COPPER-THERM

COPPER PIPING SYSTEM

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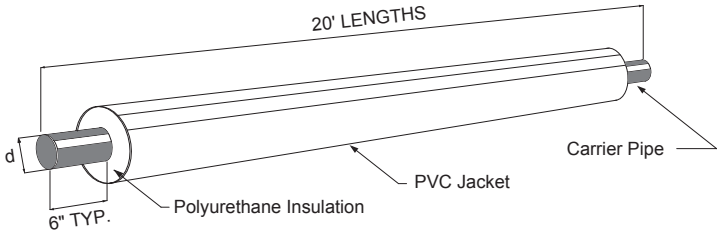
THERMACOR'S COPPER-THERM is a factory-fabricated, pre-insulated piping system for below ground distribution of heating water, domestic hot water, chilled water, condensate return, process fluids, and cryogenic services. The system is designed with Copper Tubing (type to be specified), closed cell poly-urethane foam insulation, and a Type 1, Class 1 PVC or High Density Polyethylene (HDPE) jacket. O-ring couplings are also available for joining straight lengths of pipe to compensate for thermal expansion.

Carrier Pipe

- Type "K" Copper
- Type "L" Copper
- Type "M" Copper



Polyurethane Insulation

• Density	> 2.0 lbs/ft³
• "K" Factor	≤ 0.16 @ 75°F
• Compressive Strength	> 30 psi
• Closed Cell Content	≥ 90% @ 75°F

Jacket

- Type 1, Class 1, PVC
- High Density Polyethylene (HDPE)

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SPECIFICATION GUIDE *

GENERAL

All underground and above ground piping materials transporting heating water, domestic hot water, chilled water, condensate return, process fluids, and cryogenic services shall be **COPPER-THERM** as manufactured by **THERMACOR PROCESS INC.** All straight pipe, fittings, anchors, insulating materials, and technical support shall be provided by the manufacturer.

SERVICE PIPE

The carrier or service pipe shall be Type K Copper tube, conforming to ASTM B-88. (*At the Engineer's option*, Type L or Type M is acceptable.) Cleaned and capped Type K, and ACR Type L copper tube may be used for cryogenic and refrigeration applications. All copper tubing shall have ends cut square for socket brazing. Straight sections shall be supplied in 20 foot lengths with cutbacks to allow for brazing at the field joints. Field joining of piping shall utilize approved methods of silver soldering or brazing with alloys melting at or above 1100°F; 50-50 tin-lead solder is not acceptable. (O-ring couplings may be used to join straight pipe lengths.)

INSULATION

Insulation of the service pipe shall be rigid polyurethane foam with a minimum 2.0 lbs/ft³ density, 90% minimum closed cell content, and a "K" factor not higher than .16 @ 75°F per ASTM C518. The polyurethane foam shall be CFC-free. The polyurethane foam shall completely fill the annular space between the service pipe and jacket, and shall be bonded to both. Insulation shall be provided to the minimum insulation thickness specified.

JACKET

The outer protective jacket shall be either extruded white polyvinyl chloride, consisting of clean, virgin NSF approved Class 12454-B PVC compound, conforming to ASTM D-1784, Type 1, Grade 1 or high density polyethylene (HDPE). No FRP, HDUP, or tape jacket allowed. PVC jacket shall have a wall thickness in mils equal to ten times the nominal jacket diameter and shall not be less than 60 mils.

FITTINGS

All straight sections, fittings, anchors, and other components shall be factory-fabricated and pre-insulated. Fittings shall be jacketed with a molded fitting cover or with a PVC fitting cover and wrapped with polyethylene backed, pressure sensitive rubberized bitumen adhesive tape, 30 mils thick. Carrier pipe fittings shall be silver soldered or brazed with alloys melting at or above 1100°F; 50-50 tin-lead solder is not acceptable. Fittings include expansion loops, elbows, tees, reducers, and anchors. (*At the Engineer's option*, fittings may be field insulated with liquid urethane foam insulation, jacketed with a PVC fitting cover and then wrapped with polyethylene backed, pressure sensitive rubberized bitumen adhesive tape, 30 mils thick.) Above ground installations shall use white, pressure sensitive PVC tape. (In systems utilizing O-ring couplings, fittings are not insulated and are thrust blocked at all changes in direction. Expansion compensation occurs at couplings between straight lengths of pipe, therefore expansion loops and elbows are not required.)

FIELD JOINTS

Service pipe shall be hydrostatically tested as per the Engineer's specification with a factory recommendation of 1.5 times the specified pressure of the system. Straight joint sections shall be insulated using urethane foam to the thickness specified, jacketed with an HDPE or PVC sleeve and sealed with pressure sensitive, polyethylene backed, rubberized bitumen adhesive tape, 30 mils thick, or a heat shrink sleeve or tape. Above ground installations shall use white, pressure sensitive PVC tape. All insulation and jacketing materials shall be furnished by THERMACOR. (In systems utilizing O-ring couplings, straight run joints are not insulated to allow for expansion and contraction of the gasketed joint. At the Engineer's option, straight joint sections may be jacketed as above to prevent the ingression of moisture or debris.)

INSTALLATION

Installation of the piping system shall be in accordance with the manufacturer's instructions. Factory trained field technicians shall be provided for critical periods of installation, unloading, field joint instruction, and testing.

** For alternate specifications, please contact THERMACOR.*

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