

UNITHERM™ 2200 PRE-INSULATED TUBING

Principal of Operation

Unitherm 2200 pre-insulated tubing is a thermally insulated steam, gas or liquid transportation line. It is comprised of a process tube; moisture resistant, non-wicking, inorganic fibrous glass thermal insulation; and weather protective black 105°C PVC jacket. This energy efficient design provides for normal jacket surface temperatures of 140°F (60°C) or lower at 80°F (26°C) ambient conditions, while transporting 400°F (204°C) 232.6 PSIG saturated steam. The compact design, thermal efficiency and rugged jacket provide an insulated product with low heat loss, zero maintenance, employee protection and saves up to 50% on installation cost. Higher Temperatures designs for applications up to 1000°F fluid temperatures are available.

(look at our 2201 series literature)

Features

Pre-Insulated & prefabricated for fast, easy installation
 Light, durable and easy to handle
 Low Heat loss
 Personnel protection

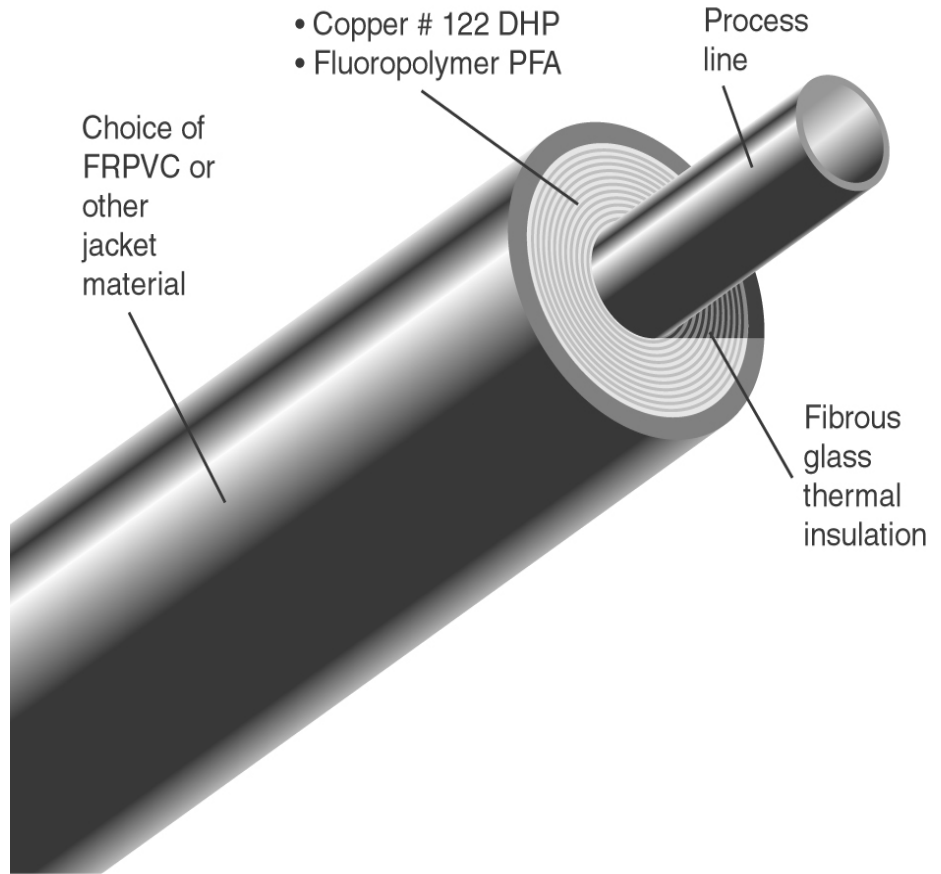
Applications

Steam supply lines
 Condensate return lines
 Gas transport Lines
 Liquid Transport Lines

Standard Tube

Materials Include:

- Welded 316 SS
- Seamless 316 SS
- Copper # 122 DHP
- Fluoropolymer PFA



Refer to Product Derivation for options on Tube Mat'l's & Jackets

How to Specify

Example: 2200-41A49

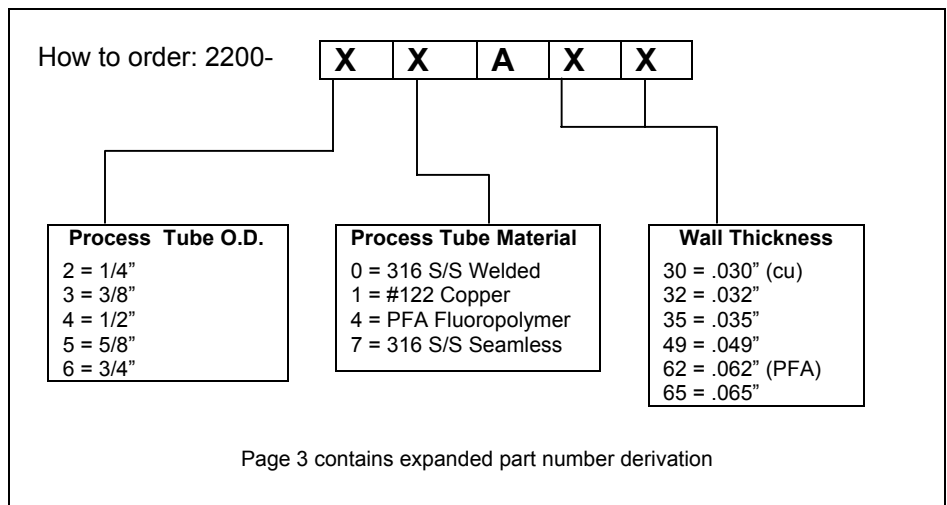
Unitherm pre-insulated line; (1) 1/2" O.D. x .049" wall #122 copper process line; moisture resistant, non-wicking, inorganic fibrous glass thermal insulation; 105°C black PVC jacket;

