國晟工業股份有限公司
GWO CHERN INDUSTRIAL CO.,LTD

JIS 2021 JIS 連鑄品（合金銅連續鑄造鑄物） Copper alloy continuous castings

ASTM 2019 ASTM Copper and Copper Alloys

國晟 材質規格一覽表 GWO CHERN Material specifications

名稱 Name	合金番號 Alloy Number	編號 Internal Material Code	化學成份 Chemical Compostiton 質量% (Mass %) 主要成份(Major elements) Cu	Pb	Fe	Sn	Ni	Al	Si	Bi	Mn	P	B	其他 Other	特色及用途例 Characteristics & Uses	對應材質 Equivalent Material	物理性質 Physical Properties 比重Specific Gravity (20℃)	導電率 Electrical Conductivity[%IACS]	熱傳導率 Thermal Conductivity [w/(m·K)](20℃)	縱彈性係數 Young's Modulus[KN/mm²]
電子無酸素銅(無氧銅) Oxygen Free Copper	JIS C1011	101	≧99.99	≦0.001	—	—	—	—	—	≦0.001	—	≦0.0003	—	Zn≦0.0001 Se≦0.001 O≦0.001 Cd≦0.0001 S ≦0.0018 Te≦0.001 Hg≦0.0001	具有優異導電性、導熱性、延展性。焊接性、耐腐蝕性及耐候性良好。在還原性氣體環境中高溫加熱也不可能會發生氫脆化。用於電器元件與工業化學品等等。 Electric and thermal conductivity, ductility, weldability, corrosion resistance and weather resistance are well. If C1011 and C1020 are heated in a reducing atmosphere, hydrogen embitterment would not occur. C1011 and C1020 can be made into electrical parts, chemical industry parts, etc.	ASTM C10100	8.94	101	391	118
無酸素銅(無氧銅) Oxygen Free Copper	JIS C1020	102	≧99.96	—	—	—	—	—	—	—	—	—	—			ASTM C10200	8.94	101	391	118
電解銅 Electrolytic Tough Pitch Copper (ETP)	JIS C1100	110	≧99.9	—	—	—	—	—	—	—	—	—	—	—	具有優異導電性、導熱性、延展性。耐腐蝕性及耐候性良好。用於電器元件與工業化學品等等。 Electric and thermal conductivity, ductility, corrosion resistance and weather resistance are well. C1100 can be made into electrical parts, chemical industry parts, etc.	ASTM C11000	8.89~8.94	101	391	118
黃銅 Cartridge Brass, 70%	JIS C2600	260	68.5~71.5	≦0.02	≦0.02	—	≦0.02	≦0.02	—	—	≦0.02	—	—	—	具有良好之加工性、冷鍛性、沖製性、使用於鉚釘、機械螺釘、插鎖、彈簧線網紗、尖尾螺絲、拉鏈、線切割線、彈簧殼。C2600 is good for cold working and form rolling. Ductility is well. C2600 can be made into machine parts and electric parts etc. C2600 can be made into rivets, machine screws, pins, hooks, springs and wire	ASTM C26000	8.53	28	121	110
黃銅 Yellow Brass, 66%	JIS C2680	268	64.0~68.0	≦0.05	≦0.05	—	—	—	—	—	—	—	—	—	延展性、擠押性、可鍍性良好。用於四合扣、相機、保溫瓶等等，終端連接器，配線器具等等。C2680 is good for raising and electroplating, also has good ductility. C2680 can be raised into snap buttons, cameras, thermoses etc. Also C2680 can be made into terminal connectors, wiring devices and so on.	ASTM C26800	8.47	27	117	103
黃銅 Yellow Brass, 65%	JIS C2700	270	63.0~67.0	≦0.02	≦0.02	—	≦0.02	≦0.02	—	—	≦0.02	—	—	—	冷間鍛造性、轉造性、延展性良好。機械零件、電器零件、大頭釘、螺釘、彈簧、金屬絲網等等。 C2700 and C2720 are good for cold working and form rolling. Ductility is well. C2700 and C2720 can be made into machine parts, electric parts etc. C2700 and C2720 can be made into rivets, screws, pins, hooks, springs, etc.	ASTM C27000				
