



Soft Seat Options for Ball Valves

Please consult A-T Controls for seat material selection for your unique applications. These parameters are **guidelines**, and customers are responsible for materials of construction being compatible with their valve application. ASME B16.34 shall be considered when selecting valve materials of construction (for example, ASTM A216 Grade WCB is not recommended in services above 797°F). Please note other materials present in the valve will be affected by higher temperatures/pressures, such as o-rings, joint gaskets, and pyramidal stem seals. MAST (Maximum Allowable Stem Torque) should be considered when using seat materials that require added torque. Frequency of operation is also a factor that should be investigated when selecting a seat material. Pressure vs. Temperature charts for individual valves series shall also be considered when selecting the correct seat material. Applications that involve process media that is prone to thermal expansion (Ammonia, water/steam, Chlorine, etc.) require a vented ball to improve seat durability. Room temperature is defined as 72°F. Please note that low/high temperature ratings are for **transient use only** and not continual operation:

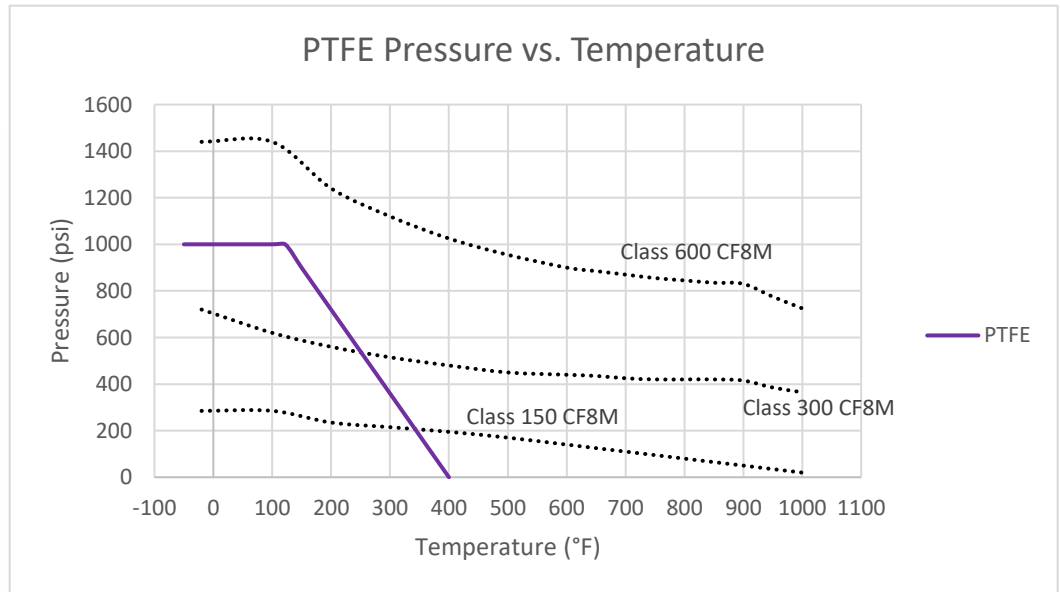
PTFE (100% Virgin Polytetrafluoroethylene)

Commonly referred to as DuPont's Teflon®, PTFE is a thermoplastic fluoropolymer that consists of Carbon and Fluorine. This structure allows PTFE to be non-reactive to many chemicals and applied to severe chemical environments. PTFE is ideal for low cycle life applications. Do not use in molten alkali metal and molten Fluorine applications.

Temperature Range: -50°F to 400°F

Max Pressure at Room Temperature: 1000 psi

Color: White





A-T Controls, Inc.

9955 International Blvd. • Cincinnati, Ohio 45246
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Engineer: CMB No.: DI00074
Date Created: 08/04/2016
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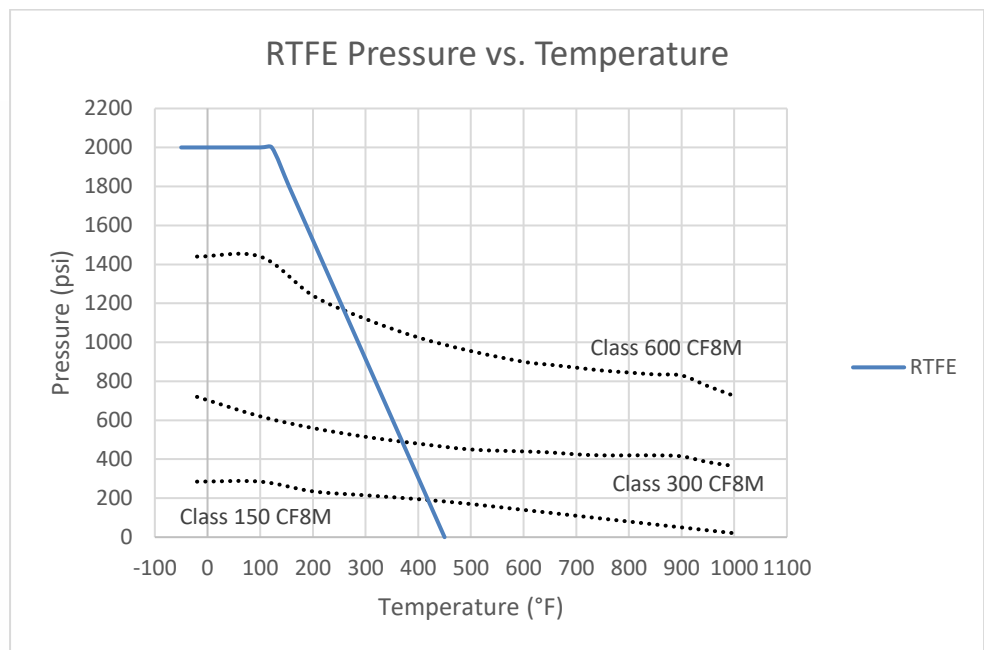
RTFE (Reinforced Teflon®: 85% PTFE, 15% Glass Fiber)

