



CUSTOMISED SOLUTIONS WORLDWIDE

BENTELER 
Distribution



REFERENCE DATA



IMPERIAL STANDARD WIRE GAUGE swg



Gauge No	ins	mm
0	.324	8.229
1	.300	7.620
2	.276	7.010
3	.252	6.401
4	.232	5.893
5	.212	5.385
6	.192	4.877
7	.176	4.470
8	.160	4.064
9	.144	3.658
10	.128	3.251
11	.116	2.946
12	.104	2.642
13	.092	2.337
14	.080	2.032
15	.072	1.829
16	.064	1.626
17	.056	1.422
18	.048	1.219
19	.040	1.016
20	.036	0.914
21	.032	0.813
22	.028	0.711

BIRMINGHAM WIRE GAUGE bwg

Gauge No	ins	mm
0	.340	8.636
1	.300	7.620
2	.284	7.214
3	.259	6.579
4	.238	6.045
5	.220	5.588
6	.203	5.156
7	.180	4.572
8	.165	4.191
9	.148	3.759
10	.134	3.404
11	.120	3.048
12	.109	2.769
13	.095	2.413
14	.083	2.108
15	.072	1.829
16	.065	1.651
17	.058	1.473
18	.049	1.245
19	.042	1.067
20	.035	0.889
21	.032	0.813
22	.028	0.711

The figures below have been corrected to give a reasonably accurate conversion factor. For definitive values refer to the British Standards Institute.

Conversion Factors Multiplier

	to convert 		 to convert
Area (L)²	ft ²	0.092903	10.7639 m ²
	in ²	645.16	0.0001550 mm ²
	in ²	6.45160	0.155000 cm ²
Force or Weight (M) (L) (t)⁻²	kgf	9.80665	0.101971 NEWTON (N)
	lbf	4.44822	0.224809 N
	lbf	0.453592	2.204623 Kgf
Length (L)	Foot (ft)	0.304800	3.280840 Metre (m)
	Inch (in)	25.4000	0.039370 Millimetre (mm)
	Mile (mi)	1.609344	0.621371 Kilometre (km)
Stress (M) (L)⁻¹ (t)⁻²	kgf/cm ²	9.80665 E-2*	0.101972E2 MPa
	ksi	6.89476	0.145038 MPa
	N/mm ²	1.	1. MPa
	kgf/mm ²	1.42231	.70307 ksi

* Indicates exact conversion(s)

To calculate the weight of a carbon steel tube : $\text{kg/m} = \frac{(\text{od mm} - \text{wall mm}) \times 24.66 \times \text{wall mm}}{1000}$