MTR* = 400°F

Stock ITEMS

2200-21A30 2200-20A35
 2200-31A32 2200-30A35
 2200-41A35 2200-40A35
 2200-41A49 2200-47A35

* Maximum Temperature Rating is the design condition for which this product is manufactured. Temperatures in excess of this rating may result in deterioration of the components or changes in the operational characteristics.



2200 PRE-INSULATED TUBING

Performance Specifications

2200 Product

Nominal Jacket Surface Temperature
With 400°F (204°C) tube and 80°F
(26°C) ambient140°F (60°C)

Nominal Heat Loss at 400°F (204°C)
inside Tube and 80°F (26°C) ambient

Process Tube O.D.	BTU/HR/FT
1/4"	42
3/8"	50
1/2"	59
5/8"	68

Product Specifications

Jacket 105°C Black PVC
Insulation Moisture resistant,
non-wicking, Inorganic
Fibrous Glass

Product Rating 400°F (204°C)

Nominal Bundle O.D.	Process Tube O.D.	Bundle O.D.
	1/4"	.92"
	3/8"	1.05"
	1/2"	1.17"
	5/8"	1.30"

Nominal Weight (Lb/Ft.)	Process Tube O.D.	Bundle Weight
	1/4"	.30
	3/8"	.38
	1/2"	.44
	5/8"	.52

Installation Recommendation

See Installation Guidelines for details.
Maximum Support Centers

Max. Bending Radius	Process Tube O.D.	Min. Radius
	1/4"	9"
	3/8"	10"
	1/2"	12"
	5/8"	14"

Minimum Recommended Slope for Condensate Run-Off (steam Applications)...3/4" Per Ft.
Minimum Installation Temperature for PVC Jacket +15°F(-9.4°C)

Alternate flame retardant jacket materials available include:

- Low Temperature Flame Retardant Polyvinyl Chloride
- Flame Retardant Urethane
- Flame Retardant Thermoplastic Elastomer

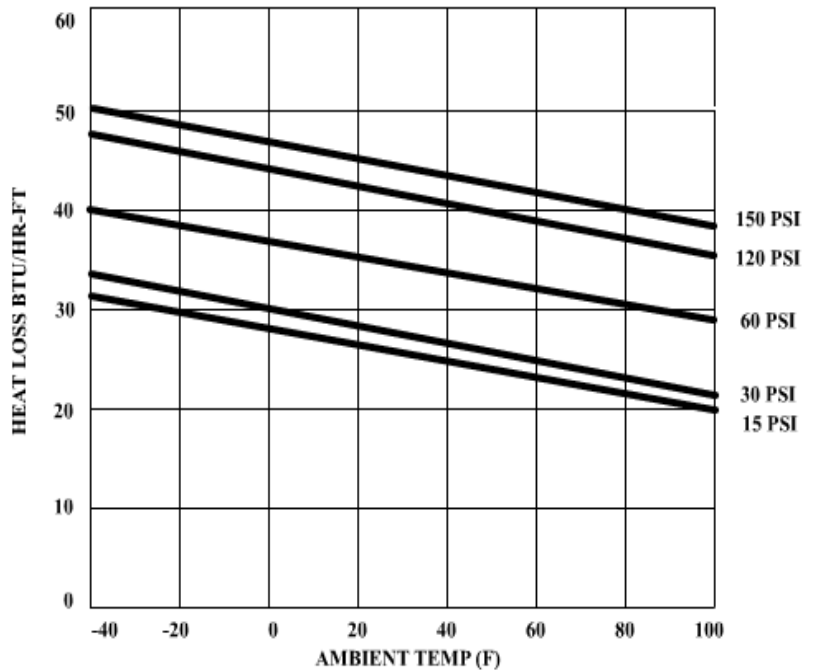
Tube O.D.	Standard Wall Thickness***	Material (1)	ASTM	Working Pressure @ 400°F	Max. Coil Length
1/4"	.030"	#122 Copper	B-68 B-75	600 psi	1000'
3/8"	.032"	#122 Copper	B-68 B-75	450 psi	1000'
1/2"	.035"	#122 Copper	B-68 B-75	360 psi	1000'
1/2"	.049"	#122 Copper	B-68 B-75	530 psi	1000'
5/8"	.049"	#122 Copper	B-68 B-75	415 psi	100'
3/4"	.049"	#122 Copper	B-68 B-75	340 psi	100'
1/4"	.035"	316-S/S WLD	A-269	5170 psi**	1000'*
3/8"	.035"	316-S/S WLD	A-269	3310 psi**	1000'*
1/2"	.035"	316-S/S WLD	A-269	2430 psi**	1000'*
5/8"	.035"	316-S/S WLD	A-269	2000 psi**	100' *
1/4"	.040"	PFA	--	30psi	500'*
3/8"	.062"	PFA	--	40 psi	500'*
1/2"	.062"	PFA	--	30 psi	500'*

