K-Flex PE and Exceptions to IMC Requirements for Materials Used in a Return Air Plenum

Section 602.2.1 of the 2012 International Mechanical Code (IMC) defines the requirements for materials used in a return air plenum. In addition, it lists several exceptions to these requirements.

K-Flex USA has technical concerns regarding the exception stated in Section 5.0: Combustible materials (i.e. PVC piping) fully enclosed within one of the following; Section 5.3 Materials listed and labeled for installation within a plenum.

The 2012 version of the IMC clarifies similar language found in the 2009 version of the code, hence this is not a change but a further clarification of what the 2009 code stated.

K-Flex USA does not agree with or recommend use of this exception. K-Flex USA has not tested any plastic piping (PVC, CPVC, PEX, etc.) covered with elastomeric or polyethylene insulation to determine the flame spread and smoke developed indices of this composite. Further, we disagree with the science behind this exception as there is no way to predict how an insulation material tested on a rigid backing or otherwise supported will react when exposed to fire on a *flexible* substrate such as plastic pipe at elevated heat levels.

We are particularly concerned with the possible use of K-Flex PE polyethylene insulation in this application. K-Flex PE meets the requirements of NFPA 90A and 90B for use on air handling equipment and in air handling plenums, i.e. it has a flame spread and smoke rating of 25 and 50 or less, respectively when tested in accordance with ASATM E84, and it does not flame, glow, smolder or smoke when teste at 250°F in accordance with ASTM C411. As such, it is considered a “plenum rated” material.

However, K-Flex PE is a *thermoplastic* insulation. When it is exposed to fire, it *melts.* As such, it would not impart any protection whatsoever to the underlying plastic pipe. The use of K-Flex PE or any other thermoplastic insulation material in this application represents a serious fire and life safety risk. **For this reason, K-Flex USA cannot support the application of K-Flex PE on any plastic piping installed in plenum areas.**

It is our recommendation that the mechanical or insulation contractor contact the pipe manufacturer for any approvals that they have obtained based on their own testing, preferably based on standards specifically developed to address these applications.