

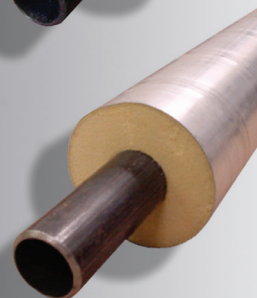
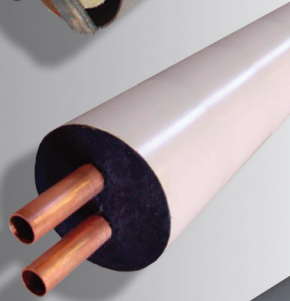
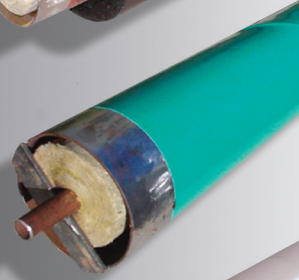
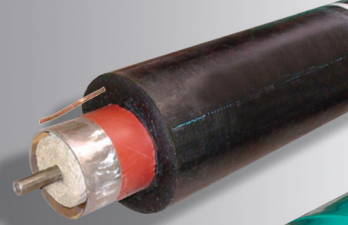


THERMACOR PROCESS INC.

PRE-INSULATED PIPING



PRODUCTS GUIDE



High Temperature Systems

(For temperatures above 250°F)

“HT-406”

THERMACOR’S “HT-406” has finally provided the answer to Engineers’, Contractors’, and End Users’ desires for a single insulated piping system suitable for high temperatures and with a non-metallic casing utilizing pressure testable joint closures. “HT-406” is the new state-of-the-art system for underground steam, condensate, hot water, and other systems where: temperature is a concern, BTU’s need to be saved, space is limited, installation costs are tight, and corrosion is a worry.



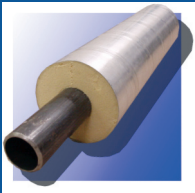
“HT-406” is a success because of the following five features: High Temperature Polyisocyanurate foam insulation, a High Density Polyethylene (HDPE) jacket, non-mitered/ one-piece polyethylene fitting covers, our electro-fusion joint closure, and our Electrical Resistance Monitoring (ERM) Leak Detection System.

THERMACOR’S [Electro-Fusion Pressure-Testable Joint Closure](#) is a proven and testable method to insure the watertight integrity of the entire High Density Polyethylene jacketed system. HDPE is not only one of the toughest jackets available today, but it is also the most widely used jacket around the world for foamed distribution systems. Additionally, because it is non-metallic, the need for cathodic protection is eliminated.

Our [High Temperature Polyisocyanurate](#) foam is the vanguard insulating material now available for high temperatures up to 366°F (150 lb steam). It is 87% closed cell foam with a superior insulating K factor of 0.15 at 75°F and 0.28 at 366°F conforming to ASTM C518.

SPIRAL-THERM “406”

THERMACOR’S SPIRAL-THERM “406” Metal Jacketed Factory Insulated Piping is the answer to above ground and tunnel piping applications. This economical, high-quality product incorporates [High Temperature Polyisocyanurate](#) foam within a durable protective metal jacket. SPIRAL-THERM is available with aluminum or galvanized steel jacket in various sizes, wall thickness, and gauges in 20’ or 40’ lengths and is provided with a spiral lock seam, either internal or external, to satisfy design criteria. A rubber o-ring manufactured into the locking seams makes our jacket watertight. Additionally, our spiral wound jacket provides the strength needed to allow maximum span distances for outside supports.



SPIRAL-THERM “406” is constructed for high temperature applications up to 366°F. Projects requiring pipe to carry steam, hot water, hot oil, process fluids, etc., are ideally suited for SPIRAL-THERM “406”. For projects with operating temperatures between -300°F to 250°F, Spiral-Therm with polyurethane foam insulation is recommended.

