UPDATED May, 2025

JX金属株式会社　銅合金特性一覧表　JX Advanced Metals Corporation Copper Alloys Property List

JX金属 高機能銅合金　JX Advanced Metals Corporation's High-Performance Copper Alloys

			チタン銅合金 Copper Titanium Alloy				コルソン合金 Corson Alloy							高導電合金 High Coudductivity Alloy				ハイパーりん青銅 Hyper Phosphor Bronze	
製品名 Copper Alloy Name			C1990(HP)	NKT322	NKT322(HB)	C1995(HP)	C7025		NKC286	NKC286S	NKC388	NKC164	NKC8738	NKC8738S	NKC164E	NKC4419	NKC4419(HC)	NKE012	C5210(HP)	C5240(HP)
UNS No.			C19900	C19910	C19910	C19950	C70250		C64728	C64728	C70252	C64745	C70390	C70390	-	C64800	C64800	C14415	C52100	C52400
化学組成 (wt%) Chemical Composition			Cu-3.0Ti	Cu-3.2Ti-0.2Fe		Cu-4.0Ti	Cu-3.0Ni-0.65Si-0.15Mg		Cu-2.8Ni-0.6Si-0.5Sn-0.4Zn		Cu-3.8Ni-0.8Si-0.1Mg-0.13Mn	Cu-1.6Ni-0.4Si-0.5Sn-0.4Zn	Cu-3.55Ni-0.87Si-0.25Co		Cu-1.6Ni-0.35Si	Cu-1.9Co-0.44Si		Cu-0.12Sn	Cu-8.0Sn-0.1P	Cu-10Sn-0.1P
物理的特性 Physical Properties	比重 Specific Gravity		8.70	8.70	8.70	8.62	8.82		8.87	8.87	8.82	8.87	8.83	8.83	8.89	8.85	8.85	8.92	8.80	8.78
	縦弾性係数 (GPa) Modulus of Elasticity		127	120	120	127	131 SH : 120		127	110	SH : 123 XSH : 123(TD : 135) USH : 120(TD : 140)	127	123	100	120	127	128	128	110	100
	導電率 (%IACS) Electrical Conductivity		12 GSH : 11	12	11	8	45 SH : 48 TM04S : 50		41	41	SH : 38 XSH : 34 USH : 32	43	41	40	55	65	71	90	12	10
	体積抵抗率 (nΩ・m)(@20℃) Specific Resistance		144 GSH : 172	144	157	216	38 SH : 35 TM04S : 34		42	42	SH : 45 XSH : 51 USH : 54	40	42	44	30	27	24	19	144	157
	熱伝導率 (W/(m・K)) Thermal Conductivity		54 GSH : 47	56	51	39	180 SH : 191 TM04S : 200		165	165	SH : 160 XSH : 143 USH : 136	170	165	163	240	260	291	350	63	50
	熱膨張係数 (×10^{-6}/K)(@20~300℃) Thermal Expansion Coefficient		18.6	18.0	18.0	18.6	17.6		17.4	17.4	17.6	17.6	17.6	17.6	17.7	17.8	17.8	17.7	18.2	18.4
機械的特性 Mechanical Properties	引張強さ (MPa) Tensile Strength	1/4H	-	-	-	-	TR02	607-726 (650)	-	-	-	-	-	-	-	520-650 (600)	-	-	-	-
		1/2H	-	-	-	-	SH	800-950 (860)	710-840 (780)	730-870 (800)	-	560-680 (640)	-	-	-	-	-	-	-	-
		H	-	900-1000 (950)	-	-	TM02	650-740 (725)	760-890 (830)	800-940 (880)	-	620-740 (680)	-	-	590-680 (630)	590-720 (670)	540-670 (610)	375-475 (430)	590-705 (636)	650-750 (708)
		EH	885-1080	920-1020 (970)	-	-	TM03	680-760 (744)	810-940 (880)	-	-	680-800 (730)	-	-	620-760 (690)	-	-	410-600 (500)	685-785 (729)	750-850 (805)
		SH	910-1110	970-1100 (1020)	-	-	TM04	750-840 (814)	-	-	890-990 (940)	-	-	-	-	-	-	-	735-835 (790)	850-950 (866)
		ESH	1000-1180	1010-1200 (1070)	980-1200 (1050)	-	TM04S	710-830 (800)	-	-	-	-	920-1130 (1010)	890-1070 (980)	-	-	-	-	770-885 (853)	950-1050 (998)
		XSH	-	-	x	-	-	-	-	-	970-1090 (1030)	-	-	-	-	-	-	-	835-1000 (918)	1000-1200 (1039)
		USH	-	-	-	-	-	-	-	-	970-1090 (1030) TD : 1070-1190 (1130)	-	-	-	-	-	-	-	-	-
