



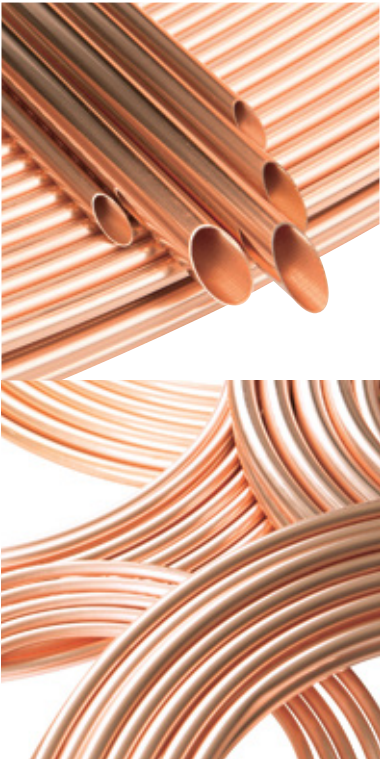
NUNGWON METAL IND. CO., LTD.
366, Geurugogae-Ro, Eunhyeon-Myeon, Yangju-si, Gyeonggi-do,
South Korea Zip Code : 11431



THE WORLD CLASS **COPPER TUBE**
MANUFACTURER IN KOREA



**THE WORLD CLASS COPPER TUBE MANUFACTURER
IN KOREA**





MAKING LIFE BETTER WITH COPPER

Established in 1986, NWM was designed to supply tube for its sister company Jungwoo fittings, and to sell tube products throughout the Asian market. By increasing production each year since opening, NWM has been able to meet increasing demands. In 2006 NWM acquired a second tube mill facility, giving a combined capacity in excess of 70,000 metric tons, and the ability to produce a range of products from Level wound coil to pancake coil, utility coil, and straight lengths. NWM operates both cast and roll and extrusion processes, and a range of copper tube product from 4.76mm to 307.98mm (3/16" ~ 12"). NWM currently supply customers for tube in over 30 countries worldwide.



HEADQUARTER / SEOUL OFFICE

431, Cheonggyecheon-ro, Dongdaemun-gu, Seoul, South Korea
Zip Code : 02586

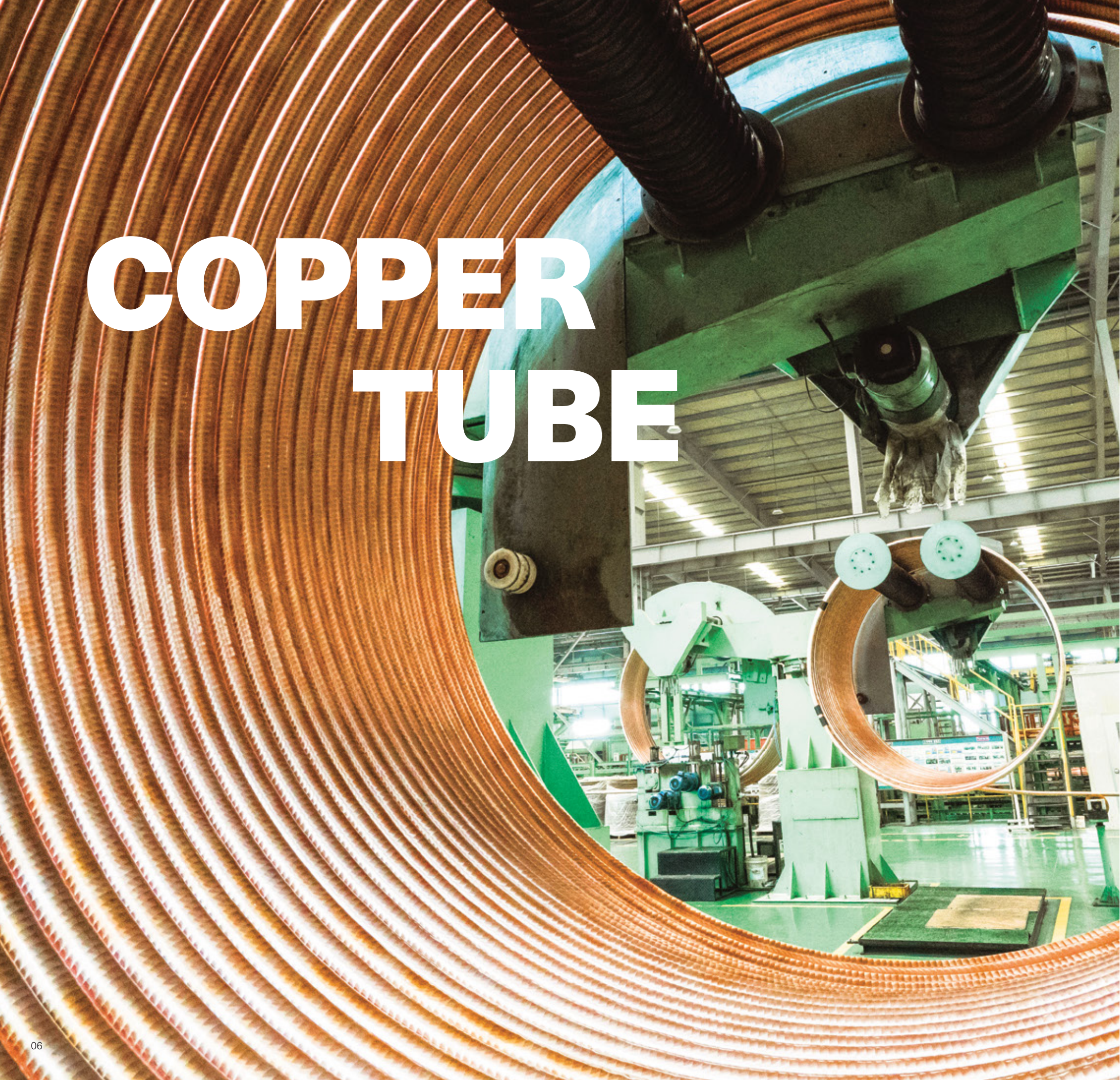
FACTORY

366, Geurugogae-ro, Eunhyeon-myeon, Yangju-si, Gyeonggi-do, South Korea
Zip Code : 11431

NWM OVERSEAS SALES DEPT.

sales@nwmmetal.com
TEL : +82-2-3290-9088 FAX : +82-2-2231-9055

www.nwmmetal.com



COPPER TUBE

Thank you for your interest in NWM and our products. Since our establishment in 1986, our primary commitment has been, and remains, to manufacture the highest quality copper products. With over 30 years of experience and focus in the copper industry, we are very proud to be at the forefront of manufacturing excellence. In addition to becoming the Korean copper market leader, we also actively export to over 30 countries worldwide. Global certificates for our products, together with the development of our facilities and capability, have enabled us to develop our business in North and South America, Europe, Middle East, Asia, Oceania and Africa. With our highly experienced engineering team, NWM manufactures both its own machinery and tooling on site. Equipped with state-of-the-art manufacturing facilities, NWM is able to produce many standard or non-standard copper products to meet customers' various flow control application requirements (water, gas, sanitation, air-conditioning, heating, and bespoke plant fittings). The combination of 30 years of market-leading experience, excellence in manufacturing, and assured global quality certificates guarantees consistency and reliability for our business partners both domestically and worldwide. We look forward to continued partnership with our customers and to welcoming new partners to NWM, supported by our continued commitment to quality and service.

Founder & Chairman
Kwangwon Lee

HISTORY

1980

- 1986. 03. Established "DONGKWANG METAL CO."
(produced Seamless Copper Water Tubes)
- 1989. 01. Corporate name changed to "SHIN HAN METAL IND.CO."