Metric available 6,8 and 10 mm O.D. x 1 mm WT Standard *** Heavier wall thickness available upon request

(1) Other tube materials available

* Longer coil lengths available upon request ** Values given are for welded. Seamless slightly higher

HEAT LOSS VS AMBIENT FOR VARIOUS STEAM PRESSURES



Graph (above) plots the heat loss for the Unitherm 2200 family products with a 1/4" tube. For other tube sizes, the multipliers in Table I should be applied to the values from the graphs for the given conditions.

TABLE I - Heat Loss Multipliers

2200 1/4"	2200 3/8"	2200 1/2"	2200 5/8"
1.0	1.2	1.4	1.6

Due to imaging and distortion chart points can only be used for approximations.

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UNITHERM™

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Product Derivation Dekoron/Unitherm Pre-Insulated Tubing

2200- X X A X X - X X X

**Process
 Tube OD**

- 1= 1/8"
- 2= 1/4"
- 3= 3/8"
- 4= 1/2"
- 5= 5/8"
- 6= 3/4"
- 7= 7/8"
- 8= 1"
- 9= 1- 1/4"
- A= 1- 1/2"
- M= 4 mm
- N= 6 mm
- P= 8 mm
- Q= 10 mm
- R= 12 mm

Process Tube Material

- 0= Wld T316 SS
- 1= #122 DHP Copper 68/75
- 2= Wld T304 SS
- 3= Smls T304 SS
- 4= PFA Fluoropolymer
- 5= FEP Fluoropolymer
- 6= Smls Low Carbon Steel
- 7= Smls T316 SS
- 8= Monel 400*
- 9= Wld T316L SS
- A= Smls T316L SS
- B= Wld T304L SS
- C= Smls T304L SS
- D= TFE Fluoropolymer
- E= Wld Low Carbon Steel
- F= Smls Inconel 600*
- G= Incoloy 825*
- H= Hastelloy C-22*
- J= Hastelloy C-276*
- K= Nickel 200
- L= Alloy 20
- M= Polypropolene
- N= Low Density Poly
- P= High Desity Poly
- Q= Thermoplastic Hose
- R= Customer Spld. Matl.
- S= Nylon
- T= FR Polyethylene
- U= Permbar
- Z= Other Tube Material

**Tube Wall
 Thickness**

- 20= .020" (Metal)
- 28= .028" (Metal)
- 30= .030" (CU)
- 32= .032" (CU)
- 35= .035" (Metal)
- 39= 1 mm
- 40= .040" (Plastic)
- 49= .049" (Metal)
- 59= 1.5 mm
- 62= .062" (Plastic)
- 65= .065" (Metal)
- 79= 2 mm

Length

- A= Coils
- S= 17-24 Ft

Jacket Material

- 0= FR PVC
- 1= FR LT PVC
- 2= FR TPE
- 3= FR PE
- 5= FR Urethane

**Max.
 Temperature
 Rating ****

- 0=400°F

Tubing Thickness Standards

Tube & OD	Light Wall	Std. Wall	Hvy Wall	X-Hvy Wall
Copper				
1/4"	N/A	.030"	.032"	.049"
3/8"	N/A	.032"	.035"	.049"
1/2"	N/A	.035"	.049"	.065"
3/4"	.035"	.049"	.065"	.093"
Metal				
1/8"	.020"	.028"	.035"	N/A
1/4"	.028"	.035"	.049"	.065"
3/8"	.028"	.035"	.049"	.065"
1/2"	N/A	.035"	.049"	.065"
3/4"	N/A	.035"	.049"	.065"
Plastic				
1/4"	.030"	.040"	.047"	.062"
3/8"	.040"	.062"	.093"	N/A
1/2"	N/A	.062"	.093"	N/A

NOTES:

1. Reference tubing and material selection are to determine appropriate derivations.
 2. Twelve (12) digit part numbers are used only for products which require outer jacketing material other than our standard FR PVC or if material is required in 17'-24' straight length rather than maximum coil length.
 3. Jacketing material with "FR" = Flame - Retardant.
- *Hastelloy is a trade name of Haynes International, Inc.
 *Monel, Inconel, and Incoloy are trade names of Inco Alloys International, Inc.
 ** Specially designed bundles can be engineered for temperatures beyond the maximum temperature rating (MTR). Please contact the factory.