		GSH	1300-1600 (1400)	-	-	(1540)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0.2%耐力 (MPa) Yield Strength	1/4H	-	-	-	-	TR02	550min (575)	-	-	-	-	-	-	-	370-500 (480)	-	-	-	-
		1/2H	-	-	-	-	SH	-	690-830 (760)	695-835 (765)	-	520-670 (610)	-	-	-	-	-	-	-	-
		H	-	800-900 (850)	-	-	TM02	585min (644)	740-880 (810)	775-915 (845)	-	580-730 (660)	-	-	540-680 (610)	570-700 (650)	520-650 (590)	(420)	(565)	580-690 (617)
		EH	780-930	850-950 (900)	-	-	TM03	655min (710)	790-930 (860)	-	-	640-790 (720)	-	-	600-740 (670)	-	-	(490)	(688)	650-790 (755)
		SH	810-960	900-1000 (950)	-	-	TM04	740min (800)	-	-	860-960 (910)	-	-	-	-	-	-	-	(760)	780-920 (813)
		ESH	950-1100	950-1050 (1000)	950-1050 (1000)	-	TM04S	700min (780)	-	-	-	-	880-1060 (960)	860-1010 (920)	-	-	-	-	(823)	900-1030 (935)
		XSH	-	-	1000-1100 (1050)	-	-	-	-	-	940-1060 (1000)	-	-	-	-	-	-	-	(879)	950-1190 (997)
		USH	-	-	-	-	-	-	-	-	940-1060 (1000) TD : 1040-1160 (1100)	-	-	-	-	-	-	-	-	-
		GSH	(1390)	-	-	(1530)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	伸び (%) Elongation	1/4H	-	-	-	-	TR02	6.0min (10.0)	-	-	-	-	-	-	-	10min (17)	-	-	-	-
		1/2H	-	-	-	-	SH	1.0min (3)	3min (6.0)	3min (7.0)	-	5min (8.0)	-	-	-	-	-	-	-	-
		H	-	12.0min (18.0)	-	-	TM02	10.0min (13.0)	2min (4.0)	1min (2.0)	-	3min (6.0)	-	-	5min (12)	2min (8)	2min (6)	1min (3)	20min (33.4)	11min (29.6)
		EH	10min (17.0)	10.0min (15.0)	-	-	TM03	5.0min (9.0)	1min (2.0)	-	-	1min (4.0)	-	-	2min (5)	-	-	(2)	11min (22.1)	9min (18.5)
		SH	8min (14.0)	6.0min (10.0)	-	-	TM04	1.0min (3.0)	-	-	1.0min (3)	-	-	-	-	-	-	-	9min (17.8)	5min (11.6)
		ESH	(3.0)	3.0min (5.0)	2.0min (7.0)	-	TM04S	1.0min (4.0)	-	-	-	-	0.1min (3.0)	0.5min (3.0)	-	-	-	-	5min (12.0)	1min (2.8)
		XSH	-	-	1.0min (5.0)	-	-	-	-	-	1.0min (2)	-	-	-	-	-	-	-	1min (2.8)	(1.1)
		USH	-	-	-	-	-	-	-	-	1.0min (2)	-	-	-	-	-	-	-	-	-
	硬さ (Hv) Vickers Hardness	1/4H	-	-	-	-	TR02	180-220 (204)	-	-	-	-	-	-	-	160-210 (180)	-	-	-	-
		1/2H	-	-	-	-	SH	235-300 (255)	200-270 (230)	215-285 (250)	-	160-230 (190)	-	-	-	-	-	-	-	-
		H	-	(300)	-	-	TM02	190-240 (215)	210-280 (245)	250-320 (285)	-	170-240 (200)	-	-	160-220 (200)	180-220 (200)	160-220 (185)	95-160 (130)	185-235	200-240
		EH	280min (300)	(310)	-	-	TM03	200-250 (235)	230-300 (260)	-	-	200-270 (220)	-	-	170-230 (210)	-	-	105-175 (145)	210-260	230-270
		SH	300min (320)	(320)	-	-	TM04	225-275 (248)	-	-	250-310 (280)	-	-	-	-	-	-	-	230-270	250-290
		ESH	320min (340)	(340)	(340)	-	TM04S	210-260 (246)	-	-	-	-	260-370 (300)	260-370 (295)	-	-	-	-	245-285	270-310
		XSH	-	-	(350)	-	-	-	-	-	285-350 (325)	-	-	-	-	-	-	-	270-350	290min
		USH	-	-	-	-	-	-	-	-	285-350 (325)	-	-	-	-	-	-	-	-	-
		GSH	(400)	-	-	(460)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
残留応力率 (%) Thermal stress relaxation resistance Remaining stress @150℃, 1000h, 0.8σ, Thickness range: t≧0.08mm ※参考値 Reference data			95	97	97	-	91		85	85	92	85	-	-	77	76	-	-	-	-