1990

- 1993. 11. Plant moved to Yangju city, Kyeonggi-Do, Korea.
- 1994. 07. Appointed as regional industrial complex
- 1995. 10. Seoul Office established : NUNGDO BLDG., SHINSEOLDONG,
DONGDAEMOON-GU, SEOUL, KOREA
- 1996. 03. Renamed to "NUNGWON METAL Ind.Co.,Ltd."
- conversion to Corporation

2000

- 2000. 01. Awarded "Exporting USD 10 Million Sales"
- 2000. 12. Increased Capital (from USD 10 Million to
10.5 Million)
- 2004. 11. Awarded "Exporting USD 30 Million Sales" by
Ministry of Commerce Industry and Energy
- 2005. 10. Awarded Gold Medal for "Korea Best Practice
Skill Contest"
- 2006. 06. Awarded prize for "Honorable industrial safety
supervisor"

2010

- 2010. 11. Awarded "Exporting USD 100 Million Sales"
by Ministry of Commerce Industry and Energy
- 2011. 10. Awarded for its distinct relations between labor and corporation
by Industrial Bank of Korea
- 2011. 11. Awarded "Exporting USD 200 Million Sales" by Ministry of
Commerce Industry and Energy
- 2014. 04. Forbes CEO Award.
- 05. Achieved KiteMark certificate

- 2006. 07. Completed Automatic Equipment at 2nd plant
- 2006. 09. Awarded Gold Prize for "2006 Quality Management
Contest in Korea"
- 2006. 11. Awarded "Prime Minister's Prize" & "Exporting
USD 70 Million Sales" by Ministry of Commerce
Industry and Energy
- 2007. 01. Awarded "Global Standard Management Award"
for Product Quality Management



CONTENTS

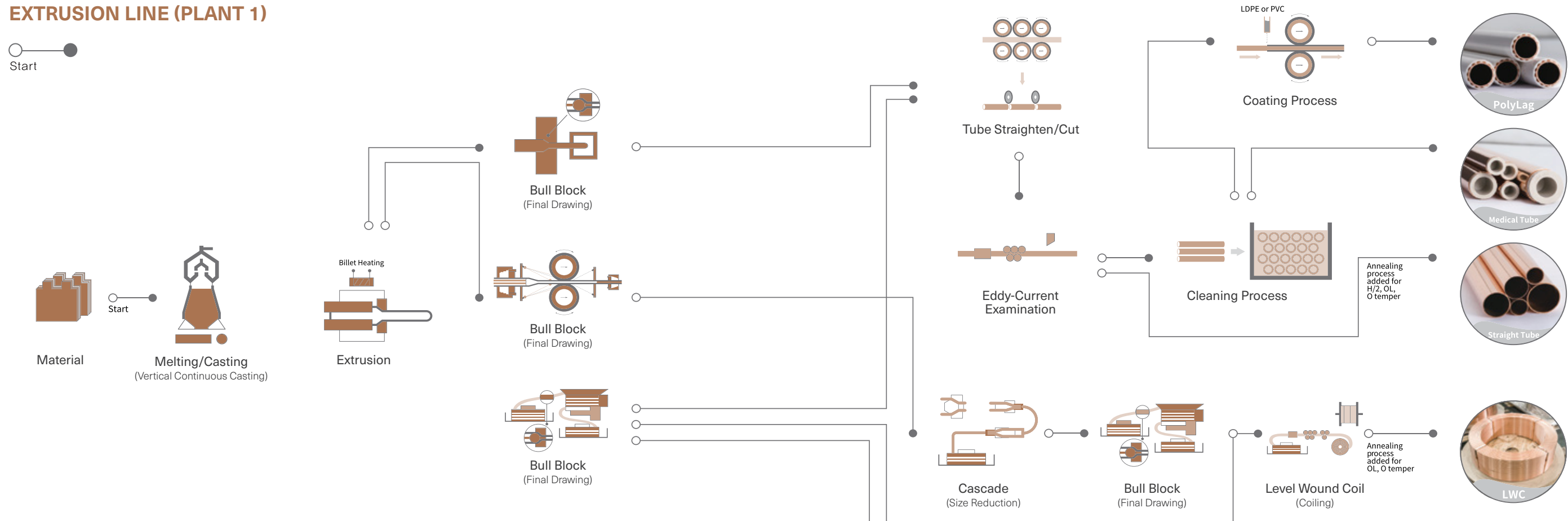
Message From Chairman	06
History	08
Manufacturing Process	12
Product List	12
Mechanical Properties	14
Size Range	15
Standard Product	
▪ ASTM	
- ASTM B88	16
- ASTM B280	18
- ASTM B819	20
- ASTM B306	21
- ASTM B837	22
▪ BS EN	
- BS EN 12735	23
- BS EN 1057	24
- BS EN 13348	25
▪ AS/NZS1571	26
▪ AS1432	27
▪ JIS H3300	28
Customized Product	
▪ LWC	29
▪ Inner Grooved Tube	30
▪ PolyLag	31
▪ Hexagonal/Octagonal	32
Certificates	34

MANUFACTURING PROCESS

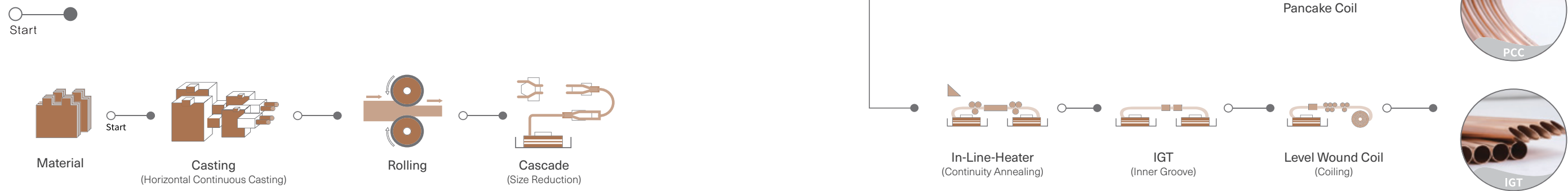
PROCESS

PROCESS

EXTRUSION LINE (PLANT 1)



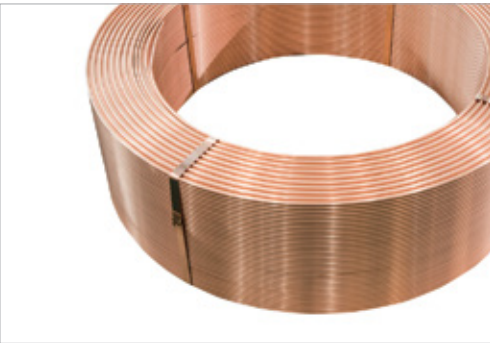
CAST & ROLL LINE (PLANT 2)



PRODUCT LIST

○ Level Wound Coil

- Temper : O, OL, H
- Size : 4.76mm ~ 28.58mm (3/16"OD ~ 1-1/8"OD)
- Incising available
- Packing : Bobbin (Reel) / No-Bobbin (Eye-to-sky)
- Coil weight : 110Kg ~ 300Kg
240 lb ~ 660 lb



○ Soft Coils = pancake coil

- Temper : O
- Size : 6.35mm~28.58mm (1/4"OD~1-1/8"OD)
- Length : Standard 15m / 30m / 50ft / 60ft / 100ft
- Incising & Ink Marking available
- Packing : NWM Carton box
Plastic wrap + label
Outer Cap / Inner Cap
- UL 700 psi Certified Refrigeration Coil



○ Inner Grooved Tube

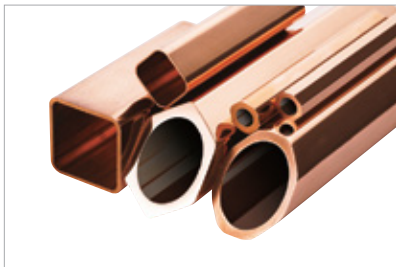
- Temper : OL
- Size : 5mm ~ 12.7mm (5mm ~ 1/2"OD)
- Packing : Center-feed / Bobbin (Reel)
- Coil weight : 110kg ~ 220kg
240lb ~ 485lb



○ Bunch Coil



○ Hex/Octagonal Tube



○ Billet



○ Straight Tube

- Temper : O, OL, H, 1/2H
- Size : 6mm ~ 307.98mm (6mm ~ 12-1/8"OD)
- Incising available
- Packing : Bundle / Wooden Box
- Length : Various



○ ACR/Medical Straight Tube

- Temper : H
- Size : 8mm ~ 200mm (3/8"OD ~ 8-1/8"OD)
- Length : Standard 3m / 6m / 10ft / 20ft
- Incising & Ink Marking available
- Packing : Bundle, Wooden box, Inner cap



○ Polylagged Tube / Plastic Coated Tube

- Temper : H, 1/2H
- Size : 9.52mm ~ 108mm
- Length : Standard 3m / 6m / 10ft / 20ft
- Coil : Standard 15m / 20m / 30m
- Ink Marking available
- Packing : Bundle, Wooden Box
- LDPE White Sleeve or PVC Green / Yellow / Purple Sleeve



○ Packaging



LWC - Bobbin



PCC - Carton Box



S/Length - Bundle



S/Length - Wooden Box

MECHANICAL PROPERTIES

MECHANICAL PROPERTIES

Standard	UNS No.	Copper Alloy	Temper		Tensile Strength ^{Mpa}	Elongation %	Hardness	Grain Size (mm)
KS, JIS	C1220 C1201	DHP DLP	O	Soft Annealed	205 Max	over 40	HR 15T 60 Max	0.025-0.060
			OL	Light Annealed			HR 15T 65 Max	0.040 Max
			1/2H	Half Hard	245-325		HR 30T 30-60	
			H	Drawn	315 Min 275 Min 255 Min		HR 30T 55 Min (apply to below 25mm only)	
ASTM B88 ASTM B280	C12200	DHP	O60	Soft Annealed	205 Min		HRF 50 Max	0.040 Min
			O50	Light Annealed			HRF 55 Max	0.040 Max
			H58	Drawn	250 Min		HR30T 30 Min	
AS1432 AS/NZS1571	C12200	C1220T	Ann	Annealed			HV 70 Max	
			BQ	Bendable Quality			HV 80-100	
			HD	Drawn			HV 100 Min	
EN1057 EN12735-1	C12200 CW024A	DHP	R220	Annealed	220 Min	40 Min	HV5 40-70	
			R250	Half Hard	250 Min	30 Min 20 Min	HV5 75-100	
			R290	Hard	290 Min	3 Min	HV5 100 Min	

