Slidura

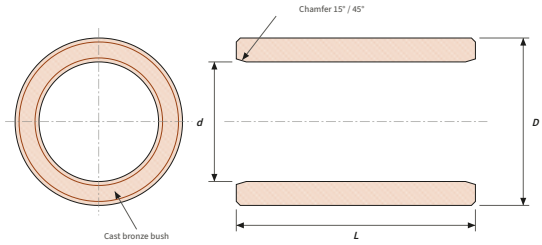
Cast bronze bushings · sleeve · flanged · thrust washers

Cast Bronze Bushings – Technical Data Sheet

Machined from continuous-cast and centrifugally cast bronze · 12 alloys · ISO 4379 sizes

A cast bronze bushing is a **solid cylindrical bearing machined from cast copper-alloy stock** – bore d, outside diameter D, length L – pressed into a housing and running on a steel shaft under grease or oil. Slidura turns and bores them from continuous-cast and centrifugally cast bar and tube in twelve alloys, to the ISO 4379 metric series or to your drawing. This sheet gives the data an enquiry, a drawing check or a material substitution needs.

Sleeve bushing – ISO 4379 Type C



d = bore (E6 as delivered, closes to approx. H8 in an H7 housing) · D = outside (s6 to Ø120, r6 above) · L = length (h13) · chamfers 45° outside, 15° inside.

STANDARD ALLOY	LIMITS, GREASED	FITS	HS CODE
C93200 / SAE 660 · CuSn7Zn4Pb7 · Rg7 · CC493K	25 / 45 N/mm² · 0.5 m/s · -40 … +250 °C	Housing H7 · bush s6 / r6 · bore E6 · shaft e7 / e8 / g7	8483.30 · US 8483.30.80 · EU 8483 30 80

Operating limits – all grades, boundary lubrication

Parameter	Value	Unit / condition
Specific load p, moving	25	N/mm²
Specific load p, stationary	45	N/mm²
Sliding speed v	0.5	m/s
Coefficient of friction μ	0.08 – 0.15	greased
Working temperature	-40 … +250	°C
Housing / shaft	H7 / e7–e8	ISO 286

One set of design limits applies to the whole range under greased or oil-lubricated, boundary lubrication, steel shaft (confirmed 2026-08-07). They are the values we quote against; a specific grade, speed or duty outside them is checked on request. The grades differ in how they fail, not in the design load: soft leaded bronzes forgive misalignment and poor grease, hard aluminium bronze and C86300 carry shock but need a hardened shaft.

Features

- Solid cast bearing bronze through the wall – no backing, no liner, no oil stored in pores. Bore, groove or re-machine it freely.
- Specific load 25 N/mm² moving and 45 N/mm² stationary under grease; sliding speed to 0.5 m/s; -40 to +250 °C.
- Stock is continuous-cast (ASTM B505) or centrifugally cast (ASTM B271, EN 1982 GZ / GC) bar and tube; the material certificate names the standard and the analysis.
- Twelve alloys in five families: leaded tin bronze (C93200 standard), tin bronze, gunmetal, aluminium bronze, high-strength brass – every one in every standard size.
- ISO 4379 metric series Ø6 – 200 mm; any other size, inch dimensions, steps, grooves and holes to drawing from Ø3 to Ø1000 mm.
- Grease or oil lubricated, groove patterns G1 – G8 and oil holes machined to the code on the drawing. Not self-lubricating.

Product forms

Sleeve bushings	ISO 4379 Type C · Ø6 – 200 mm bore, three walls per bore, lengths 6 – 250 mm
Flanged bushings	ISO 4379 Type F · Ø6 – 200 mm, Series 1 thin flange, Series 2 heavy flange
Thrust washers	Slidura series (proposal) · shaft 12 – 200 mm, thickness 2 – 12 mm, plain or G7 face grooves
To drawing	Ø3 – 1000 mm: stepped, grooved, drilled, half bearings, large rings, inch sizes, worn-part dimensions

Standard sizes with tolerances: size chart PDF. Finished bushings are not sold off the shelf – every size is machined per order; samples in 3 – 5 working days, no minimum quantity.

Order codes

Grade code, then bore – outside Ø – length, each with at least two digits. Other grades replace **660**; a groove pattern or oil hole is a suffix.

660-253020	sleeve Ø25 × Ø30 × 20, C93200
660-100115100	sleeve Ø100 × Ø115 × 100
660F-253230	flanged Ø25 × Ø32 × 30, Series 2
660W-25	thrust washer for a Ø25 shaft
955-506060	Ø50 × Ø60 × 60 in C95500
660-404840-G2	Ø40 × Ø48 × 40 with G2 grooves

Grooves: **G1** plain bore, no groove · **G2** straight axial grooves · **G3** circumferential groove · **G4** figure-8 groove · **G5** double figure-8 / cross grooves · **G6** spiral (helical) groove · **G7** radial grooves on the face (washers / flanges) · **G8** grease pockets. **-H** = one oil hole at mid-length.