**REFERENCE
DATA**

SPECIFICATION	TENSILE STRENGTH			YIELD MIN			ANALYSIS PER CENT					
	tons /in2	kg /mm2	n /mm2	tons /in2	kg /mm2	n /mm2	C max	Si	Mn	S max	P Max	
HFS Mechanical												
BS 3602 Pt:1:1987 HFS 430	27.85	43.86	430	16.51	26.01	255	0.21	0.10/0.35	0.40/1.20	0.035	0.035	
BS 6323 Pt:3: 1982 HFS 5	31.70	49.92	490	21.70	34.18	335	0.23	0.35 max	1.50 max	0.05	0.05	
DIN 2448/1629 ST37	22.64	35.70	350	13.92	21.93	215	0.17	-	-	0.4	0.04	
DIN 2448/1629 ST52	33.02	52.00	590	21.59	34.00	333	0.22	-	-	0.5	0.05	
DIN 2448/17121 ST52-3N	31.70	49.92	490	18.45	29.06	285	0.20	0.55 max	1.60 max	0.4	0.04	
EN 10297-1 E355	≤16mm	31.85	49.98	490	23.08	36.21	355	0.22	0.05 max	1.60 max	0.035	0.030
	>16mm ≤40mm	31.85	49.98	490	22.43	35.19	345	0.22	0.05 max	1.60 max	0.035	0.030
	>40mm ≤65mm	31.85	49.98	490	21.78	34.17	335	0.22	0.05 max	1.60 max	0.035	0.030
	>65mm ≤80mm	30.55	47.94	470	20.48	32.13	315	0.22	0.05 max	1.60 max	0.035	0.030
	>80mm ≤100mm	30.55	49.94	470	19.18	30.09	295	0.22	0.05 max	1.60 max	0.035	0.030
EN 10210 S355J2H	<3mm	33.5/ 44.2	52.02/ 69.36	510-680	23.08	36.21	355	0.22	0.55 max	1.60 max	0.035	0.035
	≥3mm ≤16mm		49.98/ 64.26	490-630	23.08	36.21	355	0.22	0.55 max	1.60 max	0.035	0.035
	≥16mm ≤40mm		49.98/ 64.26	490-630	22.43	35.19	345	0.22	0.55 max	1.60 max	0.035	0.035
	≥40mm ≤65mm		49.98/ 64.26	490-630	21.78	34.17	335	0.22	0.55 max	1.60 max	0.035	0.035
Hollow Bar												
PTG 600	37.52	59.12	580	25.87	40.77	400	0.22	0.35 max	1.60 max	0.04	0.035	
PTG 470 (EN 10294 E470)												
Linepipe												
ASTM A106 Gr B	26.79	42.19	413	15.62	24.60	241	0.30	0.10 min	0.29/1.06	0.058	0.058	
API 5L GrB	26.69	42.19	413	15.62	24.60	241	0.27	-	1.15 max	0.05	0.05	
API 5L X52	29.46	46.39	455	23.18	36.50	358	0.31	-	1.45 max	0.03	0.03	
DIN 2458/1615 ST37	22.02	34.68	340	17.80	28.04	275	0.17	0.60 max	1.70 max	0.04	0.04	
DIN 2458/1626 ST37	22.66	35.70	350	15.18	23.97	235	0.20	-	-	0.04	0.04	
Hydraulic												
BS 3602 Pt:1:1987 CFS 360 NBK	23.31	36.71	360	13.92	21.92	215	0.17	0.35 max	0.40/0.80	0.045	0.045	
EN 10305-4 E235 +N	22.10/ 31.20	34.68/ 48.96	340-480	15.28	23.97	235	0.17	0.35 max	1.20 max	0.025	0.015	
CFS Precision												
BS 6323 1982 Pt:4: CFS 3BK	29.15	45.91	450	23.31	36.71	360	0.20	0.35 max	0.90 max	0.05	0.05	
BS 6323 1982 Pt:4: CFS 3 NBK	23.29	36.78	360	13.91	21.96	215	0.20	0.35 max	0.90 max	0.05	0.05	
BS 6323 1982 Pt:4: CFS 5BK	38.82	61.29	600	31.05	49.04	480	0.23	0.50 max	1.50 max	0.05	0.05	
BS 6323 1982 Pt:4: CFS 5 NBK	31.70	50.06	490	21.99	34.73	340	0.23	0.50 max	1.50 max	0.05	0.05	
DIN 2391 ST35 BK	26.67	42.00	411	-	-	-	0.18	-	-	0.05	0.05	
DIN 2391 ST35 NBK	22.00	34.73	340	15.21	24.01	235	0.18	-	-	0.05	0.05	
DIN 2391 ST52 BK	41.40	65.38	640	-	-	-	0.22	0.55 max	1.60 max	0.025	0.025	
DIN 2391 ST52 NBK	31.70	50.06	490	22.97	36.27	355	0.22	0.55 max	1.60 max	0.025	0.025	
EN 10305-1 E235 +C	31.20	48.96	480	see note ¹			0.17	0.35 max	1.20 max	0.025	0.030	
EN 10305-1 E235 +N												
EN 10305-1 E355 +C												
EN 10305-1 E355 +N												
SPEZIAL 07/Zista 07	20.07	31.62	310	13.28	20.91	205	0.06	0.025 max	0.22-0.30	0.02	0.015	
Boiler Tube												
BS 3059 Pt:1:1987 CFS 320	20.72	32.63	320	12.63	19.89	195	0.16	0.30/0.70	-	0.05	0.05	
BS 3059 Pt:1:1987 ERW 320	20.72	32.63	320	12.63	19.89	195	0.16	0.30/0.70	-	0.05	0.05	
BS 3059 Pt:1:1987 HFS 320												
DIN 17175 ST35.8 I												
EN 10216-2 P235 GH												
EN 10217-2 P235 GH												
ERW Precision												
BS 6323 Pt:5: ERW1 KM	19.43	30.60	300	12.29	20.39	200	0.13	-	0.60 max	0.05	0.05	
BS EN-10305-3 E220 +CR2	20.15	31.62	310	14.3	22.44	220	0.14	0.35max	0.70 max	0.025	0.025	
BS EN-10305-5 E220 +CR2	20.15	31.62	310	14.3	22.44	220	0.14	0.35max	0.70 max	0.025	0.025	

The information given in this Stock Guide is for guidance purposes only. Whilst to the best of our knowledge it is correct for definitive values etc. please refer to the relevant standards as we accept no liability for errors of any nature contained herein

¹ Depending on the degree of cold work in the finishing pass the yield strength may be nearly as high as the tensile strength
For calculation purposes the following relationships are recommended
For delivery condition 'C' : ReH ≥ 0.8 Rm.

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