Metal	British Standard	Equivalent specifications	Tensile strength -N/ mm²	0.2% proof strength N/ mm²	Elongation %	Brinell hardness HB	Izod impact Nm	Specific gravity grms/ cc	Expansion coefficient per °C x10⁻⁶	Thermal conductivity cal/sec/cm²/°C/cm	Electrical conductivity % of Cu standard	Specific heat cal/grm/ °C	Young's modulus N/ mm²	Weldability	Machinability	Advantageous properties (see key below)
Aluminium alloys	**BS1490**															
Aluminium	LMO		80	30	30	25		2.70	24.0	0.50	57		69,000	Argon arc	Gummy	F,H,I,J
Aluminium 10%Si 2%Cu	2		150-200	90-130	2-3	65-90		2.74	20.0	0.24	26		71,000	Argon arc	Fair	F,H,I
Aluminium 5%Si 3%Cu 0.5%Mn	4	ISO 3522 Al.Si5Cu3	140-230	90-110	2-3	65-80	1.4	2.75	21.0	0.29	32		71,000	Good	Fair	E,H
Aluminium 5%Mg 0.5%Mn	5	ISO 3522 Al.Mg5Si1 & Al.Mg6	140-170	90-110	3	50-70	7.9	2.65	23.0	0.33	31		71,000	Argon arc	Good	H,I
Aluminium 12%Si	6	ISO 3522 Al.Si12 & Al.Si12Fe	160-180	60-70	5	50-55	6.0	2.65	20.0	0.34	37		71,000	Good	Poor	E,F,H,I
Aluminium 12%Si 0.5%Mg 0.5%Mn	9	ISO 3522 Al.Si10Mg	170-240	95-120	3-5	75-85		2.68	22.0	0.35	38		71,000	Argon arc	Fair	A,E,H,I
Aluminium 10%Cu 0.3%Mg	12		170	140-170	0.5-1	80-95	1.0	2.94	22.0	0.32	33		71,000	Argon arc	Good	C,E
Aluminium 12%Si 1%Cu 1%Mg	13	ISO 3522 Al.Si12Cu & Al.Si12CuFe	140-170		0-1	65-150		2.70	19.0	0.28	29		73,000	Argon arc	Fair	C,E,G,H
Aluminium 5%Si 1%Cu 0.5%Mg	16	ISO 3522 Al.Si5Cu1Mg	190-230	120-140	2	80	1.4	2.70	23.0	0.34	39		71,000	Argon arc	Fair	E
Aluminium 12%Si	20	ISO 3522 Al.Si12Cu & Al.Si12CuFe	190-230	70-80	5	55-65	9.0	2.68	20.0	0.37	37		71,000	Argon arc	Poor	A,H,I
Aluminium 6%Si 4%Cu 0.4%Mn Mg	21	ISO 3522 Al.Si6Cu4	150-200	80-140	1-2	70-100		2.81	21.0	0.29	32		71,000	Argon arc	Fair	H
Aluminium 5%Si 3%Cu 0.4%Mn	22	ISO 3522 Al.Si5Cu3	245 1	10-120	8	70-80	4.8	2.77	21.0	0.29	32		71,000	Argon arc	Fair	A,H,K
Aluminium 8%Si 3.5%Cu	24	ISO 3522 Al.Si8Cu3Fe	180	100-120	1	85		2.79	21.0	0.23	24		71,000	Argon arc	Fair	A,H
Aluminium 7%Si 0.5%Mg	25	ISO 3522 Al.Si7Mg	130-230	80-100	1-2	55-65		2.68	22.0	0.36	39		71,000	Argon arc	Fair	H,1
Aluminium 10%Si 3%Cu 1%Mg	26		210	160-190	1	90-120	1.4	2.67	21.0	0.25	26		71,000	Argon arc	Fair	A,C,G,H
Aluminium 7%Si 2%Cu 0.5%Mn	27		140	80-90	1	90-120	2.75		21.5	0.37	27		71,000	Good	Fair	E,H
Aluminium 18%Si 1.5%Cu 1%Ni	28		120		0	90-140	2.68		17.5	0.27			82,000	Argon arc	Poor	C,H
Aluminium 23%Si 1%Cu Mg Ni	29		120	120	0	100-140	2.65		16.5	0.24-0.27			88,000	Argon arc	Poor	C,H
Aluminium 17%Si 4.5%Cu Mg	30		150			110		2.73	18.0	0.32	20		82,000	Argon arc	Poor	C,D,H
Aluminium 5%Zn 0.7%Mg Ti	31	ISO 3522 Al.Zn5Mg	215		4	70	2.7-4.0	2.81	25.0	0.35	25		71,000	Argon arc	Good	A,H,K
Copper alloys	**BS1400**															
Brass 25% Zn 3%Pb 2%Sn	SCB1	ASTM B146-52; BS1028	170-200	80-110	18-40	45-60		8.5	19.5	0.26	18-28			Braze	Good	E,G
Brass 33%Zn 2%Pb	3		190-220	70-110	11-30	45-65		8.4	19.5	0.29	18-28			Braze	Good	E
Brass 15%Zn As	6	170-190	80-110	18-40	45-60		8.6	19.5	0.29	18-28			Good	Poor	H,I	
Naval brass 36%Zn Sn	SB4										0.36					
High-tensile brass 35%Zn Al Fe Mn	HTB1		470-570	170	18-35	100-150		8.2	19.8	0.1-0.26	19-29			Fair	Poor	C,F,G,H,I