黃銅 Yellow Brass	JIS C2720	272	62.0~64.0	≦0.02	≦0.02	—	≦0.02	≦0.02	—	—	≦0.02	—	—	—		ASTM C27200				
黃銅 Muntz Metal, 60%	JIS C2800	280	59.0~63.0	≦0.02	≦0.02	—	≦0.02	≦0.02	—	—	≦0.02	—	—	—	熱間鍛造性良好。機械零件、電器零件等等。與合金番號C2600、C2700、C2720相比，強度較高、延展性較好。焊接棒，釘子等等。C2800 is good for hot-working and it can be made into machine parts, electric parts etc. Strength of C2800 is higher than alloy number C2600, C2700 and C2720 and also it has better ductility.	ASTM C28000	8.39	28	121	103
Nipple黃銅 Medium Leaded Brass, 62%	JIS C3501	351	60.0~64.0	0.7~1.7	≦0.20	—	—	—	—	—	—	—	—	Fe+Sn≦0.40	切削性、冷間鍛造性良好、適用於腳踏車用的輻條螺帽。C3501 is good for cold-working and mechinability is good. C3501 can be made into bicycle wheel nipples, etc.	ASTM C35000	8.44	26	117	103
	ASTM C35300	353	61.0~63.0	1.5~2.5	≦0.15	—	—	—	—	—	—	—	—	—	切削性、冷間鍛造性良好、適用於機車、腳踏車用的輻條螺帽、螺帽。C35300 is good for cold-working and mechinability is good. C35300 can be made into motorcycles, bicycle wheel nipples, cap nuts, etc.		8.47	26	115	103
	ASTM C36000	360	60.0~63.0	2.5~3.0	≦0.35	—	—	—	—	—	—	—	—	—	切削性良好，C3601、3602 延展性也良好，適用電腦、電子、鐘錶、釣具、筆、燈飾、螺絲、小螺帽、齒輪、凡而、照相機各種五金零件。These materials are good for cold-working and also has good machinability. Ductility of alloy number C3601 and C3602 is well. They can be made into bolts, nuts, screws, spindles, gears, valves, lighters, clocks, parts of camera, electric parts, etc.					
	JIS C3601	361	59.0~63.0	1.8~3.7	≦0.30	—	≦0.20	—	—	—	—	—	—	Fe+Sn≦0.50 As≦0.02		ASTM C36000	8.50	26	117	96
	JIS C3602	362	59.0~63.0	1.8~3.7	≦0.50	—	≦0.20	—	—	—	—	—	—	Fe+Sn≦0.8 As≦0.02		ASTM C36000				
		36K	57.0~61.0	1.8~2.8	≦0.35	≦0.20	≦0.10	—	—	—	—	—	—	—						
	JIS C3603	363	57.0~61.0	1.8~3.7	≦0.35	—	≦0.20	—	—	—	—	—	—	Fe+Sn≦0.6 As≦0.02		ASTM C36010				
	JIS C3604	364	57.0~61.0	1.8~3.7	≦0.50	—	≦0.20	—	—	—	—	—	—	Fe+Sn≦0.8 As≦0.02		ASTM C36010				
鍛造用黃銅 Forging Brass	JIS C3712	371	58.0~62.0	0.25~1.2	≦0.8		≦0.20	—	—	—	—	—		As≦0.02	熱間鍛造性良好，精密鍛造亦適合機械零組件。C3712 is good for hot-working and suitable for precision forging. Usually C3712 is made into machine parts, etc.	ASTM C37100	8.41	27	117	103
	JIS C3771	377	57.0~61.0	1.0~2.5	≦1.0		≦0.20	—	—	—	—	—		As≦0.02	熱間鍛造性和切削性均佳、用於凡而、錶殼、機械零件等。 C3771 is good for hot working and also has good machinability. C3771 can be made into valves, machine parts, etc.	ASTM C37700	8.44	27	117	103
海軍黃銅 Naval Brass, 63.5%	JIS C4621	46A	61.0~64.0	≦0.20	≦0.10	0.7~1.5	—	—	—	—	—	—	—	—	耐腐蝕性，特別是耐海水性良好。船舶零件、機軸等等。Corrosion resistance is well, especially seawater resistance. C4621 and C4622 can be made into parts of ships and boats, shafts, etc.	ASTM C46200				