Jiaxing Slidura Bearings Co., Ltd. · No. 6 Lingxiu Road, Jiashan County, Jiaxing, Zhejiang, China
+86 573 8311 6381 · inquiry@castbronzebushings.com · www.castbronzebushings.com

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Chemical composition ranges and mechanical properties of the twelve grades, taken from the casting standard each grade is bought to – **ASTM B505** (continuous cast), **B271** (centrifugal), **B584** (sand), **EN 1982** and **GB/T 1176** – plus typical as-cast values where the standard or the Copper Development Association publishes them. They describe the alloy, not a particular part: the material certificate delivered with the bushings shows the actual analysis and, on request, the hardness measured on the batch.

Chemical composition

% by mass, ranges as printed in the standard · "max." = maximum of an incidental element · — = not specified

Grade	Standard	Cu	Sn	Pb	Zn	Al	Fe	Ni	Mn	P
C93200 / SAE 660 CuSn7Zn4Pb7	ASTM B505	81.0–85.0	6.3–7.5	6.0–8.0	1.0–4.0	—	—	max. 1.0	—	—
C93700 / SAE 64* CuSn10Pb10	ASTM B505	78.0–82.0	9.0–11.0	8.0–11.0	max. 0.8	—	—	max. 0.5	—	—
C93800 / SAE 67* CuSn7Pb15	ASTM B505	75.0–79.0	6.3–7.5	13.0–16.0	max. 0.8	—	—	max. 1.0	—	—
CuSn12* CuSn12	EN 1982	85.0–88.5	11.0–13.0	max. 0.7	max. 0.5	—	—	max. 2.0	—	max. 0.6
CuSn10P (ZCuSn10P1)* CuSn10P	GB/T 1176 (ZCuSn10P1)	balance	9.0–11.5	max. 0.25	max. 0.05	—	—	max. 0.1	—	0.5–1.0
CuSn10* CuSn10	EN 1982	88.0–90.0	9.0–11.0	max. 1.0	max. 0.5	—	—	max. 2.0	—	max. 0.2
C90500 / SAE 62* CuSn10Zn2	ASTM B584 / B505	86.0–89.0	9.0–11.0	max. 0.3	1.0–3.0	—	—	max. 1.0	—	—
LG2 / C83600* CuSn5Zn5Pb5	ASTM B505	84.0–86.0	4.0–6.0	4.0–6.0	4.0–6.0	—	—	max. 1.0	—	—
C95400* CuAl10Fe3	ASTM B505	min. 83.0 (balance)	—	—	—	10.0–11.5	3.0–5.0	max. 1.5	max. 0.5	—
C95500* CuAl10Ni5Fe4	ASTM B505	min. 78.0 (balance)	—	—	—	10.0–11.5	3.0–5.0	3.0–5.5	max. 3.5	—
CuAl10Fe3Mn2 (ZCuAl10Fe3Mn2)* CuAl10Fe3Mn2	GB/T 1176	balance	—	—	max. 0.5	9.0–11.0	2.0–4.0	max. 0.5	1.0–2.0	—
C86300 / SAE 430B CuZn25Al5Mn4Fe3	ASTM B505	60.0–66.0	—	max. 0.20	22.0–28.0	5.0–7.5	2.0–4.0	—	2.5–5.0	—

Mechanical properties

R_m tensile · $R_{p0.2}$ yield (0.5 % ext. under load for ASTM) · A elongation · HB Brinell (500 kg tin bronzes, 3000 kg aluminium bronze / C86300)