High tensile brass 28%Zn 5%Al Fe Mn	3		740-810	400	11-18	150-230		8.1	19.8	0.1-0.26	19-29			Fair	Poor	H
Gun metal 10%Sn 2%Zn	G1		270-480	130-310	13-25	70-95		8.8	18.3	0.12	11-12			Good	Fair	C,E,G,H,I
Nickel gun metal 7%Sn 5%Ni 3%Zn	3		280-340	140-160	3-25	70-95		8.8	18.3	0.12	11-12			Good	Fair	C,H
Leaded gun metal8%Zn 5%Pb 3%Sn	LG1	ASTM B62-52; BS897 1	80-220	80-130	11-15	55-65		8.7	18.7	0.12	10-15			Braze	Good	E,G,H
Leaded gun metal 5%Pb 5%Zn 5%Sn	2		200-270	100-130	13-25	65-75		8.9	18.7	0.12	10-15			Braze	Good	E,G,H
Leaded gun metal 7%Sn 3%Pb 3%Zn	4		250-320	130-140	16-25	70-85		8.8	18.7	0.12	10-15			Braze	Good	E,G,H
Leaded bronze 15%Pb 9%Sn	LB1		170-230	80-110	4-10	50-70		9.1	18.5	0.16	8-10			Poor	Good	C,D,J
Leaded bronze 10%Pb 10%Sn	2		190-270	80-130	5-15	65-85		9.0	18.5	0.16	8-10			Poor	Good	C,D,J
Leaded bronze 9%Pb 5%Sn Cu	4		160-190	60-100	7-12	55-75		9.0	18.5	0.09	8-10			Poor	Good	C,D
Leaded Bronze 2%Pb 5%Sn	5		160-190	60-100	5-10	45-65		9.1	18.7		8-10			Poor	Good	C,D
Phosphor bronze 10%Sn P	PB1	BS1059	220-280	130-160	3-8	70-100		8.8	17.7	0.09	10-11			Braze	Fair	B,C,E,F
Phosphor bronze 11%Sn P	2		220-310	130-170	5-15	75-110		8.8	17.7	0.09	10-11			Braze	Fair	B,C,E
Phosphor bronze 10%Sn Pb P	4		190-270	100-160	3-12	70-95		8.8	17.5	0.20	10-11			Braze	Fair	B,C,E,F
Aluminium bronze 10%Al 3%Fe	AB1	ASTM B148-52; BS1072/3	500-590	170-200	18-40	90-140		7.6	16.8	0.16	6-12			Good	Poor	C,G,H,I
Aluminium bronze 10%Al 5%Fe 5%Ni	2		640-700	250-300	13-20	140-180		7.6	16.8	0.16	6-12			Good	Poor	C,G,H,I
Aluminium silicon bronze	3		460-500	180-190	20-30			7.7	16.8		6-12			Good	Fair	
Copper-tin 10%Sn	CT1		230-310	130-160	6-20	70-90		8.8	18.1		11			Braze	Fair	
Copper-tin 12%Sn Ni	2		280-330	160-180	12-20	75-110		8.8	19.0		9			Fair	Fair	
Copper nickel chromium	CN1		480-540	300-320	18-25	170-200		8.8	18.0		5			Poor	Poor	
Copper nickel niobium	2		480-540	300-320	18-25	170-200		8.8	18.0 5					Poor	Poor	
Copper magnesium aluminium	CMA1		650-730	280-340	18-25	160-210		7.5	17.7		3-4			Good	Poor	

NATURE OF THE GUIDE

Information given here is intended only as an aid in selecting metals for specific purposes. Before confirming the choice, reference should be made to more detailedinformation in the standard specifications and other relevant literature. Heat treatment, surface finishing etc., should also be considered.

ACCREDITATION AND MEMBERSHIPS

Member of Cast Metals Federation
Member of Castings Technology International

CONVERSION FACTORS

1 metre (m)	3.281 feet1	N/sq.mm	145.0 lb/sq. inch
1 millimetre (mm)	0.03937 inch	1 gram (grm)	0.002205 lb
1 square mm	0.00153 sq. inch	1 grm/cc	0.03641 lb/cu. inch
1 cubic centimetre (cc)	0.06102 cu. inch	1 calorie (cal)	0.2520 BThU
1 Newton (N)	0.2248 pounds force	1 cal	4.187 joules
1 Nm	0.7376 foot-lb	1 degree C (°C)	0.5556 °F

KEY TO ADVANTAGEOUS PROPERTIES

A High strength-to-weight ratio
B Spring
C Bearing, lubricated
D Bearing, dry
E Pressure tightness
F Cold working
G Use at elevated temperatures
H Anti-atmospheric corrosion
I Marine conditions
J Acid resisting
K Shock resistant

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