

Carbon Steel

Carbon Steel

 **Carbon Steel Flat Product** 2-3

• Hot Rolled Coil / Strip / Plate / Sheet 2-4

• Cold Rolled Coil / Strip / Plate / Sheet 2-5

 **Carbon Steel Long Product** 2-6

• Welded Pipe / Tube 2-7

• Seamless Pipe / Tube 2-17

• Bar 2-19

• Wire Rod 2-22

Carbon Steel Flat Product

Carbon Steel Hot Rolled Coil

● Product Specification and Steel Grade

Application	JIS	ASTM	SAE
Commercial Quality	G3131 SPHC	A569 A635 A659 A1011 CS Type A,B,C	1006-1025
Drawing Quality	G3131 SPHD		1006-1010
Deep Drawing Quality	G3131 SPHE	A622 A1011 DS Type A,B	1006-1010
General Structure (T.S. < 490 N/mm ²)	G3101 SS330 SS400 G3106 SM400A G3132 SPHT1 SPHT2 SPHT3	A36 A283 GR.C A570 GR.30-40 A1011 SS GR.30-40	1010-1025
General Structure (T.S. ≥ 490 N/mm ²)	G3101 SS490 G3106 SM490A SM490YA G3132 SPHT4	A570 GR.45-50 A607 GR.45-70 A1011 SS GR.45,50 A1011 HSLAS GR.45-70	J1392 050X

● Available Size

■ Carbon Steel Hot Rolled Coil / Strip

	Thickness (mm)	Width (mm)		Coil Inside Diameter (mm)
		Mill Edge	Cut Edge	
Coil	1.50 ~ 6.50	720 ~ 1860		762
	6.51 ~ 10.00	850 ~ 1300		
Strip	1.50 ~ 6.50		30 ~ 720	

■ Carbon Steel Hot Rolled Plate / Sheet

	Thickness (mm)	Width (mm)	Length (mm)
		Cut Edge	
Plate	6.00 ~ 150	500 ~ 4000	1200 ~ 18000
Sheet	1.50 ~ 5.99	50 ~ 1845	760 ~ 6100

Carbon Steel Cold Rolled Coil

● Product Specification and Steel Grade

Application	JIS	ASTM	SAE
Commercial Quality	G3141 SPCC	A1008 CS Type A,B,C	1008-1012 CQ
Drawing Quality	G3141 SPCD	A1008 DS Type A,B	1006-1008 DQ
Deep Drawing Quality	G3141 SPCE(N)	A1008 DDS	1006DDQ

● Available Size

■ Carbon Steel Cold Rolled Coil / Strip

	Thickness (mm)	Width (mm)	Coil Inside Diameter (mm)
Coil	0.30 ~ 0.34	850 ~ 1100	506 or 610
	0.35 ~ 0.39	850 ~ 1219	
	0.40 ~ 0.49	850 ~ 1400	
	0.50 ~ 0.59	850 ~ 1525	
	0.60 ~ 0.69	850 ~ 1575	
	0.70 ~ 2.00	850 ~ 1650	
	2.01 ~ 3.20	850 ~ 1260	
Strip	0.30 ~ 3.20	7 ~ 850	

■ Carbon Steel Cold Rolled Sheet

	Thickness (mm)	Width (mm)	Length (mm)
		Cut Edge	
Sheet	0.3 ~ 3.2	50 ~ 1260	50 ~ 1260

Carbon Steel Long Product

Carbon Steel Welded Pipe/Tube

Types

● ASTM A53 Black and Hot-Dipped, Zinc-Coated Steel Welded Pipes	2-9
● BS 1387 Screwed and Socked Steel Tubes	2-10
● BSA, BSB Class Black Steel Pipes, Post-Hop-Dip Zinc Coated Steel Pipes and Pre-Hot-Dip Zinc Coated (EMT) Steel Pipes	2-11
● JIS G3454 Carbon Steel Pipes for Pressure Service	2-12
● JIS G3452 Carbon Steel Pipes for Ordinary Piping	2-12
● JIS G3444 Carbon Steel Tubes for General Structural Purpose	2-13
● JIS G3466 Carbon Steel Square Pipes for General Structural Purpose	2-14
● JIS G3445 Carbon Steel Tubes for Machine Structural Purpose	2-15
● JIS G8305 Rigid Steel Conduits	2-15
● ANSI C80.1 Rigid Steel Conduits – Zinc Coated	2-16
● E.M.T. Pre-Hot-Dip Zinc Coated Electrical Metallic Tubing	2-16

