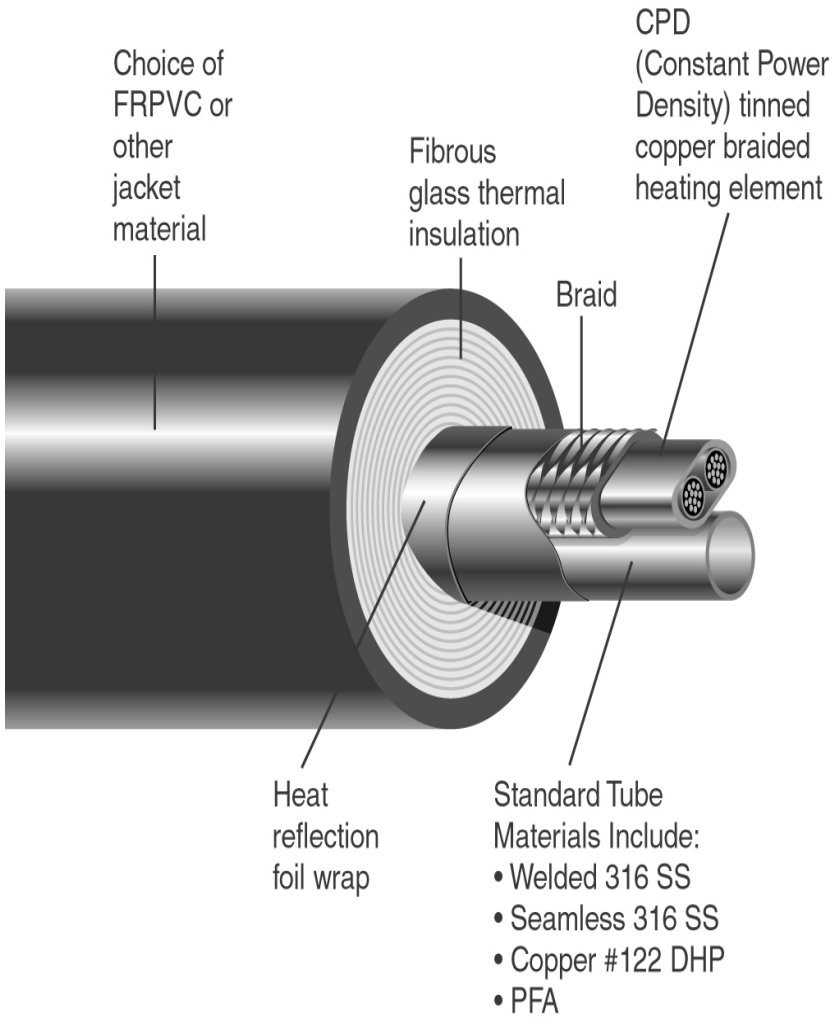
UNITHERM ™ 2252/2262 ELECTRIC TRACE TUBING CONSTANT POWER DENSITY

Principal of Operation

Unitherm 2252/2262 CPD electric trace tubing system is comprised of tinned copper braided Constant Power Density heating element, single or dual process tube (s), a heat reflecting foil wrap, moisture resistant, non-wicking, inorganic, fibrous glass thermal insulation, and a 105ºC black flame retardant PVC jacket. This unique Constant Power Density heating element allows for a wide range of temperature maintenance applications. The standard product is available from (240ºF @ 80ºF ambient) with 11.4 Watt/foot @ 120 VAC heating element. The Constant Power Density heating element is approved by CSA and FM for pipe and vessel tracing applications under designations 3A, 3B, 3C, 5A and 5B, in the Class 1, Division 2, groups A, B, C, D hazardous locations.



Features

- CPD (Constant Power Density heating element
- Pre-insulated and prefabricated for fast, easy installation.
- Consistent and predictable thermal characteristics.
- Maintenance free
- Class I, Division 2 design.

Applications

- Stack gas sampling lines
- Analyzer and instrument lines
- Small diameter process lines
- Impulse lines

How to Specify

Example: 2252-20A14

Unitherm CPD electric trace tubing (1) 1/4“ O.D. x .035” wall 316-Welded S/S tube; 11.4 W/ft @ 120 VAC CPD tinned copper braided heating element; moisture resistant, non-wicking, inorganic fibrous glass thermal insulation; 105ºC black PVC jacket; MTR**= 400ºF

* *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.

