

TABLE III - COPPER BASE ALLOYS
Typical Chemical Range Percentages

<i>Alloy & (CDA No.)</i>	<i>Al</i>	<i>Zn</i>	<i>Sn</i>	<i>Pb</i>	<i>Ni</i>	<i>Fe</i>	<i>Si</i>	<i>Be</i>	<i>Co</i>	<i>Mn</i>	<i>P</i>	<i>Cr</i>	<i>Cu</i>	<i>Total Others</i>
Aluminum Bronze A (952)	8.5 9.5	--	--	--	--	2.5 4.0	--	--	--	--	--	--	86.0 ¹	1.0
Aluminum Bronze B (953)	9.0 11.0	--	--	--	--	.75 1.5	--	--	--	--	--	--	86.0 ¹	1.0
Aluminum Bronze C (954)	10.0 11.5	--	--	--	2.5	3.0 5.0	--	--	--	.50	--	--	83.0 ¹	.50
Aluminum Bronze D (955)	10.0 11.5	--	--	--	3.0 5.5	3.0 5.0	--	--	--	3.5	--	--	78.0 ¹	.50
BeCu 10C (820)	.10	.01	.01	.01	.20	.10	.15	.45 .8	2.4 2.7 ²	--	--	.01	Bal.	--
BeCu 20C (825)	.15	.10	.10	.02	.20	.25	.20 .35	1.9 2.2	.35 .7 ²	--	--	.10	Bal.	--
BeCu 165C (824)	--	--	--	--	--	--	--	1.7 1.8	.20 .30	--	--	--	97.20 ¹	--
BeCu 275C (828)	.15	.10	.10	.02	.20	.25	.20 .35	2.5 2.8	.35 .7 ²	--	--	.10	Bal.	--
Pure Copper	--	--	--	--	--	--	--	--	--	--	--	--	99.95 ¹	--
Chrome Copper	--	--	--	.015	--	.05	.10	--	--	--	--	.4 1.0	Bal.	.1
Leaded Yellow Brass (854)	.35	24.0 32.0	5.0 1.5	1.5 3.8	1.0	.7	.05	--	--	--	--	--	65.0 70.0	
Red Brass (836)	--	4.0 6.0	4.0 6.0	4.0 6.0	1.0	.30	--	--	--	--	.05	--	84.0 86.0	
Manganese Bronze A (865)	.50 1.5	36.0 42.0	1.0	.40	1.0	.40 2.0	--	--	--	.10 1.5	--	--	55.0 60.0	
Manganese Bronze C (863)	5.0 7.5	22.0 28.0	.20	.20	1.0	2.0 4.0	--	--	--	2.5 5.0	--	--	60.0 66.0	
Tin Bronze (903)	--	3.0 5.0	7.5 9.0	.30	1.0	.15	--	--	--	--	.05	--	86.0 89.0	
Manganese Copper 2.75	--	--	--	--	--	--	--	--	--	2.5 3.0	--	--	Bal.	.15
Manganese Copper 3.5	--	--	--	--	--	--	--	--	--	3.35 3.75	--	--	Bal.	.15
Manganese Copper 5.0	--	--	--	--	--	--	--	--	--	4.75 5.25	--	--	Bal.	.15
Silicon Brass (875)	.50	12.0 16.0	--	.50	--	--	3.0 5.0	--	--	--	--	--	79.0 ¹	--
Silicon Bronze (872)	1.5	5.0	1.0	.50	--	2.5	1.0 5.0	--	--	1.5	--	--	89.0 ¹	--

¹ - Minimum, others where no range is shown are maximum.

² - Ni + Co

**TABLE IV - PROPERTIES OF SEPARATELY CAST
TEST BARS OF COPPER BASE ALLOYS**

Alloy - (CDA No.)		Tensile Strength		Yield Strength		% Elongation Range (in 2.5cm)	Hardness(Rb) Range
		English psi	Metric MPa	English psi	Metric MP		
Al.Bronze C (954)	A.C.	75-85,000	517-586	30-40,000	207-276	10-20	80-85
	H.T.	90-105,000	621-724	45-55,000	310-379	6-10	91-96
Al.Bronze D (955)	A.C.	90-100,000	621-690	40-50,000	276-347	6-10	91-96
	H.T.	110-120,000	758-827	60-70,000	414-552	5-8	93-98
Tin Bronze		40-50,000	276-347	18-30,000	124-207	20-35	40-50
Red Brass		30-40,000	207-276	14-25,000	97-172	20-30	30-35
MnBr, A		65-75,000	448-517	25-40,000	172-276	16-24	60-65
MnBr C		110-120,000	758-827	60-70,000	414-483	8-16	95-100
BeCu 10C (820)	A.C.	45-50,000	310-347	20-25,000	138-172	15-20	50-55
	Hard.	90-100,000	621-690	50-60,000	347-414	3-8	90-95
BeCu 20C (825)	A.C.	70-80,000	483-552	40-45,000	276-310	18-23	75-80
	Hard.	110-160,000	758-1103	90-130,000	621-896	1-4	25-44(Rc)
BeCu 275C (828)	A.C.	80-90,000	552-621	50-55,000	347-379	15-20	80-85
	Hard	---	---	---	---	---	42-46(Rc)
Copper		20-30,000	138-207	---	---	4-50	35-42
Cr Copper		33-50,000	228-347	20-40,000	138-276	20-30	70-78
BeCu 165C (824)		70-155,000	483-1069	40-140,000	276-965	1-15	60(Rb) - 38 (Rc)
2.75 MnCu							
3.50 MnCu							
5.0 MnCu							
Leaded Yellow Brass (854)		30-50,000	207-347	11-20,000	76-138	15-25	---

NOTE: The above mechanical property values are for information only. They do not necessarily apply to castings. Any requirements for mechanical properties are beyond this standard and must be negotiated with the foundry.

* Yield strength is determined by 0.5% extension under load or 0.2% offset method.

A.C. = as cast
H.T. = heat treated

Abbreviations for the elements:					
Al	Aluminum	H	Hydrogen	S	Sulfur
B	Boron	Hf	Hafnium	Sb	Antimony
Be	Beryllium	Mg	Magnesium	Si	Silicon
Bi	Bismuth	Mn	Manganese	Sn	Tin
C	Carbon	Mo	Molybdenum	Ta	Tantalum
Cb	Columbium	N	Nitrogen	V	Vanadium
Co	Cobalt	Ni	Nickel	W	Tungsten
Cr	Chromium	O	Oxygen	y	Yttrium
Cu	Copper	P	Phosphorus	Zn	Zinc
Fe	Iron	Pb	Lead	Zr	Zirconium