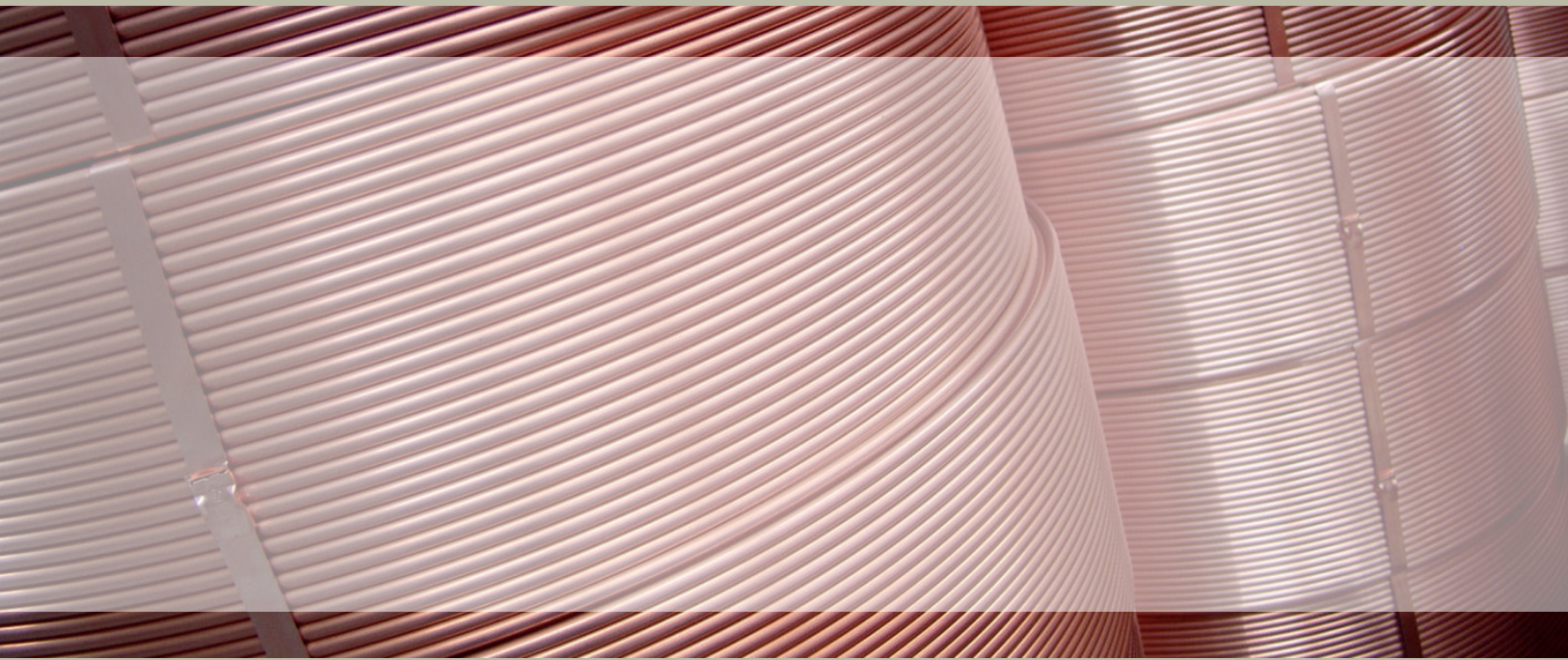




CAMBRIDGE-LEE INDUSTRIES, LLC



**LEADING SUPPLIER OF COPPER TUBE IN THE
USA, MEXICO AND LATIN AMERICA**



CAMBRIDGE-LEE INDUSTRIES, LLC

*IUSA and Cambridge-Lee Industries:
Leading the Way with Quality and Service*

Cambridge-Lee Industries entered the copper tube industry in 1955 as a small distributor serving the U.S. plumbing market. Over the years, the company has evolved into one of the world's largest distributors of copper with sales offices in every corner of the globe.