RTFE has improved wear and abrasion resistance over PTFE while maintaining its chemical compatibility. Its versatile temperature characteristics allow RTFE to be used in saturated steam applications. RTFE is the standard seat material for most A-T Controls floating ball valves. This seat should not be used in caustic (sodium hydroxide, potassium hydroxide, etc.) service.

Temperature Range: -50°F to 450°F

Max Pressure at Room Temperature: 2000 psi

Color: Off-White





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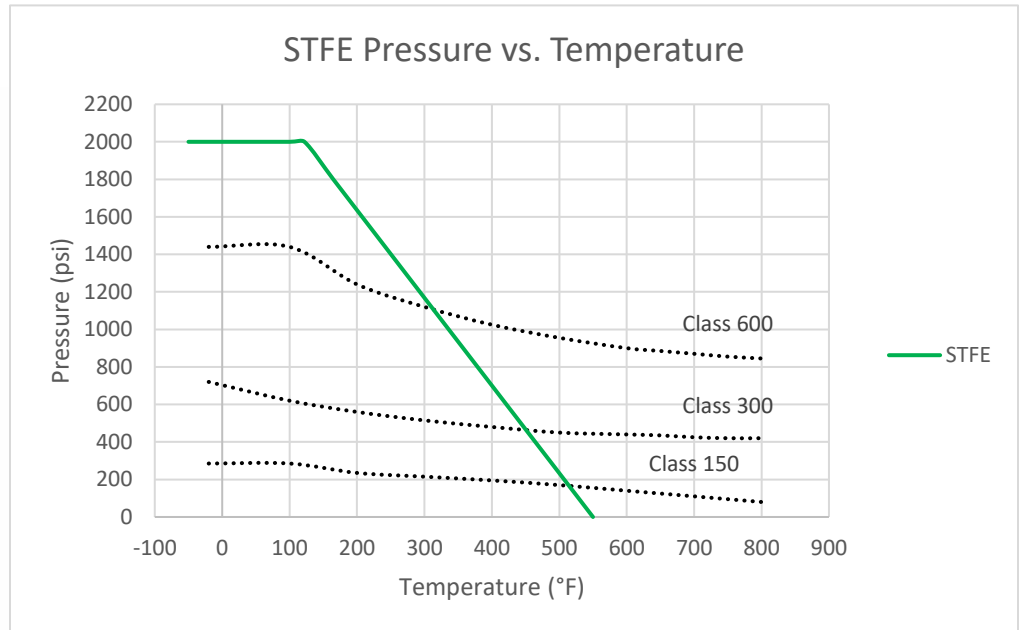
50/50 (50% 316 SST Powder, 50% PTFE)

50/50 has improved temperature resistant properties over PTFE and RTFE, as well as improved abrasion resistance and a higher density. 50/50 seats are recommended and are often used in saturated steam applications because of these characteristics. 50/50 seats are the standard in our V-ball valves.