OTYPES OF COPPER TUBE IS GROUPED

By Chemical	DHP	High Phosphorus Deoxidized (P:0.015%~0.040%)
	DLP	Low Phosphorus Deoxidized (P:0.004%~0.015%)
By Temper	O	Annealed as "soft" tube
	OL	Annealed as "light" tube
	1/2H	Half Hard is referred to as "R250, 1/2H, Bendable"
	H	Drawn temper tube is often referred to as "hard" tube
By Use	Water Tube	Domestic water service and distribution
	ACR Tube	Air-conditioning and refrigeration field service
	Condenser Tube	Heat exchange & fin tube
	DWV Tube	Drain, waste and sewage service
	GAS Tube	Natural gas & liquified petroleum gas fuel distribution service
By Shape	Straight Length	Normal length of S/T is 6m (~200mm OD), 4m (200~250mm OD), 3m (250~308mm OD)
	- PanCakeCoil	15, 18, 30M / COIL
	- Bunch Coil	150~440KG/ROLL
	- LevelWoundCoil	110~300KG/ROLL
	Inner Grooved Tube	110~220KG/ROLL

SIZE RANGE

NWM produces full range of copper tube associated with Japanese, European, American, Australian and Korean Standard

OD	Available Wall Thickness			Phosphorus Alloy											
	S/T, LWC Max	S/T, LWC Min	IGT	DLP(C12000) : Low Phosphorus Alloy						DHP(C12200) : High Phosphorus Alloy					
				Packing Method											
				Bundle or Wooden Box				Bobbin or No Bobbin + Pallet				Carton + Pallet			
				Products											
				Straight Tube			LWC			IGT			PCC		
H	1/2H	O	H	OL	O	H	OL	O	H	OL	O				
4.00	1.00	0.27		X	X	X	△	△	△	X	X	X	X	X	X
4.76	1.00	0.27		X	X	X	△	△	△	X	X	X	X	X	X
5.00	1.00	0.27	0.20	X	X	X	●	●	●	●	●	●	X	●	●
6.35	1.20	0.27	0.20	●	●	●	●	●	●	●	●	●	X	●	●
7.00	1.40	0.27	0.22	●	●	●	●	●	●	●	●	●	X	●	●
7.94	1.50	0.27	0.25	●	●	●	●	●	●	●	●	●	X	●	●
9.52	1.65	0.27	0.28	●	●	●	●	●	●	●	●	●	X	●	●
12.70	2.00	0.37		●	●	●	●	●	●	X	X	X	X	●	●
15.88	2.00	0.40		●	●	●	●	●	●	X	X	X	X	●	●
19.05	2.00	0.50		●	●	●	●	●	●	X	X	X	X	●	●
22.22	3.11	0.55		●	●	●	●	●	●	X	X	X	X	●	●
25.40	3.50	0.60		●	●	●	●	●	●	X	X	X	X	●	●
28.58	6.11	0.60		●	●	●	●	●	●	X	X	X	X	●	●
31.75	8.00	0.70		●	●	●	X	X	X	X	X	X	X	X	X
34.92	8.00	0.70		●	●	●	X	X	X	X	X	X	X	X	X
38.10	8.00	0.80		●	●	●	X	X	X	X	X	X	X	X	X
41.28	8.00	0.80		●	●	●	X	X	X	X	X	X	X	X	X
50.80	8.00	0.80		●	●	●	X	X	X	X	X	X	X	X	X
53.98	8.00	0.90		●	●	●	X	X	X	X	X	X	X	X	X
60.00	8.00	0.91		●	●	●	X	X	X	X	X	X	X	X	X
63.50	8.00	0.91		●	●	●	X	X	X	X	X	X	X	X	X
66.68	8.00	1.09		●	●	●	X	X	X	X	X	X	X	X	X
76.20	10.00	1.22		●	●	●	X	X	X	X	X	X	X	X	X
79.38	10.00	1.09		●	●	●	X	X	X	X	X	X	X	X	X
83.54	10.00	2.01		●	●	●	X	X	X	X	X	X	X	X	X
88.90	10.00	1.40		●	●	●	X	X	X	X	X	X	X	X	X
101.60	10.00	1.22		●	●	●	X	X	X	X	X	X	X	X	X
104.78	10.00	1.47		●	●	●	X	X	X	X	X	X	X	X	X
108.00	10.00	1.50		●	●	●									
127.00	10.00	1.42		●	X	●	X	X	X	X	X	X	X	X	X
130.18	10.00	1.83		●	X	●	X	X	X	X	X	X	X	X	X
133.00	10.00	1.50		●	X	●	X	X	X	X	X	X	X	X	X
152.40	10.00	1.63		●	X	●	X	X	X	X	X	X	X	X	X
155.58	10.00	1.83		●	X	●	X	X	X	X	X	X	X	X	X
159.00	10.00	2.00		●	X	●	X	X	X	X	X	X	X	X	X
180.00	10.00	2.00		●	X	●	X	X	X	X	X	X	X	X	X
203.20	10.00	2.03		●	X	●	X	X	X	X	X	X	X	X	X
206.38	10.00	2.77		●	X	●	X	X	X	X	X	X	X	X	X
207.01	10.00	1.91		●	X	●	X	X	X	X	X	X	X	X	X
257.18	10.00	4.00		●	X	●	X	X	X	X	X	X	X	X	X
307.98	10.29	4		●	X	●	X	X	X	X	X	X	X	X	X
310	10.29	4		●	X	●	X	X	X	X	X	X	X	X	X

ASTM B88

Seamless Copper Water Tube



I. SIZE TABLE

Type	OD			Wall Thickness		WEIGHT		Temper Quality	Product Type	Safe Working Pressure at service temperature	
	Inch		mm	Inch	mm	kg/m	lb/ft			65°C	149°F
	Nom	Act								kPa	psi
K	1/4	3/8	9.53	0.035	0.889	0.216	0.145	O60, H58	LWC, PCC, S/T	7,090	1,020
	3/8	1/2	12.70	0.049	1.245	0.400	0.269	O60, H58	LWC, PCC, S/T	7,480	1,080
	1/2	5/8	15.88	0.049	1.245	0.512	0.344	O60, H58	LWC, PCC, S/T	5,880	850
	5/8	3/4	19.05	0.049	1.245	0.622	0.418	O60, H58	LWC, PCC, S/T	4,850	700
	3/4	7/8	22.23	0.065	1.651	0.954	0.641	O60, H58	LWC, PCC, S/T	5,550	800
	1	1 1/8	28.58	0.065	1.651	1.248	0.839	O60, H58	LWC, PCC, S/T	4,260	610
	1 1/4	1 3/8	34.93	0.065	1.651	1.543	1.037	H58	S/T	3,450	500
	1 1/2	1 5/8	41.28	0.072	1.829	2.026	1.361	H58	S/T	3,230	460
	2	2 1/8	53.98	0.083	2.108	3.070	2.063	H58	S/T	2,830	410
	2 1/2	2 5/8	66.68	0.095	2.413	4.355	2.926	H58	S/T	2,620	380
	3	3 1/8	79.38	0.109	2.769	5.957	4.003	H58	S/T	2,520	360
	3 1/2	3 5/8	92.08	0.120	3.048	7.620	5.120	H58	S/T	2,390	340
	4	4 1/8	104.78	0.134	3.404	9.690	6.511	H58	S/T	2,340	340
	5	5 1/8	130.18	0.160	4.064	14.392	9.671	H58	S/T	2,250	320
	6	6 1/8	155.58	0.192	4.877	20.638	13.868	H58	S/T	2,260	320
	8	8 1/8	206.38	0.271	6.883	38.558	25.909	H58	S/T	2,410	340
	10	10 1/8	257.18	0.338	8.585	59.928	40.269	H58	S/T	2,410	350
	12	12 1/8	307.98	0.405	10.287	85.991	57.783	H58	S/T	2,410	350
L	1/4	3/8	9.53	0.030	0.762	0.188	0.126	O60, H58	LWC, PCC, S/T	6,010	870
	3/8	1/2	12.70	0.035	0.889	0.295	0.198	O60, H58	LWC, PCC, S/T	5,220	750
	1/2	5/8	15.88	0.040	1.016	0.424	0.285	O60, H58	LWC, PCC, S/T	4,740	680
	5/8	3/4	19.05	0.042	1.067	0.539	0.362	O60, H58	LWC, PCC, S/T	4,120	590
	3/4	7/8	22.23	0.045	1.143	0.677	0.455	O60, H58	LWC, PCC, S/T	3,770	540
	1	1 1/8	28.58	0.050	1.270	0.974	0.654	O60, H58	LWC, PCC, S/T	3,240	470
	1 1/4	1 3/8	34.93	0.055	1.397	1.315	0.884	H58	S/T	2,900	420
	1 1/2	1 5/8	41.28	0.060	1.524	1.701	1.143	H58	S/T	2,670	380
	2	2 1/8	53.98	0.070	1.778	2.606	1.751	H58	S/T	2,380	340
	2 1/2	2 5/8	66.68	0.080	2.032	3.689	2.479	H58	S/T	2,190	310
	3	3 1/8	79.38	0.090	2.286	4.949	3.325	H58	S/T	2,070	300
	3 1/2	3 5/8	92.08	0.100	2.540	6.386	4.291	H58	S/T	1,980	280
	4	4 1/8	104.78	0.110	2.794	8.001	5.377	H58	S/T	1,910	270
	5	5 1/8	130.18	0.125	3.175	11.323	7.609	H58	S/T	1,750	250
	6	6 1/8	155.58	0.140	3.556	15.180	10.200	H58	S/T	1,630	230
	8	8 1/8	206.38	0.200	5.080	28.715	19.295	H58	S/T	1,760	250
	10	10 1/8	257.18	0.250	6.350	44.725	30.053	H58	S/T	1,770	250
	12	12 1/8	307.98	0.280	7.112	60.085	40.374	H58	S/T	1,650	240

