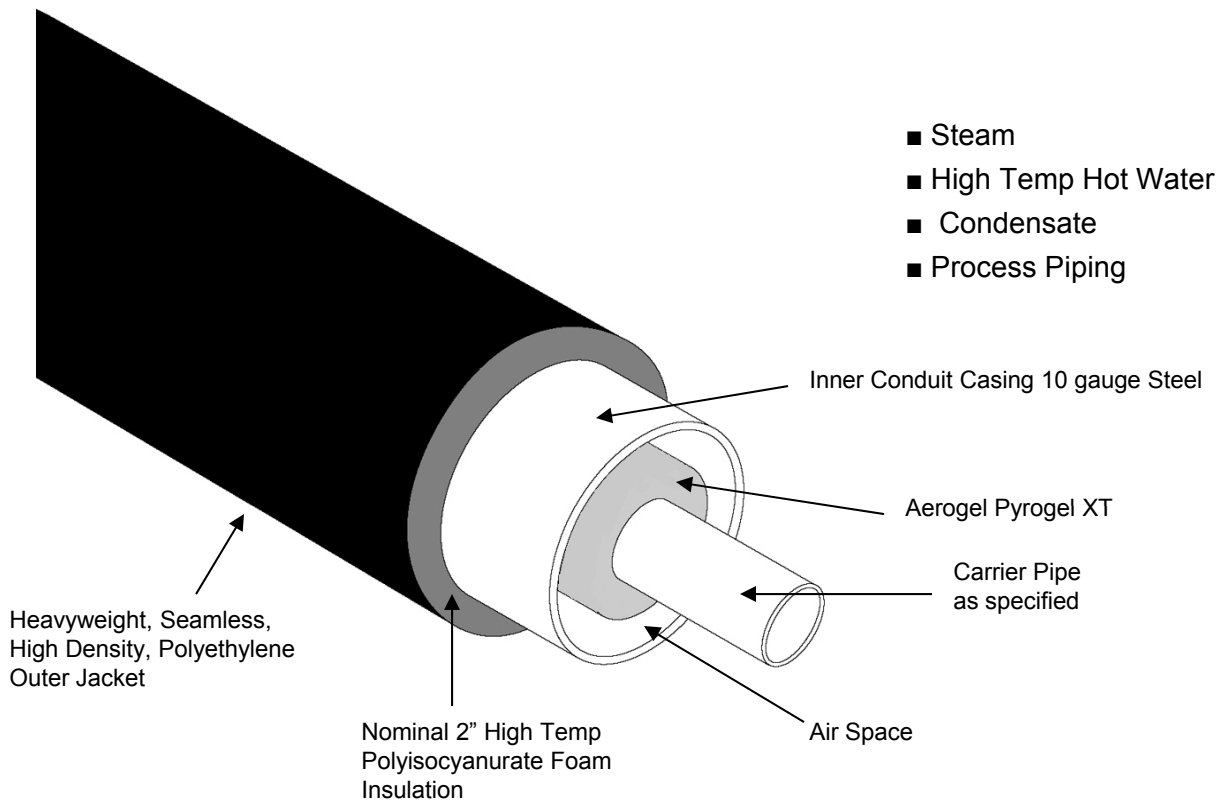


Insul-800 High Temp Conduit ELITE by Rovanco

High Temperature, Pre-Insulated Conduit System with Aerogel Technology



Rovanco's Insul-800 High Temp Conduit Elite is designed for below ground or concrete trench/tunnel high temperature systems (210°F and above). It is Drainable, Dryable and Air Testable. The product is composed of a steel, copper or stainless steel carrier pipe and Pyrogel XT insulation. The insulated pipe is enclosed in an inner conduit casing of a 10 gauge steel which is insulated with a high temperature foam insulation, rated for 400°F continuous service. The outer layer of foam insulation is protected by a heavy-weight, seamless, high density polyethylene outer jacket. This combination results in an economical, high quality, high quality, high temp system, and the most energy efficient available. Since the system has a polyethylene outer jacket that is non-corrosive, the system does not require cathodic protection.

Rovanco's systems are engineered to the latest edition of ANSI B31.1.

Rovanco's Insul-800 High Temp Conduit Elite is provided with part numbered cut-to-length pieces manufactured to verified field dimensions. All piping systems are spooled out with elbows, tees, anchors and end seals added to lengths of pipe at Rovanco's Joliet Illinois factory.

The piping system comes complete with all accessories of steel sleeves, joint insulation, and polyethylene shrink sleeve to make the installation completely watertight.

To find out more about Rovanco's Insul800 High Temp Conduit Elite System, you can call your local representative, phone us at (815) 741-6700, fax us at (815) 741-4229, visit our website at www.rovanco.com, or email us at marketing@rovanco.com.

The Most Energy Efficient Pre-Insulated Piping System Guaranteed

INSUL-800 ELITE High Temp Guide Specification

HIGH TEMP, PRE-INSULATED CONDUIT SYSTEM FOR STEAM, HIGH TEMP HOT WATER, CONDENSATE, ETC.

Carrier Pipe:

All carrier pipe shall be carbon steel A-53B ERW. Pipe 10" and smaller shall be Schedule 40. Pipe 12" and larger shall be .375 wall. Schedule 80 shall be used for condensate lines 10" and smaller, XH for 12" and larger.

