

# TECHNICAL GUIDE

Wall  
1.0mm

Temper: Hard  
Max Working Pressure: 35  
Thickness Tolerance:  $\pm 15\%$   
Diameter Tolerance:  $\pm 0.06\text{mm}$

Diameter  
42mm

10th Revision 2015

**LAWTON**  
TUBES

*The nations copper specialist*



# Refrigeration and Air Conditioning Tubes

Pipeline solutions for refrigeration and air conditioning, all to EN 12735-1.

Our copper tubing is designed specifically for refrigeration and air conditioning use and accordingly cleaned, nitrogen-purged and capped.

## Material Analysis

Material Grade Phosphorus de-oxidised copper; Cu-DHP or CW024A as defined in BS EN 1976.

Minimum Copper Content 99.90 % (including silver)

Phosphorus 0.015-0.040 %

Total Impurity Maxima 0.060 % (excluding phosphorus and silver)

The melting point of copper is 1083°C and it has a density of 8.9 gm/cc

## Mechanical Properties

### BS EN 12735-1 Refrigeration and Air Conditioning Tubes



Material Temper EN 1173	Tensile Strength min. (N/mm <sup>2</sup> )	Elongation min. (%)	Hardness (Indicative) HV5 VPN
R220 (soft)	220	40	40-70
R250 (Half Hard)	250	30	75-100
R290 (Hard)	290	3	Over 100

The table below and on the next page give the maximum working pressure (MWP)

They have been calculated based on the requirements of EN378 using the stress values according to BS 1306.

Although straight tube is supplied in either half hard or fully hard condition, we have also quoted figures based on annealed condition which is representative of the tube in the area immediately surrounding brazed joints.

The maximum test pressure can be 1.5 times that of the (MWP)

### Standard Copper Coiled Tube to EN 12735-1 R220



O.D. (inches)	Wall (inches)	Gauge (SWG)	Max Working Pressure in annealed condition
1/4	0.028	22	92
5/16	0.028	22	72
5/16	0.036	20	94
3/8	0.032	21	68
1/2	0.032	21	50
5/8	0.036	20	45
3/4	0.040	19	39
7/8	0.040	19	33

### Economy Copper Coiled Tube to EN 12735-1 R220



O.D. (inches)	Wall (inches)	Gauge (SWG)	Max Working Pressure in annealed condition
1/4	0.020	25	72
5/16	0.020	25	51
3/8	0.020	25	47
1/2	0.022	24	37
5/8	0.028	22	34
3/4	0.032	21	33
7/8	0.040	19	33
1 1/8	0.048	18	33

**Copper Straight Tube to EN 12735-1 R250/R290**

O.D. (inches)	Wall (inches)	Gauge (SWG)	Max Working Pressure bar up to 65°C	Max Working Pressure in annealed condition
3/8	0.032	21	103	68
1/2	0.036	20	86	57
1/2	0.048	18	113	75
5/8	0.036	20	68	78
5/8	0.048	18	89	59
3/4	0.048	18	71	50
3/4	0.064	16	99	64
7/8	0.048	18	61	42
7/8	0.064	16	82	54
7/8	0.104	12	139	92
1 1/8	0.048	18	47	33
1 1/8	0.064	16	63	45
1 1/8	0.080	14	80	53
1 3/8	0.048	18	38	27
1 3/8	0.064	16	51	36
1 3/8	0.080	14	64	45
1 3/8	0.104	12	85	56
1 5/8	0.048	18	32	22
1 5/8	0.064	16	43	30
1 5/8	0.080	14	54	38
1 5/8	0.104	12	71	50
1 5/8	0.116	11	80	53
2 1/8	0.048	18	24	17
2 1/8	0.064	16	32	23
2 1/8	0.080	14	41	29
2 1/8	0.104	12	54	35
2 5/8	0.048	18	22	14
2 5/8	0.064	16	30	19
2 5/8	0.080	14	37	23
2 5/8	0.104	12	49	30
3 1/8	0.064	16	25	15
3 1/8	0.080	14	31	19
3 1/8	0.104	12	41	25
3 5/8	0.064	16	21	13
3 5/8	0.080	14	27	17
4 1/8	0.064	16	19	12
4 1/8	0.080	14	23	15
4 1/8	0.104	12	31	19

Working pressures are to BS 2871:part1:1971