

MAY 2024



## From Experience

### Conduit Seal Effectiveness

Facilities often contain spaces that are conditioned to low temperatures for product or ingredient storage, and to maintain product temperature during processing and packaging. Typical temperature requirements range from 60°F to 0°F or lower. At these temperatures, when the temperature in the conditioned room is below the dew point of vapor in the adjacent spaces, the potential for condensation exists. Wall penetrations between these spaces provide an opportunity for vapor pressure to push water vapor towards the cool, dry space where the vapor can condense. Conduit penetrations are a particular concern, since they can provide a niche where condensation and microbial growth could occur out of sight and in an area that is difficult to clean. This makes an effective vapor barrier inside the conduit essential for preventing vapor infiltration and condensation.

#### Conduit Seals Tested by Hixson

After observing the failure of several types of conduit seals in the field, Hixson conducted testing of four commonly installed seal types – neutral cure silicone, expanding polyurethane foam sealant, duct seal compound, and hazardous location sealing compound. The goal of our testing was to determine

which seal was most effective. Three primary characteristics were evaluated: ease of installation, vapor infiltration, and pressure resistance.

#### Hixson Test Results

Based on the testing that was conducted, expanding foam was found to be the most effective conduit sealant. The foam was easy to install and provided an effective seal with an almost foolproof installation method. Due to its ease of installation, the expanding foam also provides the lowest total installed cost. Silicone and the hazardous location sealing compound were cumbersome to install and required additional tools and/or materials to complete the task. The expanding foam forced its way in between and around all the conductors

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#### **EXPERIENCE IN BRIEF**

Conduit drains can be useful to permit accumulated condensation to flow out of the conduit system, but the first line of defense should be to prevent the condensation from occurring in the first place with effective conduit seals.

present in the conduit, whereas the silicone, duct seal, and hazardous location sealing compound were only able to fill the conduit partially, resulting in an inadequate seal. Hixson then conducted pressure tests, which established that the expanding foam would perform sufficiently even at pressures well above typical plant conditions. For more information on the conduit testing undertaken by Hixson, request the Hixson white paper on this topic.



**Expanding Foam Section**

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