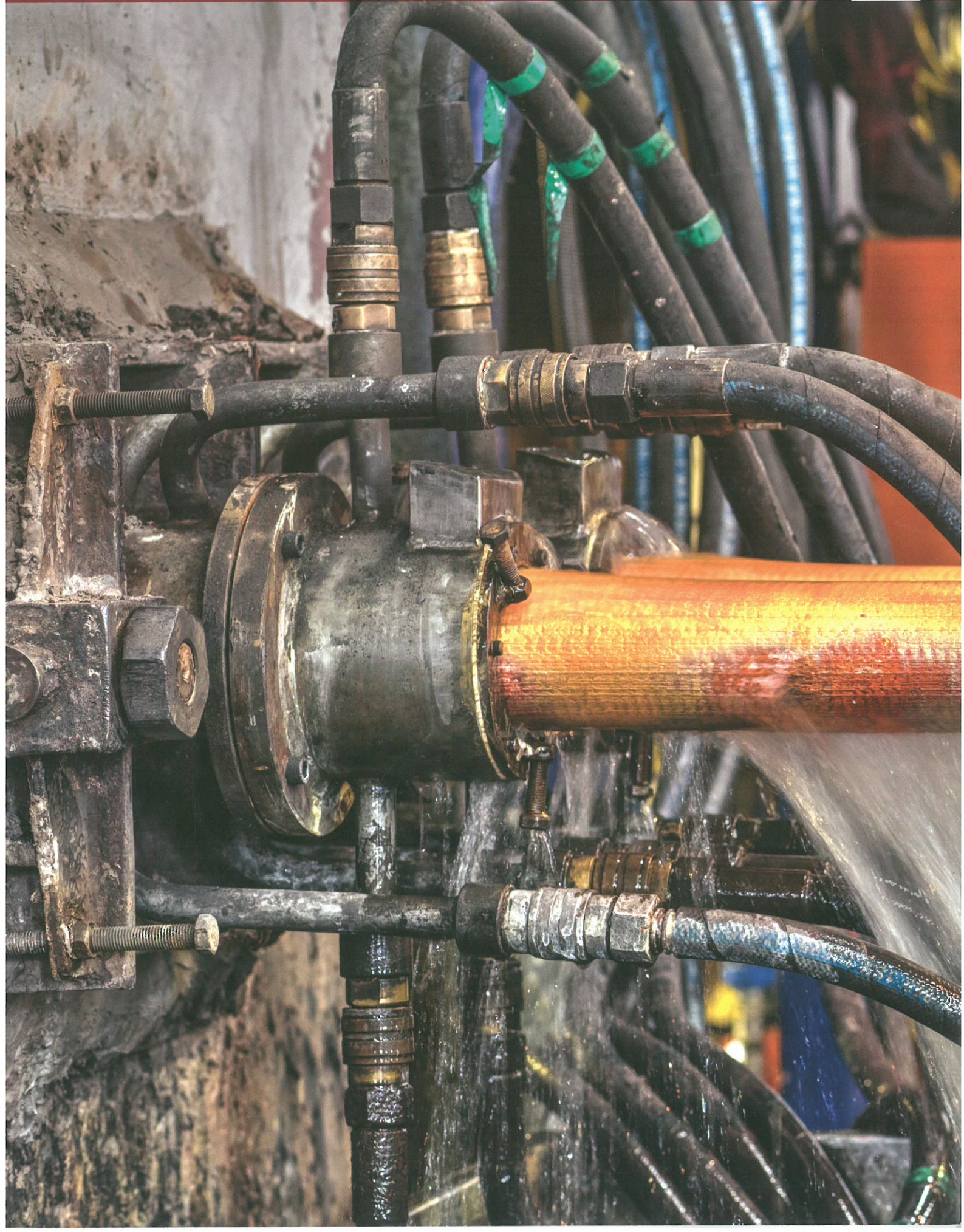




MAKSAL ALWAYS LEADS THE WAY

PLUMBING & REFRIGERATION TUBE - EXPORT
MADE IN SOUTH AFRICA

MAKSAL TUBES



MAKSAL TUBES



History

Maksal Tubes (Pty) Ltd origin dates back to the late 1940's when the first copper tube was produced at the present site at Springs, 50 km east of Johannesburg.