いずれの合金もポアソン比は0.33。( )内の数字は代表値。

Every alloy's Poisson's ratio is 0.33. Number inside ( ) shows typical value.

※TD : Transverse Direction (圧延直角方向)

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一般銅合金(参考)　Conventional Copper Alloys (Reference data)

			一般りん青銅 Phosphor Bronze					洋白 Nickel Silver	
製品名 Copper Alloy Name			C5111	C5102	C5191	C5212	C5210	C7521	C7701
UNS No.			C51100	C51000	C51900	-	C52100	C75200	C77000
化学組成 (wt%) Chemical Composition			Cu-4.0Sn-0.1P	Cu-5.0Sn-0.1P	Cu-6.0Sn-0.1P	Cu-8.0Sn-0.1P	Cu-8.0Sn-0.1P	Cu-18Zn-18Ni	Cu-26Zn-18Ni
物理的特性 Physical Properties	比重 Specific Gravity		8.87	8.86	8.83	8.80	8.80	8.73	8.70
	縦弾性係数 (GPa) Modulus of Elasticity		110	110	110	110	110	125	125
	導電率 (%IACS) Electrical Conductivity		17	15	14	13	13	6	5
	体積抵抗率 (nΩ・m)(@20℃) Specific Resistance		87	115	133	-	-	287	314
	熱伝導率 (W/(m・K)) Thermal Conductivity		84	71	67	-	-	33	29
	熱膨張係数 ($\times 10^{-6}$/K)(@20~300℃) Thermal Expansion Coefficient		-	-	18.0	-	-	16.2	16.7
機械的特性 Mechanical Properties	引張強さ (MPa) Tensile Strength	1/4H	345-440	375-470	390-510	390-510	-	-	-
		1/2H	410-510	470-570	490-610	490-610	470-610	440-570	540-655
		H	490-590	570-665	590-685	590-705	590-705	540min	630-735
		EH	570min	620min	635min	685min	685-785	-	705-805
		SH	-	-	-	-	735-835	-	765-865
		ESH	-	-	-	-	-	-	-
		XSH	-	-	-	-	-	-	-
		USH	-	-	-	-	-	-	-
		GSH	-	-	-	-	-	-	-
	0.2%耐力 (MPa) Yield Strength	1/4H	-	-	-	-	-	-	-
		1/2H	-	-	-	-	-	-	-
		H	-	-	-	-	(528)	-	-
		EH	-	-	-	-	(667)	-	-
		SH	-	-	-	-	(710)	-	-
		ESH	-	-	-	-	-	-	-
		XSH	-	-	-	-	-	-	-
		USH	-	-	-	-	-	-	-
		GSH	-	-	-	-	-	-	-
	伸び (%) Elongation	1/4H	25min	28min	35min	40min	-	-	-
		1/2H	12min	15min	20min	30min	27min	5min	8min
		H	7min	7min	8min	12min	20min (28.9)	3min	4min
		EH	3min	4min	5min	5min	11min (19.0)	-	-
		SH	-	-	-	-	9min (18.1)	-	-
		ESH	-	-	-	-	-	-	-
		XSH	-	-	-	-	-	-	-
		USH	-	-	-	-	-	-	-
	硬さ (Hv) Vickers Hardness	1/4H	80-150	90-160	100-160	100-160	-	-	-
		1/2H	120-180	130-190	150-205	150-205	140-205	120-180	150-210
		H	150-200	170-220	180-230	180-235	185-235	150min	180-240
		EH	-	190min	200min	210min	210-260	-	210-260
		SH	-	-	-	-	230-270	-	230-270
		ESH	-	-	-	-	-	-	-
		XSH	-	-	-	-	-	-	-
		USH	-	-	-	-	-	-	-
		GSH	-	-	-	-	-	-	-
	残留応力率 (%) Thermal stress relaxation resistance Remaining stress @150℃, 1000h, 0.8σ, Thickness range: t≧0.08mm ※参考値 Reference data		-	-	-	-	60	-	-

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