

COPPER TUBE FOR HVACR APPLICATIONS

Job Name	Contractor
Job Location	Wholesaler
Engineer	Streamline[®] Rep

Product Description:

Streamline[®] Service Coils, ACR/Nitrogenized straight-length or line set copper tube for use in refrigeration applications. Available sizes ranging from 1/8" to 8-1/8" in outside diameter. All tube should be manufactured in the United States.

Material:

Streamline[®] Copper Tube is manufactured from UNS C12200 grade of copper.


Key Specifications:

Streamline[®] Copper Refrigeration Service Coils, ACR/Nitrogenized straight lengths and line sets are made to meet the chemical, mechanical, cleanliness, and eddy current testing requirements of the applicable specification of ASTM B280. Streamline[®] copper tube is third party verified in select sizes¹ through Underwriters Laboratories (UL) for operating pressure of 700psi at 250°F.

Installation:

Installations shall comply with the latest applicable building codes for the local jurisdiction. For detailed installation instructions, consult the Copper Development Association at copper.org.

References:

1 Product Line	Product Type	Diameter
Copper Tube 	Streamline [®] Refrigeration Service Coils	1/8" – 1-1/8"
	Streamline [®] Line Sets & Mini-Splits	1/8" – 1-1/8"
	Streamline [®] ACR - Type L (Hard Lengths)	1/8" – 1-3/8"
	Streamline [®] ACR - Type K (Hard Lengths)	1/8" – 2-5/8"

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|-----------|---|
| ASTM B75 | Seamless Copper Tube |
| C12200 | 99.9% Pure Copper |
| ASTM B280 | Seamless Copper Tube for Air Conditioning and Refrigeration |



COPPER TUBE DATA

Mueller Industries' cleaning, purging and pressurizing process assures the high level of tube cleanliness in conformance to ASTM B280, the refrigeration industry standard. The tube is sealed with plugs which maintain the standard of cleanliness from the factory to the job site.

STREAMLINE[®] COPPER TUBE PRESSURIZED WITH NITROGEN provides maximum protection against the formation of harmful oxides normally formed during brazing operations. Reduction of these oxides greatly reduces system contamination. Plugs are reusable. When less than a 20' length of tube is required for an installation the unused length of tube may be re-plugged to prevent atmospheric contamination during storage.

STREAMLINE[®] NITROGENIZED seamless copper tube is available in sizes 3/8" OD through 3-1/8" OD. Larger sizes from 3-5/8" OD through 8-1/8" OD are cleaned and capped. Manufactured and cleaned in accordance with ASTM B280. 20-ft. lengths hard drawn - cleaned and capped - color coded - Marked "ACR/MED"

TYPE K NITROGENIZED ACR / MED RATED WORKING PRESSURE (PSIG)

O.D. DIA.	WT/FT	150°F	200°F	250°F	300°F	400°F
3/8	0.145	913	877	860	842	537
1/2	0.269	960	923	904	885	565
5/8	0.344	758	728	713	698	446
3/4	0.418	700 †	700 †	700 †	577	368
7/8	0.641	700 †	700 †	700 †	668	426
1 1/8	0.839	700 †	700 †	700 †	513	327
1 3/8	1.04	700 †	700 †	700 †	416	266
1 5/8	1.36	700 †	700 †	700 †	387	247
2 1/8	2.06	700 †	700 †	700 †	341	217
2 5/8	2.93	700 †	700 †	700 †	312	199
3 1/8	4	328	315	308	302	193
3 5/8	5.12	311	299	293	286	183
4 1/8	6.51	306	294	288	282	180
5 1/8	9.67	293	281	276	270	172
6 1/8	13.9	295	283	277	271	173
8 1/8	25.9	314	301	295	289	184

TYPE L NITROGENIZED ACR / MED

3/8	0.126	777	747	731	716	457
1/2	0.198	700 †	700 †	700 †	612	391
5/8	0.285	700 †	700 †	700 †	567	362
3/4	0.362	700 †	700 †	700 †	496	316
7/8	0.455	700 †	700 †	700 †	457	292
1 1/8	0.655	700 †	700 †	700 †	388	248
1 3/8	0.884	700 †	700 †	700 †	344	220
1 5/8	1.14	348	334	327	320	205
2 1/8	1.75	309	297	291	285	182
2 5/8	2.48	286	275	269	263	168
3 1/8	3.33	270	259	254	249	159
3 5/8	4.29	258	248	243	238	152
4 1/8	5.38	249	240	235	230	147
5 1/8	7.61	229	229	215	211	135
6 1/8	10.2	213	213	201	196	125
8 1/8	19.3	230	230	216	212	135

Tables give computed allowable stress for annealed copper tube at indicated temperature.

† UL Recognized to 700 PSI (select sizes)

COPPER TUBE DATA

REFRIGERATION SERVICE TUBE

STREAMLINE[®] dehydrated and nitrogen purged and sealed copper tube is of a consistent annealed temper, bright and thoroughly dried and packaged in individual cartons. Each carton is clearly labeled showing size and length.

