

## **K-Flex Insulation for VRF / VRV Climate Control Systems (Variable Refrigerant Flow / Variable Refrigerant Volume)**

VRF / VRV systems are innovative climate control technologies that allow for changes in temperature in different parts of a building at different times of day. This type of climate control system is relatively new to the US HVAC market, and is being used in place of chilled water systems for some applications. These new systems have a number of benefits, including: increased energy efficiency, design flexibility, simultaneous heating / cooling capabilities, and individual user temperature control, among others.

VRF / VRV systems utilize R-410a refrigerant at similar temperatures and pressures as traditional split systems, with refrigerant line temperatures generally not exceeding 125 °F. Manufacturers alert users that temperature spikes of 250°F can occur if the system malfunctions. The system automatically shuts down when these situations occur, limiting the temperature spikes to 10 minutes or less. This information is important when selecting the proper insulation for the system. The major manufacturers of VRF / VRV systems require that all refrigerant piping be insulated with an insulation specifically designed for use in an HVAC system, and be able to withstand the standard operating temperature of the refrigerant. Closed cell elastomeric foam insulation (ASTM 534, Type I, Grade I) is the industry standard insulation for refrigerant piping. K-Flex Insul-Tube® is rated up to 220 °F, which is well beyond the standard operating temperature of these systems. In addition, K-Flex Insul-Tube is a thermoset / cross linked elastomeric product that can withstand spike temperatures exceeding 250°F with no degradation of performance properties. K-Flex Insul-Tube is tested according to ASTM C-411 (Standard Method for Hot Surface Performance of High Temperature Thermal Insulation) where it is subjected to 250°F for 96 hours, showing no signs of sagging, surface cracking, warping or delamination. During the test, there are no signs of the product smoking, flaming, glowing or smoldering. K-Flex Insul-Tube would easily be able to withstand the short term temperature spikes that might occur if a malfunction in the system were to occur (unlike a thermoplastic type insulation material that would melt if its' rated high service temperature were exceeded. As such, K-Flex Insul-Tube® has been, and continues to be, approved by major equipment manufacturers and mechanical engineers for use on these systems.

The size range, flexibility and ease of installation of elastomeric insulation make it the ideal choice for VRF / VRV systems. K-FLEX Insul-Tube® is available in 6 foot lengths or continuous coils in the ID and wall sizes required for VRF / VRV systems.

If you have any further questions regarding the insulation required for these new innovative climate control technologies, please contact your K-FLEX USA representative.