Black and Hot-Dipped, Zinc Coated Steel Welded Pipes

■ ASTM A53

Available Specification

Designator		Outside Diameter		Nominal Wall thickness		Normal Weight (Mass) per Unit Length, Plain End		Schedule No	Test Pressure			
NPS	DN	in	mm	in	mm	in	mm		Grade A		Grade B	
in	mm	in	mm	in	mm	in	mm		psi	kg/cm ²	psi	kg/cm ²
1/2	15	0.840	21.3	0.109	2.77	0.85	1.27	40	700	50	700	50
				0.147	3.73	1.09	1.62	80	850	60	580	60
3/4	20	1.050	26.7	0.113	2.87	1.13	1.69	40	700	50	700	50
				0.154	3.91	1.48	2.20	80	850	60	850	60
1	25	1.315	33.4	0.133	3.38	1.68	2.50	40	700	50	700	50
				0.179	4.55	2.17	3.24	80	850	60	850	60
1-1/4	32	1.660	42.2	0.140	3.56	2.27	3.39	40	1200	84	1300	91
				0.191	4.85	3.00	4.47	80	1800	127	1900	134
1-1/2	40	1.900	48.3	0.145	3.68	2.72	4.05	40	1200	84	1300	91
				0.200	5.08	3.63	5.41	80	1800	127	1900	134
2	50	2.375	60.3	0.154	3.91	3.66	5.44	40	2300	162	2500	176
				0.218	5.54	5.03	7.48	80	2500	176	2500	176
2-1/2	65	2.875	73.0	0.203	5.16	5.80	8.63	40	2500	176	2500	176
3	80	3.500	88.9	0.125	3.18	4.51	6.72	-	1290	91	1500	105
				0.156	3.96	5.58	8.29	-	1600	112	1870	131
				0.188	4.78	6.66	9.92	-	1930	136	2260	159
				0.216	5.49	7.58	11.29	40	2220	156	2500	176
4	100	4.500	114.3	0.125	3.18	5.85	8.71	-	1000	70	1170	82
				0.156	3.96	7.24	10.78	-	1250	88	1460	103
				0.188	4.78	8.67	12.91	-	1500	105	1750	123
				0.219	5.56	10.02	14.91	-	1750	123	2040	143
				0.237	3.02	10.80	16.07	40	1900	134	2210	155
5	125	5.563	141.3	0.156	3.96	9.02	13.41	-	1010	71	1180	83
				0.188	4.78	10.80	16.09	-	1220	86	1420	100
				0.219	5.56	12.51	18.61	-	1420	100	1650	116
6	150	6.625	168.3	0.188	4.78	12.94	19.27	-	1020	72	1190	84
				0.219	5.56	15.00	22.31	-	1190	84	1390	98
				0.250	6.35	17.04	25.36	-	1360	96	1580	111
8	200	8.625	219.1	0.188	4.78	16.96	25.26	-	780	55	920	65
				0.203	5.16	18.28	27.22	-	850	60	1000	70
				0.219	5.56	19.68	29.28	-	910	64	1070	75
				0.250	6.35	22.38	33.31	20	1040	73	1220	86