Tube is manufactured in accordance with ASTM B280 and ANSI B9.1, refrigeration industry standards. For special lengths and sizes not listed please consult your local Mueller Industries representative.

COILS

SIZE	RATED INTERNAL WORKING PRESSURE (PSIG)				50 FEET		SHIP INFO	100 FOOT	
	150°F	200°F	350°F	400°F	COIL DIA	WT/COIL	COIL/MSTR	COL DIA	WT/COIL
1/8	2613	2459	2049	1537	10 3/4	1.74	10	17	3.48
3/16	1645	1548	1290	968	11 3/4	2.88	10	18 5/8	5.76
1/4	1195	1125	938	703	13 1/2	4.02	10	18 5/8	8.04
5/16	1017	957	798	598	15 1/2	5.45	10	19 7/8	10.90
3/8	836	787	656	492	17	6.70	10	21 7/8	13.40
1/2	700 †	700 †	485	363	19 7/8	9.10	5	25	18.20
5/8	700 †	700 †	412	309	21 1/4	12.55	5	25 1/4	25.10
3/4	700 †	700 †	341	256	23 1/4	15.25	3	29	30.50
7/8	700 †	700 †	388	291	27 1/4	22.75	3	32 1/4	45.50
1 1/8	700 †	700 †	330	247	34 1/2	32.75	-	38 1/2	65.50
1 3/8	373	351	293	219	45	44.20	-	45	88.40
1 5/8	347	327	272	204	45	57.00	-	49	114.00

† UL Recognized to 700 PSI (select sizes)

TECHNICAL DATA

Values of allowable internal working pressure for copper tube in service are based on the formula from ANSI B31, Standard Code for Pressure Piping:

$$P = \frac{2 S tm}{D \text{ max} - 0.8 tm}$$

P = Allowable Pressure	@ 150°F S = 5100 PSIG annealed
S = Allowable stress	@ 200°F S = 4800 PSIG annealed
T = Wall thickness	@ 300°F S = 4700 PSIG annealed
D Max = Outside Diameter	@ 400°F S = 3000 PSIG annealed

All ratings listed for types K, L, M, DWV and refrigeration service tube in the preceding charts are calculated for tube in the annealed condition. These values should be used when soldering, brazing or welding is employed for joining components in a system. While the ratings for hard drawn tube are substantially higher, they should only be used for systems using properly designed flare or compression mechanical joints, since joining by any heating process might anneal (soften) the tube.

In designing a system, careful consideration should also be given to joint ratings as well as those of the components.

COPPER TUBE AND SOLDER TYPE FITTINGS

1. Cut tube square with the cutter or fine hack saw (32 tooth blade is recommended). Remove Burr.

2. Clean outside end of copper tube thoroughly with sand cloth or sandpaper equal depth of fitting. Leave no dark spots.

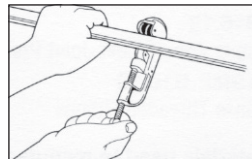
3. Clean inside of fitting carefully to tube stop with wire brush. Note: Sand cloth or sandpaper may also be used.

4. Using a brush, apply light uniform coat of soldering flux to the outside of the tube and inside of the fitting.

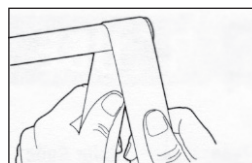
5. Slip tube into fitting to tube stop. Turn tube back and forth once or twice to distribute flux evenly.

6. Apply heat uniformly around the fitting with torch. When solder melts upon contact with heated fitting, the proper soldering temperature has been reached. Remove flame and feed solder slightly off center at the bottom of the joint. Proceed across the bottom of the fitting and up to the top center position. Return to the starting point, and then proceed up the incomplete side to the top, again, overlapping the solder metal. Wipe off surplus solder with a piece of cloth.

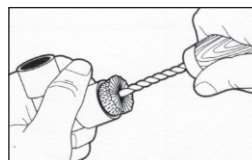
CAUTION: No not overheat the joint or direct the flame into the face of the fitting cup. Overheating could burn the flux, which will destroy its effectiveness and the solder will not enter the joint properly.



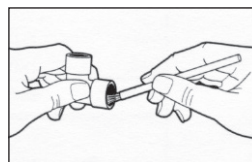
1. Cut tube to length & remove burr with file or scraper.



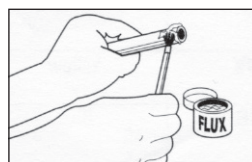
2. Clean outside of tube with sandpaper or sand cloth.



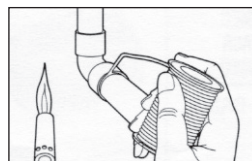
3. Clean inside of fitting with wire brush, sand cloth or sandpaper.



4. Apply flux thoroughly to inside of fitting.



5. Apply flux thoroughly to outside of tube - assemble tube and fitting.



6. Apply heat with torch. When solder melts upon contact with heated fitting, the proper temp for soldering has been reached. Remove flame & feed solder to the joint at one or two points until a ring of solder appears at the end of the fitting.