

Applications for Bronze Alloys

Alloy	Standard	Material Description	Typical Properties and Applications	Machinability Rating	Near/equiv. Specification	SAE
C83600	ASTM B505	Leaded gunmetal	Excellent machinability, medium strength, good pressure tightness; not subject to dezincification.	85	LG2	40
C84400	ASTM B505	Leaded gunmetal	Excellent machinability; widely used in the pump industry for bowl and lineshaft bearings.	90	LG1	n/a
C86300	ASTM B505	Manganese bronze	Exceptional strength, good wearing properties and good ductibility but has only fair machinability.	25	HTB3	430
C86500	ASTM B505	Manganese bronze High tensile brass	Good strength and reasonable machinability. Suitable for machinery parts requiring strength and toughness, but susceptible to dezincification.	30	HTB1	43
C90700	ASTM B505	Phosphor bronze	Good machinability, high strength and good corrosion resistance. Suitable for heavy-duty gears and bearings with medium to high loads.	30	PB1	65
C90810	AS 1565	Phosphor bronze	High strength, good machinability and corrosion resistance. Suitable for heavy duty gears/bearings with medium to high loads. Good resistance to impact loading.	30	PB2	65
C91700	ASTM B505	Nickel tin bronze	Fine-grained structure for improved strength and wear resistance. Suitable for higher-stressed, fast-running worm gears and helical gears.	40	CuSn12Ni	n/a
C93200	ASTM B505	Leaded gunmetal	Excellent machinability, good hardness, strength and wear resistance. Not subject to dezincification and has reasonable resistance to seawater.	70	SAE660	660
C93700	ASTM B505	Leaded bronze	Leaded tin bronze with excellent machinability, medium strength and good corrosion resistance. Will withstand mild acids as found in mine water.	95	LB2	64
C95400	ASTM B505	Aluminium bronze	Excellent wear resistance, good impact resistance and reasonable corrosion resistance. Suitable for high strength bearings.	50	UNI5274	J461
C95500	ASTM B505	Nickel aluminium bronze	Good wear properties, suited for elevated temperatures. Heavy duty, high strength alloy with excellent resistance to corrosion and fatigue.	50	UNI5275	n/a
C95800	ASTM B505	Nickel aluminium bronze	Widely used for marine applications, having superior corrosion resistance, high strength, good wear and erosion resistance.	40	AB2	n/a

Applications for Brass Alloys

Alloy	Standard	Material Description	Typical Properties and Applications	Machinability Rating	Near/equiv. Specification
C35200	AS/NZS 1567	Dezincification resistant machining brass	Arsenical leaded dezincification resistant alloy with good machining performance. Meets requirements of AS4020 for products used in contact with drinking water.	80	C35330
C48600	AS/NZS 1567	Dezincification resistant forging brass	Arsenical leaded dezincification resistant alloy with good machining performance and good hot forging properties.	80	
C37700	ASTM B124	2% leaded 60/40 forging brass	Standard hot forging brass for a wide range of uses.	80	CZ122 AS/NZS 1567
C36000	ASTM B16	Free machining brass (American)	High speed repetition work with ductility for light riveting.	95	CZ124 AS/NZS 1567
C38500	ASTM B455	Free machining brass	Maximum productivity and tool life on high speed repetition work.	100	CZ121 AS/NZS 1567
C46400	ASTM B21	Naval brass	Improved corrosion resistance; bolts, fittings etc. in marine use. Low lead content for use where environmental aspects may be a concern.	30	CZ112 AS/NZS 1567
C68600	AS/NZS 1567	Leaded manganese brass	Combines high strength with fair machinability and hot forgability.	70	CZ114
C64200 C64300	ASTM B150	Extruded aluminium-silicon bronze	High strength aluminium bronze; excellent corrosion resistance, good forging properties and fair machinability.	60	
C67300	AS/NZS 1567	Extruded silicon-manganese bronze	Excellent wear resistance; for bushings, gear blanks and hydraulic pump components.	70	

Many other alloys including low lead and forging grade variants of selected alloys are also available.

Aluminium Bronze

C95400 is a hard and wear-resistant alloy with excellent strength and reasonable machining properties. Physical properties remain good at elevated temperatures. General corrosion resistance is good under most conditions.

C95400 is suitable for high-strength bearings, gears and worm wheels, having good impact resistance but requiring full film lubrication.

AB2 has similar properties but shows superior corrosion resistance, especially in sea water, due to the addition of nickel.