Grade	Family	R_m min. MPa	$R_{p0.2}$ min. MPa	A min. %	Hardness HB	R_m typical MPa	Density g/cm³	Machinability	Source
C93200 / SAE 660 CuSn7Zn4Pb7	leaded tin bronze	207	110	8	65–75	240	8.93	70	ASTM B505 (min.) · typical as cast
C93700 / SAE 64* CuSn10Pb10	leaded tin bronze	241	138	6	60–70	240	8.95	80	ASTM B505 (min.) · typical as cast
C93800 / SAE 67* CuSn7Pb15	leaded tin bronze	172	110	5	50–60	207	9.25	80	ASTM B505 (min.) · typical as cast
CuSn12* CuSn12	tin bronze	280	150	5	min. 90	—	8.7	—	EN 1982 CC483K, GZ / GC (min.)
CuSn10P (ZCuSn10P1)* CuSn10P	tin bronze	310	170	2	min. 90	—	8.76	—	GB/T 1176 (J) / EN 1982 CC481K, GZ / GC (min.)
CuSn10* CuSn10	tin bronze	280	130	10	min. 70	—	8.7	—	EN 1982 CC480K, GZ / GC (min.)
C90500 / SAE 62* CuSn10Zn2	tin bronze	276	124	20	min. 70	310	8.72	30	ASTM B584 (min.) · typical as cast
LG2 / C83600* CuSn5Zn5Pb5	gunmetal	207	97	15	55–65	255	8.83	84	ASTM B505 (min.) · typical as cast
C95400* CuAl10Fe3	aluminium bronze	586	221	12	min. 150 (170 typical)	620	7.45	60	ASTM B505 (min.) · typical as cast
C95500* CuAl10Ni5Fe4	aluminium bronze	655	290	10	min. 190 (195 typical)	690	7.53	50	ASTM B505 (min.) · typical as cast
CuAl10Fe3Mn2 (ZCuAl10Fe3Mn2)* CuAl10Fe3Mn2	aluminium bronze	490	—	15	min. 110	—	7.5	—	GB/T 1176 (S / J, min.)
C86300 / SAE 430B CuZn25Al5Mn4Fe3	high-strength brass	758	427	14	225 typical (3000 kg)	820	7.8	8	ASTM B505 (min.) · typical as cast

* Typical values per ASTM B505 / B271 / B584, EN 1982 and GB/T 1176 for the cast alloy; not a guarantee for a specific part. C93200 and C86300 data were checked against the owner-approved material sheets; the other grades are standard values and are confirmed on the certificate of the delivered stock. Machinability: free-cutting brass C36000 = 100 (CDA). Physical properties common to the tin bronzes: thermal expansion approx. 18×10^{-6}/K, thermal conductivity approx. 58 W/(m·K), modulus of elasticity approx. 100 GPa; aluminium bronze approx. 16×10^{-6}/K, 110 GPa.

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There is no best bearing bronze, only the right one for a load, a shaft, a lubricant and a medium. The decision table sends an enquiry to one of the five families; the designation table translates the name on a foreign drawing; the fits are what we machine to unless the drawing says otherwise. Two checks size the bearing.

Decision table: duty – grade

owner rule of thumb and alloy character; the grade pages on the website give the detail

Duty	Recommended	Why	Alternative
General machinery, grease, unhardened shaft	C93200 / SAE 660 (RG7, CuSn7Zn4Pb7)	7 % Pb covers grease gaps, embeds grit, 65–75 HB tolerates a plain steel shaft	LG2 / C83600 for lighter load in water
Interrupted or poor lubrication, shock, soft shaft	C93700 / SAE 64 (CuSn10Pb10)	10 % Pb smears over the shaft when grease is short; tolerates rough and mildly corroded shafts	C93800 / SAE 67 (15 % Pb) for the worst lubrication
Lead-free, higher load, hard shaft available	CuSn12 · CuSn10P (B101 / PB1) · CuSn10	90 HB and above, best wear and fatigue resistance of the tin bronzes, seawater resistant	C90500 / SAE 62 gear bronze
Pumps, valves, fresh water, steam, light load	LG2 / C83600 (CuSn5Zn5Pb5)	Pressure-tight, corrosion resistant, machinability 84; the Commonwealth and JIS CAC406 default	C93200 when the load rises
Heavy load, seawater, temperatures above 150 °C	Aluminium bronze C95400 · C95500	586 – 655 N/mm² min. tensile, 150 – 195 HB, resists cavitation and erosion	CuAl10Fe3Mn2 (BA1032) where the drawing names it
Extreme load at very low speed, shock	C86300 / SAE 430B (CuZn25Al5Mn4Fe3)	758 N/mm² min. tensile, 225 HB – the strongest cast bearing alloy	C95500 where corrosion also matters

Not sure? Send load (or shaft diameter and force), speed or oscillation, temperature, medium and lubrication – we recommend the grade with the quotation.