Form – 2252/62CPDET 040903

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

How to order: 2252-	X	X	A*	1	4	Single Process Line
How to order: 2262-	X	X	X	1	4	Multiple Process Lines

Process Tube O.D.
2 = 1/4”
3 = 3/8”
4 = 1/2”
5 = 5/8”
6 = 3/4”
*Single Tube Only

Process Tube Material
0 = 316 S/S Welded
1 = #122 Copper
4 = PFA Fluoropolymer
7 = 316 S/S Seamless

Number of Process Tubes
A = 1
B = 2
C = 3
D = 4
E = 5

Heater Type
14= 11.4 Watt/ft./ 120 VAC
Tinned Copper Braid
Class 1 Div. 2

Note: Constructions and materials other than listed above are available upon request. Factory Mutual approvals require the use of Unitherm components and accessories. CSA approved heater. *See page 3 for expanded product offering.

UNITHERM ™ 2252/2262 ELECTRIC TRACE TUBING CPD

Electrical Specification

Heater Type	CPD (Constant Power Density)
Heater Insulation	PFA 600 V Rated
Circuit Length	260 Ft.
Power Output	11.4 Watt/Foot @ 120 VAC 11.5 Watt/Foot @ 208 VAC 10.2 Watt/Foot @ 240 VAC 13.8 Watt/Foot @277 VAC
Rating per N.E.C 500	T 2 C

Tubing Specifications

Tube O.D	Standard Wall Thickness	Material	ASTM	Working Pressure @ 200ºF	Max. Coil Length Feet
1/4"	.035"	316-S/S WLD	A-269	5170 psi**	500'*
3/8"	.035"	316-S/S WLD	A-269	3310 psi**	400'*
1/2"	.035"	316-S/S WLD	A-269	2430 psi**	300'*
1/4"	.040"	PFA	--	30 psi	500'*
3/8"	.062"	PFA	--	40 psi	500'*
1/2"	.062"	PFA	--	30 psi	500'*

** Values given are for welded steel. Seamless steel is slightly higher
*Longer coil length available upon request.

Product Specifications

Jacket	105ºC Black PVC
Insulation	Moisture resistant, non-wicking, Inorganic Fibrous Glass Chloride
Product Rating	400ºF (204ºC)

Nominal Bundle	Process Tube O.D.	Bundle O.D.
	1/4"	1.12"
	3/8"	1.44"
	1/2"	1.50"
	(2) 1/4"	1.38"
	(2) 3/8"	1.63"
	(2) 1/2"	1.88"

Nominal Weight (LB/FT)	Process Tube O.D.	Bundle Weight
	1/4"	.4
	3/8"	.5
	1/2"	.6
	(2) 1/4"	.6
	(2) 3/8"	.7
	(2) 1/2"	.9

Installation Recommendations

Max. Support Centers: Horizontal - 6 Feet; Vertical - 15 Feet

Min. Bending Radius	Process Tube O.D.	Minimum Radius
	1/4"	6"
	3/8"	8"
	1/2"	10"
	(2) 1/4"	8"
	(2) 3/8"	10"
	(2) 1/2"	12"

Minimum Installation Temperature for PVC: + 15ºF (-9.4)

Alternate flame retardant jacket materials include:

- **Low Temperature Polyvinyl**
- **Polyethylene**
- **Thermoplastic Elastomer**

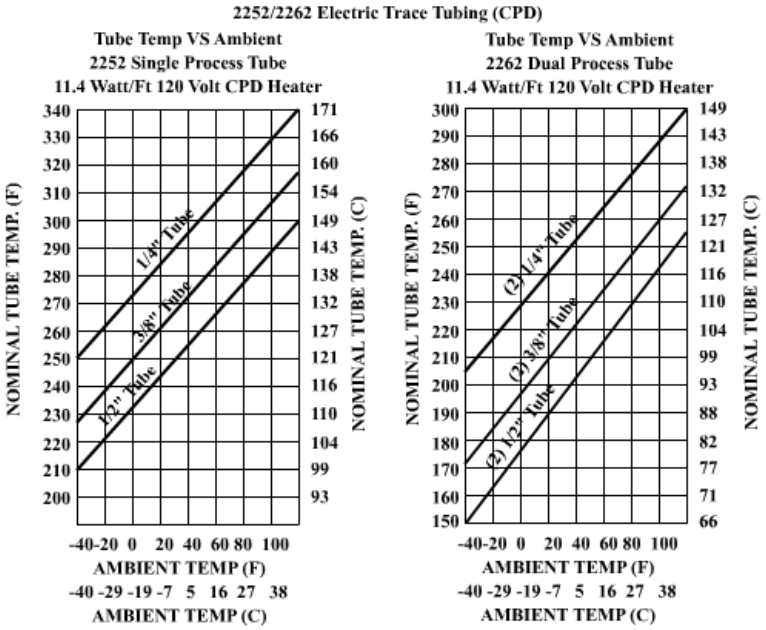
MAXIMUM CIRCUIT LENGTH

Operating Voltage	Circuit Length	Wattage
120	260 ft.	11.4
208	450 ft.	11.5
240	580 ft.	10.2
277	500 ft.	13.8

Performance Specifications

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

See Page 4 for larger graphs



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Product Derivation Dekoron/Unitherm
Constant Power Density (CPD) Electric Trace Tubing – MTR 400ºF

2252- **X X A X X - X X 0 - X** Single Process Tube
2262- **X X x X X - X X 0 - X** Multiple Process Tube

Process Tube O.D.	Process Tube Material	Number Process Tubes	Low Temperature Heater MTR 400ºF	Process Tube Wall Thickness	Jacket Material	Length
1=1/8”	0=Wld T316 SS	A=1	14= 11.4 W/ft. @ 120 V	L=Light	0=FR PVC	S=17-24Ft
2=1/4”	1=#122 DHP Copper	B=2	18= 3.8 W/ft. @ 120 V	S=Standard	1=FR LT PVC	
3=3/8”	2=Wld T304 SS	C=3	11= 2.6 W/ft. @ 120 V	H=Heavy	2=FR TPE	
4=1/2”	3=Smls T304 SS	D=4	B4= 11.5 W/ft. @ 208 V	X=Extra Hvy	3=FR PE	
5=5/8”	4=PFA Fluoropolymer	E=5	BA= 7.7 W/ft. @208 V		5=FR Urethane	
6=3/4”	5=FEP Fluoropolymer	Etc.	56= 12.8 W/ft. @ 220 V			
7=7/8”	6=Smls Low Carbon Steel		53= 8.6 W/ft. @ 220 V			
8=1”	7=Smls T316 SS		3B= 10.2 W/ft. @ 240 V			
9=1 ¼”	8=Monel 400*		CC= 13.8 W/ft. @ 277 V			
A=1 ½”	9=Wld T316 AA					
M=4 mm	A=Smls T316L SS					
N=6 mm	B=Wld T304L SS					
P=8 mm	C=Smls T 304L SS					
Q=10 mm	D=TFE Fluoropolymer					
R=12 mm	E=Wld Low Carbon Steel					
	F=Smls Inconel C22*					
	G=Incoloy 825*					
	H=Hastelloy C-22*					
	J=Hastelloy C-276*					
	K=Nickel 200					
	L=Alloy 20					
	M=Polypropylene					
	N=Low Density Poly					
	P=High Density Poly					
	Q=Thermoplastic Hose					
	R=Customer Spld. Matl.					
	S=Nylon					
	T=FR Polyethylene					
	U=Permbar					
	Z=Other Tube Material					

Tubing Thickness Standards

Tube & O.D	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. Thirteen (13) 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. Specially designed bundles can be engineered for temperatures beyond the maximum temperature rating (MTR).
4. Jacketing material with “FR” = Flame – Retardant.
5. Heater styles noted are supplied with tinned copper overbraid approved for use in FM and CSA Class 1, Division 2, Groups B, C & D areas providing the approved connection/termination kit is used. Alternate jacket materials are available for Class 1, Division 2, and General Purpose area. Please contact factory.

*Hastelloy is a trade name of Haynes International, Inc.
*Monel, Inconel, and Incoloy are trade names of Inco Alloys International, Inc.

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