

PVP2020

Pressure Vessels & Piping Conference 2020

July 19-24, 2020, Minneapolis, Minnesota, USA

THE EFFECT OF WATER ABSORPTION ON THE MECHANICAL PERFORMANCE OF GASKET MATERIALS

Jeffery Wilson

VSP Technologies
Prince George, VA

ABSTRACT

The selection of gasket materials for bolted flanged connections (BFCs) is largely influenced by temperature, pressure, commodity (chemical), flange geometry, and available bolt load.

However, very little focus has been placed on what happens to gasket materials if they are exposed to water or high humidity before or during installation. While not all gasket materials are susceptible to the absorption of water, others are, and their performance could be critically reduced by the slightest amount of absorption. The understanding and ability to quantify the degree to which different gasket materials are affected by pre-assembly water exposure will be another tool used to determine the correct gasket for different services and external conditions, along with addressing the importance of proper gasket handling and storage environments.

This paper will explore the degree to which a wide group of common industrial gasket materials absorb water and how they perform under compressive loads from a mechanical perspective. With the data collected from this testing, users will have a better understanding of which materials are susceptible to the absorption of water and to what extent it affects the mechanical performance of the gasket.

Keywords: gasket; material; compressibility; performance