Machining Allowance – C95400/AB2

All sizes have the following allowance for finish machining:-

< 3"	OD	+0.072"
	ID	-.125"
≥ 3" ≤ 4"	OD	+0.110"
	ID	-.125"
> 4" ≤ 5 1/2"	OD	+0.130"
	ID	-.145"
> 5" ≤ 6 1/2"	OD	+0.170"
	ID	-.150"
> 6 1/2" ≤ 8"	OD	+0.190"
	ID	-.200"
> 8" ≤ 20"	Tolerances on request	

(Note: allowances are approximate)

Material Specification

	UNS		
	BS1400	C95400	AB2
Australia	AS	C95400	C95810
Germany	DIN	CuAl11Fe4	CuAl10Ni
Italy	UNI	5274	5275*

Nominal Chemical Analysis %

	C95400	AB2
Copper	85	82
Aluminium	11	9.5
Iron	4	4.0
Nickel	-	4.5

Mechanical Properties

	C95400	AB2
Tensile (typical)	95Ksi (655Mpa)	100Ksi (690Mpa)
Yield (typical)	35Ksi (240Mpa)	38Ksi (260Mpa)
Elongation (typical)	15%	18%
Hardness (typical)	180BHN	170BHN

Standard Lengths – C954/AB2

≤ 6" diameter: 12ft
 > 6" diameter: Length on request
 (Bars may be cut to order)

* Similar but not identical. Ksi = 1,000psi

C95400 – Stock Sizes and Weights

Imperial: **SOLID**

O/D	I/D	kg/ft	kg/m	lb/ft
3/4		0.78	2.6	1.7
1		1.3	4.3	2.9
1 1/4		2.0	6.6	4.4
1 1/2		2.9	9.3	6.3
1 3/4		3.8	12.5	8.4
2		4.9	16.2	10.9
2 1/4		6.2	20.3	13.7
2 1/2		7.6	24.9	16.8
2 3/4		9.2	30.0	20.2
3		10.9	35.6	23.9
3 1/4		13.0	42.6	28.6
3 1/2		15.0	49.1	33.0
3 3/4		17.1	56.2	37.8
4		19.4	63.7	42.8
4 1/2		24.6	80.8	54.3
5		30.3	99.2	66.7
5 1/2		36.4	119.6	80.3
6		43.8	143.6	96.5

Imperial: **HOLLOW**

O/D	I/D	kg/ft	kg/m	lb/ft
1 1/4	3/4	1.6	5.1	3.4
1 1/2	3/4	2.4	7.8	5.3
	1	2.0	6.4	4.3
1 3/4	1	2.9	9.7	6.5
	1 1/4	2.4	7.7	5.2
2	3/4	4.5	14.7	9.9
	1	4.1	13.3	9.0
	1 1/4	3.5	11.4	7.7
	1 1/2	2.8	9.1	6.1
2 1/4	1	5.3	17.5	11.7
	1 1/4	4.7	15.6	10.5
	1 1/2	4.0	13.2	8.9
	1 3/4	3.2	10.4	7.0
2 1/2	1	6.7	22.1	14.8
	1 1/4	6.2	20.2	13.6
	1 1/2	5.4	17.8	12.0
	1 3/4	4.6	15.0	10.1
	2	3.6	11.7	7.9
2 3/4	1 1/4	7.7	25.3	17.0
	1 1/2	7.0	22.9	15.4
	1 3/4	6.1	20.1	13.5
	2	5.1	16.8	11.3
	2 1/4	4.0	13.0	8.7
3	1	10.0	32.7	22.0
	1 1/4	9.4	30.8	20.7
	1 1/2	8.7	28.5	19.1
	1 3/4	7.8	25.6	17.2
	2	6.8	22.3	15.0
	2 1/4	5.7	18.6	12.5
	2 1/2	4.4	14.3	9.6
3 1/4	1 1/2	10.8	35.5	23.8
	1 3/4	9.9	32.6	21.9
	2	8.9	29.3	19.7
	2 1/4	7.8	25.6	17.2
	2 1/2	6.5	21.3	14.3
3 1/2	1	14.0	45.9	30.9
	1 1/2	12.8	42.0	28.2
	2	10.9	35.9	24.1
	2 1/2	8.5	27.9	18.7
	3	5.5	18.0	12.1
3 3/4	1 1/2	15.0	49.1	33.0
	2	13.1	43.0	28.9
	2 1/2	10.6	34.9	23.5
	3	7.6	25.0	16.8