During 1993, Industrias Unidas S.A. de C.V. (IUSA), one of Mexico's largest conglomerates, acquired Cambridge-Lee. IUSA has a modern, state-of-art copper refinery and tube mill in Pasteje Mexico. In 1996, Cambridge-Lee purchased Reading Tube Corporation, a major U.S. producer of copper tube. As a result of the merger and acquisition, Cambridge-Lee has become one of the world's leaders in the manufacture and distribution of copper tube for water supply, air conditioning, refrigeration and a variety of commercial applications.

Cambridge-Lee has grown to be a world leader because we understand that customer satisfaction requires not only quality products but also a high level of service. Our employees take pride in ensuring we meet our customer needs and requirements: from on-time deliveries, to well-trained sales and service departments, to utmost product quality.



Commitment to Quality

Cambridge-Lee implements strict testing methods and controls to ensure that the highest quality tube reaches our customers. Tubes manufactured are continuously tested for defects by Eddy-Current test units.

ACR Copper Coils & Pipes are dehydrated, degreased, purged with nitrogen and capped to maintain the internal cleanliness of the product.

From the selection of raw materials to final packaging, our tube is continually tested and inspected at all stages in the manufacturing process to ensure problems and defects are detected and solved at their source. Each Coil is individually packed in dye cut carton boxes. This ensures the Originality & Exclusivity of the product while also giving additional protection during Transportation. Environmentally harmful material such as plastic shrink wrap are eliminated in the packaging process.



Another step in our ongoing commitment to provide the highest level of product quality, exceptional customer and technical service is that both our production facilities have achieved ISO 9001:2000 Certification – the international standard for assured product quality. This achievement along with our dedication to you is the driving force that paved the way for and has earned us the reputation as a world- class industry leader.

Compatibility to Fittings

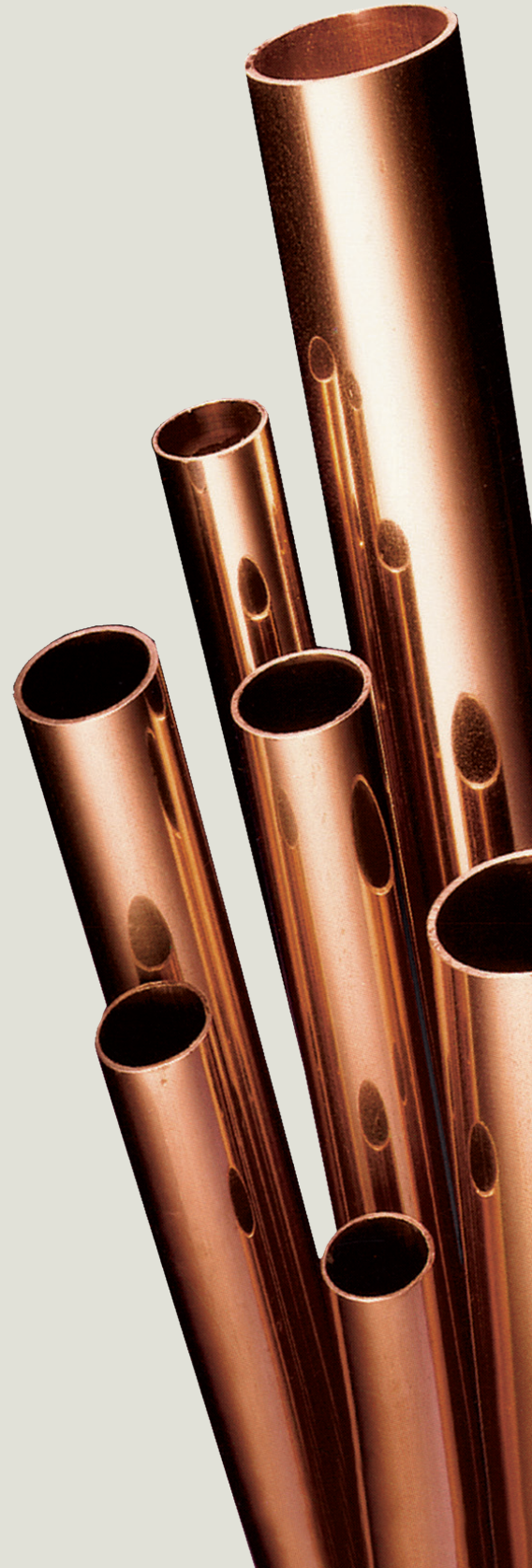
Copper Tubes & Coils manufactured by IUSA Cambridge Lee are compatible with Copper Fittings manufactured by NIBCO INC or equivalent.



