alpha seats, with increased temperature capability (1000°F), by substituting graphite for TFE as the lubricant. Gamma is successful on hot abrasive services. This seat material has all the advantages of Graphitar® without the brittleness which causes Graphitar seats to fracture and fail.

SEAL APPLICATIONS —

- B** Buna “N” body seals and all of the other elastomer body seals (Neoprene, EPR, Viton®) are good to maximum rated pressure on all valves. Buna “N” temperature range is from -40°F to 250°F This material is the best elastomer for petroleum service. Buna “N” is also normally used on high pressure seals with the “Y” seats. The material is Precision 7657 or equivalent. The color is black.
- N** Neoprene body seals are also excellent seals at all rated pressures. The temperature range for Neoprene seals is -50°F to + 250°F. Neoprene is excellent for refrigerants, oxygen, and nitrous oxide. These seals are made from Precision 2347 or equivalent. The color coding consists of one yellow dot, or all red.
- E** Ethylene Propylene Rubber (EPM, EPDM) body seals are excellent at all rated pressures with a temperature range of -60°F to 350°F. EPR is the recommended seal for steam to 150 psi or hot water and for phosphate ester base hydraulic fluids. EPR is not recommended for petroleum service. This material is Precision 3959 or equal. These seals are black with one white strip and two yellow dots or one white stripe, or all purple.
- V** Viton (Fluorocarbon Rubber) body seals are excellent at all rated pressures with a temperature range of -20°F to 400°F. Viton is the best elastomer for high temperature applications, but it should not be used on steam. The material is Precision 16209 or equal. The color code is one white and one green mark, or all green or all brown.
- T** TFE body seals are excellent at pressure below 1500 psi and at temperatures from -20°F to 400°F. They will not withstand temperature fluctuations in excess of 200°F and they are not reusable. They are made of virgin TFE and they are white in color.
- M** TFE coated stainless steel “S” gaskets. This seal will handle up to 1500 psi at temperatures from -425°F to 650°F. They are excellent seals, but they are not reusable. They are made from 316SS with a coating of green TFE.
- G** Graphite coated stainless “S” gaskets. This is the same seal as “M” except the coating is graphite, which increases the high temperature limit to 1000°F.
- U** UHMWPE - Ultra High Molecular Weight Polyethylene. Usable from 0°F to 200°F, at pressures equal to elastomers. Material is Hercules UHW 1900 or equal. This may be used in low to medium level radiation service and in applications where fluorocarbons cannot be tolerated. These seals are opaque white.
- Z** Grafoil®- Packing (Grade GTK) is a graphite seal material. It is usable from -70°F to 1000°F on almost any media. It is the standard seal in 3"-8" fire rated valves and a similar material is used for stem seals on all Worcester fire rated valves. These seals are dark gray in color.

* SEAL RELIEF

VALVE SIZE	BRASS	444 CARBON STEEL	466 316 SS
1/4", 3/8", 1/2"	6,300 PSI	11,000 PSI	10,000 PSI
3/4"	5,000 PSI	9,000 PSI	8,000 PSI
1"	4,700 PSI	8,100 PSI	7,500 PSI
1 1/4"	4,000 PSI	6,900 PSI	6,300 PSI
1 1/2"	3,200 PSI	6,200 PSI	5,800 PSI
2	3,000 PSI	5,700 PSI	5,100 PSI

*Point at which elastomer body seal relieves excessive internal pressure.