

TUFF GUARD™ Gauge Isolator Modified PTFE Diaphragm

Overview

When processing media contain certain chemical fluids that promote a reaction with metallic pressure sensing instruments, it is necessary to isolate the media from the instrument while continuing to transmit the system pressure accurately.

Isolating pressure sensing instruments is accomplished by providing a non-permeable barrier that will prevent the process media from coming in contact with the instrument.

Isolating components, diaphragms, have been used for centuries to perform this requirement.

A common material for diaphragms has been virgin PTFE. Virgin PTFE has many ideal characteristics, but newer formulations have been developed to improve performance. This material has been identified in the industry as Modified PTFE.

Modified PTFE is a chemically modified version of PTFE with higher permeation resistance, lower creep and smoother surfaces. Modified PTFE has reduced porosity and improved tensile strength and are engineered for use in critical applications which are beyond the scope of Virgin PTFE. During sintering of molded parts, the particle fusion of Virgin PTFE is hindered due to the high viscosity of the Virgin PTFE melt. As a result, there is a slow rate of void closure and a small fraction of void volume remains.

Benefit Review:

- Reduced cold flow
- Substantially reduced deformation under load
- Lower porosity and permeability due to denser polymer structure and lower void content
- Improved stress recovery, particularly at elevated temperatures
- Smoother surfaces
- Excellent non-stick and dielectric properties
- Higher elastic modulus
- Improved flexibility

Independent test results have concluded the following:

- Deformation under load: Modified PTFE 4%, Virgin PTFE 10%
- Reduced void content: the better particle coalescence reduces the void content by a factor of almost 2:1
- Thickness sheet permeation: the coefficient of permeation of Modified PTFE is 40% less than that of PTFE, independent of thickness

For the benefit of all applications, Marquest Scientific PTFE Diaphragms come standard as Modified PTFE material.