Copper Tube Product Range

Product	Application	Temper	Ink Color Marking	Standards
Water Tube Type M	Domestic Water Service Fire protection Solar, Fuel Oil HVAC	Drawn	Red	ASTM B-88
Water Tube Type L	Domestic Water Service Fire protection Solar, Fuel Oil HVAC, Natural Gas	Drawn Annealed	Blue N/A	ASTM B-88
Water Tube Type K	Domestic Water Service Fire protection Solar, Fuel Oil HVAC	Drawn Annealed	Green N/A	ASTM B-88
Refrigeration Tube	Air Conditioning Refrigeration Service	Annealed	N/A	ASTM B-280
ACR Tube (L cleaned and capped/de greased)	Air Conditioning Refrigeration Natural Gas	Drawn	Blue	ASTM B-280
OXY/MED tube (k&L cleaned and capped/degreased)	Medical Gas Systems	Drawn	(L) Blue (K) Green	ASTM B-280, B-819
DWV	Drainage	Drawn	Yellow	ASTM-B306

Product	Application	Temper	Specifications
Copper Tube	Water and gas in sanitary and heating	Annealed Half Hard Hard	BS EN 1057
Copper Tube	Water and gas in sanitary and heating	Annealed Half Hard Hard	BS EN 12735-1



Level Wound Coils

A level wound coil from IUSA Cambridge-Lee is a long length of tube that is uniformly and tightly spooled in layers parallel to the axis of the coil. Such coils are used for a wide variety of applications in many industries.

Material

Type DHP (UNS C12200) Copper. This material meets the requirements of ASTM B743 and B251 Standards.

Cleanliness and Appearance

As per requirements of standard ASTM B 743, any residue on the inside of the tube will not exceed 0.0035 gm/ft² (0.038 g/m²).

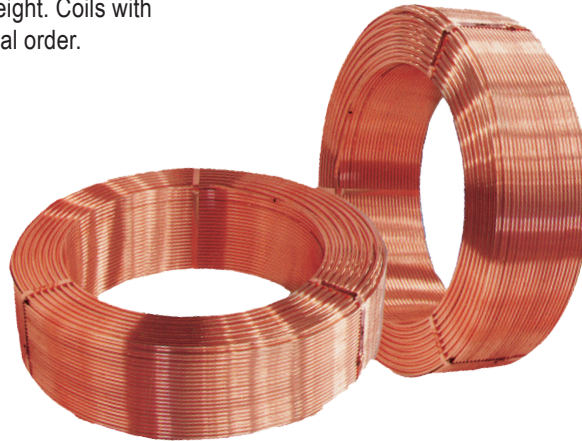
Both the inside and outside diameter surfaces will be clean and bright, with the finish being smooth and free from slivers, scale, open grain and major metal defects such as inclusions. Level wound coils with insignificant surface damage, such as minor dents that will not interfere with the tubing's end use, will be shipped.

Coil Weight

Nominal Weight standards for Cambridge-Lee Level Wound coils are 200 pounds (90 kg) and 264 pounds (120 kg) in reels and 200 pounds (90 kg) to 400 pounds (180 kg) in bulk packaging. In any single shipment, coils with weights that are less than these nominal standards - and as low as 100 pounds (40.82 kg) - will be included on the basis of 80 percent nominal weight and 20 percent lighter weight. Coils with non-standard weights and/or lengths can be supply on special order.

Temper

We can supply special tempers on request.