DUO-THERM “505”

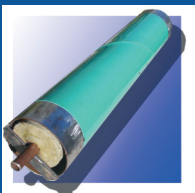
THERMACOR’S DUO-THERM “505” is a pre-insulated piping system that provides a high temperature, drainable, dryable, and testable conduit system. DUO-THERM “505” is considered an enhanced Class “A” system because polyurethane foam and a rugged non-corrosive High Density Polyethylene (HDPE) jacket surround the outer steel conduit. This concept not only adds insulating value to the system, but also protects the outer steel conduit from corrosion, thereby eliminating the need for cathodic protection. A variety of insulations are available for the carrier pipe including mineral wool, fiberglass, calcium silicate, foam glass, or perlite. DUO-THERM “505” is a conduit system designed and built to withstand the most severe and corrosive conditions that can be found in underground heat distributing systems.



CLASS “A” STEEL - FBE

THERMACOR’S CLASS “A” STEEL Conduit System is the most durable and economic steel system available. The Class “A” Steel System is an approved system under the tough Federal Agency criteria and has been rigorously tested. The system is able to handle heavy traffic/ earth loads, high water tables, and corrosive soils.

FUSION BONDED EPOXY (FBE) is a one-part, heat curable, thermosetting powdered epoxy coating designed to provide maximum corrosion protection to pipeline systems. It is a 100 percent solids, epoxy applied from the powdered state onto preheated pipe.

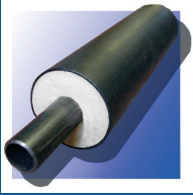


Our exclusive NOVACOAT is a two-component, self-priming, chemically cured, polyurethane, high solids coating, designed to provide maximum durability, toughness, flexibility, and chemical resistance.

Low Temperature Systems

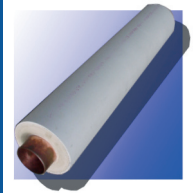
(For temperatures up to 250°F, Polyurethane Foam Systems)

Thermacor's polyurethane foam is 2.5 – 3.5 lbs/ft³, 90%-95% closed cell, and has a K factor of 0.14 at 75°F.



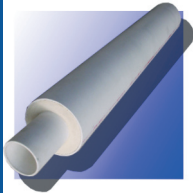
FERRO-THERM

THERMACOR'S FERRO-THERM is a factory fabricated, pre-insulated piping system for below ground or above ground distribution of hot (250°F) and chill water, low pressure steam, condensate, oil, and viscous fluids. The system is designed with steel carrier pipe (type and grade specified, as required), polyurethane foam insulation, and a High Density Polyethylene (HDPE) jacket or a Type 1, Class 1 PVC jacket.



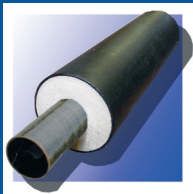
COPPER-THERM

THERMACOR'S COPPER-THERM is a pre-insulated piping system utilizing Type "K", "L", or "M" (ASTM B-88) copper pipe in sizes 1/2" through 6" as the carrier pipe, polyurethane foam insulation, and a rigid PVC or black HDPE jacket for the underground distribution of hot water, chill water, domestic hot water, low pressure steam, and condensate. The joint and fittings can be joined using silver solder or brazing alloys melting at or above 1100°F, or they can be joined using machine cast bronze couplings with EPDM o-ring seals. The coupling joining method allows for thermal expansion to be taken up in the coupling itself. Therefore, expansion loops or other similar thermal expansion provisions are not necessary.



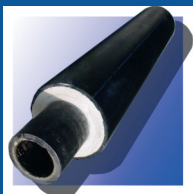
CHILL-THERM

THERMACOR'S CHILL-THERM is a pre-insulated piping system designed with PVC plastic pressure carrier pipe, polyurethane foam insulation, and a HDPE or PVC plastic jacket for the underground distribution of chilled water. The plastic carrier pipe may be Class 160 (SDR 26), Class 200 (SDR 21), C900/905, Schedule 40, or Schedule 80 PVC as required. Chill-Therm is the most economical choice available for chill water distribution systems.