O/D	I/D	kg/ft	kg/m	lb/ft
4	1	18.4	60.5	40.7
	1 1/2	17.3	56.6	38.0
	2	15.4	50.5	33.9
	2 1/2	12.9	42.4	28.5
	3	9.0	32.6	21.9
	3 1/2	6.0	20.7	13.9
4 1/2	1 1/2	22.5	73.9	49.7
	2	20.7	67.9	45.6
	2 1/2	18.3	59.9	40.3
	3	15.3	50.1	33.7
	3 1/2	11.7	38.4	25.8
	4	7.6	24.8	16.7
5	2	26.3	86.3	58.0
	2 1/2	23.9	78.4	52.7
	3	20.9	68.5	46.0
	3 1/2	17.3	56.8	38.2
	4	13.2	43.2	29.0
5 1/2	2	32.5	106.6	71.6
	3	27.1	88.8	59.7
	3 1/2	23.5	77.1	51.8
	4	19.4	63.5	42.7
6	2	39.8	130.7	87.8
	2 1/2	36.7	120.4	80.9
	3	34.4	113.0	75.9
	3 1/2	30.9	101.3	68.0
	4	26.7	87.7	58.9
	4 1/2	21.2	69.6	46.7
	5	16.7	54.9	36.9

AB2 – Stock Sizes and Weights

Imperial: **SOLID**

O/D	I/D	kg/ft	kg/m	lb/ft
3/4		0.79	2.6	0.36
1		1.4	4.4	0.64
1 1/4		2.1	6.7	1.0
1 1/2		2.9	9.5	1.4
2		5.1	10.5	2.4
2 1/2		7.8	26.5	3.6
2 3/4		9.4	30.7	4.3
3 1/2		15.3	50.1	7.0
6		44.1	144.5	20.0

Imperial: **HOLLOW**

O/D	I/D	kg/ft	kg/m	lb/ft
2 1/2	1 1/4	6.3	20.6	2.9
3 1/2	1	14.4	47.1	6.4
4 1/4	1 1/2	20.3	66.4	9.2
4 1/4	2	18.4	60.1	8.4
4 3/4	1	27.0	88.6	12.3
5	2	26.7	87.6	12.1
5	3	21.1	69.3	9.6
5 1/2	1 3/8	35.3	115.8	18.0
6	2 1/2	37.4	122.7	17.0
6	3	34.3	112.6	15.6

Note: Sizes over 6"OD and up to and including 20"OD are centrifugally cast in 40' lengths.

Bronze

LG2 is a general purpose engineering bronze with a wide range of applications that require good bearing properties and corrosion resistance.

PB1 is suitable for higher loadings and when a harder material with good bearing properties is required.

Machining Allowance – LG2/PB1

All sizes have the following allowance for finish machining:-

≤ 3 ³ / ₄ "		OD	+0.040"
		ID	-.060"
≤ 4"	≤ 5"	OD	+0.070"
		ID	-.090"
> 5"	≤ 6"	OD	+0.094"
		ID	-.108"
> 6"	≤ 8"	OD	+0.109"
		ID	-.120"
> 8"	≤ 20"	Tolerances on request	

(Note: allowances are approximate)

Material Specification

	BS1400	LG2	PB1
USA	UNS	C83600	C90700
Japan	JIS	BC6C	PBC2C
Germany	DIN	RG5	G-CuSn10
Australia	AS	83600	C90710

Nominal Chemical Analysis %

	LG2	PB1
Copper	85	89
Tin	5	10.3
Zinc	5	-
Lead	5	-
Phosphorus	-	0.7

Mechanical Properties

	LG2	PB1
Tensile	45Ksi (310Mpa)	55Ksi (380Mpa)
Yield	19Ksi (130Mpa)	28Ksi (190Mpa)
Elongation	20%	13%
Hardness	80BHN	110BHN

Standard Lengths – LG2/PB1

≤ 8" diameter: 10ft
 > 8" diameter: Length on request
 (Bars may be cut to order)

LG2 – Stock Sizes and Weights
Imperial: SOLID – continuous

O/D	I/D	kg/ft	kg/m	lb/ft
1/2		0.40	1.3	0.18
5/8		0.61	2.0	0.28
3/4		0.86	2.8	0.39
7/8		1.2	3.8	0.52
1		1.5	4.9	0.68
1 ¹ / ₈		1.9	6.1	0.85
1 ¹ / ₄		2.3	7.5	1.1
1 ³ / ₈		2.7	9.0	1.3
1 ¹ / ₂		3.3	10.7	1.5
1 ⁵ / ₈		3.8	12.5	1.7
1 ³ / ₄		4.4	14.4	2.0
2		5.7	18.7	2.6
2 ¹ / ₄		7.2	23.6	3.3
2 ¹ / ₂		8.8	29.0	4.0
2 ³ / ₄		10.7	35.0	4.9
3		12.7	41.5	5.8
3 ¹ / ₄		14.8	48.6	6.6
3 ¹ / ₂		17.2	56.3	7.7
3 ³ / ₄		19.7	64.6	8.8
4		22.7	74.4	10.3
4 ¹ / ₂		28.6	93.9	13.0
5		35.2	115.5	16.0
5 ¹ / ₂		42.9	140.6	19.5
6		50.9	166.9	23.1
7		69.2	227.1	31.4
8		90.1	295.5	40.8

