



BALL AND BUTTERFLY VALVE SEAT/SEAL MATERIALS

SEAT MATERIALS AND APPLICATIONS

Virgin PTFE (Polytetrafluoroethylene)

PTFE or TFE (Teflon[®]) is a fluorocarbon based polymer and typically is the most chemically-resistant of all plastics while retaining excellent thermal and electrical insulation properties. TFE also has a low coefficient of friction so is ideal for many low torque applications. This material is non-contaminating and accepted by the FDA for use in food services. Although TFE's mechanical properties are low compared to other engineered plastics, its properties remain useful over a wide temperature range

Temperature range: -100°F to +450°F.

Color: white

Torque adder: 0%

RTFE (Reinforced Polytetrafluoroethylene)

RTFE (reinforced Teflon[®]) is compounded with a percentage of fiber glass or filler material to provide additional strength, stability and resistance to abrasive wear, cold flow and permeation in molded seats. Reinforcement such as glass fiber permits application at higher pressures and temperatures than unfilled TFE. RTFE should not be used in applications that attack glass, such as hydrofluoric acid and hot/strong caustics.

Temperature range: -320°F to 450°F.

Color: off-white ("milky-white")

Torque adder: 0%

TFM

TFM is a modified "second generation" TFE polymer that maintains the chemical and heat resistance properties of first generation PTFE. It has a denser polymer structure than standard PTFE with better stress recovery.

Temperature range: -100°F to 500°F

Color: white

Torque adder: approximately 10%

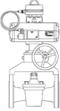
Delrin[®]

Delrin[®] is DuPont's trademark for Polyoxymethylene. Delrin is very rigid, does not undergo cold flow, and has an excellent combination of strength, hardness, stiffness, stability, abrasion resistance and low friction. Delrin allows pressures up to 5000PSI depending on the valve size and seal combination.

Temperature range: -70°F to +180°F

Color: glossy white

Torque adder: approximately 20%



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SEAT MATERIALS AND APPLICATIONS (Continued)

PEEK (unfilled) Polyetheretherketone

PEEK is a high temperature, semi-rigid elastomer offering a unique combination of chemical, mechanical and thermal properties. PEEK is excellent for water and steam applications at temperatures to 600° F and pressures to 6000 PSI while providing good corrosion resistance.

Temperature range: -70° F to +600° F

Color: Beige/Brown

Torque adder: 75%

UHMWPE Ultra-High Molecular Weight Polyethylene

UHMWPE is a durable material ideal for low-radiation service and resistant to most corrosive chemicals. This seat also meets the requirements for the tobacco industry (where TFE is prohibited) and offers an excellent resistance to abrasive media.

Temperature range: -70° F to +200° F

Color: White/Opaque

Torque adder: 35%

Cavity-Filled TFE

Cavity-filler seats are used primarily on sanitary ball valves with clamp ends. They are designed to reduce the possibility of contamination by entrapment of process fluids in the void normally found behind the ball between the valve body on standard valves. Cavity-filled seats are ideal for applications where cross-contamination is a concern, such as paints and dyes or food product like dairy.

Temperature range: see Virgin TFE

Color: see Virgin TFE

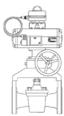
Torque adder: 50%

Metal (Stellite)

Metal seats are recommended for severe service applications such as flashing, /hydraulic shock, abrasive media or where possible trapped metal may exist. Metal seats are hand-lapped to the ball, which ensures tight shutoff and smooth operation. Metal seats are available with different shut off classes, including class IV, V and VI.

Temperature range: 600° F (with graphite body seals)

Torque adder: 60%



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BODY SEAL MATERIALS AND BUTTERFLY VALVE SEATS

EPDM (Ethyl-Propylene)

EPDM has good abrasion and tear resistance while offering excellent chemical resistance to a variety of acid and weak alkaline-based media. It also has exceptional weather aging and ozone resistance. EPDM is susceptible to attacks by oils and therefore is not recommended for applications involving petroleum oils, hydrocarbons, alcohols, strong acids or strong alkalines. EPDM also should not be used on compressed air lines.

Color: black

Temperature range: -65° F 600° F (with graphite body seals on ball valves only; +350° F on BFVs)

BUNA-N (Nitrile)

BUNA-N (NBR) is a general purpose polymer with good resistance to oil, water, solvents and hydraulic fluids. With good compression, tensile strength and abrasion-resistance, BUNA-N performs well with diverse media such as fatty acids, oils, alcohols, compressed air, Di-ester based fluids, inactive gasses or glycerine.

Color: black

Temperature range: -65° F to +250° F

Neoprene

Neoprene is an all-purpose polymer that is excellent for a variety of applications. Desirable characteristics include high resiliency with low compression, resistance for vegetable and animal oil, and flame resistance. This sealing material is excellent for refrigerants, ammonia and Freon, and is principally used in pulp and (non-bleached) paper lines. Neoprene is not recommended for strong oxidizing acids, chlorinated solvents, esters, ketones, aromatic hydrocarbons and hydraulic fluids.

Color: Black

Temperature range: -35° F to +225° F

Viton[®] (Fluorocarbon, FKM, or FPM)

Viton[®] is DuPont's trademark name for Fluoroelastomer and is widely recognized for excellent heat resistance. With extensive chemical compatibility spanning a wide range of concentration and temperature ranges, fluorocarbon elastomers have gained acceptance in a variety of applications. Viton offers excellent resistance to aggressive fuels and chemicals as well as diverse media as mineral acids, salt solutions, chlorinated hydrocarbons, and petroleum oils. Viton should not be used in steam or hot water service.

Color: black or red

Temperature range: 0° F to 400° F

Flexible Graphite

Graphite (or "graphoil") is chemically resistant to attack from nearly all organic and inorganic fluids with the exception of highly oxidizing chemicals and concentrated, highly oxidizing mineral acids. Because of its high temperature range, graphite is used with our fire safe valves.

Color: shiny black

Temperature range: -70° F to 1000° F