Temperature Range: -50°F to 550°F

Max Pressure at Room Temperature: 2000 psi

Color: Dark Grey





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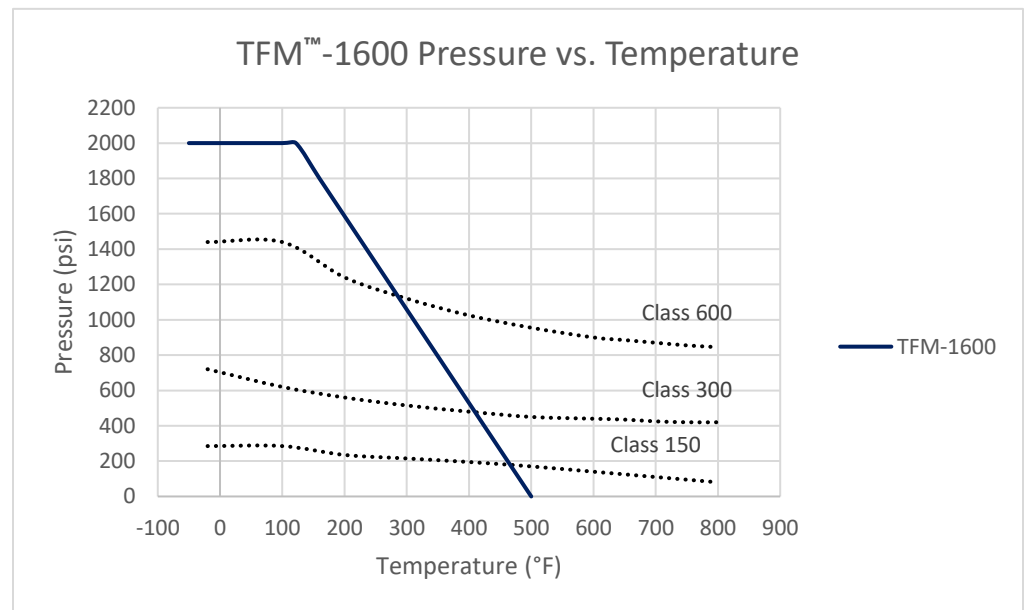
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TFM™-1600

TFM™-1600 is second generation PTFE. TFM™-1600 has a lower coefficient of friction that provides better creep resistance than PTFE. TFM™-1600 is ideal for high purity applications such as semi-conductor, and also in lower temperature applications. TFM™-1600 is the standard seat material in Series F9R valves, and Series HP/H78 High Purity Ball Valves. TFM™-1600 resists “popcorning” in monomer and polymer services, such as Butadiene because of its lower porosity and permeability compared to PTFE. TFM™-1600 is FDA 21 CFR 177.1550 (Food Grade), USP <88> Biological Reactivity Test In Vivo, USP23 Class VI, and 3A compliant. TFM™-1600 included in Series HP and Series H78 High Purity Valves are USP <87> Biological Reactivity Test In Vitro compliant.

- Temperature Range:** -75°F to 500°F
- Max Pressure at Room Temperature:** 2000 psi
- Color:** Transparent White





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CTFE (25% Carbon Graphite, 75% PTFE)

CTFE is used for low pressure steam applications, abrasive, and slurry services. It offers comparable chemical resistance to PTFE.

Temperature Range: -50°F to 480°F

Max Pressure at Room Temperature: 2000 psi

Color: Black



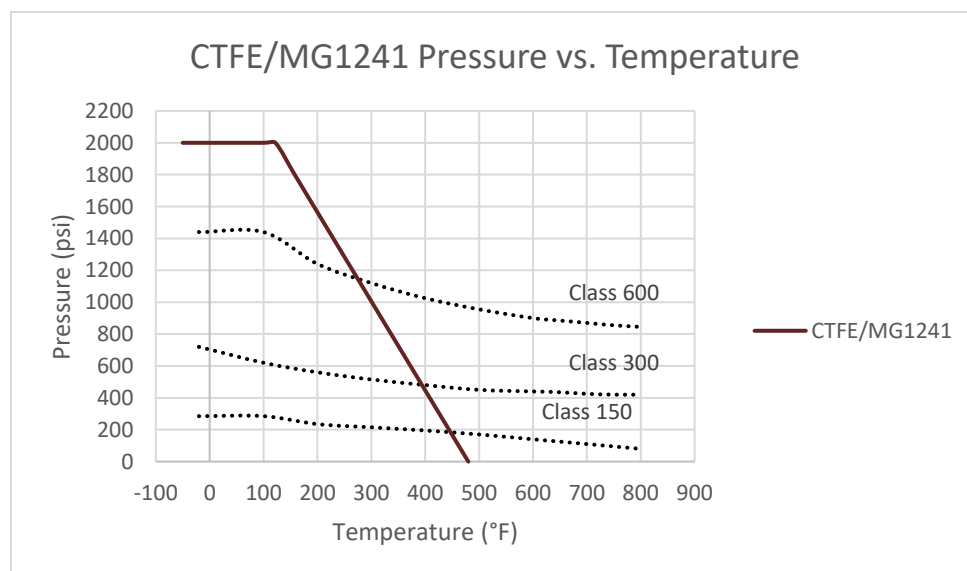
MG1241 (5% Graphite, 20% Glass Fiber, 75% PTFE)

MG1241 is a thermoplastic that is ideal for high cycle applications and abrasive services. Chemical compatibility is also comparable to PTFE.