Imperial: HOLLOW – continuous

1	1/2	1.2	4.0	0.55
	3/4	0.8	2.7	0.38
1 ¹ / ₈	3/4	1.2	4.0	0.55
	1 ¹ / ₄	1/2	2.0	6.6
1 ¹ / ₄	3/4	1.6	5.3	0.74
	1	1.1	3.5	0.49
1 ³ / ₈	1	1.5	5.0	0.70
	1 ¹ / ₂	1/2	3.0	9.8
1 ¹ / ₂	3/4	2.6	8.5	1.18
	1	2.0	6.7	0.93
1 ⁵ / ₈	1 ¹ / ₄	1.3	4.3	0.60
	1	2.6	8.5	1.2
1 ³ / ₄	1 ¹ / ₄	1.9	6.1	0.85
	3/4	3.7	12.3	1.7
2	1	3.2	10.4	1.5
	1 ¹ / ₄	2.5	8.0	1.1
2 ¹ / ₄	1 ¹ / ₂	1.6	5.1	0.71
	3/4	5.1	16.6	2.3
2 ¹ / ₂	1	4.5	14.7	2.1
	1 ¹ / ₄	3.8	12.3	1.7
2 ³ / ₄	1 ¹ / ₂	2.9	9.4	1.3
	3/4	6.5	21.4	3.0
3	1	6.0	19.6	2.7
	1 ¹ / ₄	5.2	17.2	2.4
3 ¹ / ₄	1 ¹ / ₂	4.3	14.3	2.0
	1 ³ / ₄	3.3	10.7	1.5
3 ¹ / ₂	2	2.0	6.7	0.92
	3/4	8.2	26.9	3.7
4	1	7.6	25.0	3.5
	1 ¹ / ₄	6.9	22.6	3.2
4 ¹ / ₂	1 ¹ / ₂	6.0	19.7	2.7
	1 ³ / ₄	4.9	16.2	2.3
5	2	3.7	12.1	1.7

O/D	I/D	kg/ft	kg/m	lb/ft
2 ³ / ₄	1	9.5	31.0	4.3
	1 ¹ / ₄	8.7	28.6	4.0
	1 ¹ / ₂	7.8	25.7	3.6
	1 ³ / ₄	6.8	22.1	3.1
	2	5.5	18.1	2.5
3	2 ¹ / ₄	4.1	13.4	1.9
	1	11.5	37.6	5.2
	1 ¹ / ₄	10.7	35.2	4.9
	1 ¹ / ₂	9.8	32.2	4.5
	1 ³ / ₄	8.8	28.7	4.0
3 ¹ / ₄	2	7.5	24.6	3.4
	2 ¹ / ₄	6.1	20.0	2.8
	2 ¹ / ₂	4.5	14.8	2.1
	1	13.6	44.7	6.1
	1 ¹ / ₄	12.9	42.3	5.8
3 ¹ / ₂	1 ¹ / ₂	12.0	39.3	5.3
	1 ³ / ₄	10.9	35.8	4.9
	2	9.7	31.7	4.3
	2 ¹ / ₄	8.3	27.1	3.7
	2 ¹ / ₂	6.7	21.9	2.9
3 ³ / ₄	2 ³ / ₄	4.9	16.1	2.1
	1	16.0	52.3	7.1
	1 ¹ / ₄	15.2	50.0	6.8
	1 ¹ / ₂	14.3	47.0	6.4
	1 ³ / ₄	13.3	43.5	5.9
4	2	12.0	39.4	5.3
	2 ¹ / ₄	10.6	34.8	4.7
	2 ¹ / ₂	9.0	29.6	4.0
	2 ³ / ₄	7.3	23.8	3.2
	3	5.3	17.5	2.3
4 ¹ / ₂	1	18.5	60.6	8.3
	1 ¹ / ₄	17.7	58.2	7.9
	1 ¹ / ₂	16.8	55.2	7.5
	1 ³ / ₄	15.8	51.7	7.0
	2	14.5	47.6	6.5
5	2 ¹ / ₄	13.1	43.0	5.8
	2 ¹ / ₂	11.5	37.8	5.1
	2 ³ / ₄	9.8	32.0	4.3
	3	7.8	25.7	3.4
	3 ¹ / ₄	5.7	18.8	2.5
5 ¹ / ₂	1	21.6	70.7	9.8
	1 ¹ / ₄	20.9	68.4	9.4
	1 ¹ / ₂	20.0	65.5	9.0
	1 ³ / ₄	18.9	62.1	8.5
	2	17.7	58.0	8.0
6	2 ¹ / ₄	16.3	53.5	7.3
	2 ¹ / ₂	14.7	48.3	6.6
	2 ³ / ₄	13.0	42.6	5.8
	3	11.1	36.4	4.9
	3 ¹ / ₄	9.0	29.6	4.0
6 ¹ / ₂	3 ¹ / ₂	6.8	22.2	3.0
	2	23.6	77.5	10.7
	2 ¹ / ₂	20.7	67.8	9.3
	3	17.0	55.8	7.6
	3 ¹ / ₂	12.7	41.6	5.7
7	4	7.7	25.2	3.5
	2	30.2	99.1	13.7
	2 ¹ / ₂	27.3	89.4	12.3
	3	23.6	77.5	10.6
	3 ¹ / ₂	19.3	63.3	8.6
7 ¹ / ₂	4	14.3	46.8	6.5
	4 ¹ / ₂	8.6	28.1	3.9
	2	38.0	124.5	17.1
	2 ¹ / ₂	35.0	114.9	15.8
	3	31.4	103.0	14.1

