ALLOY GUIDE - Bar & Busbar

MITSUBISHI MATERIALS CORPORATION

NOTE:Following chart only serves as a general guideline. For exact specifications, please contact us.

MSC Alloy Name	Oxygen-free copper for electron devices		OFC	TC	Copper-tellurium alloy	Copper-zirconium alloy			Copper-chromium-zirconium	Copper-chromium alloy	high conductivity high heat-resistant alloy	n corrosion resistance free-cutting alloy	n corrosion resistance alloy for casting	Wear resistance alloy	Naval brass	High strength brass	Free-cutting Brass	Brass for forging	Lead-free brass ECOBRASS		
	EOFC	OFCE			C145	15ZC	10ZC	ZC	CZ1	CRC	HRSC	UR31	UR34	UH13							
FORM	○	○	○ □	○ □	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Octagon
JIS No.	C1011		C1020	C1100								C3531	C3531		C4641	C6782	C3604	C3771	C6932	C6931	CAC804
CDA No.		C10100	C10200	C11000	C14500	C15000	C15100	C15150	C18150	C18200	C18625				C46400			C37700	C69300	C69310	C87850
PROCESS	EXTRUSION/DRAWING		EXTRUSION/DRAWING/BUSBAR		EXTRUSION /DRAWING	EXTRUSION /DRAWING	EXTRUSION /DRAWING	EXTRUSION /DRAWING	EXTRUSION /DRAWING	EXTRUSION /DRAWING	DRAWING	EXTRUSION /DRAWING	EXTRUSION /DRAWING	EXTRUSION /DRAWING	EXTRUSION /DRAWING	EXTRUSION /DRAWING	EXTRUSION /DRAWING	EXTRUSION /DRAWING	EXTRUSION /DRAWING	EXTRUSION /DRAWING	CASTING
Nominal Composition [wt%]	Cu:99.99Min.		Cu:99.96Min.	Cu:99.90Min.	Cu:99.5 Te:0.5 P:0.008	Cu:99.85 Zr:0.15	Cu:99.9 Zr:0.1	Cu:99.98 Zr:0.02	Cu:Rem. Cr:0.8 Zr:0.1	Cu:Rem. Cr:1.0	Cu:99.5 Co:0.27 P:0.08 Sn:0.04 Ni:0.04	Cu:63.0 Pb:1.8 Fe:0.1 Sn:0.8 Ni:0.4 Zn:Rem.	Cu:62.0 Pb:1.7 Fe:0.1 Sn:0.8 Ni:0.4 Zn:Rem.	Cu:62.0 Pb:0.2 Al:3.0 Mn:3.0 Si:1.0 Zn:Rem.	Cu:61.0 Pb:0.1 Fe:0.05 Sn:0.8 Zn:Rem.	Cu:58.5 Pb:0.3 Fe:0.6 Al:0.6 Mn:1.0 Zn:Rem.	Cu:59.0 Pb:3.0 Fe:0.1 Fe+Sn:0.3 Zn:Rem.	Cu:59.0 Pb:2.0 Fe+Sn:0.3 Zn:Rem.	Cu:75.5 Si:3.0 Sn:0.02 P:0.08 Pb:0.02 Zn:Rem.	Cu:76.0 Si:3.0 Sn:0.5 P:0.08 Pb:0.02 Zn:Rem.	Cu:76.0 Si:3.0 Sn:0.02 P:0.08 Pb:0.02 Zn:Rem.

NOTE:The physical properties are average.

Specific Gravity	8.94		8.94	8.94	8.94	8.9	8.9	8.9	8.9	8.9	8.9	8.4	8.4	7.9	8.41	8.3	8.5	8.41	8.3	8.3	8.3
Coeff.of Thermal Expansion [×10^{-6}/k](20～300℃)	17.7		17.7	17.7	17.8	17.7	17.7	17.7	17.3	17.8	17.7	21	21	20	21.2	20	20.5	20.8	20	20	20
Thermal Conductivity [W/(m·K)](20℃)	391		391	391	355	340	360	373	330	330	330	117	117	100	117	95	117	117	45	45	45
Electrical Resistivity [μΩ·m]	0.0171		0.0171	0.0171	0.019	0.019	0.018	0.018	0.022	0.022	0.022	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.22	0.22	0.22
Electrical Conductivity [%IACS]	101		101	101	93	90	95	97	80	80	80	26	26	23	26	26	26	27	8	8	8
Modulus of Elasticity [kN/mm^2]	118		118	118	117	121	121	121	118	117	118	103	103	103	103	100	96	103	105	105	105

Tensile Strength [N/mm^2] (MPa=N/mm^2, 1N/mm^2=0.1451ksi)

BE F	195Min.		195Min.	* Please contact us									315Min.	550Min.	345Min.	460Min. 33≦ ≦50 400Min. 50<	335Min.	315Min.	450Min.		
BD F												350Min. 12≦ ≦30 315Min. 30< ≦50		650Min. 13≦ ≦18 685Min. 18< ≦50	375Min.	490Min.	335Min.	315Min.	450Min.		
BD 1/2H	245Min. 6≦ ≦25	260～345 ≦10	245Min. 6≦ ≦25																		
	225Min. 25< ≦50	230～345 10<	225Min. 25< ≦50																		
	215Min. 50< ≦75		215Min. 50< ≦75																		
			205Min. 75< ≦110																		
BD H	275Min. 6≦ ≦25	310～410 ≦10	275Min. 6≦ ≦25																		
	245Min. 25< ≦75	275～380 10< ≦25	245Min. 25< ≦50																		
		240～345 25< ≦50	225Min. 50< ≦75																		
		230～330 50< ≦75	215Min. 75< ≦110																		
		205～330 75<																			
BD TMT, SST											350Min. (TMT)										300Min. (SST)
BB 1/4H			215～275 2.0≦ ≦30																		
BB 1/2H			245～315 2.0≦ ≦20																		
BB H			275Min. 2.0≦ ≦10																		

Elongation [%min]

BE F			25Min.	* Please contact us.									5Min.		20Min.	20Min.		15Min.	5Min.		15Min. (SST)
BD F												5Min.			20Min.	15Min.		15Min.			

Vickers Hardness [HV]

BE F				* Please contact us.									75Min.				80Min.		110Min.		
BD F												75Min.									

※ BE:Extrusion bar/BD:Drawing bar/BB:Busbar