Maksal Tubes (Pty) Ltd is the dominant force in the non-ferrous tube and extrusion industry in South Africa, developing thin walled plumbing, air-conditioning and refrigeration tube specially to meet the growing demand of local and international markets.

In recent years Maksal has embarked on a rigorous capital expansion program aimed at elevating Maksal's manufacturing activities in line with modern world class practices and at the same time have commenced on a global marketing strategy.

Among some of the prestigious projects that were totally or partial supplied with Maksal tubes include among others:

- DUBAI MALL
- PALM JUMERIAH
- PORT SAEED DUBAI
- AL WAHDA MALL, ABU DHABI



ASTM B280 SOFT ANNEALED COILS

Manufacture Size				Mass per m/kg	Mass per Coil	Coils per Carton	Mass per Carton
mm		inches					
OD	WT	OD	WT				
6.35	0.76	1/4"	0.030	0.119	1.813	10	18.129
7.94	0.81	5/16"	0.032	0.162	2.464	10	24.644
9.53	0.81	3/8"	0.032	0.198	3.014	10	30.140
12.70	0.81	1/2"	0.032	0.270	4.110	5	20.548
15.88	0.89	5/8"	0.035	0.374	5.693	5	28.465
19.05	0.89	3/4"	0.035	0.453	6.897	4	27.587
22.23	1.14	7/8"	0.045	0.673	10.259	4	41.038
28.58	1.27	1 1/8"	0.050	0.971	14.800	3	44.401

AVAILABLE IN 50FT COILS, 15.24M COILS. OTHER SIZES AVAILABLE ON REQUEST.

GENERAL SPECIFICATIONS

APPLICATION: Used in supermarkets, cold rooms, display fridges & air conditioners for the connection, repairs, or alteration of air conditioning or refrigeration units in the field or under construction.

QUALITY: Maksal™ ACR tubing is manufactured to consistently meet the demands of the industry and is compatible with all refrigerants.

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

MATERIAL: C12200, Cu 99.9%min, P 0.015 - 0.040%

MECHANICAL PROPERTIES:
 Tensile Strength 205 MPa / min
 Yield Stress 8 MPa
 Elongation min 3%
 Hardness > 40 - 50 VPN
 Soft Annealed

TEMPER: Soft Annealed.

PACKAGING: End capped, double layer coiled and shrink wrapped.

NOTE: COILS ARE PACKED IN CARDBOARD CARTONS WITH RED PRINTING.

JOINING: Suitably connected by means of capillary solder fittings.

BENDING: Suitable for bending with or without specialized tooling.

LENGTH: 50ft (15.24m)

SOFT ANNEALED COILS

Manufacture Size				Mass per m/kg	Mass per Coil	Coils per Carton	Mass per Carton
mm		inches					
OD	WT	OD	WT				
6.35	0.61	1/4"	0.024	0.0980	1.494	10	14.941
7.94	0.61	5/16"	0.024	0.1252	1.908	10	19.080
9.53	0.61	3/8"	0.024	0.1524	2.322	10	23.219
12.70	0.71	1/2"	0.028	0.2384	3.633	5	18.163
15.88	0.71	5/8"	0.028	0.3016	4.596	5	22.980
19.05	0.81	3/4"	0.032	0.4137	6.305	4	25.218
22.23	1.02	7/8"	0.040	0.6058	9.232	4	36.927

AVAILABLE IN 50FT COILS, 15.24M COILS. OTHER SIZES AVAILABLE ON REQUEST.

GENERAL SPECIFICATIONS

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MATERIAL: C12200, Cu 99.9%min, P 0.015 - 0.040%

MECHANICAL PROPERTIES:
 Tensile Strength 205 MPa / min
 Yield Stress 8 MPa
 Elongation min 3%
 Hardness > 40 - 50 VPN
 Soft Annealed

TEMPER: Soft Annealed.