Designations in the main standards

"nearest" = neighbour with a different composition · full cross-reference with ГОСТ, PN and trade names: separate PDF

Grade	UNS / ASTM	SAE	EN 1982	DIN (old)	BS 1400	JIS H5120	GB/T 1176
C93200 / SAE 660 CuSn7Zn4Pb7	C93200	SAE 660	CuSn7Zn4Pb7-C · CC493K	Rg7 · 2.1090	—	—	— (cast to ASTM; nearest ZCuSn5Pb5Zn5)
C93700 / SAE 64 CuSn10Pb10	C93700	SAE 64	CuSn10Pb10-C · CC495K	CuPb10Sn · 2.1176	LB2	CAC603 (LBC3)	ZCuPb10Sn10
C93800 / SAE 67 CuSn7Pb15	C93800	SAE 67	CuSn7Pb15-C · CC496K	CuPb15Sn · 2.1182	LB1	CAC604 (LBC4)	ZCuPb15Sn8
CuSn12 CuSn12	C90800 (nearest)	—	CuSn12-C · CC483K	GBz12 · 2.1052	PB2 (nearest)	CAC502 (PBC2, nearest)	ZCuSn10P1 (nearest, phosphor)
CuSn10P (ZCuSn10P1) CuSn10P	C90710 / C90700 (nearest)	SAE 65 (nearest)	CuSn11P-C · CC481K (nearest)	— (no DIN casting grade; nearest G-CuSn10)	PB1	CAC502 (PBC2)	ZCuSn10P1
CuSn10 CuSn10	C90700 (nearest)	—	CuSn10-C · CC480K	G-CuSn10 · 2.1050	CT1 (nearest)	CAC403 (BC3, nearest)	ZCuSn10Zn2 (nearest)
C90500 / SAE 62 CuSn10Zn2	C90500	SAE 62	— (nearest CuSn10-C · CC480K)	G-CuSn10Zn · 2.1086	G1	CAC403 (BC3)	ZCuSn10Zn2
LG2 / C83600 CuSn5Zn5Pb5	C83600	SAE 40	CuSn5Zn5Pb5-C · CC491K	Rg5 · 2.1096	LG2	CAC406 (BC6)	ZCuSn5Pb5Zn5
C95400 CuAl10Fe3	C95400	—	CuAl10Fe2-C · CC331G (nearest)	G-CuAl10Fe · 2.0940	AB1	CAC702 (AlBC2)	ZCuAl10Fe3
C95500 CuAl10Ni5Fe4	C95500	—	CuAl10Fe5Ni5-C · CC333G	G-CuAl10Ni · 2.0975	AB2	CAC703 (AlBC3)	ZCuAl10Fe4Ni4 (nearest)
CuAl10Fe3Mn2 (ZCuAl10Fe3Mn2) CuAl10Fe3Mn2	C95400 (nearest)	—	CuAl10Fe2-C · CC331G (nearest)	G-CuAl10Fe · 2.0940 (nearest)	AB1 (nearest)	CAC702 (nearest)	ZCuAl10Fe3Mn2
C86300 / SAE 430B CuZn25Al5Mn4Fe3	C86300	SAE 430B	CuZn25Al5Mn4Fe3-C · CC762S	G-CuZn25Al5 · 2.0598	HTB3	CAC304 (HBsC4)	ZCuZn25Al6Fe3Mn3

Fits and surfaces (ISO 4379)

Housing	H7 · chamfered edge · Ra max. 1.6 µm
Bush outside Ø	s6 (max. Ø120) / r6 (> Ø120) · Ra 1.6 µm
Bush bore	E6 before fitting (approx. H8 after pressing into H7) · Ra 1.6 µm · finished after fitting on request
Shaft	**e7** general duty (ISO 4379) · **e8** heavier load, misalignment, grease with dirt · **g7** precision, light load, oil · Ra max. 0.8 µm
Shaft hardness	min. 150–200 HB (unhardened steel acceptable for 660 / LG2); min. 300 HB, hardened or hard-chromed, for aluminium bronze and C86300
Flange Ø · length	d11 · h13 · washer thickness 0 / −0.1 mm (Slidura)

Running clearance after fitting 0.1 – 0.3 % of the shaft diameter; the design guide PDF gives the ISO 286-2 interference and clearance by diameter.

Two checks that size the bearing

Specific load p

$$p = F / (d \times L)$$

F in N, bore d and length L in mm, p in N/mm². Compare with 25 (moving) or 45 (stationary). A Ø40 × 40 bush at 30 kN carries 18.8 N/mm² – inside the limit.

Sliding speed v

$$v = \pi \times d \times n / 60\,000$$

d in mm, n in rpm, v in m/s; for oscillation use the mean speed over a cycle. Limit 0.5 m/s under grease – Ø40 at 200 rpm is 0.42 m/s. Above it, oil lubrication and a check by us.

Temperature -40 … +250 °C for all grades; the leaded bronzes lose strength above 250 °C. Where a position cannot be relubricated, a graphite-plugged or metal-polymer bush is the right part, not a cast bronze bush.

Jiaxing Slidura Bearings Co., Ltd. · No. 6 Lingxiu Road, Jiashan County, Jiaxing, Zhejiang, China
+86 573 8311 6381 · inquiry@castbronzebushings.com · www.castbronzebushings.com