LG2 – Stock Sizes and Weights

Imperial: HOLLOW – continuous

O/D	I/D	kg/ft	kg/m	lb/ft
5½	3½	27.1	88.9	12.1
	4	22.1	72.6	10.0
	4½	16.4	53.9	7.4
	5	10.1	33.1	4.5
6	2	46.0	150.8	20.8
	2½	43.0	141.2	19.4
	3	39.4	129.3	17.7
	3½	35.1	115.2	15.7
	4	30.1	98.8	13.6
	4½	24.5	80.2	11.0
7	3	57.9	189.8	26.0
	4	48.6	159.5	21.9
	5	36.6	120.1	16.4
	6	21.9	71.7	9.9
8	3	78.7	258.2	35.5
	4	69.5	227.8	31.3
	5	57.5	188.5	25.9
	6	42.7	140.1	19.3
	7	25.2	82.8	11.5

Imperial: HOLLOW – centrifugal

8½	4	80.9	265.4	36.6
	5	68.9	226.0	31.1
	6	54.2	177.7	24.5
	7	36.7	120.3	16.7
9	4	93.0	305.2	42.0
	5	81.0	265.9	36.6
	6	66.3	217.5	30.0
	7	48.8	160.2	22.2
9½	8	28.6	93.8	13.0
	4	105.9	347.3	47.9
	5	93.9	307.9	42.4
	6	79.1	259.6	35.8
10	7	61.6	202.2	28.0
	8	41.4	135.9	18.8
	5	107.4	352.2	48.5
	6	92.6	303.9	41.9
10½	7	75.1	246.5	34.1
	8	54.9	180.2	24.9
	9	32.0	104.9	14.5
	5	121.5	398.8	54.9
11	6	106.8	350.4	48.4
	7	89.3	293.0	40.5
	8	69.1	226.7	31.4
	9	46.2	151.4	21.0
11½	5	136.4	447.6	61.7
	6	121.7	399.2	55.1
	7	104.2	341.9	47.3
	8	84.0	275.5	38.1
	9	61.0	200.2	27.7
	10	35.3	115.9	16.0
12	5	152.0	498.6	68.7
	6	137.2	450.2	62.1
	7	119.8	392.9	54.3
	8	99.5	326.6	45.1
	9	76.6	251.3	34.7
12	10	50.9	167.0	23.1
	5	168.2	551.9	76.1
	6	153.5	503.5	69.5
7	136.0	446.2	61.7	

PB1 – Stock Sizes and Weights

Imperial: SOLID

O/D	I/D	kg/ft	kg/m	lb/ft
3/4		0.85	2.8	0.39
1		1.5	4.9	0.68
	1¼	2.3	7.5	1.1
1½		3.3	10.6	1.5
	2	5.7	18.6	2.6
2½		8.8	28.8	4.0
	2¾	10.6	34.7	4.8
3		12.6	41.3	5.7
	3½	16.8	55.0	7.6
3¾		19.2	63.0	8.7
	4	22.6	73.9	10.3
6		50.5	165.6	22.9

