

## BALL AND BUTTERFLY VALVE SEAT/ SEAL MATERIALS

### **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 ( Modified PTFE )**

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%

### **PEEK ( 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%

### **Delrin® (Polyoxy-methylene)**

Delrin is DuPont's trademark for Polyoxy-methylene. 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%

### **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%

### **Devlon**

This grade of material is part of the polyamide family but has an additive which allows it to perform at higher pressures and temperatures than other grades of the Nylon family. When Devlon "V" was torque tested against other Nylon materials the Devlon did not show any increase in torque data. Devlon "V" material, which does not succumb easily to aggressive chemicals, however chemicals aggressive to Devlon "V" are well documented and can be advised if required.

Temperature range: - 300°F up to + 390°F.

### **Nylon**

Nylon is one of the most versatile and widely used thermoplastic materials. Its physical properties and reasonable price combine to make it a popular choice for numerous applications, such as seat material. This material also meets military/association specifications and may be FDA/USDA/NSF/3A dairy approved (grade dependant). Nylon has excellent corrosion and chemical resistance at low temperatures.

Color: Off white / Burnt orange

### **PCTFE**

PCTFE is well suited for cryogenic parts such as ball valve seats & seals. PCTFE is a tough, durable fluoroplastic that exhibits unique physical and mechanical properties. Stress-crack resistance, High mechanical strength and low shrinkage rate at low temperatures providing excellent stability for valve seats. Excellent stability at low temperatures. Excellent chemical resistance to all inorganic corrosive liquids. Practically zero moisture absorption. Excellent electrical properties maintained in high humidity conditions.

Temperature range: -400 °F to +248 °F (-240 deg. °C to +120 °C).