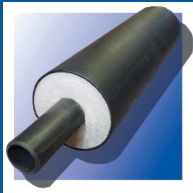
FIBER-THERM 250

THERMACOR'S FIBER-THERM 250 is a pre-insulated piping system designed with fiberglass reinforced plastic pressure carrier pipe, polyurethane foam insulation, and a HDPE or PVC plastic jacket for the distribution of chilled water, low temperature hot water, steam, and condensate up to 250°F. The fiberglass pipe in the 250 System is rated at 150 psi max. To prevent fiberglass pipe from being subjected to steam damage, flash tanks or other piping arrangements should be used at high pressure drip points.



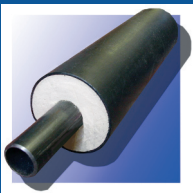
FERRO-THERM D.I.

THERMACOR'S FERRO-THERM D.I. is a pre-insulated piping system that is cement lined with sealcoat, pressure class 50 or 51, gasketed Ductile Iron (D.I.) pipe with polyurethane foam insulation, watertight end seals, and a rigid PVC or black HDPE jacket for distribution of chilled water. For hot water applications, we would provide a pre-insulated piping system that is cement lined (without sealcoat), pressure class 50 or 51, EPDM gasketed Ductile Iron pipe with polyurethane foam insulation, watertight end seals, and a rigid PVC or black HDPE jacket. Additionally, the bell and spigot joining method allows for thermal expansion to be taken up in the bell end of the joint. Therefore, expansion loops or other similar thermal expansion provisions are not necessary.



POLYCOR

THERMACOR'S POLYCOR is a completely pre-insulated piping system designed with black High Density Polyethylene plastic carrier pipe, polyurethane foam insulation, and covered with a black High Density Polyethylene jacket for the distribution of chilled water, sewer, water main, force main, waste heat, etc.



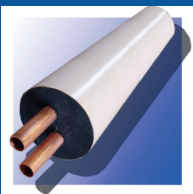
STEEL-THERM

THERMACOR'S STEEL-THERM is a factory pre-insulated piping system created by combining our popular FERRO-THERM line with DUCTILE IRON COUPLINGS to seal the joints between lengths of pipe. The D.I. Couplings, utilizing two EPDM rubber gaskets, eliminate welding and provide compensation for expansion and contraction, thereby eliminating the need for expansion loops or expansion joints.

Variations for the Low Temperature systems listed above are available. Please contact us for more information.

Cryogenic Systems

(For temperatures down to -320°F, Polyurethane Foam Systems)



CRYOCOR-K and CRYOCOR DUAL-K

THERMACOR'S CRYOCOR-K and DUAL-K can consist of either single or dual line Type K Copper, Type L Copper, Steel or Stainless Steel carrier pipes that will be insulated with an efficient thermal barrier of factory applied polyurethane foam and covered with a PVC jacket. These products are ideal for transporting cryogenic fluids and gases such as CO₂, Liquid Nitrogen, Liquid Oxygen, and Liquid Natural Gas.

Standard Components, Pre-Fab Systems & Pressure Testable Joint Closures



STANDARD COMPONENTS (SC)

Standard Components (SC) are typical piping components that are pre-insulated by the manufacturer, providing a higher quality product than their field-insulated alternatives without having to specify a pre-engineered system. No field insulation of fittings will be required because all joint closures shall occur at straight lengths of pipe.



PRE-FABRICATED/ PRE-ENGINEERED SYSTEMS

THERMACOR'S PRE-FAB SYSTEMS are part of a complete piping system designed and manufactured to jobsite dimensions. PRE-FAB SYSTEMS are delivered to the job site as part of a completely pre-engineered system. Thermacor can also offer stress analysis reports, heat loss/ gain calculations, or design help for this system as well as with others. This system is the highest quality option available. The contractor has only to assemble the numbered pieces as shown on our engineered site drawing, and then field insulate the joints.

