

清峰金属工業株式会社-リン青銅、洋白、KA合金 KIYOMINE METAL INDUSTRY CO., LTD - Phosphor bronze, Nickel silver and KIYOMINE Alloy Strip

材料名 Alloy Name	CDA No. JIS No.	リン青銅 Phosphor bronze				ばね用リン青銅 Phosphor bronze For Springs		KA合金 Development alloy of KIYOMINE Metal				洋白 Nickel Silver			
		CDA C52100 C5212	CDA C51900 C5191	CDA 51000 C5102	CDA 51100 C5111	CDA C52400 C5240 高強度バネ	CDA 52100 C5210	Sn-Ni-P alloy KA1025 特許：高精度バネ	Corson alloy KA250 特許：コルソン合金	CDA C50710 MF202 りん青銅系合金	CDA C73150 MB115 洋白系合金	CDA C77000 C7701 HCR-C7701※2	CDA C75200 C7521 HCR-C7521※3	CDA C75400 C7541	CDA C74500 C7451
化学成分 Nominal Composition [wt.%]	Cu	Rem	Rem	Rem	Rem	Rem	Rem	Rem	Rem	Rem	Rem	54.0-58.0	62.0-66.0	60.0-64.0	63.0-67.0
	Zn	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-	-	-0.20	9.0-13.0	Rem	Rem	Rem	Rem
	Fe	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-	-	-0.10	-0.25	-0.25	-0.25	-0.25	-0.25
	Ni	-	-	-	-	-	-	0.2-0.35	1.6-2.2	0.1-0.4	4.0-7.0	16.5-19.5	16.5-19.5	12.5-15.5	8.5-11.0
	Sn	7.0-9.0	5.5-7.0	4.5-5.5	3.5-4.5	9.0-11.0	7.0-9.0	9.0-11.0	-	1.7-2.3	-	-	-	-	-
	P	0.03-0.35	0.03-0.35	0.03-0.35	0.03-0.35	0.03-0.35	0.03-0.35	0.03-0.35	-	-0.15	-	-	-	-	-
	Si	-	-	-	-	-	-	-	0.4-0.8	-	-	-	-	-	-
	Mn	-	-	-	-	-	-	-	-0.50	-	-0.50	-0.50	-0.50	-0.50	-0.50
融点[°C] Melting point		1020	1043	1050	1060	1000	1020	1070	1080	1065	1070	1055	1060	1075	1020
ポアソン比 Poisson's ratio		0.33	-	0.33	0.33	0.33	0.33	0.33	0.33	-	-	0.32	0.32	0.32	0.34
比重 Specific Gravity		8.8	8.9	8.9	8.86	8.78	8.8	8.8	8.9	8.88	8.77	8.7	8.73	8.68	8.61
導電率 [%IACS] Electrical Conductivity		13	14	15	20	11	13	12	42	32	15	5.5	6	7	9
熱伝導率 [W/m·K (20°C)] Thermal Conductivity		63	65.8	71	84	50	63	55	160	155	-	29	33	38	46
縦弾性係数 [kN/mm ²] Modulus of Elasticity		110	105	105	105	100	110	110	127	125	120	125	125	125	121
熱膨張係数 [ppm/K (20~300°C)] Coeff. of Thermal Expansion		18.2	17.8	17.8	17.8	18.4	18.2	18.0	16.0	17.0	-	16.7	16.2	16.2	16.4
引張強さ [N/mm ²] Tensile Strength Spec	O	345-	315-	305-	295-	-	-	-	-	315-	315-	-	375-	355-	325-
	1/4H	390-510	390-510	375-470	345-440	-	-	-	-	-	-	-	-	-	-
	1/2H	490-610	490-610	470-570	410-510	-	470-610	640-740	-	410-510	390-490	540-655	440-570	410-540	390-510
	H	590-705	590-685	570-665	490-590	650-750	590-705	700-800	640-740	490-590	460-560	630-735	540-640	490-	-
	EH	685-	635-720	620-710	570-660	750-850	685-785	800-900	-	540-635	530-630	705-805	610-	-	-
	SH	-	690-	660-	640-	850-950	735-835	850-950	-	610-705	-	765-865	-	-	-
	ESH	-	-	-	-	950-	770-885	950-1050	-	-	-	-	-	-	-
耐力 [N/mm ²] Yield Strength [0.2% Offset] Nominal	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1/4H	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1/2H	-	-	-	-	-	260-	-	-	-	-	390-	-	-	-
	H	-	-	-	-	510-	450-	560-	600-	-	-	500-	-	-	-
	EH	-	-	-	-	630-	580-	680-	-	-	-	600-	-	-	-
	SH	-	-	-	-	750-	640-	800-	-	-	-	680-	-	-	-
	ESH	-	-	-	-	870-	690-	920-	-	-	-	-	-	-	-
伸び[%] Elongation Spec	XSH	-	-	-	-	930-	-	980-	-	-	-	-	-	-	-
	O	45-	42-	40-	38-	-	-	-	-	30-	25-	-	20-	20-	20-
	1/4H	40-	35-	28-	25-	-	-	-	-	-	-	-	-	-	-
	1/2H	30-	20-	15-	12-	-	27-	29-	-	15-	5-	8-	5-	5-	5-
	H	12-	8-	7-	7-	11-	20-	15-	5-	5-	-	4-	3-	3-	-
	EH	5- ※1	5- ※1	4- ※1	3- ※1	9-	11-	6-	-	2-	-	-	-	-	-
	SH	-	-	-	-	5-	9-	2-	-	-	-	-	-	-	-
ビッカース硬さ [HV] Vickers Hardness Spec	ESH	-	-	-	-	-	5-	1-	-	-	-	-	-	-	-
	XSH	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	O	-	-	-	-	-	-	-	-	70-115	-	-	-	-	-
	1/4H	100-160	100-160	90-160	80-150	-	-	-	-	-	-	-	-	-	-
	1/2H	150-205	150-205	130-190	120-180	-	140-205	190-220	-	125-165	110-	150-210	120-180	110-170	105-155
	H	180-235	180-230	170-220	150-200	200-240	185-235	220-260	195-240	150-185	135-	180-240	150-210	135-	-
	EH	210-	200-240	190-230	170-220	230-270	210-260	240-290	-	175-205	150-	210-260	185-	-	-
	SH	-	210-	200-	200-	250-300	230-270	270-310	-	185-	-	230-270	-	-	-
	ESH	-	-	-	-	270-	245-285	300-	-	-	-	-	-	-	-
	XSH	-	-	-	-	290-	-	320-	-	-	-	-	-	-	-

※1: 板厚0.2mm以上の場合

Thickness ≥ 0.2mm

※2&3: Heat Discoloration Resistance

耐熱変色性のあるC7701 & C7521を表し 300°C × 10分でも変色しません。

HCR doesn't change the color at 300°C × 10 min