Imperial: HOLLOW

2	1	4.5	14.7	2.0
	1½	2.9	9.4	1.4
	2¼	3.3	10.7	1.5
2½	1	7.6	24.9	3.5
	1¾	4.9	16.1	2.3
3	1	11.4	37.3	5.2
	1½	9.8	32.0	4.5
	2	7.5	24.5	3.4
3½	2½	8.7	28.4	4.0
	2¾	7.0	22.7	3.2
4	2	17.4	57.1	7.9
	2½	14.5	47.4	6.6
4½	2½	20.3	66.6	9.2
	5	29.9	97.9	13.6
5½	3½	26.5	86.8	12.0
	6	37.8	127.1	17.2

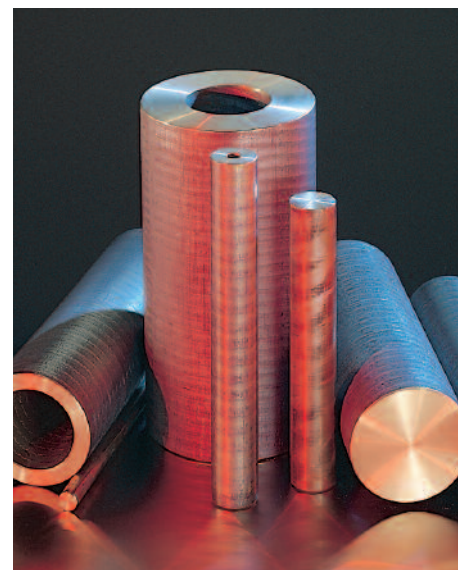
O/D	I/D	kg/ft	kg/m	lb/ft
12	8	115.8	379.9	52.5
	9	92.8	304.6	42.1
	10	67.1	220.3	30.5
13	6	188.0	616.9	85.2
	7	170.5	559.5	77.3
	8	150.3	493.2	68.2
	9	127.4	417.9	57.7
	10	101.7	333.6	46.1
	11	73.2	240.3	33.2
14	7	207.8	681.8	94.2
	8	187.6	615.5	85.1
	9	164.7	540.2	74.6
	10	139.0	455.9	63.0
	11	110.5	362.6	50.1
15	12	79.4	260.3	36.0
	7	247.8	813.1	112.3
	8	227.6	746.8	103.2
16	9	204.7	671.5	92.8
	10	179.0	587.2	81.1
	11	150.5	493.9	68.3
	12	119.4	391.6	54.1
	13	85.5	280.4	38.8
	17	8	270.4	887.1
9		247.4	811.8	112.2
10		221.7	727.5	100.5
11		193.3	634.2	87.6
12		162.1	531.9	73.5
13		128.2	420.6	58.1
18	14	91.6	300.4	41.5
	8	315.9	1036.0	143.2
	9	292.9	961.0	132.8
	10	267.2	876.7	121.1
	11	238.8	783.5	108.2
	12	207.6	681.2	94.1
	13	173.7	569.9	78.7
19	14	137.1	449.7	62.1
	15	97.7	320.4	44.3
	9	341.2	1119.0	154.6
	10	315.5	1034.0	143.0
20	11	287.0	941.7	130.1
	12	255.9	839.4	116.0
	13	222.0	728.2	100.6
	14	185.3	607.9	84.0
	15	145.9	478.7	66.2
	16	103.8	340.5	47.1
	10	366.4	1201.0	166.1
	11	338.0	1108.0	153.2
20	12	306.8	1005.0	139.1
	13	272.9	895.0	123.7
	14	236.3	775.0	107.1
	15	196.9	646.0	89.3
	16	154.8	507.0	70.2
	17	109.9	361.0	49.8
	12	360.6	1182.0	163.4
	13	326.6	1071.0	148.1
20	14	290.0	951.0	131.4
	15	250.6	822.0	113.6
	16	208.5	654.0	94.5
	17	163.6	537.0	74.2
	18	116.0	381.0	52.6



Centrifugal castings can be supplied machined to near net size.