PACKAGING: End capped, double layer coiled and shrink wrapped.

NOTE: COILS ARE PACKED IN CARDBOARD CARTONS WITH BLUE PRINTING.

JOINING: Suitably connected by means of capillary solder fittings.

BENDING: Suitable for bending with or without specialized tooling.

LENGTH: 50ft (15.24m)

Manufacturing Size				Mass p/ metre (kg)	Qty per bundle	Rated Internal Working Pressure (PSI)			
OD (Inch)	OD (mm)	WT (Inch)	WT (mm)			150°F	200°F	300°F	400°F
Refrigeration Lengths - Hard Drawn - Straight Lengths						150°F	200°F	300°F	400°F
3/8"	9.53	0.030	0.76	0.187	20	1761	1761	1709	1607
1/2"	12.70	0.035	0.89	0.294	10	1528	1528	1483	1394
5/8"	15.88	0.040	1.02	0.424	10	1390	1390	1349	1268
3/4"	19.05	0.042	1.07	0.539	10	1208	1208	1173	1102
7/8"	22.23	0.045	1.14	0.673	10	1105	1105	1073	1008
1 1/8"	28.58	0.050	1.27	0.971	5	949	949	922	866
1 3/8"	34.93	0.055	1.40	1.314	5	851	851	826	777
1 5/8"	41.28	0.060	1.52	1.692	4	784	784	761	715
2 1/8"	53.98	0.070	1.78	2.602	3	697	697	677	636
2 5/8"	66.68	0.080	2.03	3.675	2	643	643	625	587
3 1/8"	79.38	0.090	2.29	4.943	1	607	607	590	554
3 5/8"	92.08	0.100	2.54	6.368	1	581	581	564	530
4 1/8"	104.78	0.110	2.79	7.967	1	561	561	545	512

AVAILABLE IN 19FT (5.800M) AND 20FT (6.096M) LENGTHS.

GENERAL SPECIFICATIONS

APPLICATION:

Used in supermarkets, cold rooms, display fridges & air conditioners for the connection, repairs, or alteration of air conditioning or refrigeration units in the field or under construction.

QUALITY:

Maksal™ ACR tubing is manufactured to consistently meet the demands of the industry and is compatible with all refrigerants.

CLEANLINESS:

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

MATERIAL:

C12200, Cu 99.9%min, P 0.015 - 0.040%

MECHANICAL PROPERTIES:

Tensile Strength 290 MPa / min
Yield Stress 205 Mpa
Elongation min 3%
Hardness > 100VHN

TEMPER:

Hard Drawn.

PACKAGING:

Bore internally cleaned and capped. 3/8" - 2 1/8" Internally plugged.
> 2 1/8" Externally capped.

JOINING:

Suitably connected by means of capillary solder fittings.

BENDING:

Not suitable for bending.

Manufacturing Size				Mass p/ metre (kg)	Qty per bundle	Rated Internal Working Pressure (PSI)			
OD (Inch)	OD (mm)	WT (Inch)	WT (mm)			150°F	200°F	300°F	400°F
Refrigeration Lengths - Hard Drawn - Straight Lengths						150°F	200°F	300°F	400°F
1/4"	6.35	0.020	0.61	0.098	20	760	760	739	694
3/8"	9.53	0.024	0.61	0.152	10	1390	1390	1349	1268
1/2"	12.70	0.024	0.61	0.206	10	1028	1028	998	938
5/8"	15.88	0.028	0.71	0.302	10	957	957	929	874
3/4"	19.05	0.028	0.71	0.365	10	793	793	770	723
7/8"	22.23	0.032	0.81	0.486	10	776	776	753	708
1 1/8"	28.58	0.036	0.91	0.705	5	677	677	657	617
1 3/8"	34.93	0.040	1.02	0.968	5	614	614	596	560
1 5/8"	41.28	0.048	1.22	1.368	4	623	623	605	569
2 1/8"	53.98	0.056	1.42	2.090	3	555	555	538	506
2 5/8"	66.68	0.064	1.63	2.969	1	512	512	497	467
3 1/8"	79.38	0.070	1.78	3.868	1	470	470	456	429
3 5/8"	92.08	0.080	2.03	5.118	1	463	463	449	422
4 1/8"	104.78	0.095	2.41	6.908	1	483	483	469	441

AVAILABLE IN 19FT (5.800M) AND 20FT (6.096M) LENGTHS.