※ Pressure ratings for K, L, M DWV and refrigeration tube are calculated for annealed tube and for use when jointing is made using a heat source. Hard drawn tube has higher pressure ratings which will only be maintained when non-heat source joining methods are used. This information is key when systems are designed.

ASTM B88

Seamless Copper Water Tube



I. SIZE TABLE

Type	OD			Wall Thickness		WEIGHT		Temper Quality	Product Type	Safe Working Pressure at service temperature	
	Inch		mm	Inch	mm	kg/m	lb/ft			65°C	149°F
	Nom	Act								kPa	psi
M	3/8	1/2	12.70	0.025	0.635	0.215	0.145	O60, H58	LWC, PCC, S/T	3,660	530
	1/2	5/8	15.88	0.028	0.711	0.303	0.204	O60, H58	LWC, PCC, S/T	3,260	470
	5/8	3/4	19.05	0.030	0.762	0.391	0.263	O60, H58	LWC, PCC, S/T	2,900	420
	3/4	7/8	22.23	0.032	0.813	0.489	0.329	O60, H58	LWC, PCC, S/T	2,650	380
	1	1 1/8	28.58	0.035	0.889	0.691	0.464	O60, H58	LWC, PCC, S/T	2,240	320
	1 1/4	1 3/8	34.93	0.042	1.067	1.015	0.682	H58	S/T	2,200	310
	1 1/2	1 5/8	41.28	0.049	1.245	1.400	0.940	H58	S/T	2,170	310
	2	2 1/8	53.98	0.058	1.473	2.172	1.459	H58	S/T	1,960	280
	2 1/2	2 5/8	66.68	0.065	1.651	3.015	2.026	H58	S/T	1,770	250
	3	3 1/8	79.38	0.072	1.829	3.983	2.676	H58	S/T	1,650	230
	3 1/2	3 5/8	92.08	0.083	2.108	5.326	3.579	H58	S/T	1,640	230
	4	4 1/8	104.78	0.095	2.413	6.936	4.661	H58	S/T	1,650	230
	5	5 1/8	130.18	0.109	2.769	9.907	6.657	H58	S/T	1,520	220
	6	6 1/8	155.58	0.122	3.099	13.269	8.916	H58	S/T	1,420	200
	8	8 1/8	206.38	0.170	4.318	24.500	16.463	H58	S/T	1,490	210
	10	10 1/8	257.18	0.212	5.385	38.074	25.584	H58	S/T	1,490	210
	12	12 1/8	307.98	0.254	6.452	54.628	36.708	H58	S/T	1,500	210

II. MARKING AND INCISING

OD SIZE	WT TYPE	Standard Marking		Note
		Ink Marking (Durable)	Incising (Permanent)	
Full range	Type K	TradeMark, Type K, Origin	TradeMark, Type K	Green Ink
	Type L	TradeMark, Type L, Origin	TradeMark, Type L	Blue Ink
	Type M	TradeMark, Type M, Origin	TradeMark, Type M	Red Ink

※ Warnock hersey logo or NSF61 logo and other information can be marked by mutual agreement, the standard and the license agreement

III. FINISHING

CLEANLINESS	END-CAP
Unrequired by the Standard	End-capped by a buyer's option



ASTM B280

Seamless Copper Tube for
Air Conditioning and Refrigeration Field Service



I. SIZE TABLE OF B280 STRAIGHT TUBE

※ Yellow Block : UL 700Psi Certified Size



Type	OD		Wall Thickness		WEIGHT		Temper Quality	Safe Working Pressure at service temperature	
	Inch	mm	Inch	mm	kg/m	lb/ft		65°C	149°F
								kPa	psi
L	3/8	9.53	0.030	0.762	0.188	0.126	H58	6,010	870
	1/2	12.70	0.035	0.889	0.295	0.198	H58	5,220	750
	5/8	15.88	0.040	1.016	0.424	0.285	H58	4,740	680
	3/4	19.05	0.042	1.067	0.539	0.362	H58	4,120	590
	7/8	22.23	0.045	1.143	0.677	0.455	H58	3,770	540
	1 1/8	28.58	0.050	1.270	0.974	0.654	H58	3,240	470
	1 3/8	34.93	0.055	1.397	1.315	0.884	H58	2,900	420
	1 5/8	41.28	0.060	1.524	1.701	1.143	H58	2,670	380
	2 1/8	53.98	0.070	1.778	2.606	1.751	H58	2,380	340
	2 5/8	66.68	0.080	2.032	3.689	2.479	H58	2,190	310
	3 1/8	79.38	0.090	2.286	4.949	3.325	H58	2,070	300
	3 5/8	92.08	0.100	2.540	6.386	4.291	H58	1,980	280
	4 1/8	104.78	0.110	2.794	8.001	5.377	H58	1,910	270
	5 1/8	130.18	0.125	3.175	11.323	7.609	H58	1,750	250
6 1/8	155.58	0.140	3.556	15.180	10.200	H58	1,630	230	
8 1/8	206.38	0.200	5.080	28.715	19.295	H58	1,760	250	
K	3/8	9.53	0.035	0.889	0.216	0.145	H58	7,090	1,020
	1/2	12.70	0.049	1.245	0.400	0.269	H58	7,480	1,080
	5/8	15.88	0.049	1.245	0.512	0.344	H58	5,880	850
	3/4	19.05	0.049	1.245	0.622	0.418	H58	4,850	700
	7/8	22.23	0.065	1.651	0.954	0.641	H58	5,550	800
	1 1/8	28.58	0.065	1.651	1.248	0.839	H58	4,260	610
	1 3/8	34.93	0.065	1.651	1.543	1.037	H58	3,450	500
	1 5/8	41.28	0.072	1.829	2.026	1.361	H58	3,230	460
	2 1/8	53.98	0.083	2.108	3.070	2.063	H58	2,830	410
	2 5/8	66.68	0.095	2.413	4.355	2.926	H58	2,620	380
	3 1/8	79.38	0.109	2.769	5.957	4.003	H58	2,520	360
	3 5/8	92.08	0.120	3.048	7.620	5.120	H58	2,390	340
	4 1/8	104.78	0.134	3.404	9.690	6.511	H58	2,340	340
	5 1/8	130.18	0.160	4.064	14.392	9.671	H58	2,250	320
	6 1/8	155.58	0.192	4.877	20.638	13.868	H58	2,260	320
	8 1/8	206.38	0.271	6.883	38.558	25.909	H58	2,410	340

※ Pressure ratings for K, L, M DWV and refrigeration tube are calculated for annealed tube and for use when jointing is made using a heat source. Hard drawn tube has higher pressure ratings which will only be maintained when non-heat source joining methods are used. This information is key when systems are designed.