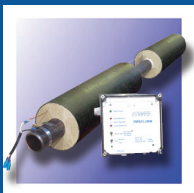


PRESSURE TESTABLE JOINT KITS

THERMACOR'S PRESSURE TESTABLE JOINT CLOSURE utilizes an electric-fusion wire embedded in an easy-to-install wraparound HDPE sleeve. By applying an electric current, the wire melts and fuses the surrounding sleeve and jacket together to create a guaranteed watertight seal.

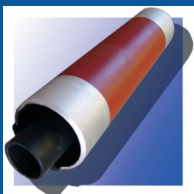
THERMACOR'S pressure-testable joint closures are tested at a recommended 5 psi, and become mechanically as strong as the HDPE jacket itself when fused properly. The pressure-testable closure guarantees integrity of the critical pipe joint connections and can be used on all HDPE jacketed systems.

Containment and Leak Detection



ERM LEAK DETECTION

Electrical Resistance Monitoring (ERM) is a very simple and inexpensive leak detection system that adds peace-of-mind to the owner of a steel or copper pre-insulated piping system. ERM is simply a copper wire embedded within the foam that is used to create an open circuit between itself and the carrier pipe. If water enters the system, this circuit will close, and a leak can be detected. No additional equipment beyond a standard ohmmeter is needed, although continuous monitoring panels are available. If a leak does occur, it can be located early, and a technician using a Time Domain Reflectometer (TDR) machine can locate the leak, thereby avoiding extensive damages and a costly location process.



CON II

THERMACOR'S CON II Hazardous Fluid Containment System is a pre-engineered, pre-fabricated containment piping system designed to provide maximum safety for transporting hazardous fluids above or below ground. The CON II system consists of a carrier pipe in a secondary outer pipe to contain and/or drain carrier pipe leaks that might occur, thus avoiding exposure to the environment.

CON II containment piping systems help to maintain compliance with federal, state, or local requirements for containment of fluids that may be hazardous to the environment.



LEAK DETECTION

Access ports can be provided for manual checking. THERMACOR PROCESS, L.P. can provide electronic leak detection equipment.

Please contact us for more information on leak detection systems.



HEAT TRACING / SKIN EFFECT HEATING

Various types of heat tracing methods are available, including standard heat trace cables as well as skin effect systems for longer lines. THERMACOR PROCESS, L.P. will assist in specifications of heat tracing to insure that operating costs are controlled and that system longevity is assured.