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APPLICATION:

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

MATERIAL:

C12200, Cu 99.9%min, P 0.015 - 0.040%

MECHANICAL PROPERTIES:

Tensile Strength 290 MPa / min
Yield Stress 205 Mpa
Elongation min 3%
Hardness > 100VPN

TEMPER:

Hard Drawn.

PACKAGING:

Bore internally cleaned and capped. 3/8" - 2 1/8" Internally plugged.
> 2 1/8" Externally capped.

JOINING:

Suitably connected by means of capillary solder fittings.

BENDING:

Not suitable for bending.

PRESSURE RATINGS

Pressure Ratings and Allowable Stresses



THE ALLOWABLE INTERNAL PRESSURE FOR ANY COPPER TUBE IN SERVICE IS BASED ON THE BARLOW FORMULA FOR THIN-WALLED, HOLLOW CYLINDERS USED IN THE ASME B31 CODE, FOR PRESSURE PIPING.

THE VALUE OF 'S' IS THE ALLOWABLE DESIGN STRENGTH FOR CONTINUOUS LONG-TERM SERVICE OF THE TUBE, AS DETERMINED BY THE ASME BOILER AND PRESSURE VESSEL CODE, SECTION 1 - MATERIALS.

ALLOWABLE STRESSES FOR ANNEALED AND DRAWN TEMPER COPPER TUBE ARE SHOWN IN THE TABLE BELOW. THEY ARE ONLY A SMALL FRACTION OF COPPER'S ULTIMATE TENSILE OR BURST STRENGTH. IN SYSTEM DESIGN, JOINT RATINGS MUST ALSO BE CONSIDERED, AS THE LOWER OF THE TWO RATINGS (TUBE OR JOINT) WILL GOVERN THE INSTALLATION. THE RATED JOINT STRENGTH IN SOLDERED TUBE SYSTEMS OFTEN GOVERNS DESIGN. HOWEVER, ANNEALED RATINGS MUST BE USED IN BRAZED SYSTEMS SINCE THE BRAZING OPERATION MAY ANNEAL THE TUBE NEAR THE JOINTS.

ALLOWABLE STRESSES FOR COPPER TUBE AS A FUNCTION OF TEMP.

Temp (F)	Allowable Stress (Psi)	
	Annealed	Hard Drawn
100	6000	10300
150	5100	10300
200	4900	10300
250	4800	10300
300	4700	10000
350	4000	9700
400	3000	9400

Barlow formula for thin walled, hollow cylinders

Conversion Factors

$$P = \frac{2st}{D - 0.08t}$$

P = Allowable Pressure
S = Allowable Stress
t = Wall Thickness
D = Outside Diameter

STRESS:

Psi x 0.006895 = MPa
MPa x 145.04 = Psi

TEMPERATURE:

F = [(F - 32) / 1.8]C
C = [(C - 1.8) / 32]F



Tube Marking	Nominal Diameter		Nominal Diameter		Theoretical Mass (kg/m)	Quantity Per Bundle
	OD mm	WT mm	OD inch	WT Inch		
1/4"	9.53	0.89	3/8"	0.035	0.215	20
3/8"	12.70	1.24	1/2"	0.049	0.398	10
1/2"	15.88	1.24	5/8"	0.049	0.508	10
5/8"	19.05	1.24	3/4"	0.049	0.618	10
3/4"	22.23	1.65	7/8"	0.065	0.951	10
1"	28.58	1.65	1 1/8"	0.065	1.244	5
1 1/4"	34.93	1.65	1 3/8"	0.065	1.538	5
1 1/2"	41.28	1.83	1 5/8"	0.072	2.021	4
2"	53.98	2.11	2 1/2"	0.083	3.064	3
2 1/2"	66.68	2.41	2 5/8"	0.095	4.337	1
3"	79.38	2.77	3 1/8"	0.109	5.942	1
3 1/2"	92.08	3.05	3 5/8"	0.120	7.603	1
4"	104.78	3.40	4 1/8"	0.134	9.651	1

AVAILABLE IN 19FT (5.800M) AND 20FT (6.096M) LENGTHS.

