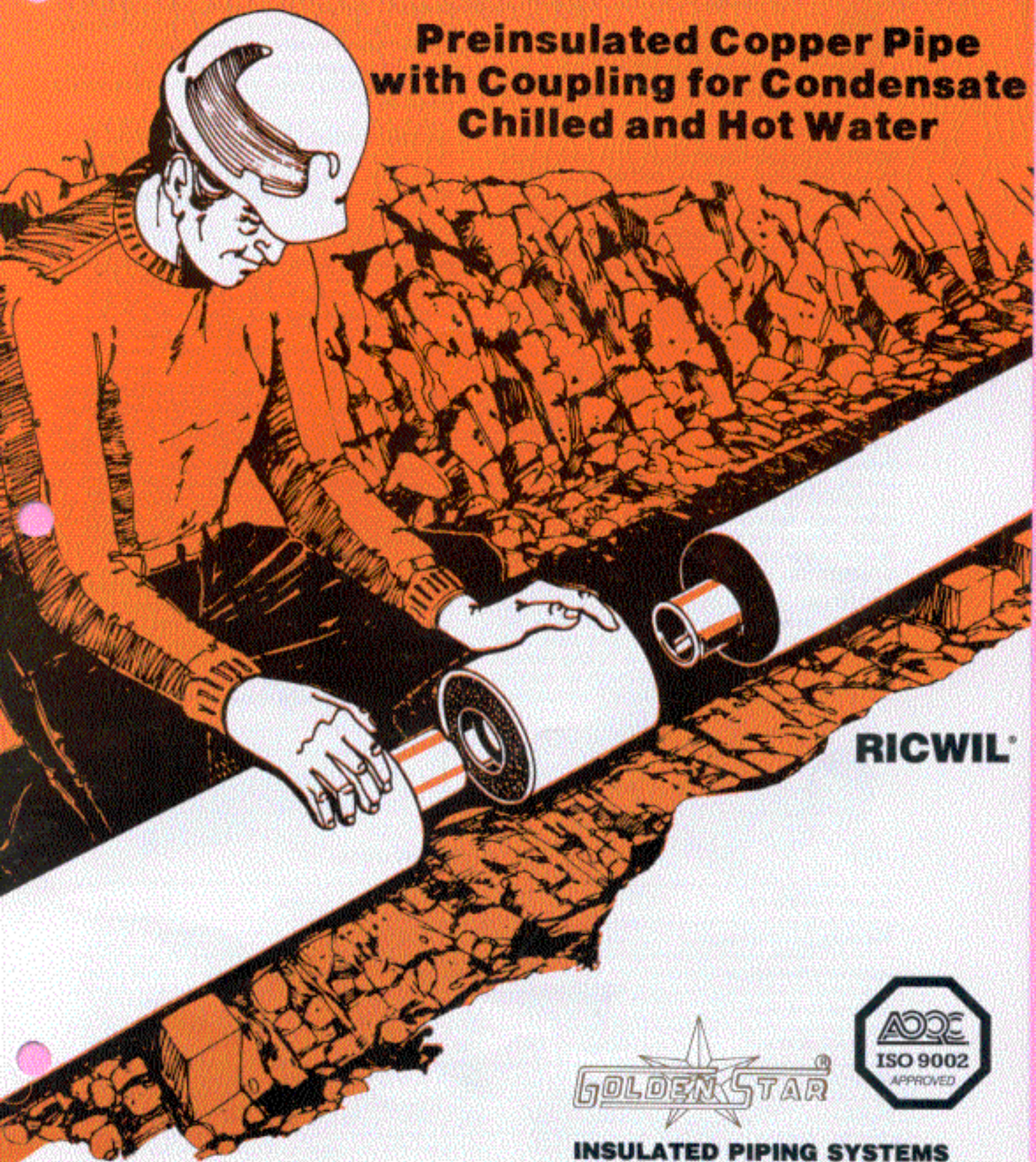


COPPER-GARD™

**Preinsulated Copper Pipe
with Coupling for Condensate
Chilled and Hot Water**

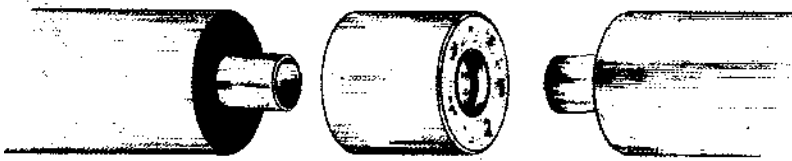


RICWIL®



INSULATED PIPING SYSTEMS

Preinsulated Piping System for Buried Hot and Chilled Water, Domestic Hot Water and Condensate Lines to 250°F



