

AEROFLEX EPDM™ Closed-Cell Elastomeric Insulation for Hygienic Facilities

Some building facilities, or specific spaces within a facility, process products or services that require a sterile environment for air, surfaces, people, and procedures. Airborne contaminants and cross contamination are the primary concern as they can cause costly and disruptive process downtime and outages. A common reference for a hygienic space is a “cleanroom”.

Examples of industries that require hygienic facilities and spaces are aerospace assembly, biotech labs, food & beverage processing, healthcare, laboratories, medical device production, pharmaceutical manufacturing, and advanced manufacturing, such as electronics and semiconductor fabrication.

Clean spaces are precision-controlled environments where factors such as air filtration, airflow, air pressure, gowning protocols, and special surfaces are specifically controlled. As a matter of fact, cleanrooms are classified per ISO 14644-1 into various classes based on how many particles are permitted in the air. Classes range from 1 – 9, the lower the number, the cleaner the environment.

Mechanical insulation for building mechanical systems (piping, ductwork, and equipment) is specified and installed for hygienic facilities and spaces with specific requirements to ensure sterile surfaces. Process Industry Practices (PIP) is a leading organization for product specifications and installation procedures of insulation for hygienic spaces. Mechanical insulation and accessories meet various PIP insulation type codes.

Insulation categories define the insulation types, plus their advantages and disadvantages. Applications, operating temperatures, substrate composition (i.e., stainless steel), and external cleaning are primary factors with insulation product selection. In most cases, an insulation jacket or vapor barrier is specified and installed to protect the insulation while providing a smooth, clean outer surface.

In addition to many insulations, system accessories such as jacketing, pipe supports, adhesives, coatings, sealants, and tapes meet PIP requirements for low toxicity, VOC chemical emissions, and flame spread/smoke-developed indexes.

Closed-cell insulations are preferred for low-temperature applications due to their resistance to the absorption and permeation of external water vapor while preventing harborage of contaminants.

Elastomeric closed-cell insulation is a proven choice for below-ambient (cold) systems in hygienic facilities due to its closed-cell structure, flexibility (no breakage), and nonparticulation. Although elastomeric offers a built-in vapor retarder (smooth outer skin), jacketing is recommended, especially for systems that will be subject to washdown procedures.

To learn more, please reference [Aeroflex USA's Installation Guide](#).

Source: Process Industry Practices – <https://pip.org>
PIP INEG1000, Insulation Design Guide
PIP INEG5000, Design Guide for Insulation in Hygienic Facilities