

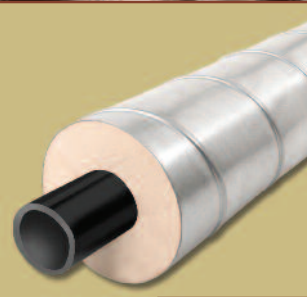
Tunnel and Utilidor Pre-Insulated Piping Systems by Rovanco®

ENERGY EFFICIENT, MOISTURE TIGHT LOCK SEAM METAL JACKETING

ISO 9001:2015
CERTIFIED COMPANY

 **PRI Registrar**
PERFORMANCE REVIEW INSTITUTE

*An economical solution
to Corrosion Under
Insulation (CUI) problems
in tunnels, utilidors and
concrete trenches*



**Aluminum, Galvanized or
Stainless Steel Jacketing**

- CHW
- HHW
- Condenser Water
- Condensate
- Steam Up To 400°F

Meets ASTM E-84
25/50 Flame &
Smoke Ratings

**An alternative to field insulated piping that is more energy
efficient with less labor and material cost – and its guaranteed!**

Corrosion Under Insulation (CUI)



CUI is a severe form of corrosion where metal deteriorates due to moisture within its surroundings. When insulation with little or no corrosion resistant properties is used, such as field-applied insulation, a closed environment is created. This area between the insulation and pipe can become wet. When heat is present, such as hot fluids running through the carrier pipe, the moisture could actually evaporate, but typical field-applied insulation prevents this from occurring. This trapped moisture between the insulation and carrier pipe combines with oxygen and the corrosion process begins. If unchecked, CUI is allowed to spread and can corrode the whole pipe run.

According to a study done by Exxon Mobil Chemical that was presented to the European Federation of Corrosion, the highest incidence of leaks in the refining/chemical industries and 40-60% of piping maintenance costs can be directly attributed to CUI damage.

Although CUI is a known source for severe pipe failure issues, it is difficult to detect since it occurs beneath the insulation. Inspections to detect this corrosion are not typically conducted often because the cost of insulation removal & replacement as well as labor cost associated with this process. Even if CUI is discovered, it is difficult to eliminate the corrosion promoting environment.

To prevent CUI from existing, the space between the insulation and carrier pipe must be free of moisture. Rovanco has created a piping system where CUI cannot exist and concern for pipe corrosion is eliminated.

Rovanco's

Rovanco's solution to CUI problems in tunnels, utilidors and concrete trenches is a system that focuses on eliminating the elements that promote corrosion – moisture and oxygen. This is accomplished using a protective, moisture tight galvanized or aluminum jacket and closed-cell polyisocyanurate foam surrounding a carrier pipe.

This process is performed from start to finish in Rovanco's state-of-the-art manufacturing facility under precise operating conditions. First, the carrier pipe material is identified and a jacket material, aluminum or galvanized steel, is selected as well as the proper gauge (18 to 26). Next one of the two foam types is selected, HT-300 (temperatures -100°F to 300°F) or HT-400 (temperatures of 300°F to 400°F). Both foams offer an industry leading 0.165 BTU-in/hr-ft²-°F. All materials selected are chosen based on the specific application so the finished piping will optimally meet the customers' requirements and needs.

Before starting production, the carrier pipe and outer jacket are fully inspected and made moisture free. The carrier pipe is then centered within the protective outer jacket using a proprietary spacing device and the annular space (between the carrier pipe and jacket) is then filled with the polyisocyanurate foam.

Carrier Pipe

Carrier pipe which is typically **SCH40 Carbon Steel** but any pipe material can be utilized.

Insulation

Polyisocyanurate foam is injected into the annular space between the carrier pipe and the galvanized or aluminum jacket. Rovanco has two types of foam insulation. **HT-300** is for temperatures between -100°F and 300°F. For temperatures between 300°F and 400°F, **HT-400** is used. Both foams offer an **industry leading 0.165 BTU-in/hr-ft²-°F**.

Outer Jacket

Spiral lock seamed water tight protective outer jacketing is bonded to polyisocyanurate insulation. Jacket is available in 18 to 26 gauge and in two different standard materials, **galvanized and aluminum**. Stainless steel jacketing is available upon request. Jacket is waterproof and crush resistant.