Designation		Similar Specifications					
UNS/CDA/SAE	BS1400	AS1565	UNI	DIN		BSEN 1982:1999	Other
Aluminium Bronzes							
C95200 C95300 C95400 C95400HT C95410 C95500 C95500HT C95800 C95900	AB1 ² AB2 ² AB2 ²	C95210 ² C95300 C95400 C95500HT C95810 ²	5273 5274 5275			CuAl10Fe2 ² CuAl10Ni ² CuAl10Fe5Ni5 ²	SAE 68A ¹ SAE 68B ¹ AMS 4870C AMS 4872B AMS 4880
Gear Bronzes							
C90700 C90800 C91600 C91700 C92900	PB1 ² PB2	C90710 ² C90810 C91700	7013-72-2A	SnBz10 SnBz12	CuSn10 ² CuSn12 CuSn12Ni ²	CuSn11P CuSn12	SAE65c ¹
Bearing Bronzes							
C83600 C84400 C90300 C90500 C92200 C92500 C92700 C93200 C93700 C93800	LG2 G1 LB2	C83600 C83810A ² C90300 C92610 C93200 C93700	7013-72-8A 7013-72-9A ² 7013-72-6A ² 7013-72-7A ² 7013-72-3A ² 7013-72-4A ²	RG5 RG10 RG7 ² SnPbBz10	CuSn5ZnPb CuSn10Zn CuSn7ZnPb ² CuPb10Sn CuPb15Sn	CuSn5Zn5Pb5 CuSn7Zn4Pb7 ² CuSn10Pb10 ² CuSn7Pb15	SAE 40 ¹ SAE 620 ¹ SAE 62 ¹ SAE 622 ¹ SAE 640 ¹ SAE 63 ¹ SAE 660 ¹ SAE 64 ¹ SAE 67 ¹
Manganese Bronzes							
C86200 C86300 C86500 C67300	HTB3 ² HTB1 ²	C86300 C86500			CuZn25Al5 CuZn35Al1	CuZn25Al5Mn4Fe3 ² CuZn35Mn2Al1Fe1 ²	SAE 430A ¹ SAE 430B ¹ SAE 43 ¹
<i>Fraser is not limited to the alloys above. Other alloys are available upon request.</i>							

- Continuous cast products comply with ASTM B505.
- Centrifugal cast products comply with ASTM B271.
- ¹ For cross-reference only – specification discontinued.
- ² Similar, but not identical.



Continuous cast hollow and solid bar is available in a wide range of alloys and sizes.

Designation	Nominal Chemical Composition (%)						Mechanical Properties ³									
UNS/CDA/SAE							Specific Gravity	Tensile (kpsi)		Yield (kpsi)		Elongation (%)		Brinell Hardness		
								Min	Typ	Min	Typ	Min	Typ	Min	Typ	
	<i>Copper</i>	<i>Alum</i>	<i>Iron</i>	<i>Nickel</i>	<i>Mang</i>											(3000kg)
C95200	88	9	3				7.64	65	86	25	32	20	38			140
C95300	89	10	1				7.53	65	85	25	38	20	30			159
C95400	85	11	4				7.45	75	95	30	35	12	18			187
C95400HT	85	11	4				7.45	90	110	45	50	6	14			207
C95410	84	10	4	2			7.45	75	95	30	35	12	18			187
C95500	81	11	4	4			7.53	90	110	40	62	6	12			212
C95500HT	81	11	4	4			7.53	110	115	60	70	5	10			229
C95800	81	9	4	5	1		7.64	85	100	35	40	15	20			183
C95900	Bal	13	4.5				7.18	75	80	50	55	1	1.5	241		277
	<i>Copper</i>	<i>Tin</i>	<i>Lead</i>	<i>Zinc</i>	<i>Nickel</i>	<i>Other</i>										(500kg)
C90700	88.8	11				Phos 0.2	8.78	40	56	25	32	10	25			95
C90800	87.8	12				Phos 0.2	8.73	50	60	28	32	12	20			95
C91600	88	10.3			1.5	Phos 0.2	8.87	45	60	25	32	10	25			85
C91700	86.3	12			1.5	Phos 0.2	8.75	50	60	28	32	12	20			95
C92900	83.5	10	2.8		3.5	Phos 0.2	8.87	45	58	25	32	8	12			75
	<i>Copper</i>	<i>Tin</i>	<i>Lead</i>	<i>Zinc</i>	<i>Nickel</i>											(500kg)
C83600	85	5	5	5			8.83	30	45	14	20	20	40			70
C84400	81	3	7	9			8.69	30	35	15	18	16	20			
C90300	88	8		4			8.83	40	55	18	26	20	32			80
C90500	88	10		2			8.73	40	55	18	28	20	25			85
C92200	88	6	1.5	4.5			8.65	34	50	16	22	18	35			65
C92500	86.5	11	1		1		8.73	40	55	24	23	10	20			90
C92700	88	10	2				8.78	38	54	20	26	8	25			80
C93200	83	7	7	3			8.93	30	47	14	22	15	30			70
C93700	80	10	10				8.87	30	42	12	25	15	18			70
C93800	78	7	15				9.25	26	36	14	20	12	17			60
	<i>Copper</i>	<i>Alum</i>	<i>Iron</i>	<i>Mang</i>	<i>Zinc</i>	<i>Other</i>										(3000kg)
C86200	63	4	3	3	27		7.85	90	100	45	58	18	23			192
C86300	63	6	3	3	25		7.84	110	115	60	75	12	15			229
C86500	58	1	1	1	39		8.30	65	80	25	32	20	25			149
C67300*	60.5			2.3	Bal	Lead 1.2 Silicon 1.1	8.3	55	60	26	29	15	20			100