	JIS C4640	464	59.0~62.0	≦0.20	≦0.10	0.50~1.0	—	—	—	—	—	—	—	—		ASTM C46400	8.41	26	67	117
磷青銅 Phosphor Bronze	JIS C5102	512	殘值	≦0.02	≦0.10	4.5~5.5	—	—	—	—	—	0.03~0.35	—	Zn≦0.20 Cu+Sn+P≧99.5	耐疲乏性良好，耐腐蝕性及耐磨耗性良好。棒、齒輪、凸輪、軸、軸受、螺釘、螺栓、螺母、摺動部品、連接器、架空線用的掛鉤。線彈簧、螺旋彈簧、四合扣、用於結合的電線、金屬絲網、頂蓋材、洗衣機等等。Fatigue resistance, corrosion resistance and wear resistance are well. For rods, C5102 and C5191 can be made into gears, cams, axes, bearings, screws, bolts, nuts, sliding parts, connectors, hangers of trolley wire, etc. For wires, C5102 and C5191 can be made into coil springs, spiral springs, snap buttons, armature binding wires, wire nettings, header materials, washers, etc.	ASTM C51000	8.86	15	75	110
	JIS C5191	519	殘值	≦0.02	≦0.10	5.5~7.0	—	—	—	—	—	0.03~0.35	—	Zn≦0.20 Cu+Sn+P≧99.5		ASTM C51900	8.83	13	67	105
高力黃銅 Manganese Brass	JIS C6782	678	56.0~60.5	≦0.50	0.10~1.0	—	—	0.20~2.0	—	—	0.50~2.5	—	—	—	強度高，熱間鍛造性、耐腐蝕性良好。船舶螺旋槳軸、泵軸等等。C6782 is good for hot-working and also corrosion resistance is well, also with high strength. C6782 can be made into ship propeller shafts, pump shafts, etc					
	ASTM C86300	863	60.0~66.0	≦0.20	2.0~4.0	≦0.20	≦1.0	5.0~7.5	—	—	2.5~5.0	—	—	Zn 22.0~28.0			7.83	8		
無鉛抗脫鋅黃銅	CDA C89710	897	61.5~62.5	≦0.10	—	0.50~0.6	—	0.15~0.25	—	0.15~0.30	0.20~0.40	0.15~0.20	0.002~0.005	Sb:0.25~0.35			8.42			
低鉛快削黃銅 Leadless Free-cutting Brass	JIS C6801	681 / 682 / 68A	57.0~64.0	≦0.01	≦0.50	0.10~2.5	—	—	—	0.50~4.0	—	≦0.20		Cd≦75ppm	符合環保低、低鎘、低鉻、低汞等要求，俗稱環保用快削黃銅，切削性良好，適用於電腦、電子、鐘錶、釣具、筆、燈飾、螺絲、螺帽、光學、醫療，凡而、照相機各種五金零件。C6801, C6802are eco-friendly materials. Chemical composition of Cd, Cr, Hg and Pb is low in C6801, C6802 . Good machinability and ductility. These materials can be made into bolts, nuts, screws, spindles, gears, valves, lighters, clocks, cameras, etc.		8.5	24	117	96
	JIS C6802	68E / 683 / 685	57.0~64.0	≦0.09	≦0.7	0.10~3.0	—	—	—	0.50~4.0	—	≦0.20		Cd≦75ppm			8.5	21	117	96
低鉛、無鉛黃銅 ECO Brass	ASTM C69300	693	73~77	≦0.09	≦0.1	≦0.20	≦0.10	—	2.7~3.4	—	≦0.10	0.04~0.15	—	—	它在鍛造黃銅中的導熱係數較低且具有適度的低電導率和適度的熔化溫度，良好的切削加工性，良好的延展性，適用於較小的螺絲和齒輪。it has a moderately low electrical conductivity and a moderately low melting temperature.Good machinability, good extensibility, suitable for smaller screws and gears	JIS C6932	8.3	8		110

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黃銅棒線的物理性質根據JIS訂定。

以上主要成分含量根據JIS與ASTM的規範。其餘成分分析則根據買賣雙方的協定。

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