Temperature Range: -50°F to 400°F

Max Pressure at Room Temperature: 2000 psi

Color: Dark Gray



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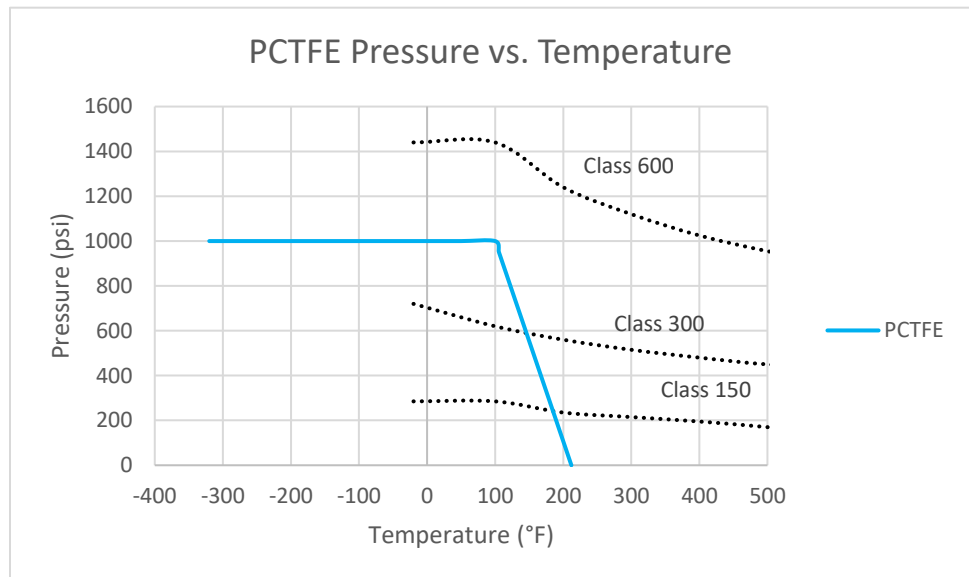
PCTFE (Polychlorotrifluoroethylene)

PCTFE is ideal in applications with low and cryogenic temperatures. It offers comparable chemical compatibility to PTFE, with few differences (should not be used for Ethylene Oxide applications, for example).

Temperature Range: -320°F to 212°F

Max Pressure at Room Temperature: 1000 psi

Color: Transparent White





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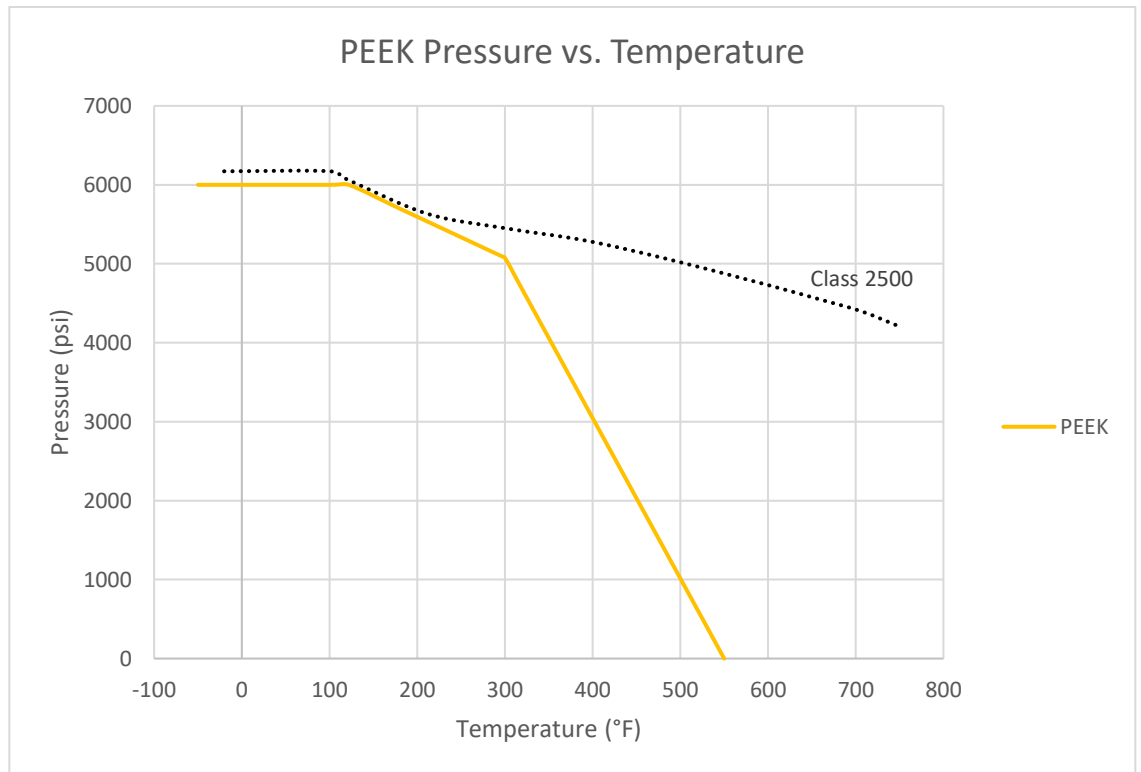
PEEK (Polyether Ether Ketone)

PEEK has good chemical resistance, and also high temperature tolerance. Ideal for high pressure applications. Other thermoplastics should be used for low pressure applications. Use of PEEK seats require the use of a 17-4 PH® stem. Do not use in applications prone to thermal shock, or in Chlorine and Sulfuric Acid applications.