Extensive facilities and operational versatility enable Fraser to furnish virtually any non-ferrous alloy.

* Available heat treated, also extruded up to 2.75".



Roller indexing continuous casting line and furnace.



Summary of Capacity

Hollow (mm)			
Round	OD	11.0 to 70.0	bar length to maximum weight of 32kg
Hexagon	A/F	12.0 to 57.15	bar length to maximum weight of 32kg
Octagon	A/F	12.0 to 67.3	bar length to maximum weight of 32kg
Solid (mm)			
Round	OD	11.0 to 38.1	3.6m long bar
Round	OD	38.2 to 70.0	bar length to maximum weight of 35kg
Hexagon	A/F	12.0 to 36.0	3.6m long bar
Hexagon	A/F	36.1 to 58.0	bar length to maximum weight of 35kg
Octagon	A/F	12.0 to 37.0	3.6m long bar
Octagon	A/F	37.1 to 67.0	bar length to maximum weight of 35kg

Tolerances – Inside Diameters

Metric (mm)	Minus only
up to 31.80	- 0.40
31.80 up to 50.80	- 0.50
50.80 up to 54.00	- 0.60

Concentricity

Wall Thickness (mm)	Max variation
up to 3.50	0.8
over 3.50	1.0

Tolerances – Outside Diameters

Round (OD)

Metric (mm)	
11.00 to under 25.40	+/- 0.08
25.40 to under 38.10	+/- 0.10
38.10 to under 47.60	+/- 0.13
47.60 to under 57.20	+/- 0.15
57.20 up to 70.00	+/- 0.30

Hexagon (A/F)

Metric (mm)	Minus only
12.00 to under 23.80	- 0.13
23.80 to under 34.90	- 0.20
34.90 to under 44.50	- 0.30
44.50 up to 58.00	- 0.38

Octagon (A/F)

Metric (mm)	Minus only
12.00 to under 23.80	- 0.13
23.80 to under 34.90	- 0.20
34.90 to under 44.50	- 0.30
44.50 up to 67.00	- 0.38

Applications for Standard Alloys

Alloy	Standard	Material Description	Typical Properties and Applications	Machinability Rating	Near/equiv. Specification
C35200	AS/NZS 1567	Dezincification resistant machining brass	Arsenical leaded dezincification resistant alloy with good machining performance. Meets requirements of AS4020 for products used in contact with drinking water.	80	C35330
C48600	AS/NZS 1567	Dezincification resistant forging brass	Arsenical leaded dezincification resistant alloy with good machining performance and good hot forging properties.	80	
C37700	ASTM B124	2% leaded 60/40 forging brass	Standard hot forging brass for a wide range of uses.	80	CZ122 AS/NZS 1567
C36000	ASTM B16	Free machining brass (American)	High speed repetition work with ductility for light riveting.	95	CZ124 AS/NZS 1567
C38500	ASTM B455	Free machining brass	Maximum productivity and tool life on high speed repetition work.	100	CZ121 AS/NZS 1567
C46400	ASTM B21	Naval brass	Improved corrosion resistance; bolts, fittings etc. in marine use. Low lead content for use where environmental aspects may be a concern.	30	CZ112 AS/NZS 1567
C68600	AS/NZS 1567	Leaded manganese brass	Combines high strength with fair machinability and hot forgability.	70	CZ114
C64200 C64300	ASTM B150	Extruded aluminium-silicon bronze	High strength aluminium bronze; excellent corrosion resistance, good forging properties and fair machinability.	60	
C67300	AS/NZS 1567	Extruded silicon-manganese bronze	Excellent wear resistance; for bushings, gear blanks and hydraulic pump components.	70	
<i>Many other alloys including low lead and forging grade variants of selected alloys are also available.</i>					

Product data sheets and material test reports on request.
 Bore Sizes: available in any dimension to a minimum wall thickness of 2.0mm. Thinner wall available on request.
 Sections: special sizes and tolerances manufactured to customer's specifications.