● Thickness Tolerance : + not specified, -12.5%

Screwed and Socked Steel Tubes

■ BS 1387

1. Plain End for Tubes Welding

2. Screwed and Socketed End for BS 21 Pipe Threads

Available Specification

Nominal Size (DN)		Outside Diameter		Class	Thickness	Mass of Black Tube	
		Max.	Min.			Plain End	Screw and Socketed
in	mm	mm	mm		mm	Kg/m	Kg/m
1/2	15	21.4	21.0	Light	2.00	0.947	0.956
		21.7	21.1	Medium	2.60	1.21	1.22
				Heavy	3.20	1.44	1.45
3/4	20	26.9	26.4	Light	2.30	1.38	1.39
		27.2	26.6	Medium	2.60	1.56	1.57
				Heavy	3.20	1.87	1.88
1	25	33.8	33.2	Light	2.30	1.98	2.00
		34.2	33.4	Medium	3.20	2.41	2.43
				Heavy	4.00	2.94	2.96
1-1/4	32	42.5	41.9	Light	2.60	2.54	2.57
		42.9	42.1	Medium	3.20	3.10	3.13
				Heavy	4.00	3.80	3.83
1-1/2	40	48.4	47.8	Light	2.90	3.23	3.27
		48.8	48.0	Medium	3.20	3.57	3.61
				Heavy	4.00	4.38	4.42
2	50	60.2	59.6	Light	2.90	4.08	4.15
		60.8	59.8	Medium	3.60	5.03	5.10
				Heavy	4.50	6.19	6.26
2-1/2	65	76.0	75.2	Light	3.20	5.71	5.83
		76.6	75.4	Medium	3.60	6.43	6.55
				Heavy	4.50	7.93	8.05
3	80	88.7	87.9	Light	3.20	6.72	6.89
		89.5	88.1	Medium	4.00	8.37	8.54
				Heavy	5.00	10.30	10.50
4	100	113.9	113.0	Light	3.60	9.75	10.00
		114.9	113.3	Medium	4.50	12.20	12.50
				Heavy	5.40	14.50	14.80
5	125	140.6	138.7	Medium	5.00	16.60	17.10
		140.6	138.7	Heavy	5.40	17.90	18.40
6	150	166.1	164.1	Medium	5.00	19.70	20.30
		166.1	164.1	Heavy	5.40	21.30	21.90

● Thickness Tolerance :

Light Class : + not specified, -8%

Medium & Heavy Class : + not specified, -10%

BSA, BSB Class Black Steel Pipes Post-Hop-Dip Zinc Coated Steel Pipes Pre-Hop-Dip Zinc Coated (EMT) Steel Pipes

■ YP Standard

Available Specification

Nominal Size (DN)		Outside Diameter		Class	Thickness	Mass of Black Tube	
		max	min			Plain End	Screw and Socketed
in	mm	mm	mm		mm	Kg/m	Kg/m
1/2	15	21.4	21.0	BSA	1.90	0.904	0.913
		21.7	21.1	BSB	2.60	1.21	1.22
3/4	20	26.9	26.4	BSA	2.10	1.27	1.29
		27.2	26.6	BSB	2.90	1.72	1.74
1	25	33.8	33.2	BSA	2.45	1.88	1.90
		34.2	33.4	BSB	3.25	2.45	2.48
1-1/4	32	42.5	41.9	BSA	2.45	2.40	2.43
		42.9	42.1	BSB	3.60	3.45	3.50
1-1/2	40	48.4	47.8	BSA	2.60	2.92	2.96
		48.8	48.0	BSB	4.10	4.48	4.53
2	50	60.2	59.6	BSA	2.60	3.68	3.74
		60.8	59.8	BSB	4.10	5.68	5.78
2-1/2	65	76.0	75.2	BSA	3.00	5.37	5.48
		76.6	75.4	BSB	4.50	7.93	8.05
3	80	88.7	87.9	BSA	3.00	6.31	6.39
		89.5	88.1	BSB	4.50	9.36	9.55
4	100	113.9	113.0	BSA	3.25	8.83	9.06
		114.9	113.3	BSB	4.50	12.20	12.50
5	125	140.1	138.9	BSA	3.60	12.07	12.41
		140.6	138.7	BSB	4.50	15.00	15.42
6	150	165.5	164.4	BSA	3.60	14.33	14.76
		166.1	164.1	BSB	4.50	17.82	18.36
8	200	217.0	215.3	BSA	4.50	23.49	--
		218.5	214.1	BSB	6.00	31.12	--

Carbon Steel Pipes for Pressure Service

■ JIS G3454

Available Specification

Nominal Size (DN)		Outside Diameter	Nominal Wall Thickness					
			Schedule 20		Schedule 40		Schedule 60	
A	B	mm	Wall Thick mm	Unit Mass kg/m	Wall Thick mm	Unit Mass kg/m	Wall Thick mm	Unit Mass kg/m
15	1/2"	21.7	--	--	2.8	1.31	3.2	1.46
20	3/4"	27.2	--	--	2.9	1.74	3.4	2.00
25	1"	34.0	--	--	3.4	2.57	3.9	2.89
32	1-1/4"	42.7	--	--	3.6	3.47	4.5	4.24
40	1-1/2"	48.6	--	--	3.7	4.10	4.5	4.89
50	2"	60.5	3.2	4.52	3.9	5.44	4.9	6.72
65	2-1/2"	76.3	4.5	7.97	5.5	9.12	Subject to prior negotiation	
80	3"	89.1	4.5	9.39	5.5	11.3		
100	4"	114.3	4.9	13.2	6.0	16.0		
125	5"	139.8	5.1	16.9	Subject to prior negotiation			
150	6"	165.2	5.5	21.7				
200	8"	216.3	6.4	33.1				

