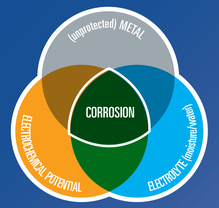
Johns Manville
Industrial Insulation Group

EVALUATING CORROSION UNDER INSULATION (CUI)

What is **Corrosion Under Insulation?**

CUI occurs on the pipe surface when water penetrates the insulation system (jacketing, insulation, coating) and comes into contact with the pipe surface. This water ingress causes corrosion to form on the surface of the pipe, threatening the integrity of the pipe and the overall performance of the system.



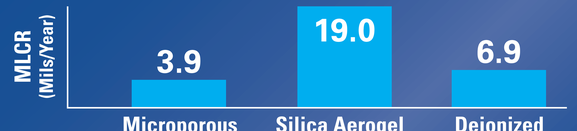
Cost of corrosion globally:
$2.5 trillion annually

Testing the **Potential** of CUI

ASTM C1617: Standard Practice for Quantitative Accelerated Laboratory Evaluation of Extraction Solutions Containing Ions Leached from Thermal Insulation on Aqueous Corrosion of Metals.

NACE TG516: Innovative, new testing protocol that explores the long-term performance of insulation in low-temperature sweating conditions and high/low-temperature cycling conditions. During the test, the test apparatus (jacketing, insulation, pipe) is submerged in a solution with up to 1500ppm Cl. The apparatus is measured under two conditions: cyclic condition, involving both high and low temperatures where the insulation is dries between cycles, and a low-temperature sweating condition, where the insulation never dries.

ASTM C1617: Mass Loss Corrosion Rate (MLCR)

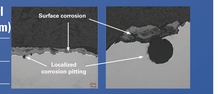


NACE TG516

Thermal Cycling Conditions

Sweating Conditions

Insulation	2-Month (Tap) Mean Corrosion Depth (µm)	2 month tap + 4 month Cl mean Corrosion Depth (µm)
Microporous Blanket	7	213
Silica Aerogel Blanket	91	1396



Addressing CUI with Insulation

Hydrophobic, microporous blanket insulation is thin, flexible, and ideal for tights spaces that demand high thermal-stability. It is less corrosive than deionized water, and substantially less corrosive than competing silica aerogel blanket insulations. Microporous blankets can also be utilized as part of a hybrid system with insulations like calcium silicate, improving thermal performance without sacrificing space.

Visit the JM booth #10

Microporous Insulation That Helps Inhibit CUI

- Extremely low corrosive potential
- Lower corrosion than other blanket insulations
- Hydrophobic
- Thin, flexible and easy to install

NACE TG516

Thermal Cycling Conditions

Sweating Conditions