Temperature Range: -50°F to 550°F

Max Pressure at Room Temperature: 6000 psi

Color: Beige





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UHMWPE (Ultra High Molecular Weight Polyethylene)

UHMWPE has good abrasion resistance for abrasive and slurry services. UHMWPE is ideal for applications such nuclear, tobacco, and low temperature applications that require no PTFE.

Temperature Range: -40°F to 180°F

Max Pressure at Room Temperature: 2000 psi

Color: Transparent White



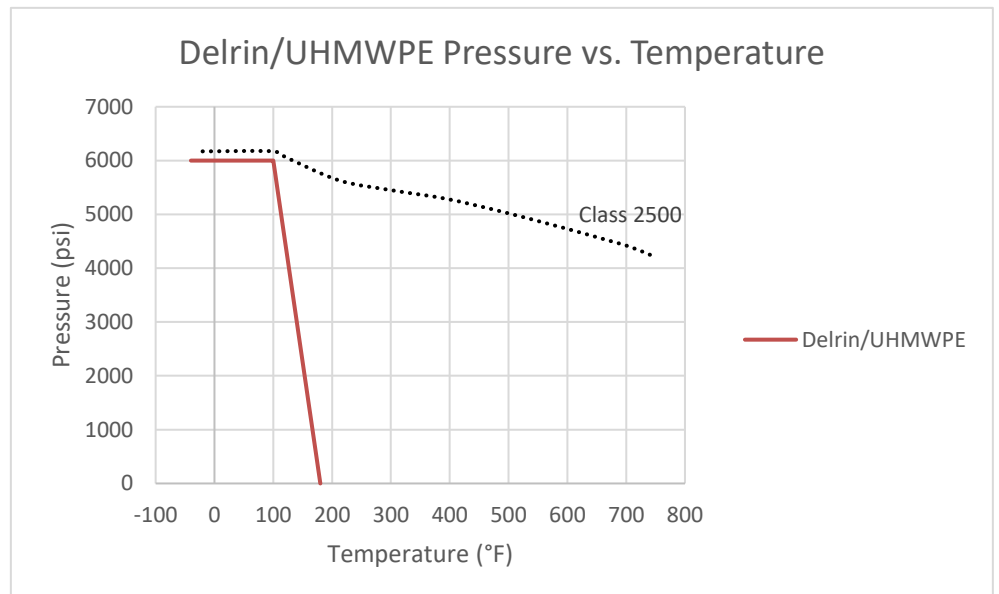
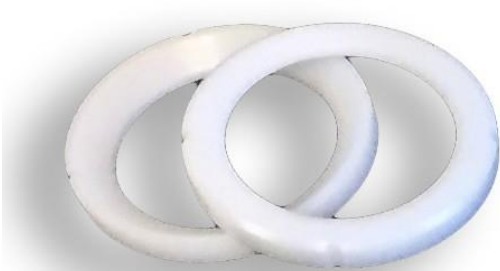
Delrin® (DuPont™ Polyoxymethylene)

Delrin® has decent chemical resistance, and is ideal for high pressure applications. Do not use in Oxygen service.

Temperature Range: -40°F to 180°F

Max Pressure at Room Temperature: 6000 psi

Color: White





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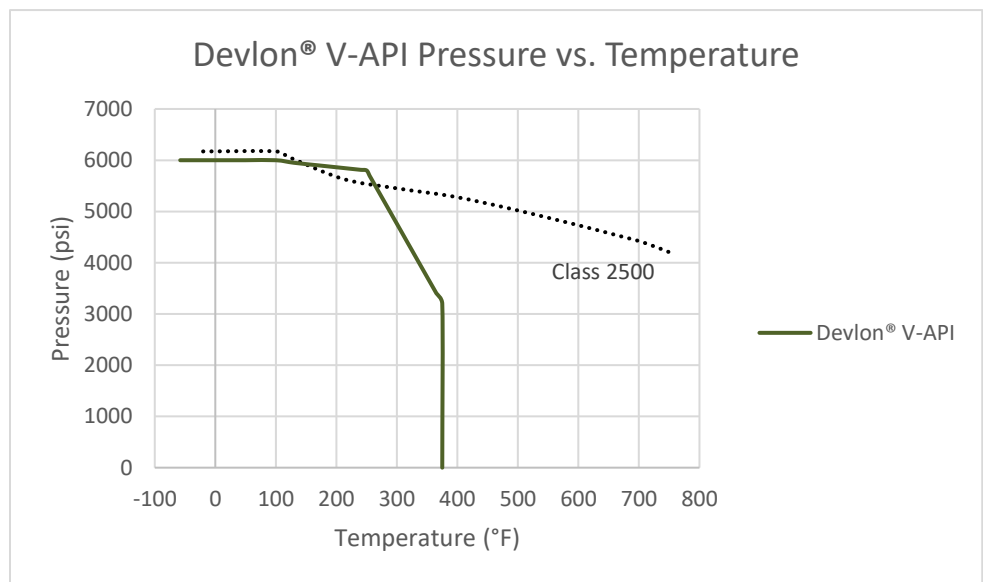
Devlon® V-API

Devlon® V-API is a polyamide that has mechanical properties that are comparable to PEEK, but does not share its high temperature characteristics. It is able to withstand high pressures, and is standard on our Class 150/300 (larger than 12") and Class 600 trunnion ball valves. Avoid using with alcohols, amines, and acids.

