

**TECHNICAL UPDATE - TU-5011**

**SUBJECT: Chloride Migration from FR-PVC Jackets**

Free chlorides are notorious for initiating stress corrosion cracking in stainless steel tubing. Our customers' sensitivity to this fact is the reason we work so hard to minimize the effect of leachable chlorides in our insulating materials and caution the customer to seal the ends of the bundle. We work hard to insure that the root causes of stress corrosion cracking are eliminated in our bundles.

Over the years, we have had customers express concern that our FR-PVC jacketing material, a chlorinated vinyl, could also accelerate stress corrosion cracking through the liberation of free chlorides in the material.

Unitherm has researched this concern thoroughly and has found no evidence that the FR-PVC jacket will leach chlorides into the bundle under normal or most abnormal operating conditions.

Our FR-PVC was tested for chloride off-gassing at normal and elevated temperatures. Samples of the material were heated in steps from room temperature to the melt point. The gasses driven off during the heating process were tested for the presence of chlorides. **The tests showed that there was no off-gassing of chlorine or chlorides until the material reached its melt point of 350°F.**

Normal thermal or UV aging showed no evidence of chlorine or chloride off-gassing.

FR-PVC has been the standard jacket material for preinsulated and traced bundles for over 20 years. The majority of these applications are in chemical processing plants or refineries, and are installed in all types of environments. We know of no reported instances of stress corrosion cracking in any stainless steel tube bundle, ours or our competitors, that had any link to chloride off-gassing in the jacket.

If the customer is experiencing stress corrosion cracking of stainless steel tubing in his operation, he should review his installation for unsealed bundle ends, moisture traps in the bundle, and cuts in the jacket that allowed contaminated water to lie against the tubes. These three items are the cause in almost all of the cracking problems seen in preinsulated and traced bundles.