RICWIL® Copper-Card pipe is a completely factory fabricated, insulated and jacketed copper piping system for the underground distribution of HW, CW domestic hot water and condensate lines. Copper-Card consists of a Type "K" or "L" copper tube insulated with rigid, foamed in situ, polyurethane foam which is encased and sealed in a rugged PVC jacket. Copper-Card provides the maximum in corrosion resistance and insulation efficiency with a minimum of installation worry—with no field insulating required.

Carrier Pipe: Type "K" or "L" (ASTM B-88) Copper Tubing. Available in sizes *W* through 6".

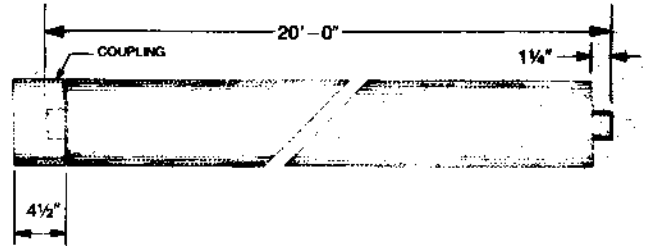
Insulation: Foamed in place closed cell polyurethane foam completely fills the annular space between the pipe and outer jacket and has the lowest thermal conductivity of any commercial insulation. 90 to 95% closed cell structure provides high resistance to water absorption. In place density (core) is 1.9 to 2.1 LB/FT³. Coefficient of thermal conductivity ("K" factor) is 0.14 BTU/(HR) (SQ. FT.) (F/I N.) at 73 F.

PVC Outer Jacket: Type I Grade I Polyvinyl Chloride provides tough yet flexible vapor barrier to protect both insulation and pipe. It is highly corrosion resistant and is strong enough so that the system can withstand H-20 loading with 2 feet of cover with 90% backfill compaction.

End Seal: A high temperature seal is factory applied to both ends of the pipe insulation to assure moisture protection at all couplings.

Pressure-Temperature Rating: 150 psig continuous working pressure through a temperature range of -40° F to +250°F.

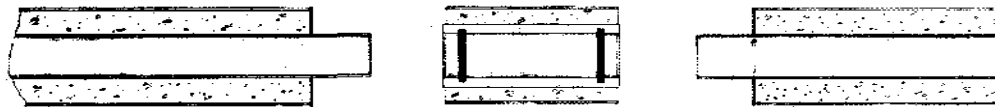
Lengths Available: Furnished in complete 20'-2" nominal laying lengths with joint coupling and joint protective jacket. Units can be field cut to length



with conventional tube cutting tools.

Coupling: Each 20 foot length is furnished with a machined coupling containing (2) O-Ring seals. When two lengths are joined in the coupling the O-Rings are compressed to form a watertight connection and also provide separation of pipe ends for expansion and contraction. Loops or expansion joints are not required as each coupling is an expansion joint evenly distributing free expansion and contraction along the entire line.

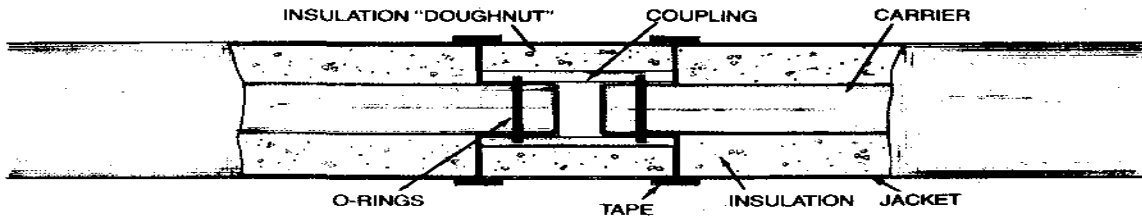
Special Note: It is important that flash tanks or other piping arrangements and accessories be used at high pressure drip points to prevent the Copper-Card condensate lines being subjected to steam. Condensate, pumped directly from vented condensate receivers, requires no special accessories.



