



## Butadiene Service

A polymer is a series of repeated units, called monomers, linked together. A monomer is a single molecule that can be bonded to another molecule of the same composition. Polymerization is the process in which monomers join forming a polymer. Typically, polymers can be resistant to chemicals, thermal insulators, and can have varying degrees of strength. A common polymer used in manufacturing is butadiene. Butadiene is a colorless gas (sometimes condensed into a liquid) that is primarily used as a monomer to produce many different types of polymers and copolymers and as a chemical intermediate in the production of industrial chemicals.

### Popcorning

Butadiene monomer (like other monomers) can polymerize quickly and aggressively in small areas. Because of this, the porosity and permeability of a material should be considered to avoid “popcorning.” “Popcorning” occurs when there is void space in a material for monomers/polymers to become trapped and polymerization takes place. This can lead to a valve lockup, and destruction of soft goods in the valve. A material proven to prevent “popcorning” is TFM™-1600. TFM™-1600 has lower porosity and permeability than normal virgin PTFE and filled PTFE compounds. TFM™-1600 is used in monomer/polymer applications because of its improved properties over PTFE and filled PTFE.

### Standard Material

**NOTE:** Please consult A-T Controls for material selection for your application. These parameters are guidelines, and customers are responsible for materials of construction and lubricants being compatible with their Polymer application.

**Packing:** Graphite or TFM™-1600

**O-ring:** FKM or FFKM (depending on temperature)

**Stem Seal:** TFM™-1600

**Body:** ASTM A351 Grade CF8M, ASTM A351 Grade CF3M

**Seats:** TFM™-1600

**Trim:** 316 SST

**Note:** A-T Controls recommends using TFM™-1600 seats over PTFE due to “popcorning.”

### Valve Packages (Others available)

**Series FD9-** 150#, 300#, 600# Direct Mount Split Body Flanged Ball Valve, Firesafe, 316SST or WCB, multiple sizes available.

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**Series F91-** Sizes 1/2”- 6”, Regular Port, 150# Unibody Direct Mount Flanged Ball Valve, 316 SST or Carbon Steel Body

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**Series F88-** Sizes 1/4”- 4”, Full Port 2000/1500/1000 psi WOG (by size), Direct Mounting Pad, Threaded, Socket Weld, or Butt Weld, 316 SST or Carbon Steel Body

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**Series F83-** Sizes 1/4”- 2”, Full Port 2000/1500 WOG (by size), Threaded, Socket Weld, or Butt Weld, 316 SST or Carbon Steel Body

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