- Thickness Tolerance :
 Thickness < 3mm : ± 0.3mm
 Thickness ≥ 3mm : ± 10%

Carbon Steel Pipes for Ordinary Piping

■ JIS G3452

Available Specification

Nominal Size (DN)		Outside Diameter	Tolerances on Outside Diameter		Wall Thickness	Unit Mass Excluding Socket
			Pipes to be cut in Taper Thread	Others Pipes		
A	B	mm			mm	kg/m
15	1/2"	21.7	± 0.5mm	± 0.5mm	2.8	1.31
20	3/4"	27.2	± 0.5mm	± 0.5mm	2.8	1.68
25	1"	34.0	± 0.5mm	± 0.5mm	3.2	2.43
32	1-1/4"	42.7	± 0.5mm	± 0.5mm	3.5	3.38
40	1-1/2"	48.6	± 0.5mm	± 0.5mm	3.5	3.89
50	2"	60.5	± 0.5mm	± 1%	3.8	5.31
65	2-1/2"	76.3	± 0.7mm	± 1%	4.2	7.47
80	3"	89.1	± 0.8mm	± 1%	4.2	8.79
100	4"	114.3	± 0.8mm	± 1%	4.5	12.2
125	5"	139.8	± 0.8mm	± 1%	4.5	15.0
150	6"	165.2	± 0.8mm	± 1.6mm	5.0	19.8
200	8"	216.3	± 1.0mm	± 0.8%	5.8	30.1

- Thickness Tolerance : + not specified, -12.5%

Carbon Steel Tubes for General Structural Purposes

■ JIS G3444

Available Specification

Outside Diameter	Thickness	Unit Weight
mm	mm	Kg/m
21.7	2.0	0.972
27.2	2.0	1.24
	2.3	1.41
34.0	2.3	1.80
42.7	2.3	2.29
	2.5	2.48
48.6	2.3	2.63
	2.5	2.84
	2.8	3.16
	3.2	3.58
60.5	2.3	3.30
	3.2	4.52
	4.0	5.57
76.3	2.8	5.08
	3.2	5.77
	4.0	7.13
89.1	2.8	5.96
	3.2	6.78
114.3	3.2	8.77
	3.5	9.58
	4.5	12.2
139.8	3.6	12.1
	4.0	13.4
	4.5	15.0
	6.0	19.8
165.2	4.5	17.8
	5.0	19.8
	6.0	23.6
216.3	4.5	23.5
	6.0	31.1

Classification	Tolerance on Outside Diameter	
	Thickness	Tolerance
Class 2	< 50mm	± 0.25mm
	≥ 50mm	± 0.5%

Classification	Thickness Tolerance	
	Thickness	Tolerance
Class 2	< 3mm	± 0.3mm
	≥ 3mm, < 12mm	± 10%

● Unit weight listed above shall be calculated from the following formula assuming that the mass of steel of 1 cm³ is 7.85g and rounding off the value obtained to three significant digits.

$$W = 0.02466 t (D-t)$$

- W** : unit weight of the tube (kg/m)
t : wall thickness of the tube (mm)
D : outside diameter of the tube (mm)

Carbon Steel Square Pipes For General Structural Purposes

■ JIS G3466

Available Specification

Side Length A x B (mm)	Thickness (mm)														
	0.7	0.8	1.0	1.1	1.5	1.6	2.0	2.2	2.3	2.8	3.2	4.0	4.5	5.0	6.0
16 x 16	Blue	Blue	Blue	Blue	Blue										
18 x 18	Blue	Blue	Blue	Blue	Blue										
19 x 19	Blue	Blue	Blue	Blue	Blue										
20 x 20	Blue	Blue	Blue	Blue	Blue										
25 x 25	Blue	Blue	Blue	Blue	Blue	Blue	Blue								
30 x 30		Blue	Blue	Blue	Blue	Blue	Blue	Blue							
38 x 38				Blue	Blue	Blue	Blue	Blue							
40 x 40				Blue	Blue	Yellow	Blue	Blue							
50 x 50						Yellow	Blue	Blue	Yellow	Blue	Yellow				
100 x 100									Yellow	Blue	Yellow	Yellow	Yellow	Blue	Yellow
125 x 125											Yellow	Blue	Yellow	Yellow	Yellow
150 x 150											Blue	Blue	Yellow	Yellow	Yellow
30 x 15		Blue	Blue	Blue	Blue										
30 x 20		Blue	Blue	Blue	Blue										
40 x 20		Blue	Blue	Blue	Blue	Blue	Blue	Blue							
50 x 25				Blue	Blue	Blue	Blue	Blue							
60 x 30				Blue	Blue	Blue	Blue	Blue							
100 x 50									Yellow	Blue	Yellow	Blue	Yellow		
150 x 100											Yellow	Blue	Yellow	Blue	Yellow