Other pipe types also available (copper, stainless steel, etc)

Carrier Pipe Insulation:

Shall be Pyrogel® XT as manufactured by Aspen Aerogel. Pyrogel® XT is a high temp insulation blanket if silica aerogel and reinforced with a non-woven, glass-fiber batting. Sectional insulation shall be banded on pipe with aluminum banding on 18" center. Insulation thickness shall be as specified.

Inner Pipe Supports:

All pipe shall be aligned and supported within the inner conduit casing with galvanized steel supports spaced on 10' centers. The carrier pipe shall bear directly on the steel support. The support shall be designed to permit drainage and free air passage. All pipe passing through supports shall be insulated.

Inner Conduit Casing:

Casing shall be 10 gauge galvanized steel. The interior surface shall be smooth to permit free moisture drainage and removability of the inner assembly. The outer casing shall be sized to provide adequate annular space between the outer surface of the insulation material and the interior surface of the casing. Inner conduit casing field joint closures shall consist of 10 gauge steel and shall be field welded over adjacent units.

Inner Conduit Casing Insulation:

Insulation thickness shall be 1-3/4" minimum.

High-temp polyisocyanurate insulation applied to the inner conduit casing shall have the following properties:

Minimum Density:	2.0 pcf per ASTM D 1622
Closed Cell Content:	90% per ASTM D 2856
Compressive Strength:	30 PSI per ASTM D 1621

K factor

Initial @ 75°F Mean Temperature	0.130
@ 200°F Mean Temperature	0.235
Aged 400°F for 28 days	0.220
@ 400°F service temp & 75° Amb	0.240

Dimensional Stability-% change per ASTM 2126 400°F Exposure of 2" cube foam sample

1 Day +1.3% length	+0.1% Volume
7 Day +2.3% length	-2.3% Volume

450°F Exposure of 2" foam cube sample

1 Day +10.31% length	+14.6% Volume
7 Day +7.1% length	+1.5% Volume

Insulation must be capable of handling intermittent temperature spikes to 450°F for 8-12 hours. Insulation must completely fill the annular space between the inner conduit casing and HDPE jacket. System supplier shall provide written temperature performance certification from foam insulation manufacturer and an independent Testing Agency Report and Certification that the insulation to be provided meets the above referenced performance standards.

Outer Jacket:

The exterior protective jacket shall be heavyweight, seamless, high impact, polyethylene conforming to ASTM D1248 & D3350. Field joints shall be insulated and covered with a polyethylene sleeve the same thickness as the outer jacket. The joint will then be sealed water tight with polyethylene heat shrink material. No FRP jacket allowed.

Expansion Loops and Elbs:

Expansion loops, expansion elbows and other fittings shall be pre-fabricated and furnished in the same types and thickness of insulation and casing as those for the straight section of the piping system. They will be of a size to permit the inner pipe or pipes to expand and contract without damage to the insulation material.

Fittings:

All changes in direction of the carrier pipe shall be made with fittings. Mitering of pipe will not be permitted. When tee branches are smaller than the main they join, weld-o-lets may be used. All weld fittings shall be the same wall thickness as adjacent piping.

Anchors:

Anchors shall be pre-fabricated onto the piping units and shall be equipped with drain and vent openings at the top and bottom of the anchor plate. Anchor plates shall be made of minimum 1/2" steel plate.

End Seals and Gland Seals:

Terminal ends of conduit inside manholes, pits or buildings shall be equipped with end seals consisting of a steel bulkhead plate welded to the conduit and carrier pipe if there is an anchor within five feet of the end seal. Where there is no anchor within five feet of a terminal end, conduits shall be equipped with gland seals consisting of a high temp gasket and follower plate. End seals or gland seals shall be made of 1/2" steel plate with drain and vent openings on the vertical center line of the mounting plate.

Field Tests:

The carrier pipe shall be field tested hydrostatically to 1-1/2 times the working pressure of the line or as specified. The 10 gauge steel inner conduit casing shall be tested with air at 15psig. All leaks shall be repaired and the test repeated. After test, all field joints shall be insulated and sealed water tight.

Back Fill:

Clean, granular backfill should be tamped in place so as to assure a stable surface. No rock should be used within 24" of the pipe. Top of pipe grade shall not be less than 24" to meet H-20 Highway loading.

Installation:

The installation shall be made in accordance with plans, specifications, and manufacturer's installation instructions. Pipe system supplier will provide an installation instructor on site to train the contractor on all phases of installation if required.

Approved Vendors:

Insul-800 Elite manufactured by Rovanco, Joliet, Illinois, 815-741-6700, or approved equal. Any alternative supplier wishing to be approved as an equal must submit their technical data, including HDPE outer jacket and polyisocyanurate insulation material test reports.

These reports must be certified by an independent Testing Agency that the high temperature polyisocyanurate insulation and the polyethylene jacketing material have been tested to and meet all ASTM standards listed in the "inner conduit insulation" and "outer jacket" section of the specifications. These reports must be submitted to the engineer ten days prior to bid date for an alternate suppliers product to be approved in writing as an equal to the specified products

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Contact Rovanco® for the name of your local Representative

20535 S.E. Frontage Road

Joliet, Illinois 60431

Tel (815) 741-6700 Fax (815) 741-4229

Website: www.rovanco.com : E-mail: marketing@rovanco.com

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