Temperature Range: -58°F to 375°F

Max Pressure at Room Temperature: 6000 psi

Color: Yellow



Other custom materials are available! Please contact A-T Controls, Inc for details.

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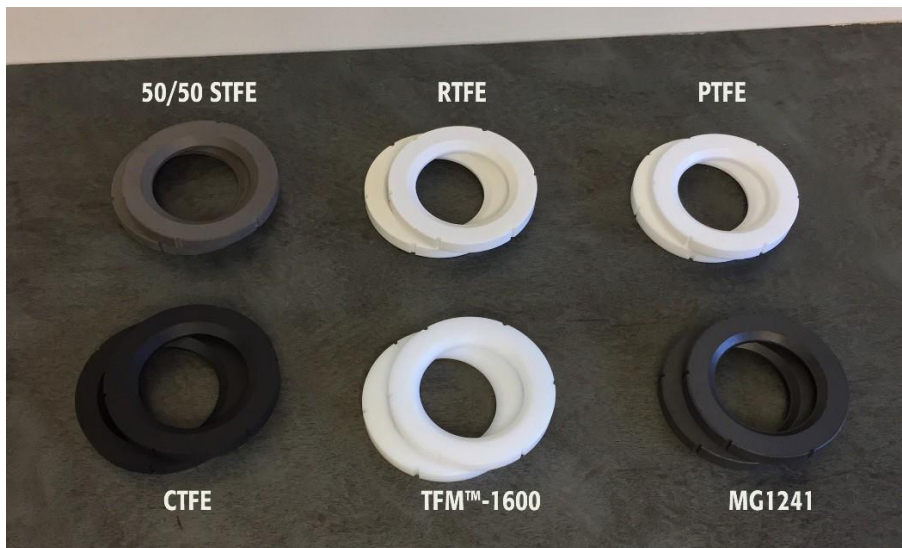
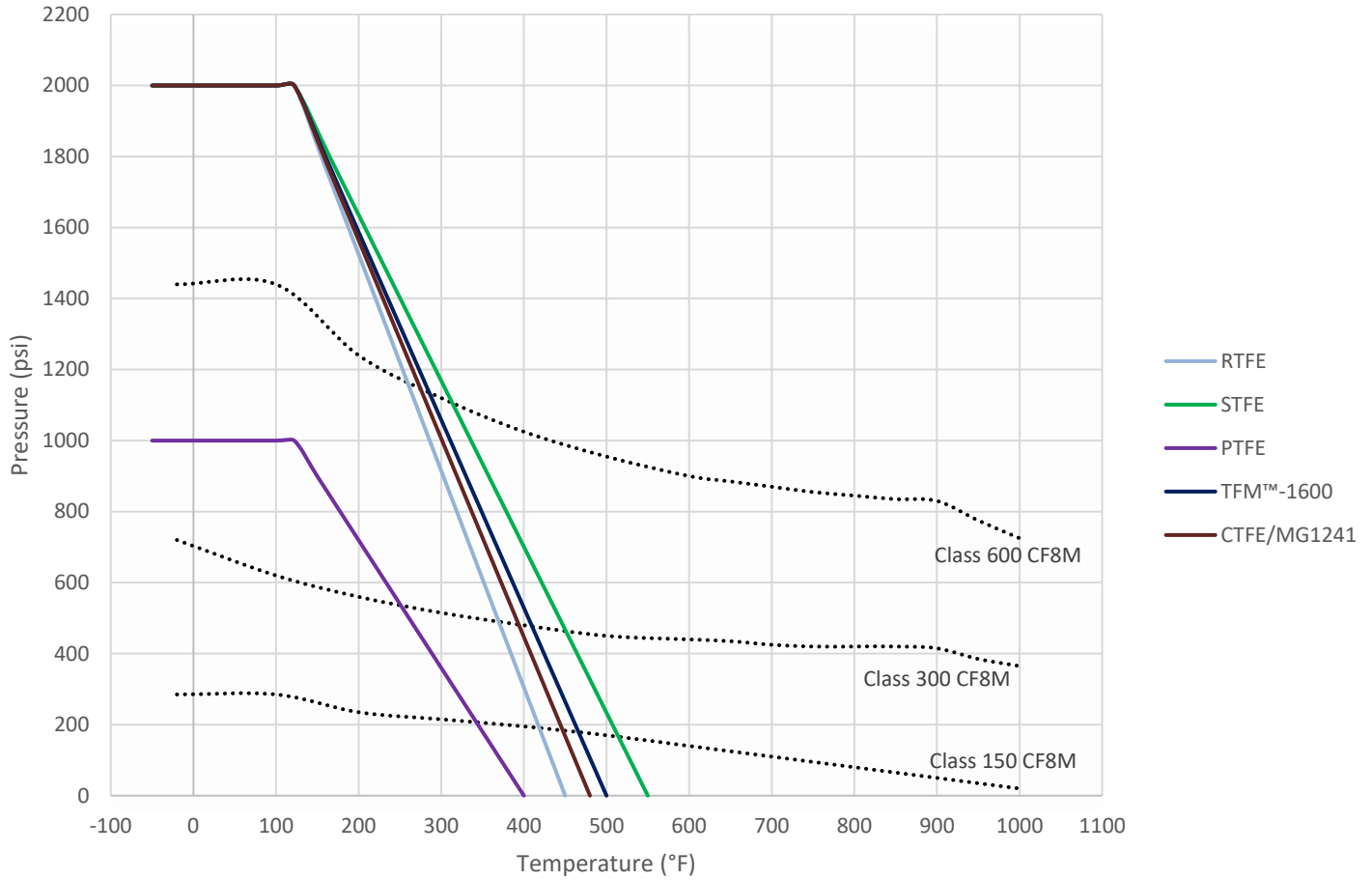