- Thickness Tolerance : + not specified, -12.5%
Thickness < 3mm : ± 0.3mm
Thickness ≥ 3mm : ± 10%
- According to JIS G3466 specification.
- According to YP Standard.

Carbon Steel Tubes for Machine Structural Purposes

■ JIS G3445

Available Specification

Nominal Diameter		Tolerance Outside Diameter	Thickness (mm)												
in	mm		0.7	0.8	0.9	1.1	1.2	1.3	1.4	1.5	1.6	1.8	2.0	2.2	
5/8"	15.90	± 0.25mm													
	18.00														
3/4"	19.10														
7/8"	22.20														
1"	25.40														
1-1/8"	28.60														
1-1/4"	31.75														
1-3/8"	35.00														
	37.50														
1-1/2"	38.10														
	50.00														
2"	50.80														

- Thickness Tolerance : + not specified, -12.5%
Thickness < 3mm : ± 0.3mm
Thickness ≥ 3mm : ± 10%
- We offer JIS G3445 STKM11A and STKM13A tubes for above specification.
- JIS G3445 STKM12B tubes with outside diameter < 89.1mm for application of Precise Drawing Tubes, Cylinder Tubes for shock absorber of automotive and motorcycle, Cylinder tube for hydraulic jacks and tube of heat exchanger for air conditioning etc. is also able to offer.

Rigid Steel Conduits

■ JIS C8305

Available Specification

Designation	Outside Diameter	Tolerance Outside Diameter	Thickness	Weight	Effective Length of Threaded Part (mm)	
	mm	mm	mm	Kg/m	Max.	Min.
G 16	21.0	± 0.3	2.3	1.06	19	16
G 22	26.5	± 0.3	2.3	1.37	22	19
G 28	33.3	± 0.3	2.5	1.90	25	22
G 36	41.9	± 0.3	2.5	2.43	28	25
G 42	47.8	± 0.3	2.5	2.79	28	25
G 54	59.6	± 0.3	2.8	3.92	32	28
G 70	75.2	± 0.3	2.8	5.00	36	32
G 82	87.9	± 0.3	2.8	5.88	40	36
G 92	100.7	± 0.3	3.5	8.39	42	36
G 104	113.4	± 0.3	3.5	9.48	45	39

Rigid Steel Conduits – Zinc Coated

■ ANSI C80.1

Available Specification

Nominal or Trade Size of Conduit	Nominal Inside Diameter	Outside Diameter	Nominal Wall Thickness	Length Without Coupling	Min. Weight of Ten Unit Lengths with Couplings Attached
in	mm	mm	mm	meters	kg
1/2	16.1	21.3	2.64	3.03	35.83
3/4	21.2	26.7	2.72	3.03	47.63
1	27.0	33.4	3.20	3.02	69.40
1-1/4	35.4	42.2	3.38	3.02	91.17
1-1/2	41.2	48.3	3.51	3.02	112.95
2	52.9	60.3	3.71	3.02	150.60
2-1/2	63.2	73.0	4.90	3.01	239.05
3	78.5	88.9	5.21	3.01	309.63
4	102.9	114.3	5.72	3.00	441.04
5	128.9	141.3	6.22	3.00	595.85
6	154.8	168.3	6.76	3.00	791.67