II. SIZE TABLE OF PANCAKE COIL

※ Yellow Block : UL 700Psi Certified Size



Type	OD		Wall Thickness (Inch/mm)		WEIGHT		Temper Quality	Safe Working Pressure at service temperature	
	Inch	mm	Inch	mm	kg/m	lb/ft		65°C	149°F
								kPa	psi
Soft Coil B280 ACR/Type L Standard	1/4	6.35	0.030	0.762	0.120	0.080	O60	9,340	1,350
	5/16	7.94	0.032	0.813	0.163	0.109	O60	7,850	1,130
	3/8	9.53	0.032	0.813	0.199	0.134	O60	6,440	930
	1/2	12.70	0.032	0.813	0.271	0.182	O60	4,750	680
	5/8	15.88	0.035	0.889	0.374	0.251	O60	4,120	590
	3/4	19.05	0.035	0.889	0.453	0.305	O60	3,410	490
	7/8	22.23	0.045	1.143	0.677	0.455	O60	3,770	540
	1 1/8	28.58	0.050	1.270	0.974	0.654	O60	3,240	470
Soft Coil B743 Economy	1/4	6.35	0.024	0.610	0.098	0.066	O60	7,320	1,060
	5/16	7.94	0.024	0.610	0.126	0.084	O60	5,760	830
	3/8	9.53	0.024	0.610	0.153	0.103	O60	4,750	680
	1/2	12.70	0.028	0.711	0.239	0.161	O60	4,120	590
	5/8	15.88	0.028	0.711	0.303	0.204	O60	3,260	470
	3/4	19.05	0.032	0.813	0.416	0.280	O60	3,110	450
	7/8	22.23	0.037	0.940	0.562	0.378	O60	3,080	440

III. MARKING AND INCISING

ITEM	PRODUCT TYPE	Standard Marking		Note
		Ink Marking (Durable)	Incising (Permanent)	
B280 STANDARD	S/TUBE	ACR, Trademark, OD, Origin	Trademark, ACR	Blue Ink
B280 TYPE K HEAVY	S/TUBE	ACR TYPE K, Trademark, OD, Origin	Trademark, ACR TYPE K	Green Ink
B280 STANDARD	COIL	Not required by standard	Trademark, ACR	Black Ink
B743 ECONOMY	COIL	Not required by standard	N/A	Black Ink

IV. FINISHING

CLEANLINESS	END-CAP
0.038g / m2	Required by the Standard



ASTM B819

Seamless Copper Tube for Medical Gas Systems

I. SIZE TABLE

※ Yellow Block : UL 700Psi Certified Size 

OD			OD Wall Thickness(Inch/mm)				Temper Quality	Product Type
Nominal	Actual		K-Type		L-Type			
Inch	Inch	mm	inch	mm	inch	mm		
1/4	3/8	9.53	0.035	0.889	0.030	0.762	H58	S/T
3/8	1/2	12.70	0.049	1.245	0.035	0.889	H58	S/T
1/2	5/8	15.88	0.049	1.245	0.040	1.016	H58	S/T
5/8	3/4	19.05	0.049	1.245	0.042	1.067	H58	S/T
3/4	7/8	22.23	0.065	1.651	0.045	1.143	H58	S/T
1	1 1/8	28.58	0.065	1.651	0.050	1.270	H58	S/T
1 1/4	1 3/8	34.93	0.065	1.651	0.055	1.397	H58	S/T
1 1/2	1 5/8	41.28	0.072	1.829	0.060	1.524	H58	S/T
2	2 1/8	53.98	0.083	2.108	0.070	1.778	H58	S/T
2 1/2	2 5/8	66.68	0.095	2.413	0.080	2.032	H58	S/T
3	3 1/8	79.38	0.109	2.769	0.090	2.286	H58	S/T
3 1/2	3 5/8	92.08	0.120	3.048	0.100	2.540	H58	S/T
4	4 1/8	104.78	0.134	3.404	0.110	2.794	H58	S/T
5	5 1/8	130.18	0.160	4.064	0.125	3.175	H58	S/T
6	6 1/8	155.58	0.192	4.877	0.140	3.556	H58	S/T
8	8 1/8	206.38	0.271	6.883	0.200	5.080	H58	S/T

II. MARKING AND INCISING

OD SIZE	TEMPER	Standard Marking		Note
		Ink Marking (Durable)	Incising (Permanent)	
		Trademark,Origin,MED	Trademark, Type K	Green Ink
Full range	H58	Trademark,Origin,MED	Trademark, Type L	Blue Ink

III. FINISHING

CLEANLINESS	END-CAP
0.038g/m2	Required by the standard



ASTM B306

Copper Drainage Tube(DWV)



I. SIZE TABLE

OD			Wall Thickness(Inch/mm)		Temper Quality	Product Type
Inch		mm				
Nom	Act		inch	mm		
1 1/4	1 3/8	34.93	0.040	1.02	H58	S/T
1 1/2	1 5/8	41.28	0.042	1.07	H58	S/T
2	2 1/8	53.98	0.042	1.07	H58	S/T
3	3 1/8	79.38	0.045	1.14	H58	S/T
4	4 1/8	104.78	0.058	1.47	H58	S/T
5	5 1/8	130.18	0.072	1.83	H58	S/T
6	6 1/8	155.58	0.083	2.11	H58	S/T
8	8 1/8	206.38	0.109	2.77	H58	S/T

II. MARKING AND INCISING

OD SIZE	Standard Marking		Note
	Ink Marking (Durable)	Incising (Permanent)	
Full range	DWV, Trademark, Origin	DWV, Trademark	Yellow Ink

III. FINISHING

CLEANLINESS	END-CAP
0.038g/m2	Required by the standard



ASTM B837

Seamless Copper Tube for Natural Gas & Liquefied Petroleum (LP) Gas Fuel Distribution Systems



I. TYPE GAS

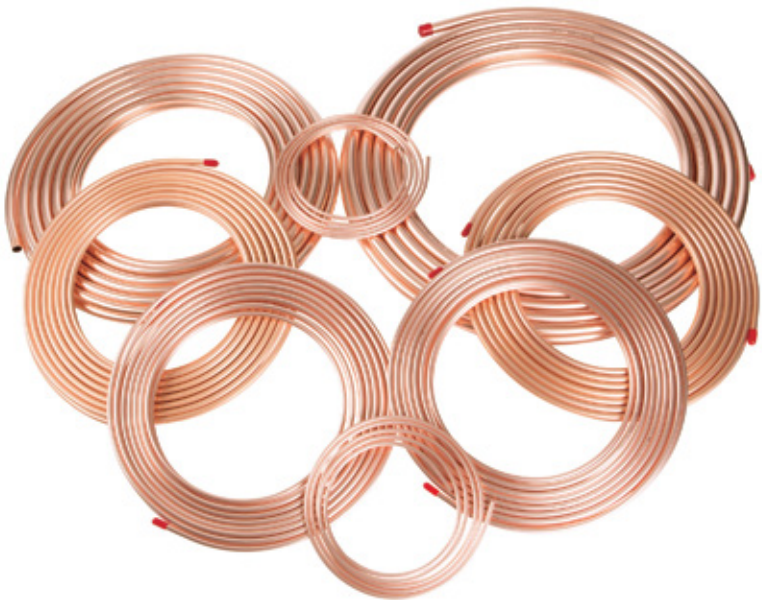
OD		OD Wall Thickness(Inch/mm)			Product Type
Inch	mm	Inch	mm	Tolerance	
Act				inch	
3/8	0.375	9.52	0.030	0.0030	PCC/ST
1/2	0.500	12.70	0.035	0.0040	PCC/ST
5/8	0.625	15.88	0.040	0.0040	PCC/ST
3/4	0.750	19.05	0.042	0.0040	PCC/ST
7/8	0.875	22.23	0.045	0.0040	PCC/ST
1 1/8	1.125	28.58	0.050	0.0050	ST

II. MARKING AND INCISING

OD SIZE	Standard Marking		Note
	Ink Marking (Durable)	Incising (Permanent)	
Full range	GAS, Trademark, Origin	GAS, Trademark	Yellow Ink