Solution to CUI Problems

A series of tests and an infrared check is then conducted to assure there are no air pockets or voids within the foam insulation. The piping system is waterproof, crush resistant and free of moisture. This piping system meets national ASTM E-84 25/50 flame and smoke rating with the HT-300 Foam so this type of system can be installed inside of buildings as well.

Rovanco's galvanized or aluminum jacketed products:

- **Eliminate CUI Problems**
- **Are available with Steel Carrier Pipe, coated externally or internally. Other carrier pipe materials include HDPE, PP-R, ductile iron, copper, PEX and stainless steel.**
- **ASTM E-84 25/50 Flame & Smoke Certification on HT-300 Foam**
- **Water Proof & Resistant to Moisture**
- **5 Year Warranty**
- **Highest BTU Savings in the Industry**
- **Less Costly than Traditional Field Insulated Pipes**
- **Proven – Thousands of Miles Installed World wide**
- **Jacket Can Be Factory or Field Painted to Match Surroundings or Color Code**
- **Optional Stainless Steel Outer Jacket Available**
- **Optional Heat Trace Capability & Leak Detection Available**



The picture above shows the Rovanco product on top and a field insulated pipe below. The labor and energy savings with Rovanco piping is substantial.



Piping arrives complete with carrier pipe, polyisocyanurate insulation and protective outer jacket – ready to install and resistant to any CUI issues.



The Rovanco product does not require any special guides or saddles. This picture shows the piping installed under a bridge.



Jacket can be factory or field painted to match its surroundings.

Specifications

Carrier Pipe:

Shall be A-53 Grade B Schedule 40 seamless or ERW (Schedule 80 for condensate). Lengths shall be 20' or 40', random as specified. Other metallic or plastic pipes available.

Insulation (2 Temps)

300°F

300°F polyisocyanurate foam insulation has a K factor of .121, density of 2.0, closed cell content of >90%, compressive strength of 30 psi, and service temperature of 300°F. Insulation must be capable of handling intermittent temperature spikes to 350°F. Conformance with ASTM Standards D1621, 1622, 2126, 2842, 2856, C518, E84 and E96. Completely filling the annular space between the carrier pipe and jacketing. Provide written independent performance certification with submittals. Meets 25/50 Flame/Smoke Rating ASTM E-84.

400°F

400°F Hi-Temp polyisocyanurate foam insulation has a K factor of .130, density of 2.5, closed cell content of 87%, compressive strength of 30 psi, and continuous service temperature of 400°F. Insulation must be capable of handling intermittent temperature spikes to 450°F. Conformance with ASTM Standard D1621, 1622, 2126, 2842, 2856, C518, E84 and E96. Completely filling the annular space between the carrier pipe and jacketing. Provide written performance certification with submittals.

Jacket Material*

Jacket Size In Inches	Aluminum Jacket	Galvanized Steel Jacket
4	22 Gauge	26 Gauge
6	22 Gauge	26 Gauge
8	22 Gauge	26 Gauge
10	22 Gauge	26 Gauge
12	22 Gauge	26 Gauge
14	18 Gauge	22 Gauge
16	18 Gauge	22 Gauge
18	18 Gauge	22 Gauge
20 & larger	18 Gauge	22 Gauge

* Stainless Steel Jacket, Heat Trace Tubes, Heat Trace Cable and other Accessories available upon request.

Insulated Fittings and Joints:

All straight joints and fitting joints shall be insulated and made moisture tight using materials supplied by system manufacturer.

Jacket Fitting & Joint Covers:

Provide metal covers designed to fit snugly on the jacketing to provide a watertight closure. All covers shall be banded in place with 3/8" wide stainless steel straps and will be the same thickness as the jacketing.

Anchors:

All anchors will be 1/2" thick steel plate welded to internal pipe and sealed at jacket areas per manufacturer's recommendations.

Approved Vendors:

HT system by Rovanco, Joliet, Illinois. All other manufacturers wishing to bid on this project must provide the engineer with certified test data from either foam manufacturer or an independent testing agency that the product is capable of withstanding the service temperature continuously. All approved manufacturers shall obtain written approval from the engineer at least 10 days prior to bid date.

Contact Rovanco's home office or local representative for additional information.

Rovanco's products are covered by various U.S. patents. Rovanco®, Insul-8®, Rhinoflex®, Rhinocoat® are federally registered trademarks.

For more specific data regarding other pipe sizes, insulation thicknesses, pressure drop, heat loss, systems design, heat tracing or pricing, please contact your local Rovanco representative.

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