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AEROFLEX EPDM insulation offers numerous benefits, including being fiber-free, low-VOC, and attenuating low-frequency noise. Its smooth surface makes it easy to clean, while also being mold resistant. The key difference is EPDM, which provides long-term moisture protection against the elements, ensuring stability in harsh environments. The evolution of thermal insulation dates back to prehistoric times when natural materials were used to insulate shelters and clothing. However, it wasn't until the industrial revolution that artificial thermal insulation materials like pipe insulation were developed. The term "insulate" means to prevent the passage of heat, electricity, or sound by surrounding the area with a non-conductive material. Thermal insulation prevents heat transfer because it is not a good conductor. There are different types of thermal insulation, including cellular, fibrous, granular, and reflective materials. Pipe insulation materials can be composed of various substances like calcium silicate, cellular glass, elastomeric foam rubber, fiberglass, mineral wool, perlite, polyisocyanurate, polystyrene, and more. Each type of pipe insulation has unique physical characteristics and working properties, such as structure, thermal conductivity, and fire safety performance. The mechanical insulation industry must comply with industry standards like ASTM International, ASHRAE, IECC, and Underwriters Laboratories. When selecting or specifying pipe insulation, it's essential to understand its performance attributes, including strengths and weaknesses. Two common reasons for pipe insulation are energy efficiency and condensation control. Choosing a thermally-efficient pipe insulation that is designed for the operating temperature range and installed with the correct thickness can help save energy and minimize heat gain or loss. The importance of pipe insulation thickness cannot be overstated, as it directly affects the performance and longevity of the system being insulated. If the correct insulation thickness is not installed, condensation will naturally occur on the pipe insulation surface, leading to a range of issues including surface damage below the pipe and potential corrosion under insulation (CUI). CUI is a costly problem that can be easily prevented by choosing the right insulation for the job. To ensure success, it's crucial to consider various factors such as pipe type, size, operating temperature, ambient temperature, relative humidity, and wind speed. Industry calculators can help you plug in these numbers to determine the correct insulation thickness for your specific application. For example, closed-cell pipe insulation is often recommended for refrigerant piping systems due to its ability to effectively manage condensation. When evaluating options, consider closed-cell elastomeric foam insulation, which offers a range of benefits including energy savings, process control, and freeze protection. This type of insulation can also help reduce noise levels and promote emission reductions. Aeroflex USA's AEROFLEX brand is a high-performance option that stands out from the competition due to its use of EPDM rubber. EPDM has several advantages over other types of rubber, including its non-polar hydrophobic properties, stable chemical structure, and higher continuous temperature threshold. Additionally, it offers greater UV resistance and is inherently microbial-resistant. In fact, EPDM components are widely used in the automotive industry due to their durability and heat resistance.