III. FINISHING

CLEANLINESS	END-CAP
Unrequired by the standard	Unrequired by the standard



BS EN 12735

Seamless, round copper tubes for air-conditioning and refrigeration

I. SIZE TABLE

OD			Nominal Wall Thickness (mm)					Temper Quality	Product Type	Maximum Working Pressure [kPa] at 65°C	
Metric	IMPERIAL Inch	mm	COIL R220		S/T R290					COIL - R220	S/T - R290
			Standard	Option1	Standard	Option1	Option2				
6.00	3/16	4.76	0.80					R220,R290	LWC	13,700	-
		6.00	0.80	1.00	0.80			R220,R290	LWC	10,500	23,100
	1/4	6.35	0.80	1.00				R220,R290	LWC, PCC, S/T	9,800	-
8.00	5/16	7.94	0.80	1.00				R220,R290	LWC, PCC, S/T	7,700	-
		8.00	0.80	1.00	0.80			R220,R290	LWC, PCC, S/T	7,600	16,800
	3/8	9.52	0.80	1.00				R220,R290	LWC, PCC, S/T	6,300	-
10.00		10.00	0.80	1.00	0.80	1.00		R220,R290	LWC, PCC, S/T	6,000	13,200
12.00		12.00	1.00		1.00			R220, R250, R290	LWC, PCC, S/T	6,300	13,800
15.00	1/2	12.70	0.80	1.00	1.00			R220, R250, R290	LWC, PCC, S/T	4,600	13,000
		15.00	1.00		1.00			R220, R250, R290	LWC, PCC, S/T	4,900	10,900
	5/8	15.88	1.00		1.00			R220, R250, R290	LWC, PCC, S/T	4,600	10,200
18.00		18.00	1.00		1.00			R220, R250, R290	LWC, PCC, S/T	4,100	9,000
22.00	3/4	19.05	1.00		1.25			R220, R250, R290	LWC, PCC, S/T	3,800	10,700
		22.00	1.00		1.00			R220, R250, R290	LWC, PCC, S/T	3,300	7,300
	7/8	22.23	1.00		1.25			R220, R250, R290	LWC, PCC, S/T	3,200	9,100
28.00	1	25.40			1.00			R220, R250, R290	LWC, PCC, S/T		6,200
		28.00			1.50			R220, R250, R290	LWC, PCC, S/T		8,600
	1 1/8	28.58			1.00	1.25		R220, R250, R290	LWC, PCC, S/T		5,500
35.00	1 3/8	34.92			1.25			R290	S/T		5,700
		35.00			1.50			R290	S/T		6,800
	1 5/8	41.28			1.25			R290	S/T		4,800
42.00		42.00			1.50			R290	S/T		5,600
54.00	2 1/8	53.97			1.25	1.65		R290	S/T		3,600
		54.00			2.00			R290	S/T		5,900
		64.00			2.00			R290	S/T		4,900
76.10	2 5/8	66.68			1.25	1.65	2.00	R290	S/T		2,900
		76.10			2.00			R290	S/T		4,100
	3 1/8	79.38			1.65	2.50		R290	S/T		3,200
	3 1/2	88.90			2.00			R290	S/T		3,500
	3 5/8	92.07			1.65	2.50		R290	S/T		2,800
	4 1/8	104.78			1.65	2.50		R290	S/T		2,400
108.00		108.00			2.50			R290	S/T		3,600

II. MARKING AND INCISING

OD SIZE	WT TYPE	Standard Marking		Note
		Ink Marking (Durable)	Incising (Permanent)	
Full range	R220, R290	EN12735-1, Trademark, OD XWT, QQYYYY		Black Ink
	R250	EN12735-1, Trademark, OD XWT I-H, QQYYYY		Black Ink

III. FINISHING

CLEANLINESS	END-CAP
10~54mm : 0.20mg/dm2	Required by the standard
64~267mm : 1.00mg/dm2	Required by the standard

BS EN 1057



Seamless, round copper tubes
for water and gas in sanitary and heating application

I. SIZE TABLE

OD	TABLE X					
	W/TH	Product Type LENGTH		Maximum Working Pressure : [Bar]		
		R250	R290	Hard	1/2H	Anneal
6	0.6	R250		160	130	100
8	0.6	R250		110	90	70
10	0.6	R250		90	70	50
12	0.6	R250		70	60	40
15	0.7	R250		70	50	40
18	0.8	R250		60	50	40
22	0.9	R250		60	50	30
28	0.9	R250		40	30	30
35	1.2	R250	R290	50	40	30
42	1.2	R250	R290	40	30	20
54	1.2	R250	R290	30	20	20
66.7	1.2		R290	20	20	10
76.1	1.5		R290	20	20	10
108	1.5		R290	20	10	10
133	1.5		R290	10	10	10
159	2.0		R290	10	10	10

- * Maximum working pressures at temperatures up to 65°C, calculated in accordance with the BS 2871 Part 1 formula. If tubes in the H and 1/2H condition are annealed, e.g. during brazing or hard soldering, annealed maximum working pressure should be referred.
- * Other sizes & thicknesses can be supplied on request.

II. MARKING AND INCISING

OD SIZE	WT TYPE	Standard Marking		Note
		Ink Marking (Durable)	Incising (Permanent)	
6~8 mm	R220, R290	OD X WT		Black Ink
10~54 mm	R220, R290	OD X WT	EN1057, Trademark, QQ-YYYY	Black Ink
	R250	OD X WT I-I	EN1057, Trademark, QQ-YYYY	Black Ink
64~267 mm	R290	OD X WT		Black Ink

III. FINISHING

CLEANLINESS	END-CAP
10~54mm : 0.20mg/dm2	Unrequired by the standard
64~267mm : 1.00mg/dm2	End-capped by a buyer's option



BS EN 13348



Seamless, round copper tubes
for medical gases or vacuum

I. SIZE TABLE

OD	TABLE X					
	W/TH	Product Type LENGTH		Maximum Working Pressure : [Bar]		
		R250	R290	Hard	1/2H	Anneal
12	0.6	R250	R290	70	60	40
15	0.7	R250	R290	70	50	40
22	0.9	R250	R290	60	50	30
28	0.9	R250	R290	40	30	30
35	1.2	R250	R290	50	40	30
42	1.2	R250	R290	40	30	20
54	1.2	R250	R290	30	20	20
66.7	1.2		R290	20	20	10
76.1	1.5		R290	20	20	10
108	1.5		R290	20	10	10
133	1.5		R290	10	10	10
159	2.0		R290	10	10	10

- * Maximum working pressures at temperatures up to 65°C, calculated in accordance with the BS 2871 Part 1 formula. If tubes in the H and 1/2H condition are annealed, e.g. during brazing or hard soldering, annealed maximum working pressure should be referred.
- * Other sizes & thicknesses can be supplied on request.

II. MARKING AND INCISING

OD SIZE	WT TYPE	Standard Marking		Note
		Ink Marking (Durable)	Incising (Permanent)	
6~8 mm	R220, R290	OD X WT		Black Ink
10~54 mm	R220, R290	OD X WT	EN13348, OD X WT, Trademark, QQ-YYYY	Black Ink
	R250	OD X WT I-I	EN13348, OD X WT, Trademark, I-I-I, QQ-YYYY	Black Ink
64~267 mm	R290	OD X WT		Black Ink

III. FINISHING

CLEANLINESS	END-CAP
10~54mm : 0.20mg/dm2	Required by the standard
64~267mm : 1.00mg/dm2	Required by the standard



AS/NZS1571

Seamless tubes
for airconditioning and refrigeration



I. SIZE TABLE

OD	Nominal Wall Thickness(mm)					Temper Quality	Product Type	Safe Working Pressure [kPa] at temperature 65°C	
ACT mm	Low-pressure		High-pressure (R410A)					Low-pressure	High-pressure
4.76	0.71					HD, Anneal	LWC	11,412	
6.35	0.71	0.81	0.91			HD, Anneal	LWC,PCC,S/T	8,235	9,545
7.94	0.71	0.81	0.91			HD, Anneal	LWC,PCC,S/T	6,442	8,465
9.52	0.71	0.81	0.91			HD, Anneal	LWC,PCC,S/T	5,296	6,103
12.7	0.71	0.81	0.91			HD,BQ,Anneal	LWC,PCC,S/T	3,899	4,482
15.88	0.91	1.02	1.22			HD,BQ,Anneal	LWC,PCC,S/T	4,002	4,516
19.05	0.91	1.02	1.07	1.14	1.22	HD,BQ,Anneal	LWC,PCC,S/T	3,306	4,190
22.22	0.91	1.14	1.22	1.40	1.63	HD,BQ,Anneal	LWC,PCC,S/T	2,817	5,203
25.4	0.91	1.22	1.63			BQ,Anneal	S/T	2,452	4,511
28.58	0.91	1.22	1.27	1.63	1.83	BQ,Anneal	S/T	1,926	4,501
31.75	0.91	1.22	2.03			BQ,Anneal	S/T	1,949	4,494
34.92	0.91	1.22	1.63	2.03		BQ,Anneal	S/T	1,768	4,063
38.1	0.91	1.22	2.29			BQ,Anneal	S/T	2,184	4,443
41.28	0.91	1.22	1.52	1.83	2.41	BQ,Anneal	S/T	1,490	4,082
50.8	1.22	1.63				BQ,Anneal	S/T	2,189	
53.98	1.22	2.11	2.64			BQ,Anneal	S/T	1,134	
66.68	1.22	1.63	2.03			BQ,Anneal	S/T	1,232	
76.2	1.63					BQ,Anneal	S/T	1,445	
79.38	2.29					BQ,Anneal	S/T	1,386	
101.6	1.63					BQ,Anneal	S/T	1,080	
104.78	2.79					BQ,Anneal	S/T	1,805	

* Blue Block : Denotes R410A rated tube

II. MARKING AND INCISING

OD SIZE	TEMPER	Standard Marking		Note
		Ink Marking (Durable)	Incising (Permanent)	
Full Range	H	AS/NZS1571 H OD X WT, Trademark		Black Ink
	BQ	AS/NZS1571 BQ OD X WT, Trademark		Black Ink
	O	AS/NZS1571 O OD X WT, Trademark		Black Ink

III. FINISHING

CLEANLINESS	END-CAP
0.20mg/dm2	R410A grade : Pink
0.20mg/dm2	Other graded : Green