GENERAL SPECIFICATIONS

APPLICATION:

A seamless copper tube suitable for general plumbing and similar conveyance of fluids in domestic water service and distribution, solar heating and fire protection.

QUALITY:

A quality product mainly supplied in the "as drawn" temper in straight lengths which have been individually non-destructively tested.

MECHANICAL PROPERTIES:

Tensile Strength 290 MPa / min
Yield Stress 205 Mpa
Elongation min 3%
Hardness > 100VPN

TEMPER:

Hard Drawn.

PACKAGING:

Bundled and Plastic wrapped.

JOINING:

These tubes are suitably connected by means of capillary solder fittings.

BENDING:

Not suitable for bending. Use with capillary fittings.

Tube Marking	Nominal Diameter		Nominal Diameter		Theoretical Mass (kg/m)	Quantity Per Bundle
	OD mm	WT mm	OD inch	WT Inch		
1/4"	9.53	0.76	3/8"	0.030	0.184	20
3/8"	12.70	0.89	1/2"	0.035	0.294	10
1/2"	15.88	1.02	5/8"	0.040	0.424	10
5/8"	19.05	1.07	3/4"	0.042	0.539	10
3/4"	22.23	1.14	7/8"	0.045	0.673	10
1"	28.58	1.27	1 1/8"	0.050	0.971	5
1 1/4"	34.93	1.40	1 3/8"	0.055	1.314	5
1 1/2"	41.28	1.52	1 5/8"	0.060	1.692	4
2"	53.98	1.78	2 1/8"	0.070	2.602	3
2 1/2"	66.68	2.03	2 5/8"	0.080	3.675	1
3"	79.38	2.29	3 1/8"	0.090	4.943	1
3 1/2"	92.08	2.54	3 5/8"	0.100	6.368	1
4"	104.78	2.79	4 1/8"	0.110	7.967	1

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Hard Drawn.

PACKAGING:

Bundled and Plastic wrapped.

JOINING:

These tubes are suitably connected by means of capillary solder fittings.

BENDING:

Not suitable for bending. Use with capillary fittings.



Tube Marking	Nominal Diameter		Nominal Diameter		Theoretical	Quantity Per Bundle
	OD mm	WT mm	OD inch	WT Inch	Mass (kg/m)	
3/8"	12.70	0.64	1/2"	0.025	0.216	10
1/2"	15.88	0.71	5/8"	0.028	0.302	10
5/8"	19.05	0.76	3/4"	0.030	0.389	10
3/4"	22.23	0.81	7/8"	0.032	0.486	10
1"	28.58	0.89	1 1/8"	0.035	0.690	5
1 1/4"	34.93	1.07	1 3/8"	0.042	1.014	5
1 1/2"	41.28	1.24	1 5/8"	0.049	1.390	4
2"	53.98	1.47	2 1/8"	0.058	2.161	3
2 1/2"	66.68	1.65	2 5/8"	0.065	3.004	1
3"	79.38	1.83	3 1/8"	0.072	3.974	1
3 1/2"	92.08	2.11	3 5/8"	0.083	5.315	1
4"	104.78	2.41	4 1/8"	0.095	6.908	1

AVAILABLE IN 19FT (5.800M) AND 20FT (6.096M) LENGTHS.

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Bundled and Plastic wrapped.

JOINING:

These tubes are suitably connected by means of capillary solder fittings.

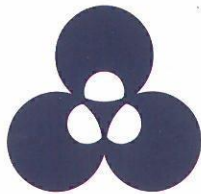
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