TYPICAL HEAT GAIN/LOSS DATA:

Nominal Pipe Size (In.)	3/4"	1"	1 1/4"	1 1/2"	2"	<i>W</i>	3"	4"	6"
PVC Jacket Size (Nominal) (In.)	3.5	3.5	3.5	4	4	5	5	6	8
Jacket Wall Thickness (In.)	.060	.060	.060	.060	.060	.085	.085	.070	.080
Insulation Thickness (In.)	1.5	1.3	1.2	1.3	1.1	1.3	1.1	.9	.9
•Heat Gain at A T30°F	1.41	1.68	1.99	3.08	2.80	2.86	3.69	5.67	7.27
•Heat Loss at A T 150°F	9.88	11.74	13.81	14.52	1933	19.84	25.45	38.70	49-52
Weight/Foot	3#	3#	4#	4#	4#	5#	6#	10#	15#

• Above figures are: BTU/LIN FT/HR



INSTALLATION PROCEDURE

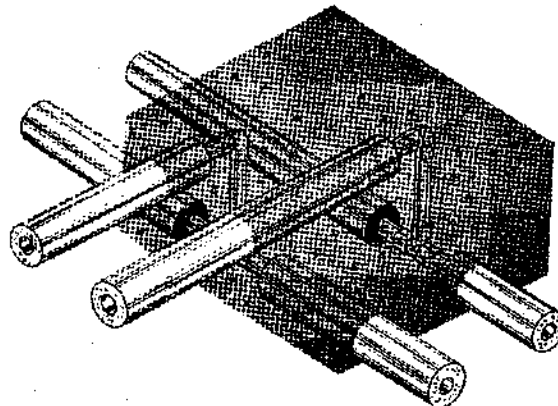
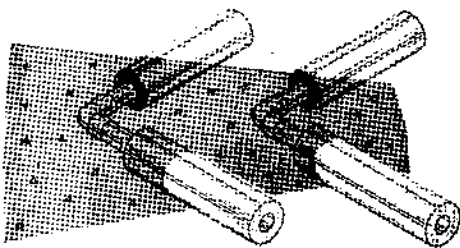
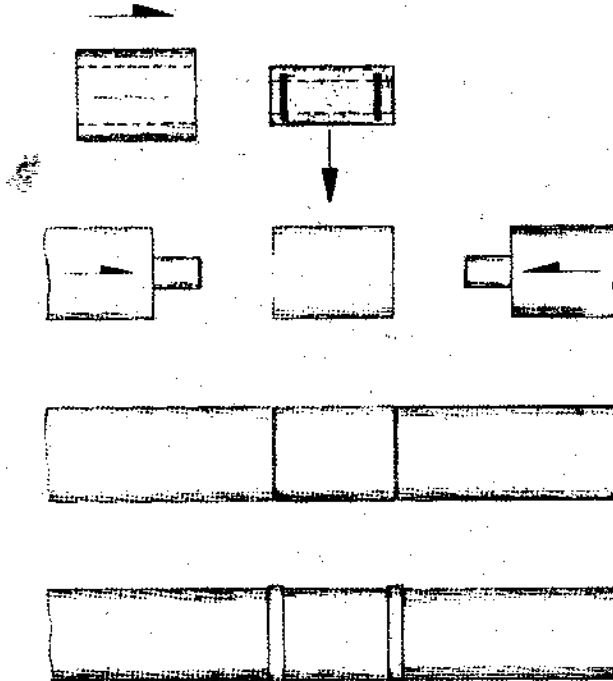
For complete installation instructions see Installation Manual.

1. Insulation "doughnut" is assembled on to coupling. Exposed pipe ends of each length and the interior of pipe and of couplings are inspected for dirt, nicks or damage. O-Rings are inserted into the coupling, and the pipe ends are lubricated.

2. The coupling is slipped onto one pipe end until it is snug against the end of the jacket.

3. The adjoining length of pipe is inserted into the coupling, butting the Jacket end against the coupling. Carrier pipes will not touch. Space for expansion or contraction is built in.