AS1432

Copper tubes for plumbing,
gasfitting and drainage applications



I. SIZE TABLE

OD		Nominal Wall Thickness (mm)				Temper Quality	Product Type	Safe Working Pressure [kPa] at temperature 65°C	
DN	ACT mm	Type A	Type B	Type C	Type D			Type A	Type B
6	6.35	0.91	0.71			HD, Anneal	LWC, PCC, S/T	11,320	8,560
8	7.94	0.91	0.71			HD, Anneal	LWC, PCC, S/T	8,810	6,700
10	9.52	1.02	0.91	0.71		HD, Anneal	LWC, PCC, S/T	8,350	7,200
15	12.7	1.02	0.91	0.71		HD, BQ, Anneal	LWC, PCC, S/T	6,100	5,290
18	15.88	1.22	1.02	0.91		HD, BQ, Anneal	LWC, PCC, S/T	5,750	4,810
20	19.05	1.42	1.02	0.91		HD, BQ, Anneal	LWC, PCC, S/T	5,560	3,970
25	25.4	1.63	1.22	0.91		HD, BQ, Anneal	LWC, PCC, S/T	4,750	3,500
32	31.75	1.63	1.22		0.91	HD	S/T	3,750	2,780
40	38.1	1.63	1.22		0.91	HD	S/T	3,100	2,300
50	50.8	1.63	1.22		0.91	HD	S/T	2,310	1,710
65	63.5	1.63	1.22		0.91	HD	S/T	1,840	1,370
80	76.2	2.03	1.63		1.22	HD	S/T	1,900	1,520
90	88.9	2.03	1.63		1.22	HD	S/T	1,630	1,300
100	101.6	2.03	1.63		1.22	HD	S/T	1,500	1,200
125	127	2.03	1.63		1.42	HD	S/T	1,200	960
150	152.4	2.64	2.03		1.63	HD	S/T	1,300	1,000
200	203.2	2.64	2.03			HD	S/T	910	720

II. MARKING AND INCISING

OD SIZE	TEMPER	Standard Marking		Note
		Ink Marking (Durable)	Incising (Permanent)	
Full Range	H	Trademark, Type, DN size, AS1432, Origin	Trademark, Type, DN size, AS1432	Type A-Green, Type B-Blue
	BQ	Trademark, Type, DN size, AS1432, BQ, Origin	Trademark, Type, DN size, AS1432, BQ	Type C-Red, Type D-Black
	ANNEAL		Trademark, Type, DN size, AS1432	Black Ink

III. FINISHING

CLEANLINESS	END-CAP
Unrequired by the standard	Unrequired by the standard
*DN 15,18,20 BQ- 0.2mg/dm2	Unrequired by the standard



JIS H3300

Copper and
copper alloy seamless pipes and tubes



I. SIZE TABLE

OD	WALL THICKNESS																			Temper Quality	Product Type
	Type K		Type L		Type M		Acceptable WT range														
ACT mm	0.25	0.30	0.35	0.40	0.50	0.60	0.70	0.80	1.00	1.20	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00			
4																			O, OL	LWC	
5																			O, OL	LWC	
6																			H, 1/2H, O, OL	LWC, PCC, S/T	
6.35																			H, 1/2H, O, OL	LWC, PCC, S/T	
8																			H, 1/2H, O, OL	LWC, PCC, S/T	
9.52								0.76	0.89										H, 1/2H, O, OL	LWC, PCC, S/T	
10																			H, 1/2H, O, OL	LWC, PCC, S/T	
12																			H, 1/2H, O, OL	LWC, PCC, S/T	
12.7						0.64			0.89	1.24									H, 1/2H, O, OL	LWC, PCC, S/T	
14																			H, 1/2H, O, OL	LWC, PCC, S/T	
15																			H, 1/2H, O, OL	LWC, PCC, S/T	
15.88							0.71		1.02	1.24									H, 1/2H, O, OL	LWC, PCC, S/T	
16																			H, 1/2H, O, OL	LWC, PCC, S/T	
18																			H, 1/2H, O, OL	LWC, PCC, S/T	
19.05									1.07	1.24									H, 1/2H, O, OL	LWC, PCC, S/T	
20																			H, 1/2H, O, OL	LWC, PCC, S/T	
22																			H, 1/2H, O, OL	LWC, PCC, S/T	
22.22								0.81		1.14	1.65								H, 1/2H, O, OL	LWC, PCC, S/T	
25																			H, 1/2H, O, OL	LWC, PCC, S/T	
25.4																			H, 1/2H, O, OL	LWC, PCC, S/T	
28.58								0.89		1.27	1.65								H, 1/2H, O, OL	LWC, PCC, S/T	
31.8																			H	S/T	
32																			H	S/T	
34.92									1.07	1.40	1.65								H	S/T	
38.1																			H	S/T	
41.28										1.24	1.52	1.83							H	S/T	
45																			H	S/T	
50																			H	S/T	
53.98										1.47	1.78	2.11							H	S/T	
66.68										1.65	2.03								H	S/T	
79.38											1.83	2.29							H	S/T	
104.78													2.41	2.79					H	S/T	
130.18													2.77	3.18					H	S/T	
155.58														3.10	3.56				H	S/T	
200																			H	S/T	
250																			H	S/T	

* Green Block shows the range of manufacture on JIS Standard book

LWC

Plain Level Wound Coil
Specification of NWM

I. SIZE TABLE

OD mm	W/Thickness (mm)		OD Inch	W/Thickness (Inch)		DHP(C12200) : High Phosphorus DLP(C12000) : Low Phosphorus		
	Max	Min		Max	Min	LWC		
						H	OL	O
4.00	1.00	0.30	0.1875	0.039	0.012	O	O	O
4.76	1.00	0.30		0.039	0.012	O	O	O
5.00	1.00	0.30		0.039	0.012	O	O	O
6.35	1.20	0.30	0.2500	0.047	0.012	O	O	O
7.00	1.40	0.30	0.3125	0.055	0.012	O	O	O
7.94	1.50	0.30		0.059	0.012	O	O	O
9.53	1.65	0.27		0.3750	0.065	0.011	O	O
12.70	2.00	0.37	0.5000	0.079	0.015	O	O	O
15.88	2.00	0.40	0.6250	0.079	0.016	O	O	O
19.05	2.00	0.50	0.7500	0.079	0.020	O	O	O
22.23	3.11	0.55	0.8750	0.122	0.022	O	O	O
25.40	3.50	0.60	1.0000	0.138	0.024	O	O	O
28.58	6.11	0.60	1.1250	0.241	0.024	O	O	O

II. PACKAGE

Bulk Packing: Skids(Pallet): 1100mm x 1100mm = 43.3" x 43.3"		
Coil ID: 605mm = 23.82"		
Coils per Skid(Pallet)		
Standard: 4+3	4	
		

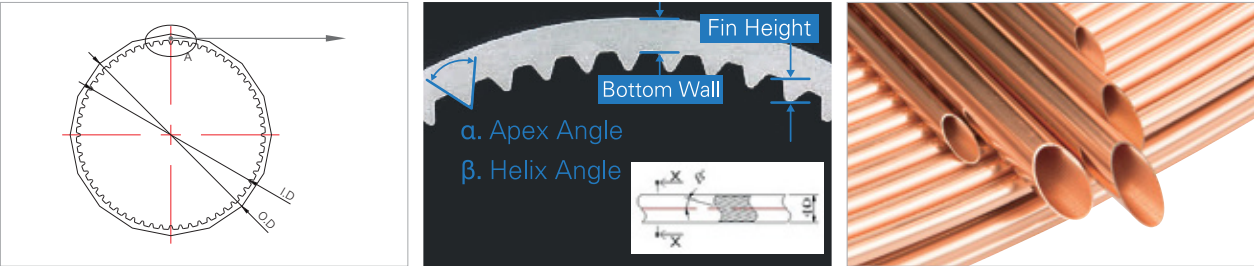
Wooden Reel Packing: Skids(Pallet): 1100mm x 1100mm = 43.3" x 43.3"		
Wooden Reel Dia.: 1100mm = 43.4"		
Hub Hole Dia.: 130mm = 5.12"		
Coils per Skid(Pallet)		
Standard: 4+3	3+3	5
		