- Thickness Tolerance : + not specified, -12.5%

Pre-Hot-Dip Zinc Coated Electrical Metallic Tubing

■ YP Standard

Available Specification

Designation	Outside Diameter	Tolerance Outside Diameter	Thickness (mm)									
	mm	mm	1.2	1.4	1.5	1.6	1.8	2.0	2.2	2.3	2.6	2.8
E 19	19.1	± 0.15										
E 25	25.4	± 0.15										
E 31	31.8	± 0.15										
E 39	38.1	± 0.20										
E 51	50.8	± 0.20										
E 63	63.5	± 0.25										
E 75	76.2	± 0.25										

Carbon Steel Seamless Pipe/Tube

Carbon Steel Seamless Pipe / Tube

- Structure Pipes
- High Pressure Boiler Pipes
- Low or Middle Pressure Boiler Pipes
- Fluid Pipes
- Pipes for Chemical Fertilizer Facility
- Pipes of Pipelines
- Petroleum Cracking Pipe
- Alloy Pipes

● Product Specification

JIS	ASTM	DIN	BS
G3444	A53	17175	970
G3445	A106	2391	3059
G3454	A161	2393	
G3455	A179		
G3456	A192		
G3460	A210		
G3461	A213		
G3462	A335		
G3464	A500		
G3465	A519		
G3467	A556		
G3473			

● Available Size

Outside Diameter	Wall Thickness
10 ~ 1067 mm	1.5 ~ 100 mm

Carbon Steel Bar

Carbon Steel Hot Rolled Bar



- **Steel Grade**

AISI	1008、1015、1017、1021、1025、1026、1035、1045、1050、1055, 4130, 4140, 4340, S45C, 5140, 8620, 12L14
JIS	SCM415、SCM420、SCM440
	34CrMo4, 9Cr2Mo

- **Available Size**

Type	Diameter
Round	25.0 ~ 300 mm
Square	21.0 ~ 54.0 mm
Forged	Up to 1000 mm

Length: 3meter-up

Condition: annealing, normalized, peeled, rough turned, quench + temper

Carbon Steel Cold Drawn Bar

- **Steel Grade**

AISI	1008 、 1015 、 1017 、 1045 、 others
JIS	SCM415 、 SCM420 、 SCM440
AISI	12L14

- **Available Size**

Type	Diameter
Round	6.0 mm ~ 4.0"
Square	6.0 mm ~ 2.0"
Hexagonal	3/8" ~ 65.0mm
Special	Depend on Customer's Demand

Carbon Steel Wire Rod

Carbon Steel Wire Rod



- Low and Middle Carbon Steel Wire Rod
- High Carbon Steel Wire Rod
- Cold Heading Carbon Steel Wire Rod
- Free Cutting Steel Wire Rod

● Product Specification and Steel Grade

■ Carbon Steel

JIS	UNS	AISI	DIN
SWRM6 ~ SWRM22	G 10060	1006	Ck 10
SWRCH6A ~ AWRCH22A	~	~	~
SWRH62A ~ SWRH72B	G 10750	1075	Ck 60

■ Free Cutting Steel

JIS	UNS	AISI	DIN
SUM 24L	G 12144	12 L 14	9 S MnPb 36

■ Welding Steel

CSC	JIS
ER 70S-6	SWRY 11
EM 12K	YGW 11

● Available Size

Diameter							
mm	inch	mm	inch	mm	inch	mm	inch
5.5	0.217	9.5	0.374	18.0	0.709	27.0	1.063
5.7	0.224	10.0	0.394	19.0	0.748	28.0	1.102
6.0	0.236	11.0	0.433	20.0	0.787	29.0	1.142
6.5	0.256	12.0	0.472	21.0	0.827	30.0	1.181
7.0	0.276	13.0	0.512	22.0	0.866	32.0	1.260
7.5	0.295	14.0	0.551	23.0	0.906	33.0	1.299
8.0	0.315	15.0	0.591	24.0	0.945	34.0	1.339
8.5	0.335	16.0	0.630	25.0	0.984	36.0	1.417
9.0	0.354	17.0	0.669	26.0	1.024	38.0	1.496

- **Size Tolerance**

Specified Size	Permissible Variation	Out-of-round	Specified Size	Permissible Variation	Out-of-round
mm			inch		
5.5-15	±0.30	0.40	0.271-0.591	±0.0118	0.0157
16-20	±0.40	0.55	0.630-0.787	±0.0157	0.0217
21-28	±0.35	0.50	0.827-1.102	±0.0138	0.0197
29-34	±0.40	0.55	1.142-1.339	±0.0157	0.0217
>34	±0.45	0.60	>1.339	±0.0177	0.0236