armacell®

MAKING A DIFFERENCE AROUND THE WORLD

AP/Armaflex®
NH/Armaflex®
UT/Solaflex

TECHNICAL INFORMATION

Bulletin #03
February 2018

03

Preventing Corrosion of Stainless Steel Systems

Stainless steel systems pose special considerations when it comes to insulation. These considerations are due to selective types of corrosive attacks, which may occur in small localized areas. In such cases, the corrosion can spread rapidly, though generally without rust.

Corrosion Risks - Causes of Corrosion

Solutions containing halogens or highly alkaline substances typically trigger transcrystalline stress corrosion in austenitic stainless steels. Stress corrosion can occur when a high-grade steel is exposed simultaneously to three trigger factors:

- Structural stresses
- Moisture
- Halogens (e.g. chlorine, bromine)

Types of Selective Corrosion

Stress corrosion and pitting corrosion can occur where the presence of a specific corrosive agent is combined with tensile stresses and moisture. Practically all austenitic stainless steel systems are susceptible to transcrystalline stress corrosion, especially at temperatures over 125°F. Ferritic stainless steels are not susceptible to transcrystalline stress corrosion, such corrosion occurs only occasionally in ferritic-austenitic steels.

Use of AP Armaflex on Stainless Steel

AP Armaflex contains some chlorinated materials that may provide leachable chlorine ions that could promote corrosion in stainless steel if the conditions are right: however, since stress corrosion on stainless steel is not known to happen below 125°F, AP Armaflex is recommended on systems operating up to 125°F. The extremely low water absorption and water vapor permeability of AP Armaflex make it the perfect product for preventing moisture on these colder systems.

Because of the risks of selective corrosion caused by chloride ions, Armacell DOES NOT RECOMMEND the use of AP Armaflex on Types 200 and 300 (austenitic) stainless steel where the temperature will exceed 125°F. This recommendation also applies to any other type of nitrile or PVC foam insulation.

Recommended products on Stainless Steel above 125°F

NH Armaflex and UT Solaflex insulation products are both formulated without halogenated materials. Therefore, they will not contribute to stress corrosion of stainless steel. As proof, both of these products do not corrode stainless steel when tested to ASTM C692: *Standard Test Method for Evaluating the Influence of Thermal Insulations on External Stress Corrosion Cracking Tendency of Austenitic Stainless Steel.*

NH Armaflex can be used on systems with operating temperatures up to 250°F and UT Solaflex can be used up to 300°F. Both products have a closed cell structure and very low water vapor permeability making them ideal for preventing moisture and corrosion.

For More Information:
Phone: (919) 304-3846
Email: info.us@armacell.com
Website: www.armacell.us