INNER GROOVED TUBE

IGT Specification of NWM

I. SIZE TABLE

No	Dimension	Outer Diameter			Inner Diameter	Bottom Wall Thickness			Fin Height	Total Wall Thickness	Mean Thickness	Apex Angle	Helix Angle	Number of Fin	Unit Weight	Remarks
	mODxTW+HF-β°	mm	inch			ID	TW	mm	inch	HF	TWT	Tmean	(α)	(β)	N	
1	7.00x0.25 (7.00X0.22+0.10-15°)	7.00 (±0.05)	7.000		6.43	0.22 (±0.02)	0.220	0.009	0.10 (±0.02)	0.32	0.25	40±5	15±2	65	46.5 ~47.5	
2	7.00x0.25 (7.00X0.23+0.12-17°)	7.00 (±0.05)	7.000		6.30	0.23 (±0.02)	0.230	0.009	0.12 (±0.02)	0.35	0.25	20±5	17±2	65	46.5 ~48.0	
3	7.00x0.28 (7.00X0.25+0.10-18°)	7.00 (±0.05)	7.000		6.30	0.25 (±0.03)	0.250	0.010	0.10 (±0.02)	0.35	0.28	40±5	18±2	65	53±2	
4	9.52X0.30 (9.52X0.28+0.12-15°)	9.52 (±0.05)	9.520	0.375	3/8	0.28 (±0.02)	0.280	0.011	0.12 (±0.02)	0.40	0.30	55±5	15±2	65	82±2	
5	9.52X0.30 (9.52X0.27+0.12-15°)	9.52 (±0.05)	9.520	0.375	3/8	0.27 (±0.02)	0.270	0.011	0.12 (±0.02)	0.39	0.30	30±5	15±2	65	78±2	
6	9.52X0.30 (9.52X0.28+0.14-21°)	9.52 (±0.05)	9.520	0.375	3/8	0.28 (±0.02)	0.280	0.011	0.14 (±0.02)	0.42	0.30	35±5	21±2	72	81±2	
7	9.52X0.30 (9.52X0.28+0.15-18°)	9.52 (±0.05)	9.520	0.375	3/8	0.28 (±0.03)	0.280	0.011	0.15 (±0.02)	0.43	0.30	53±5	18±2	60	83±2	
8	9.52x0.30 (9.52X0.28+0.14-21°)	9.52 (±0.05)	9.520	0.375	3/8	0.28 (±0.02)	0.280	0.011	0.14 (±0.02)	0.42	0.30	20±5	21±2	72	82±2	
9	9.52x0.34 (9.52X0.28+0.20-18°)	9.52 (±0.05)	9.520	0.375	3/8	0.28 (±0.02)	0.280	0.011	0.20 (±0.02)	0.48	0.34	40±5	18±2	60	88±2	
10	9.52x0.34 (9.52X0.28+0.20-18°)	9.52 (±0.05)	9.520	0.375	3/8	0.28 (±0.03)	0.280	0.011	0.20 (±0.02)	0.48	0.34	53±10	18±2	60	88±1	
11	9.52x0.36 (9.52X0.30+0.20-18°)	9.52 (±0.05)	9.520	0.375	3/8	0.30 (±0.03)	0.300	0.012	0.20 (±0.03)	0.50	0.36	53±10	18±2	60	93±2	
12	9.525x0.406 (9.525x0.406+0.20-18°)	9.525 (+0.05-0)	9.525	0.375	3/8	0.40 (±0.02)	0.400	0.016	0.20 (±0.02)	0.60	0.406	40±10	18±2	60	116±2	
13	12.70x0.41 (12.70x0.36+0.20-18°)	12.70 (±0.05)	12.700	0.500	1/2	0.36 (±0.02)	0.360	0.014	0.20 (±0.02)	0.56	0.41	53±10	18±2	65	143±3	
14	12.70x0.406 (12.70X0.406+0.25-18°)	12.70 (±0.05)	9.525	0.500	1/2	0.406 (±0.03)	0.406	0.016	0.25 (±0.02)	0.65	0.406	40±10	18±2	75	167±3	



POLYLAG

Plastic Coated Copper tubes for plumbing, gas and drainage applications

I. SIZE TABLE

OD mm	Wall Thickness mm		OD Inch	Wall Thickness Inch		LDPE (Low-Density P.E), White Sleeve			PVC		
						White Sleeve			Green, Yellow, Purple Sleeve		
						Polylag, Polylag Premium			Polylag, Polylag Premium		
	Max	Min		Max	Min	S/T HD	S/T HH	PCC	S/T HD	S/T HH	PCC
9.52	1.65	0.27	3/8	0.065	0.011	●	X	●	●	X	●
12.70	2.00	0.37	1/2	0.079	0.015	●	●	●	●	●	●
15.00	2.00	0.40		0.079	0.016	●	●	●	●	●	●
15.88	2.00	0.40	5/8	0.079	0.016	●	●	●	●	●	●
18.00	2.00	0.50		0.079	0.020	●	●	●	●	●	●
19.05	2.00	0.50	3/4	0.079	0.020	●	●	●	●	●	●
22.00	3.11	0.55		0.122	0.022	●	●	●	●	●	●
22.22	3.11	0.55	7/8	0.122	0.022	●	●	●	●	●	●
25.40	3.50	0.60	1	0.138	0.024	●	●	●	●	●	●
28.00	6.11	0.60		0.241	0.024	●	●	●	●	●	●
28.58	6.11	0.60	1 1/8	0.241	0.024	●	●	X	●	●	X
31.75	8.00	0.70	1 1/4	0.315	0.028	●	●	X	●	●	X
34.92	8.00	0.70	1 3/8	0.315	0.028	●	●	X	●	●	X
35.00	8.00	0.70		0.315	0.028	●	●	X	●	●	X
38.10	8.00	0.80	1 1/2	0.315	0.031	●	●	X	●	●	X
40.00	8.00	0.80		0.315	0.031	●	●	X	●	●	X
41.28	8.00	0.80	1 5/8	0.315	0.031	●	●	X	●	●	X
54.00	8.00	0.90		0.315	0.035	●	●	X	●	●	X



INNER GROOVED TUBE

POLYLAG

HEXAGONAL / OCTAGONAL

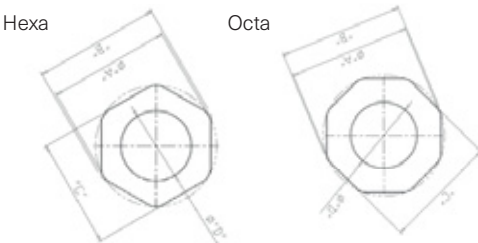
Hexa/Octagonal Straight Tube Specification of NWM. Hexagonal & Octagonal shape specialized copper tube used to produce copper fitting adapter

I. SIZE TABLE

ITEM	Distance of Two Apex		Distance of Two Opposite Side		Inner Diameter		Alloy	Temper
	Drawing : A		Drawing : C		Drawing : D			
	MIN	MAX	MIN	MAX	MIN	MAX		
Hexa	11.95	74	11	68	5.2	50	DHP(C12200)	H
Octa	22.84	122	38.5	115	13.97	103.17	High Phosphorus	H

※ Custom size can be quoted as required

II. DRAWING



※ Package Bundle Packing



CERTIFICATES



NSF/ANSI STANDARD 61

Drinking Water System Components
Health effects testing for Hoses and Tubing
• Copper Tube >= 3/16" OD
• Level Wound Coil >= 3/16" OD
• Pancake Coil >= 3/16" OD
• Straight Tube Type K, L, M >= 3/16" OD



WARNOCK HERSEY ASTM B88 / B280 / B306 / B837

Tested by an INTERTEK
• ASTM B88 : Type K, L, M - Seamless Copper Tube
• ASTM B280: ACR - Seamless Copper Tube for Air Conditioners & Refrigeration Field Service
• ASTM B306: DWV - Seamless Copper Tube for DWV, Drain & Sewer
• ASTM B837: GAS - Seamless Copper Tube for Natural Gas & liquified Petroleum (LP) Gas Fuel Distribution



UPC

• ASTM B88 Type K, L, M
Copper Water Tube Tested by IAPMO R&T Laboratory
Hard drawn & Soft annealed copper water tube



ISO 9001

Quality Management System



ISO 14001

Environmental Management System



AUSTRALIA STANDARD

• AS/NZS 1571:2020: Assured by QAS
For Air conditioning and Refrigeration



UL207

Nonelectrical Refrigerant-containing components and Accessories
ASTM B280 and ASTM B88 Type K, L: Tested by UL
• Pancake Coil: 1/4"OD ~ 1-1/8"OD
• Straight Tube: 1/4"OD ~ 2-1/2"OD



JAPANESE INDUSTRIAL STANDARD

JIS H 3300: Certified by Korean Standards Association
Copper and copper alloy seamless pipes and tubes



AUSTRALIA WATERMARK

AS 1432: Assured by QAS
For Plumbing, Gasfitting and Drainage Application



KITEMARK

EN 1057:
Copper and copper alloys,
Seamless, round copper tubes for water and gas
in sanitary and heating applications.



PED/AD2000

EN12735-1, EN12735-2:
Quality Assurance System in accordance with
• Pressure Equipment Directive 2014/68/EU, Annex I, Section 4.3
• AD 2000-Merkblatt W 0
• EN 764-5, Para, 4.2



BIS IS 10773

GRADE 2
Light Annealed 4.76mm OD ~ 250mm OD
Soft Annealed 4.76mm OD ~ 250mm OD
Light drawn 6.35mm OD ~ 104.78mm OD