THERMACOR® PRE-INSULATED PIPE COMPARISONS

PRODUCT NAME	CARRIER PIPE	JACKET MATERIAL	JOINTS	JOINT CLOSURE**	FITTINGS	EXPANSION COMPENSATION	INSULATION	OPERATING CONDITIONS
Ferro-Therm	Carbon Steel	HDPE or PVC	Welded and Insulated	Sleeve, Split Sleeve, or PTJC	Field Kits or Pre-fabricated/Pre-insulated	Loops, Anchors, and Expansion Elbows	Polyurethane	Max. = 250°F
Ferro-Therm SC	Carbon Steel	HDPE or PVC	Welded and Insulated	Sleeve, Split Sleeve, or PTJC	Standard Components	Loops, Anchors, and Expansion Elbows	Polyurethane	Max. = 250°F
Steel-Therm	Carbon Steel	HDPE or PVC	EPDM Gasketed, D.I. Coupled (2" thru 12"), and Insulated	Sleeve, Split Sleeve, or PTJC	Thrust Blocked, Welded Steel or Ductile Iron Gasketed for IPS	Gasketed Joints and Couplings	Polyurethane	Max. = 250°F
HT-406	Carbon Steel	HDPE	Welded and Insulated	Pressure Testable Joint Closure	Pre-fabricated, Pre-insulated, Pre-Engineered	Loops, Anchors, and Expansion Elbows	Polyisocyanurate	Max. = 366°F
Spiral-Therm	Carbon Steel	Aluminum, Galvanized or Stainless Steel	Welded and Insulated	PE Mold, Sleeve w/ Stainless Steel Bands	Field Kits or Pre-fabricated, Pre-insulated, Pre-Engineered	Loops, Anchors, and Expansion Elbows	Polyurethane or Polyisocyanurate	Max. = 250°F or Max. = 366°F
Copper-Therm	Type K, L, or M Copper Tubing	HDPE or PVC	Brazed and Insulated	Sleeve, Split Sleeve, or PTJC	Field Kits or Pre-fabricated/Pre-insulated	Loops, Anchors, and Expansion Elbows	Polyurethane	Max. = 250°F
Copper "O" Ring	Type K, L, or M Copper Tubing	HDPE or PVC	EPDM "O" Ring Coupled and Insulated	Sleeve, Split Sleeve, or PTJC	Thrust Blocked	Couplings	Polyurethane	Max. = 225°F
Chill-Therm	PVC, Gasketed or Solvent Weld	HDPE or PVC	Gasketed	Sleeve, Split Sleeve, or PTJC	Thrust Blocked	Gasketed Joints or Solvent Weld Elbows	Polyurethane	Max. = 80°F
Fiber-Therm 250	Fiberglass	HDPE or PVC	Epoxy Joints and Insulated	Sleeve, Split Sleeve, or PTJC	Thrust Blocked	Fiberglass	Polyurethane	Max. = 250°F
Ferro-Therm D.I.	Ductile Iron, Push or Mechanical Joint	HDPE or PVC	EPDM Gasketed	Sleeve, Split Sleeve, or PTJC	Thrust Blocked	Gasketed Joints	Polyurethane	Max. = 225°F
Polycor	HDPE	HDPE	Heat Fusion, Butt Welded and Insulated	Sleeve, Split Sleeve, or PTJC	Field Kits or Pre-fabricated/Pre-insulated	HDPE	Polyurethane	Max. = 250°F
Class "A"	Carbon Steel	Steel Conduit w/ Corrosion Coating	Welded and Insulated	Split Sleeve w/ Stainless Steel Bands	Pre-fabricated, Pre-insulated, Pre-Engineered	Loops, Anchors, and Expansion Elbows	Mineral Wool, Foam Glass, Fiber-Glass or Calcium Silicate	Max. = 700°F
Duo-Therm "505"	Carbon Steel	Double Jacketed, Steel and HDPE	Welded and Insulated	Same as Above and a Split Sleeve or PTJC	Pre-fabricated, Pre-insulated, Pre-Engineered	Loops, Anchors, and Expansion Elbows	Same as Above w/ Polyurethane	Max. = 700°F

1 Pre-Engineered systems are built to job dimensions and include installation drawings. (Complete project drawings and specs required.)

3 Pressure Testable Joint Closures are available on all HDPE jacketed systems.

2 Joint Closures can be supplied w/ Heat Shrink Tape, Pressure Sensitive Tape, or Heat Shrink Sleeves.

4 Standard components are NOT part of a Pre-Engineered system and include pipe footage. (Drawings provided at additional charge.)

5 Please see Specifications for further details.



THERMACOR PROCESS, L.P. (www.thermacor.com)

1670 HICKS FIELD ROAD E. · P.O. BOX 79670 · FORT WORTH, TEXAS 76179 · (817) 847-7300 · FAX (817) 847-7222



PRE-INSULATED PIPING SYSTEMS

THERMACOR PROCESS INC.

Your Authorized THERMACOR Representative Is:

1670 Hicks Field Road East
Fort Worth, Texas 76179-5248
P.O. Box 79670

Phone (817) 847-7300
Fax (817) 847-7222
www.thermacor.com

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