USE OF ELASTOMERIC INSULATION PRODUCTS ON STAINLESS STEEL

Elastomeric products can be used in conjunction with stainless steel providing certain restrictions are considered and precautions are taken.

Stress Crack Corrosion or Pitting Corrosion of stainless steel (austenitic) at temperatures above 90°F is well documented. Corrosion can occur when the following factors are present: structural stresses, moisture and a corrosive source. Stresses and moisture are always present. Corrosive sources are generally agents containing halogens which there are many sources of i.e. most cleaning agents. All general purpose elastomeric insulation products on the market today would have the potential to be a corrosive source for stainless steel even though the measured residual chloride ions in the product are very small.

The conservative approach to the prevention of the problem is to treat the stainless steel. Use of foils, i.e., aluminum, typically 46 standard wire gauge, acts as a physical barrier and provides cathode protection. The foil is simply wrapped around the piping with overlays. This method, when done properly, provides the most resistance to stress corrosion. Paints offer some protection. Some that are recommended are silicone-alkyd, aluminum rich silicone-alkyd, epoxy/phenolic, amine epoxy, and polyamide epoxy paint.

Tube and sheet insulation, when properly installed, have been used successfully on applications using stainless steel without any protective coating. These have been low temperature applications (below 90°F) with selected grades of stainless steel. All joints and butts must be properly sealed from water penetration. Proper installation practices greatly reduce the risk of corrosion caused by outside sources.

The same precautions would apply to the use of our polyolefin insulation, even though no chloride ions are present in the product. Corrosive agents are present from sources other than the insulation and pose the same dangers.

Flexible closed cell insulation products have been successfully used on applications involving the use of stainless steel, i.e., breweries, food / meat processing plants, and nuclear power plants, but these applications require special considerations, and precautions may need to be taken to insure a successful application, particularly at elevated temperatures.

References: ASHRAE Handbook, “Corrosion of Metals Under Thermal Insulation” by Pollock Barnhart.