4. After final hydrostatic test of the system, the coupling is sealed with high-temperature polyethel-ene tape in two wraps for added protection against outside elements.



Fittings are incorporated into the system using ASA B16.22 wrought copper fittings. Silver solder or brazing alloys melting at or above 1100°F. Is recommended. 50-50 tin-lead solder is not acceptable. Where straight lengths are field cut-to-length, a minimum exposed pipe end is shown in the installation manual.

Field insulation of fittings is not necessary. Minor heat loss or gain is compensated for by the high efficiency of the insulated system.

Concrete thrust blocks are poured prior to hydrostatic test. If a hydrostatic test is required prior to pouring thrust blocks, all directional changes must be blocked in an acceptable manner to overcome hydraulic thrust at all straight coupled joints. System should be re-tested after permanent blocks are poured to demonstrate the blocks will resist the thrust. Thrust block design and dimensions vary with local soil

conditions and the number of pipes involved. Bearing must be directly against undisturbed soil and perpendicular to the resultant direction of the thrust. Final design and dimensions are the responsibility of the Design Engineer who is designing the system and who has knowledge of conditions on site.

Thrust blocks must be installed at:

1. All changes in direction, both vertical and horizontal such as tees and elbows;
 2. All changes in size;
 3. All terminal ends such as caps, plugs or closed valves.
- Connecting piping in buildings and/or manholes must be anchored at or near the point of connection. It is also recommended that any copper connection to steel piping be made with dielectric unions or flanges to prevent galvanic corrosion of the steel due to the dissimilar metals.

RICWIL® COPPER-GARD™ — GUIDE SPECIFICATION

1.0 GENERAL

1.1 Underground piping system shall be Ricwil Copper-Gard and shall consist of Integral sealed, 20-foot long units of copper tubing insulated with rigid polyurethane foam which is protected with a PVC outer Jacket and factory applied vapor barrier on the ends of the insulation.

2.0 MATERIALS

2.1 Basic Pipe Units

- 2.1.1 Pipe shall be Type "K" or "L" (ASTM B-88) Copper Tubing.
- 2.1.2 Insulation shall be a rigid, 90 to 95% closed cell polyurethane with a 1.9 to 2.1 pound per cubic foot density and a coefficient of thermal conductivity (K) of 14 BTU/(HR.) (SQ.FT.) (F/IN.) at 73°F.
- 2.1.3 Jacket shall be a Type I Grade I Polyvinyl Chloride with a minimum wall thickness of .060 inches.

2.2 Joints

- 2.2.1 Couplings shall be machine grooved for O-Ring seals. Coupling shall be Insulated, Jacketed and sealed.

2.2.2 All fittings shall be ASA B16.22 wrought copper fittings. Solder joints shall be made with silver solder or brazing alloys melting at above 1100°F. 50-50 tin-lead solders are not acceptable.

3.0 INSTALLATION AND TESTING

- 3.1 All pipes, fittings and O-ring slip couplings shall be installed in accordance with the manufacturer's recommendations.
- 3.2 All solder joints shall be hydrostatically tested prior to pouring thrust blocks.
- 3.3 Immediately after installation in the ditch, a partial backfill shall be made in the middle of each unit leaving the joints exposed for inspection. After all thrust blocks are poured and cured, a hydrostatic test of ___ psig (or 1 ½ times operating pressure) shall be required for a period of four hours.
- 3.4 After hydrostatic test a final backfill of selected earth shall be hand-placed and hand-tamped in 4" layers to 12 inches minimum over the top of the jacket. Remainder of the backfill shall be free of large boulders, rocks over 6 inches in diameter, frozen earth or foreign matter. The backfill operation can now be completed by any convenient means. Do not use tracked or wheeled vehicles for tamping.



P.O.BOX. 2626, RIYADH 11461
TEL. 4785147/4778029/4772515
TLX. 400062 HACE SJ
TEL. 6655595/6655842

P.O.Box 20324 AL KHOBAR 31952
TEL. 8943337/8952597
P.O.BOX 10583 JEDDAH - 21443

Licensed manufacturer of RICWIL Products (USA) in the Kingdom of Saudi Arabia.

DESIGN AND SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE