

UNITHERM™ 2202/2204 LIGHT-STEAM TRACE TUBING

Principal of Operation

Unitherm 2202/2204 pre-insulated steam trace consists of single and multiple process lines; single tracer line; moisture resistant, non-wicking, inorganic fibrous glass thermal insulation; and a black 105°C PVC jacket. It is designed for **light** tracing of process, sampling and impulse lines to help prevent freezing, and protect the process fluids against high temperature degradation.

Recommended for use where heavy tracing (2201/2203) will cause high temperature degradation or boil off of the process fluids. This highly efficient, compact product is designed to limit the jacket to a nominal surface temperature of 140°F (60°C) or lower at 80°F (26°C) ambient conditions, with tracer temperatures at 400°F (204°C) 232.6 PSIG saturated steam. Higher temperatures designs for tracing applications up to 1000°F are available.

Features

- Pre-Insulated & prefabricated for fast, easy installation
- Light, durable and easy to handle
- Maintenance free
- Consistent and predictable thermal characteristics
- Personnel protection

Applications

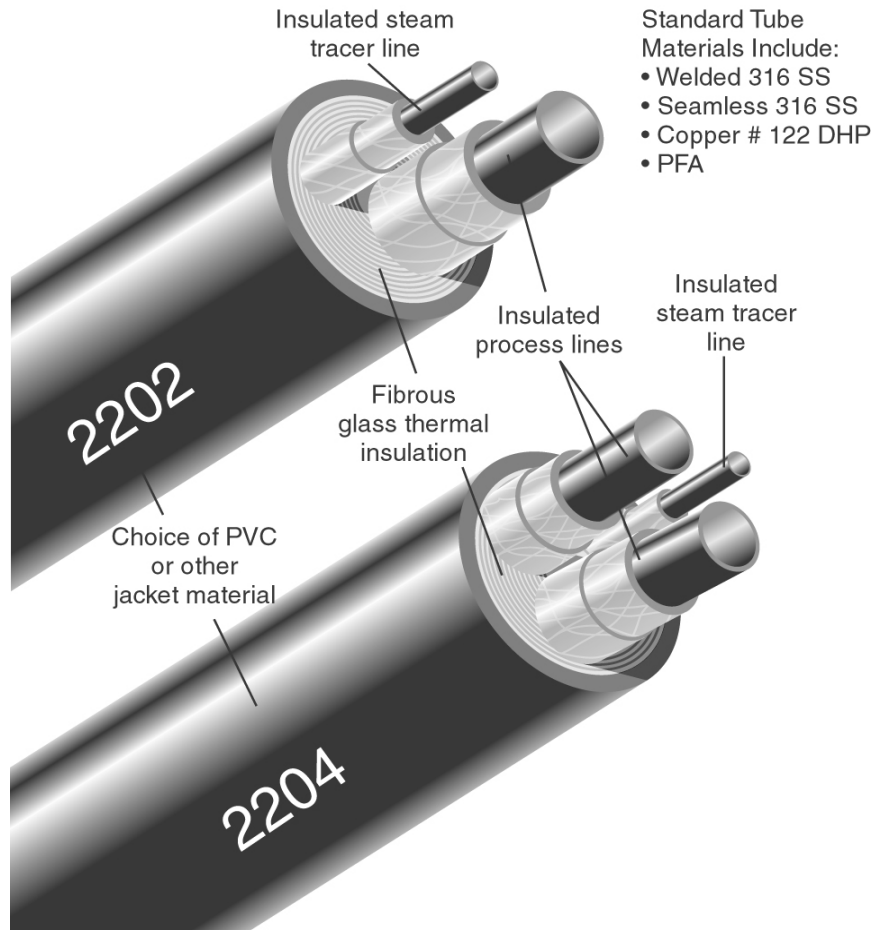
- Analyzer and Instrument lines
- Small diameter process lines
- Impulse lines-D/P cells

How to Specify

Example: 2202-20A21

Unitherm steam trace tubing (1) 1/4" O.D. x .035" wall 316-Welded S/S process tube; (1) 1/4" O.D. x .035" wall #122 copper tracer line; moisture resistant, non-wicking, inorganic fibrous glass thermal insulation; 105°C black PVC jacket; MTR*= 400°F

* 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.



- Standard Tube Materials Include:
- Welded 316 SS
 - Seamless 316 SS
 - Copper # 122 DHP
 - PFA

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

How to order: 2202-	X	X	A	X	X	Single Process Line Multiple Process Lines
How to order: 2204-	X	X	X	X	X	
Process Tube O.D.	2 = 1/4"		3 = 3/8"		4 = 1/2"	
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	
Tracer Line O.D.	2=1/4"		3=3/8"		4=1/2"	
Tracer Tube Material	0= 316S/S Welded		1= #122 Copper		7=316 S/S Seamless	

List above shows most common product configurations. Alternative tube sizes, wall thickness and materials, as well as, alternate jacket materials are available upon request. See page 3 for expanded list of product offerings.

2202/2204 LIGHT-STEAM TRACE TUBING

Performance Specifications 2202/2204 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.	Tracer Tube O.D.	BTU/HR/FT
1/4"	1/4"	40
3/8"	1/4"	40
3/8"	3/8"	40
1/2"	3/8"	40
(2) 3/8"	3/8"	40
(2) 3/8"	3/8"	40

Product Specifications

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

Product Rating 400°F (204°C)

Process Tube O.D.	Tracer Tube O.D.	Bundle O.D.	Nominal Weight (lb/ft.)	Min. Bending Radius
1/4"	1/4"	1.4"	.6	10"
3/8"	1/4"	1.5"	.6	12"
3/8"	3/8"	1.6"	.7	12"
1/2"	3/8"	1.7"	.7	14"
1/2"	3/8"	1.8"	.8	14"
(2) 3/8"	3/8"	1.8"	.9	16"
(2) 3/8"	3/8"	1.9"	1.0	18"

Installation Recommendation

See Installation Guidelines for details.
Maximum Support

Centers **Vertical** **15 Ft.**
 Horizontal **6 Ft.**

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'
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'*

Metric available 6,8 and 10 mm O.D. x 1 mm WT Standard

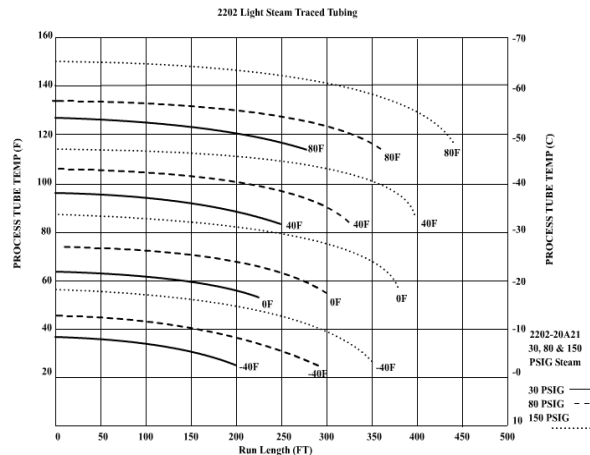
(1) Other tube materials available

*** Heavier wall thickness available upon request

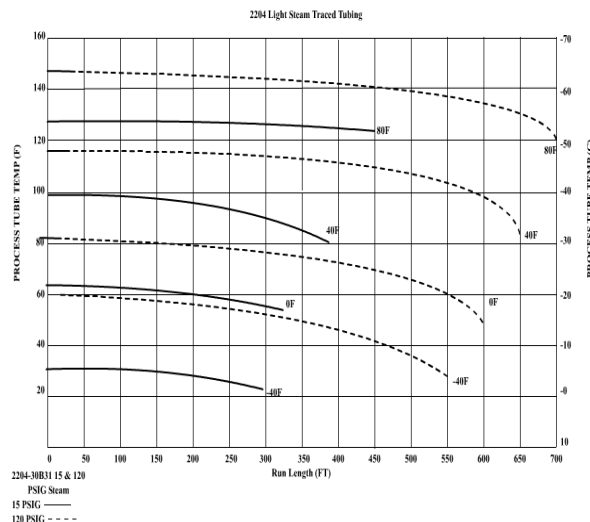
* Longer coil lengths available upon request ** Values given are for welded. Seamless slightly higher

Process Tube Profile: 2202 Product (Typical) See page 5 for enlarged graph

(For other tube sizes, ambient and steam pressures, refer to Engineering Design Guide for Steam Traced Products.)



Process Tube Profile: 2204 Product (Typical) See page 6 for enlarged graph



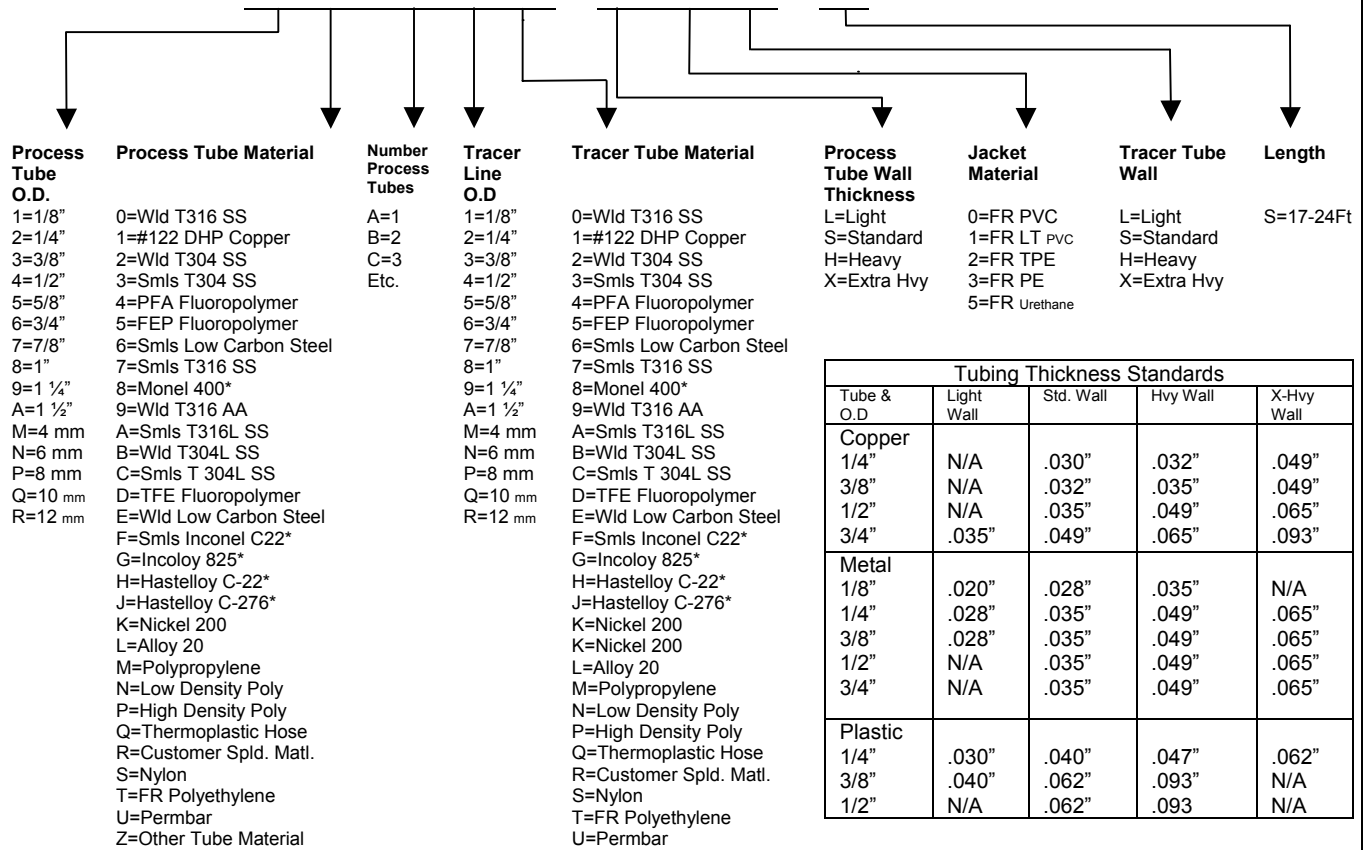
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DEKORON/UNITHERM™

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Product Derivation Dekoron/Unitherm Light Steam Trace Tubing – MTR 400°F

2202- X X A X X - X X X - X
2204- X X X X X - X X X - X



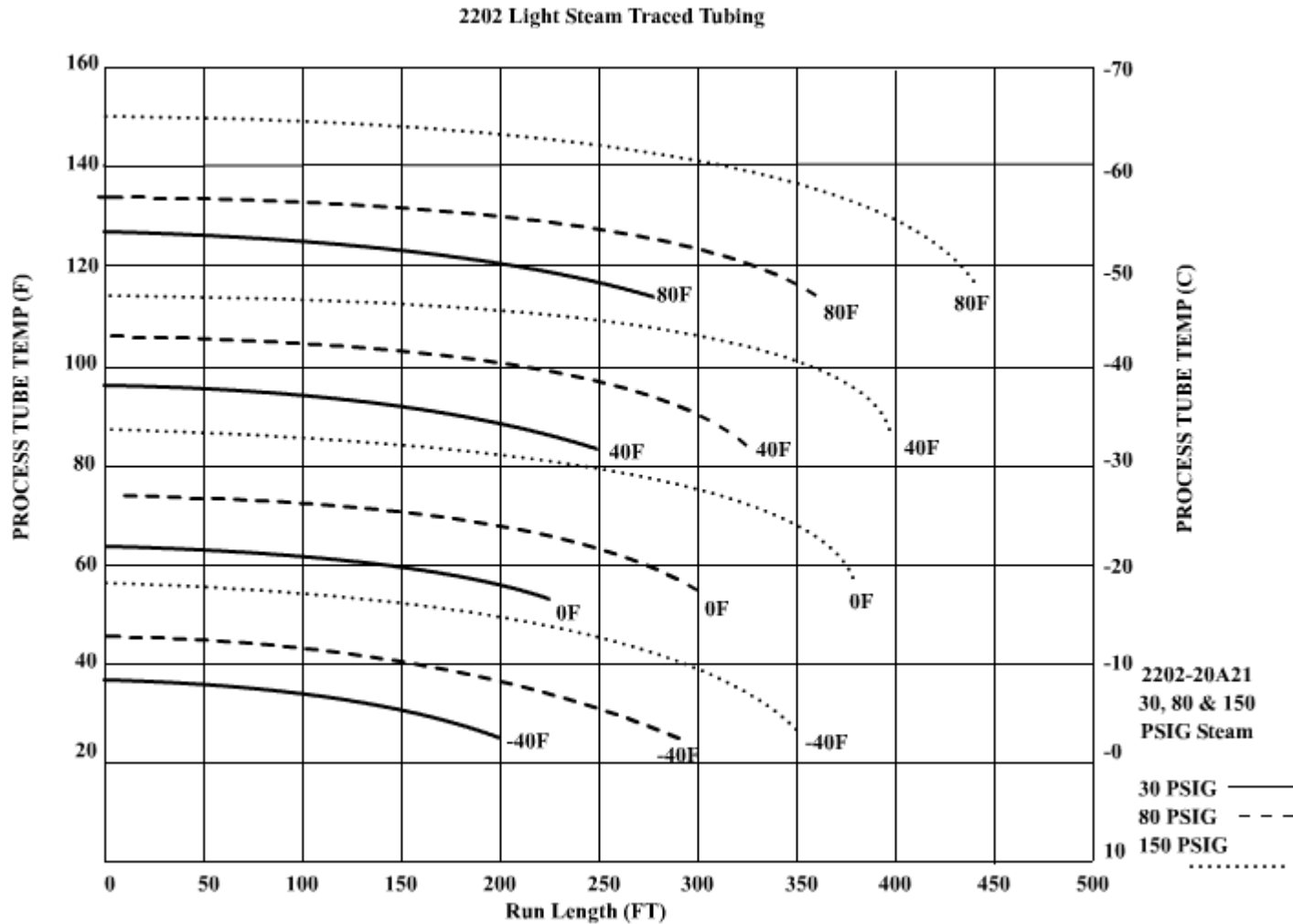
Process Tube O.D.	Process Tube Material	Number Process Tubes	Tracer Line O.D.	Tracer Tube Material	Process Tube Wall Thickness	Jacket Material	Tracer Tube Wall	Length
1=1/8"	0=Wld T316 SS	A=1	1=1/8"	0=Wld T316 SS	L=Light	0=FR PVC	L=Light	S=17-24Ft
2=1/4"	1=#122 DHP Copper	B=2	2=1/4"	1=#122 DHP Copper	S=Standard	1=FR LT PVC	S=Standard	
3=3/8"	2=Wld T304 SS	C=3	3=3/8"	2=Wld T304 SS	H=Heavy	2=FR TPE	H=Heavy	
4=1/2"	3=Smls T304 SS	Etc.	4=1/2"	3=Smls T304 SS	X=Extra Hvy	3=FR PE	X=Extra Hvy	
5=5/8"	4=PFA Fluoropolymer		5=5/8"	4=PFA Fluoropolymer		5=FR Urethane		
6=3/4"	5=FEP Fluoropolymer		6=3/4"	5=FEP Fluoropolymer				
7=7/8"	6=Smls Low Carbon Steel		7=7/8"	6=Smls Low Carbon Steel				
8=1"	7=Smls T316 SS		8=1"	7=Smls T316 SS				
9=1 1/4"	8=Monel 400*		9=1 1/4"	8=Monel 400*				
A=1 1/2"	9=Wld T316 AA		A=1 1/2"	9=Wld T316 AA				
M=4 mm	A=Smls T316L SS		M=4 mm	A=Smls T316L SS				
N=6 mm	B=Wld T304L SS		N=6 mm	B=Wld T304L SS				
P=8 mm	C=Smls T 304L SS		P=8 mm	C=Smls T 304L SS				
Q=10 mm	D=TFE Fluoropolymer		Q=10 mm	D=TFE Fluoropolymer				
R=12 mm	E=Wld Low Carbon Steel		R=12 mm	E=Wld Low Carbon Steel				
	F=Smls Inconel C22*			F=Smls Inconel C22*				
	G=Incoloy 825*			G=Incoloy 825*				
	H=Hastelloy C-22*			H=Hastelloy C-22*				
	J=Hastelloy C-276*			J=Hastelloy C-276*				
	K=Nickel 200			K=Nickel 200				
	L=Alloy 20			L=Alloy 20				
	M=Polypropylene			M=Polypropylene				
	N=Low Density Poly			N=Low Density Poly				
	P=High Density Poly			P=High Density Poly				
	Q=Thermoplastic Hose			Q=Thermoplastic Hose				
	R=Customer Spld. Matl.			R=Customer Spld. Matl.				
	S=Nylon			S=Nylon				
	T=FR Polyethylene			T=FR Polyethylene				
	U=Permbar			U=Permbar				
	Z=Other Tube Material			U=Permbar				

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:

- Reference tubing and material selection are to determine appropriate derivations.
 - 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.
 - 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.

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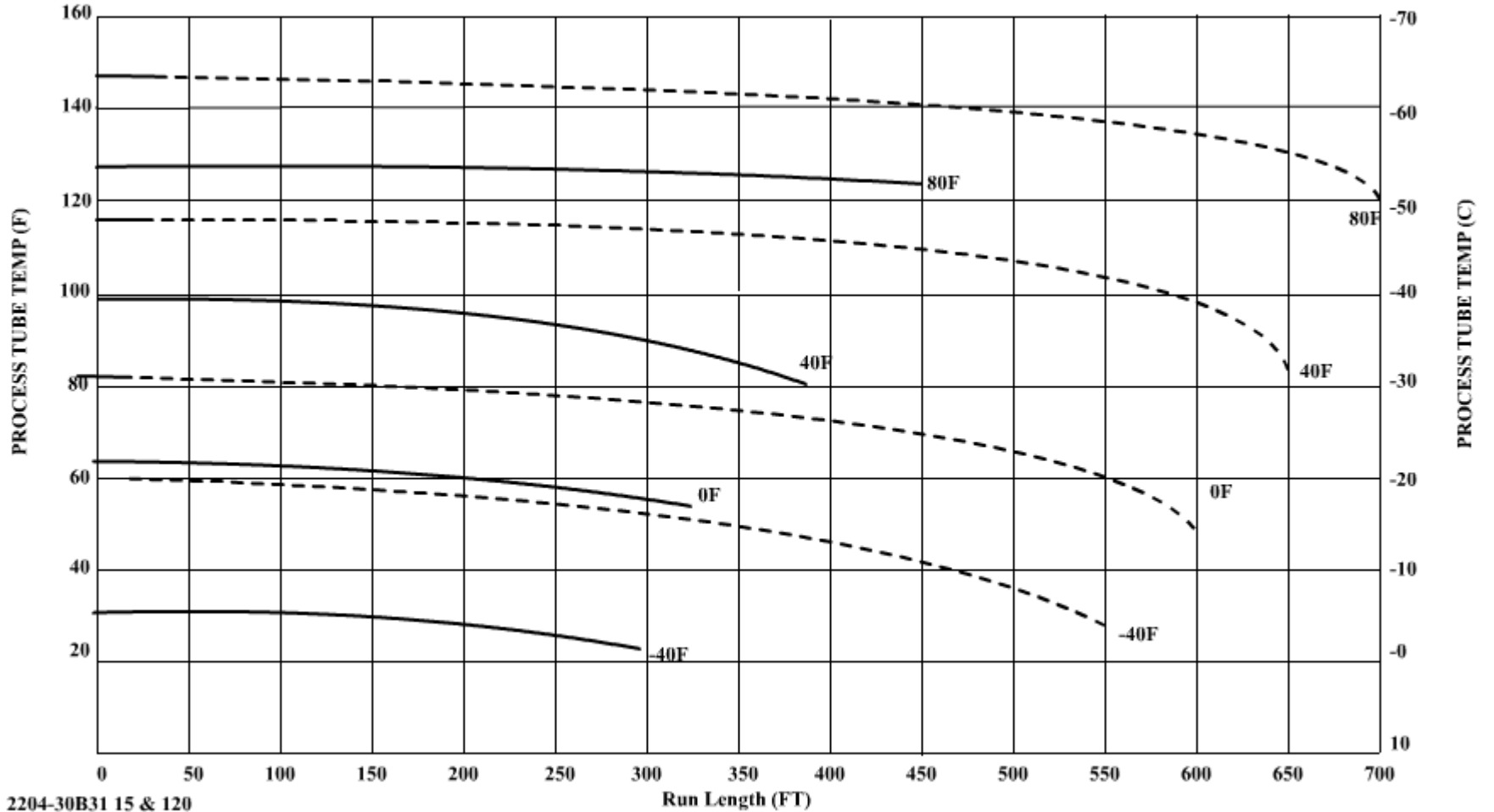
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Form 2202/4LTSTM-040103

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2204 Light Steam Traced Tubing



2204-30B31 15 & 120

PSIG Steam

15 PSIG ———

120 PSIG - - - -