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PTFE-Based Seats Pressure vs. Temperature



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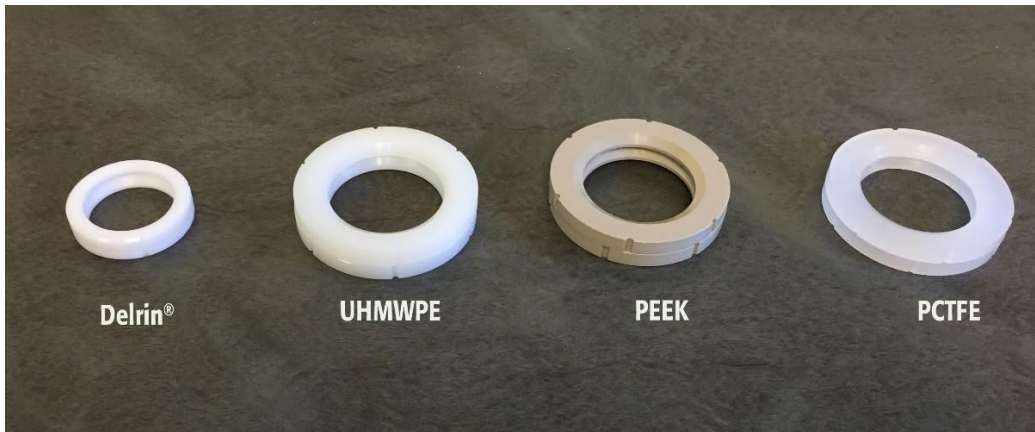
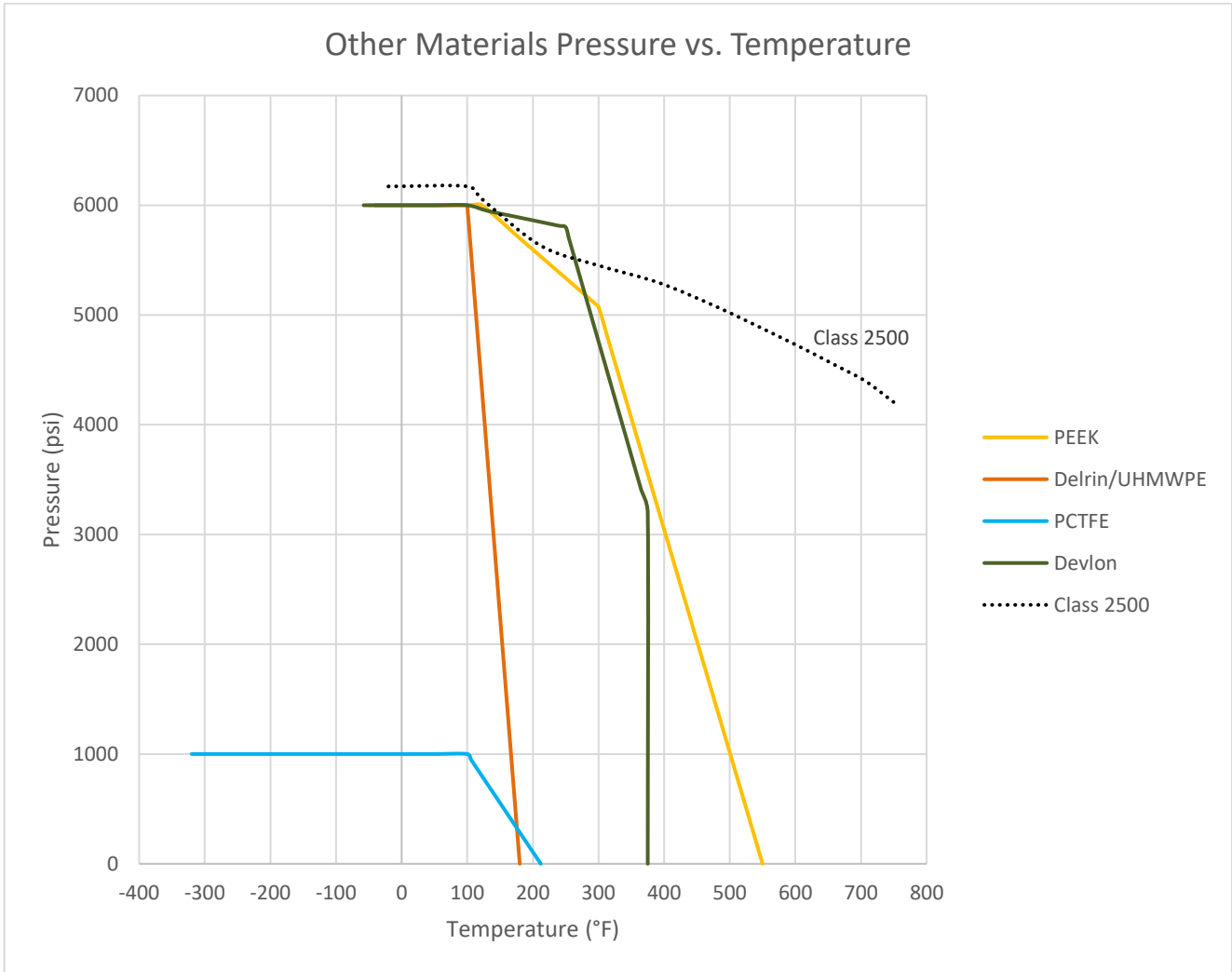