LWC Mechanical Properties ASTM B 743

Temper Designation	Wall Thickness in (mm)	Rockwell Hardness		Tensile Strength Min		Yield Strength Min		Enlogation in 2 in Min %	Average Grain Size mm
		Scale	Value	Ksi	(Mpa)	Ksi	(Mpa)		
H58	0.020 an over (0.508)	30T	30 Min	36	(250)	36	(250)	N/A	N/A
050	0.020 to 0.035 (0.508 to 0.889) Over 0.035 (0.889)	15T	65 Max	30	(205)	9	(62)	40	0.040 Máx.
		F	55 Max						
060	0.020 to 0.035 (0.508 to 0.889) Over 0.035 (0.889)	15T	60 Max	30	(205)	6	(40)	40	0.040 Min.
		F	50 Max						

ACR Mechanical Properties ASTM B 280

Temper Designation		Form	Tensile Strength Min		Elongation in 2 in, min, %	Average Grain Size, mm	Expansion of Outside Diameter %
Standard	Former		Ksi	(Mpa)			
O60	Soft Annealed	Coiled Lengths	30	(205)	40	0.040 Min	40
H58	Drawn General Purpose	Straight Lengths	36	(250)	N/A	N/A	N/A

ACR Copper Tube Technical Data Refrigeration Coils - ASTM B280 (Soft Annealed)

O. D. (in.)		Wall Thickness. in. (Nom.)	Theoretical weight		Rated internal working pressures			
			Kg/m Nominal	lb/ft Nominal	Hard Drawn 150° F-56.7°C/ 300° F = 113,4°C	Hard Drawn 300° F- 113.4° C S= 10,000 psi	Annealed 150° F- 56-7° C S= 5, 100 psi	Annealed 300°F- 113.4°C s = 4,700 psi
1/8	0,125	0,030	0,0516	0,0347	-	-	2613	2408
3/16	0,187	0,030	0,0854	0,0575	-	-	1645	1516
1/4	0,250	0,030	0,1196	0,0804	-	-	1195	1102
5/16	0,312	0,032	0,1624	0,1090	-	-	1017	937
3/8	0,375	0,032	0,1989	0,1340	-	-	836	770
1/2	0,500	0,032	0,2714	0,1820	NOT MANUFACTURED		618	569
5/8	0,625	0,035	0,3742	0,2510	-	-	525	484
3/4	0,750	0,035	0,435	0,3050	-	-	435	400
7/8	0,875	0,045	0,6768	0,4550	-	-	495	456
1 1/8	1,125	0,050	0,974	0,6650	-	-	420	387

The figures provided are for guidance only, based on the indicated temperatures
(Suitable for R-410a gas applications)

ACR Hard Drawn Straight Lengths - ASTM B280

Standard size, in.	O. D. (in.)		Wall Thickness. in.	Theoretical Weight		Rated internal working pressures	
				Kg/m Nominal	lb/ft Nominal	Hard Drawn 150° F-56.7°C S = 10,300 psi	Hard Drawn 300° F- 113.4° C S= 10,000 psi
3/8	0,375	3/8	0,030	0,1876	0,126	1569	1524
1/2	0,500	1/2	0,035	0,2949	0,198	1341	1302
5/8	0,625	5/8	0,040	0,4240	0,285	1242	1206
3/4	0,750	3/4	0,042	0,5389	0,362	1086	1055
7/8	0,875	7/8	0,045	0,6768	0,455	1002	972
1 1/8	1,125	1 1/8	0,050	0,9740	0,655	850	825
1 3/8	1,375	1 3/8	0,055	1,3156	0,884	755	733
1 5/8	1,625	1 5/8	0,060	1,7016	1,14	702	682
2 1/8	2,125	2 1/8	0,070	2,6067	1,75	625	607
2 5/8	2,625	2 5/8	0,080	3,6895	2,48	577	560
3 1/8	3,125	3 1/8	0,090	4,9498	3,33	545	529
3 5/8	3,625	3 5/8	0,100	6,3878	4,29	522	506
4 1/8	4,125	4 1/8	0,110	8,0033	5,38	504	489

The figures provided are for guidance only, based on the indicated temperatures
(Suitable for R-410a gas applications)

