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MAKING A DIFFERENCE AROUND THE WORLD

TECHNICAL BULLETIN

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Properly Designed, Specified and Insulated Pipes will provide trouble free installation for the life of the system for chilled and refrigeration piping.

When insulating chilled piping systems, it is imperative that the insulation is the correct thickness, and the system is completely sealed to prevent moisture from reaching the piping. Also, you want to have the cooling or refrigeration system turned off, so you are insulating pipes at room temperature keeping condensation from occurring under the insulation you are installing. CUI (corrosion under insulation) can occur when there is a problem with one of these requirements. To ensure the adequate thickness of insulation is specified and installed there are industry designed software programs that will calculate the thickness needed for condensation control by inputting the design conditions – pipe size, pipe composition, pipe temperature, ambient temperature, ambient humidity, etc. Armacell offers an insulation thickness calculator program, ArmWin, and it is available on the **www.armacell.us** website. The second requirement is that the installation of the insulation is done correctly following the recommended procedures in Armacell's North American Application Manual. All openings, protrusions, gaps, etc. Need to be properly sealed with an Armacell recommended adhesive. The insulation should be glued directly to the piping at least every 18 feet and any change in direction of the piping.

What happens if there is a is not enough insulation or the materials are improperly installed? Moisture can form and get between the insulation and pipe surface where it has no chance of escaping or drying up. If the pipes are iron or steel, there is the possibility that rust will form. Continued exposure to rust with ArmaFlex insulation has been known in certain circumstances to cause thinning of the insulation thickness. There again this only occurs when there is a failure to insulate with the proper thickness of insulation and / or the insulation was not properly installed per the Application Manual. Improperly sealed insulation allows moisture to be present between the piping and insulation creating a corrosive environment.

Situations where a failure has occurred can be repaired. First, you must identify all of the areas where moisture is present, between the insulation and piping. This may extend beyond the identified failure point as moisture will travel the path of least resistance within the system. The insulation in these areas will need to be removed to allow for proper inspection of the piping system. It will be important to seek the advice of the pipe manufacture or an engineer to determine the extent of the damage to the piping and verify the correct course of action associated with removing the rust. It also may be required to apply a rust inhibitor coating to the piping material to protect the pipe surface prior to covering the repaired pipe section(s). This information would typically be provided by the pipe manufacture or engineer inspecting the pipe. Insulation should then be installed to the correct thickness for the application and environmental conditions. Correct insulation sizing can be calculated utilizing the ArmWin Insulation Thickness Calculator. Armacell insulation materials can then be reinstalled making sure the insulation is properly sealed and the insulation is terminated to the piping at any change in piping direction.

In constant high humidity areas, above 80% RH, where the partial pressure drive is constantly on the insulation it may be necessary install zero perm jacketing on the insulation to prevent degradation of the insulation thickness and formation of condensation. For insulation system design in these moisture rich environments please contact your Armacell support team for assistance.

For more information, please visit:
www.armacell.us