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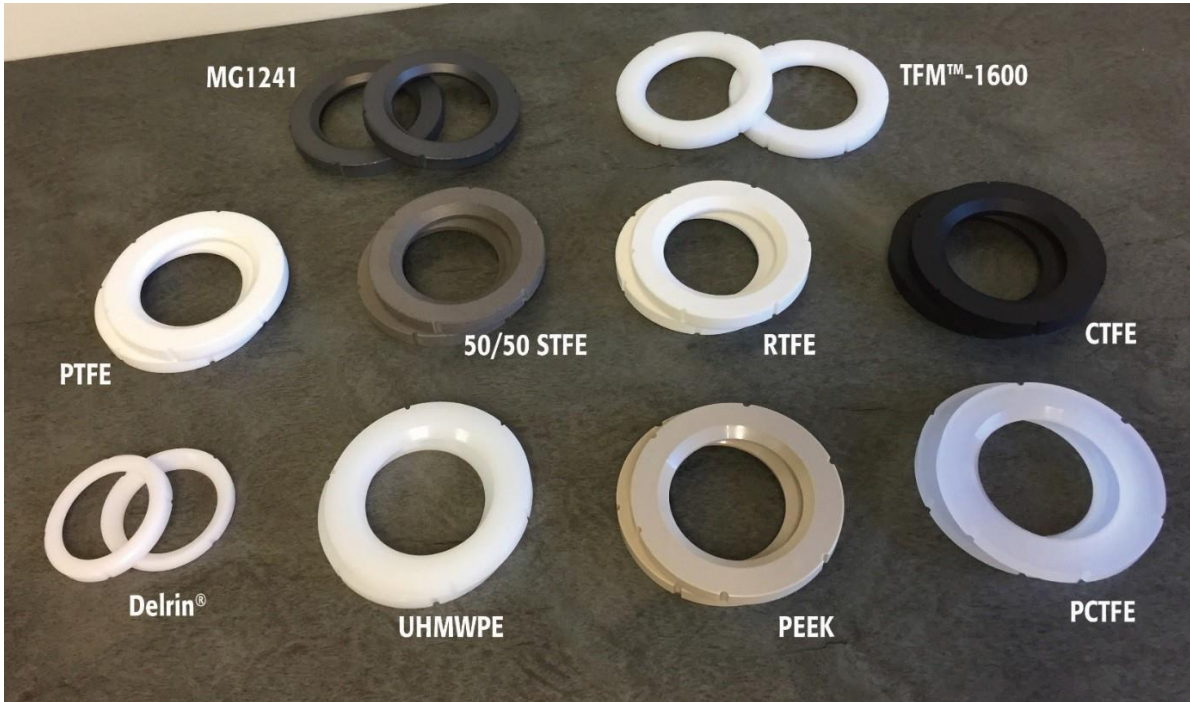
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