


# SELECTION GUIDE FOR SOLDER BAR

		SOLDER ALLOYS																								
		LEADED								LEAD FREE										HIGH PERFORMANCE						
Properties	ALLOY	Sn20Pb80	Sn30Pb70	Sn40Pb60	Sn50Pb50	Sn60Pb40	Sn63Pb37	Sn62Pb36Ag2	Sn70Pb30	95A	SAC 0107	SAC0307	SAC305	Sn96.5Ag3.5	SAC387	SAC 405	Sn97Cu3	Sn99.3Cu0.7	SN100	Sn60Pb40	Sn63Pb37	Sn99.3Cu0.7	SN100	SAC0307	SAC305	
	<b>Physical Properties</b>																									
	Solidus (°C)	183	183	183	183	183	183	179	183	221	217	217	217	221	217	217	227	227	232	183	183	227	232	217	217	
	Liquidus (°C)	280	257	238	212	191	183	179	257	240	228	228	220	221	220	220	300	227	232	191	183	227	232	228	220	
	Density (g/cm <sup>3</sup> )	10.21	9.72	9.28	8.87	8.50	8.40	8.41	9.72	7.40	7.32	7.33	7.38	7.37	7.44	7.44	7.32	7.31	7.29	8.50	8.40	7.36	7.30	7.34	7.39	
	Brinell Hardness, HB	11	12	12	14	16	17	16	12	14	-	14	15	15	15	15	-	9	4	16	17	9	4	14	15	
	<b>Mechanical Properties</b>																									
	Electrical Resistivity, μΩ-m	0.198	0.185	0.171	0.158	0.153	0.145	0.145	0.185	0.137	-	-	0.132	0.123	0.132	0.132	0.118	0.126	0.124	0.153	0.145	0.126	0.124	-	0.132	
	Thermal Conductivity, W/m-K	37	41	44	48	49	50	50	41	-	-	-	58	55	60	62	-	66	73	49	50	66	73	-	58	
Tensile Strength at Break, kgf/cm <sup>2</sup>	340	350	380	420	535	525	490	350	565	-	300	500	580	600	530	-	300	135	535	525	300	135	300	500		
Tensile Elongation at Break, %	20	18	25	35	40	37	-	18	30	-	22	19	35	16	17	-	21	-	40	37	21	-	22	19		
<b>Operating Temperature °C</b>																										
Single Wave (Peak Temperature) °C	-	-	-	-	235-260	235-260	235	-	255-270	255-265	255-265	255-265	255-265	255-265	255-265	255-265	255-270	255-270	-	235-260	235-260	255-270	-	255-265	255-265	
Dual (Peak Temperature) °C	-	-	-	-	-	-	-	255-270	255-265	255-265	255-265	255-265	255-265	255-265	255-265	255-270	255-270	-	-	-	255-270	-	255-265	255-265		
Dipping (Pot Temperature) °C	-	-	-	-	211	203	209	-	260	-	242	239	241	-	-	320	247	-	211	203	247	-	242	239		
<b>Products</b>																										
Solder Wire	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Solder Bar	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

**NOTES:**

1. Electrical resistivity and thermal conductivity are evaluated usually at 20°C and 85°C respectively.
2. Electrical resistivity is inverse to electrical conductivity.
3. Electrical conductivity is often expressed in % IACS which stands for International Annealed Copper Standard. 100% IACS is electrical conductivity of annealed copper which equals to 58.0 x 10<sup>6</sup> S-m<sup>-1</sup>.
4. Tensile strength in kgf/cm<sup>2</sup> may be converted to psi (pounds per square inch) by multiplying with 14.22.