L, K and M Mechanical Properties ASTM B 88

Temper Designation		Form	Rockwell Hardness		Tensile Strength Min		Average Grain Size mm	Expansion of Outside Diameter %
Standard	Former		Scale	Value	Ksi	(Mpa)		
O60	Annealed	Coils	F		30	(250)	0.040 Min	40
O50	Annealed	Straight Lengths	F	55 Max	30	(205)		40
H58	Drawn	Drawn	30T	30 Min	36	(205)	N/A	

Copper Tube Technical Data

TYPE "L" - STANDARD ASTM B 88				Theoretical Weight		Rated internal working pressures	
Nominal or Standard size, in.	O. D. (in.)		Wall Thickness, in.	Kg/m Nominal	lb/ft Nominal	Hard Drawn 150° F-56.7°C S = 10,300 psi	Hard Drawn 300° F- 113.4° C S= 10,000 psi
1/4	0,375	3/8	0,030	0,1876	0,126	1569	1524
3/8	0,500	1/2	0,035	0,295	0,198	1341	1302
1/2	0,625	5/8	0,040	0,424	0,285	1242	1206
5/8	0,750	3/4	0,042	0,539	0,362	1086	1055
3/4	0,875	7/8	0,045	0,677	0,455	1002	972
1	1,125	1 1/8	0,050	0,974	0,655	850	825
1 1/4	1,375	1 3/8	0,055	1,316	0,884	755	733
1 1/2	1,625	1 5/8	0,060	1,697	1,14	702	682
2	2,125	2 1/8	0,070	2,604	1,75	625	607
2 1/2	2,625	2 5/8	0,080	3,691	2,48	577	560
3	3,125	3 1/8	0,090	4,956	3,33	545	529
3 1/2	3,625	3 5/8	0,100	6,384	4,29	522	506
4	4,125	4 1/8	0,110	8,006	5,38	504	489
5	5,125	5 1/8	0,125	11,325	7,61	462	449
6	6,125	6 1/8	0,140	15,179	10,20	431	418
8	8,125	8 1/8	0,200	28,722	19,30	464	451

The figures provided are for guidance only, based on the indicated temperatures

TYPE "K" - STANDARD ASTM B 88				Theoretical Weight		Rated internal working pressures	
Nominal or Standard size, in.	O. D. (in.)		Wall Thickness, in.	Kg/m Nominal	lb/ft Nominal	Hard Drawn 150° F-56.7°C S = 10,300 psi	Hard Drawn 300° F- 113.4° C S= 10,000 psi
1/4	0,375	3/8	0,035	0,2156	0,145	1850	1796
3/8	0,500	1/2	0,049	0,4005	0,269	1946	1889
1/2	0,625	5/8	0,049	0,5115	0,344	1534	1490
5/8	0,750	3/4	0,049	0,6224	0,418	1266	1229
3/4	0,875	7/8	0,065	0,9541	0,641	1466	1424
1	1,125	1 1/8	0,065	1,2486	0,839	1126	1093
1 1/4	1,375	1 3/8	0,065	1,5430	1,04	914	888
1 1/2	1,625	1 5/8	0,072	2,0263	1,36	850	825
2	2,125	2 1/8	0,083	3,0713	2,06	747	726
2 1/2	2,625	2 5/8	0,095	4,3555	2,93	684	664
3	3,125	3 1/8	0,109	5,9573	4,00	662	643
3 1/2	3,625	3 5/8	0,120	7,6218	5,12	628	610
4	4,125	4 1/8	0,134	9,6912	6,51	618	600
5	5,125	5 1/8	0,160	14,3956	9,67	592	575
6	6,125	6 1/8	0,192	20,6426	13,90	595	578
8	8,125	8 1/8	0,271	38,5700	25,90	634	615

