

Case Study: OEM Pressure Regulators GYLON® 3522 PTFE Diaphragm Material



INDUSTRY

OEM - Food & Beverage, Pharmaceutical, Bio-Processing

CUSTOMER

A global division of a major process management OEM which specializes in pressure-reducing, pressure-relief & back-pressure regulators.

BACKGROUND

This range of pressure regulators goes into a broad spectrum of critical applications in demanding industries. As well as trying to improve performance from the materials the customer was also required to meet the full spectrum of compliance needs. For the food & beverage, pharmaceutical and bio-processing industries this meant that FDA, USP Class VI, 3A Sanitary and ASME-BPE (Bio Processing Equipment) standards were required.

CHALLENGES FACED

The diaphragms used in these styles of pressure regulators come in direct and constant contact with the process media. Therefore the diaphragm acts as a dynamic seal which should prevent the media from escaping into atmosphere, and also open/close the regulator depending on the pressure requirements specified for the system. Elastomeric diaphragms are typically used to keep costs down, but problems are encountered when the diaphragm is exposed to steam or aggressive chemicals in the line. This can cause elastomeric diaphragms to deteriorate over time and release debris into high purity processes.

OPERATING CONDITIONS

1. Media (process): Various purified gases
2. Media (sterilization): Steam (212°F / 100°C)
3. Size (pipe/hose): various ½ " to 3" (12.7mm to 76.2mm)
4. Temperature: -20°F to 165°F (-28°C to 74°C)
5. Pressure: 10psig to 5800psig (1 to 400bar)

SOLUTION AND BENEFITS

Garlock has a strong track record of co-development with OEM customers, and our ability to work closely with engineering teams ensured that the specific material and design needs could be delivered successfully. GYLON® 3522 PTFE diaphragm material was recommended for this type of high purity system and especially because FDA, 3A and USP class IV compliance was required. Unlike other styles of PTFE, GYLON® 3522 PTFE is manufactured specifically for use in high-end applications such as diaphragms. The material exhibits excellent performance due to its high flexibility, and the ultra-low void content prevents gases from permeating the diaphragm thus enabling it to withstand extreme process and cleaning conditions over a long lifetime.

Using GYLON® 3522 diaphragms in these valves allowed this OEM customer to provide their end-users with a high-performance component, with extended lifetime that will not jeopardize the purity or integrity of their processes.

For more information, please visit:

<http://www.garlock.com>

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