The figures provided are for guidance only, based on the indicated temperatures

TYPE "M" - STANDARD ASTM B 88			Theoretical Weight		Rated internal working pressures		
Nominal or Standard size, in.	O. D. (in.)		Wall Thickness, in.	Kg/m Nominal	lb/ft Nominal	Hard Drawn 150° F-56.7°C S = 10,300 psi	Hard Drawn 300° F- 113.4° C S= 10,000 psi
	3/8	0,500					
1/2	0,625	5/8	0,028	0,303	0,204	850	825
3/4	0,875	7/8	0,032	0,489	0,328	701	680
1	1,125	1 1/8	0,035	0,691	0,465	580	563
1 1/4	1,375	1 3/8	0,042	1,015	0,682	582	565
1 1/2	1,625	1 5/8	0,049	1,399	0,940	569	553
2	2,125	2 1/8	0,058	2,172	1,460	514	499
2 1/2	2,625	2 5/8	0,065	3,015	2,030	471	457
3	3,125	3 1/8	0,072	3,983	2,680	435	423
3 1/2	3,625	3 5/8	0,083	5,327	3,580	433	421
4	4,125	4 1/8	0,095	6,938	4,660	431	419
5	5,125	5 1/8	0,109	9,908	6,660	400	388
6	6,125	6 1/8	0,122	13,271	8,920	375	364
8	8,125	8 1/8	0,170	24,506	16,500	394	382

The figures provided are for guidance only, based on the indicated temperatures

Copper Pipes & Coils manufactured to ASTM B280 & ASTM B88 are suitable for R-410a gas applications and other high pressure refrigerants.

ACR Copper Tube (Economy Range) Technical Data

REFRIGERATION COILS SPECIAL WALL THICKNESS (ECONOMY) - SOFT ANNEALED								
Nominal Size of tube		Wall Thickness		Theoretical Mass	Lengths		Maximum Working Pressure	
(mm)	(in)	(mm)	(in)	(Kg/m)	(m)	(Feet)	(psi)	(Mpa)
6.35	1/4	0.61	0.024	0.098	15.24	50	1126.28	7.77
7.94	5/16	0.61	0.024	0.125	15.24	50	889.19	6.13
9.53	3/8	0.61	0.024	0.153	15.24	50	734.56	5.06
12.70	1/2	0.71	0.028	0.239	15.24	50	635.38	4.38
15.88	5/8	0.71	0.028	0.303	15.24	50	504.45	3.48
19.05	3/4	0.81	0.032	0.416	15.24	50	485.66	3.35
22.23	7/8	0.89	0.035	0.533	15.24	50	443.51	3.06
28.58	1 1/8	1.02	0.040	0.786	15.24	50	398.62	2.75

Note:

Cleanliness: Bore quality meets the 0.038 g/m ASTM B280 specified limit.

ACR TUBES SPECIAL WALL THICKNESS (ECONOMY) - HARD TEMPER								
Nominal Size of tube		Wall Thickness		Theoretical Mass	Lengths		Maximum Working Pressure	
(mm)	(in)	(mm)	(in)	(kg/m)	(m)	(Feet)	(psi)	(Mpa)
9.53	3/8	0.61	0.024	0.152	5.8	19	1534.29	10.58
12.70	1/2	0.61	0.024	0.207	5.8	19	935.59	6.45
15.88	5/8	0.71	0.028	0.303	5.8	19	865.97	5.97
19.05	3/4	0.71	0.028	0.366	5.8	19	717.52	4.95
22.23	7/8	0.81	0.032	0.489	5.8	19	711.68	4.91
28.58	1 1/8	0.91	0.036	0.710	5.8	19	607.53	4.19
34.93	1 3/8	1.02	0.040	0.958	5.8	19	557.46	3.84
41.28	1 5/8	1.07	0.042	1.205	5.8	19	496.56	3.42
53.98	2 1/8	1.42	0.056	2.100	5.8	19	483.01	3.33
66.68	2 5/8	1.63	0.064	2.970	5.8	19	462.63	3.19
79.38	3 1/8	1.78	0.070	3.875	5.8	19	428.22	2.95
104.78	4 1/8	2.03	0.080	5.864	5.8	19	364.12	2.51

Note:

Cleanliness: Bore quality meets the 0.038 g/m2 ASTM B280 specified limit.



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