

Industry Number	TEMP Liquidus	TEMP Solidus		Electrical Conductivity (1.72mm-cm)	Thermal Conductivity (W/m-c)	Coefficient Expansion (@ 20°C)	Tensile Strength	Shear Strength	Young's Modulus	Elongation	Brinell Hardness	Latent Heat of Fusion	Specific Heat SOLID LIQUID	Notes			
		°C	°F														
132	240	221	80.0 Sn	8.0 Ag	464	430	0.2870	7.30	12.8	23	8000	3640	30	13.7	0.23	High temperature electrical solder	
134	243	185	83.2 Pb	35.0 Sn	464	455	0.2870	7.25	11.9	29	3100	820	38	13.3		Lead-free, used in food equipment, potable water systems, and refrigeration tubing. Good wettability and creep resistance.	
135	247	183	85.0 Pb	35.0 Sn	469	365	0.3300	8.20									
136	247	183	85.0 Pb	35.0 Sn	477	351	0.3420	8.20									
138	247	227	83.0 Pb	18.0 Sn	477	469	0.3750	10.35								2.0 Ag	
244	245	241	91.0 Sn	5.0 Bi	478	456	0.3250	7.25									
139	250	185	86.4 Pb	36.0 Sn	482	365	0.3470	9.65								1.8 Sn	
139	251	134	89.0 Bi	5.0 Sn	484	273	0.2450	9.64									
210	251	170	76.0 Pb	27.0 Sn	487	354	0.3525	9.84								3.0 Ag	
223	251	245	85.0 Pb	10.0 Sn	491	473	0.3745	10.35								0.5 Bi	
141	257	183	76.0 Pb	30.0 Sn	495	361	0.3510	9.72	9.3	41	26	2000	4000	3.05	18	12	0.9 0.15
229	271	247	89.0 Sn	10.0 Bi	512	452	0.2610	7.25	10.7	39							
142	260	170	80.0 Sn	47.0 Pb	500	240	0.3200	8.80									3.0 Ag
150	260	262	80.0 Sn	25.0 Bi	500	564	0.3600	9.80									4.6
144	263	184	73.0 Pb	23.0 Sn	505	383	0.3570	9.88									1.3 Bi
145	263	184	73.0 Pb	23.0 Sn	505	383	0.3570	9.88									1.3 Bi
146	263	183	73.0 Pb	23.0 Sn	514	381	0.3550	9.98									1.0 Sn
148	271	271	80.0 Sn	10.0 Bi	520	430	0.3541	9.80									3.0 Ag
148	271	271	80.0 Sn	10.0 Bi	520	430	0.3541	9.80									3.0 Ag
149	280	183	80.0 Pb	20.0 Sn	538	381	0.3480	10.21	8.7	37	27	4800	3000	2.9	20	11	
149	280	183	80.0 Pb	20.0 Sn	538	381	0.3480	10.21	8.7	37	27	4800	3000	2.9	20	11	
152	281	229	82.0 Pb	1.0 Sn	545	482	0.3300	10.82									0.15
154	289	170	87.0 Pb	40.0 Sn	550	381	0.3390	10.70									4.6
154	289	170	87.0 Pb	40.0 Sn	552	354	0.3348	9.28									3.0 Ag
158	290	287	80.0 Sn	10.0 Bi	554	513	0.3384	10.75	8.5	27	29	3260					0.143
155	292	261	80.0 Sn	1.0 Ag	558		0.3374	11.00									
156	295	221	80.0 Sn	16.0 Ag	563	430	0.2711	7.61									
157	295	252	80.0 Sn	5.0 Bi	563	488	0.3360	10.90									
159	300	227	87.0 Sn	3.0 Cu	572	441	0.2645	7.32									0.13
169	302	270	80.0 Pb	16.0 Sn	576	527	0.3888	10.76	8.9	25	29	4400	2400	2.76	30	10	
162	302	275	80.0 Pb	10.0 Sn	576	527	0.3884	10.75	8.9	25	29	4400	2400	2.76	30	10	
161	303	E	80.0 Pb	2.0 Ag	577	577	0.4004	11.30	8.6								
242	304	229	85.0 Pb	2.0 Ag	579	570	0.4047	11.20									
243	304	229	85.0 Pb	2.0 Ag	579	570	0.4047	11.20									
165	300	E	80.0 Pb	1.0 Sn	588	588	0.4075	11.20	8	23	30	4420					0.5
166	310	300	80.0 Pb	1.0 Sn	588	588	0.4075	11.20	8	23	30	4420					0.5
171	312	308	80.0 Pb	5.0 Sn	590	572	0.3980	11.02	8.3	25	25	4400	2400	2.76	30	10	
171	312	308	80.0 Pb	5.0 Sn	594	566	0.3968	11.04	8.8	23	29	4600	2700				8 note 2
171	312	308	80.0 Pb	5.0 Sn	594	566	0.3968	11.04	8.8	23	29	4600	2700				8 note 2
171	312	308	80.0 Pb	5.0 Sn	594	566	0.3968	11.04	8.8	23	29	4600	2700				8 note 2
229	312	E	80.0 Pb	2.0 Ag	595	595	0.3990	11.00									
229	312	E	80.0 Pb	2.0 Ag	595	595	0.3990	11.00									
168	320	300	80.0 Pb	2.0 Sn	599		0.4047	11.20									
168	320	300	80.0 Pb	2.0 Sn	599		0.4047	11.20									
170	322	MP	100.0 Pb		608	572	0.4043	11.10									
169	322	310	80.0 Pb	1.0 Sn	612	590	0.4057	11.23									
172	320	221	80.0 Sn	3.0 Ag	621	440	0.4101	11.34	7.9	35	29	1800	1800	2.61	56	4	
173	346	222	80.0 Sn	1.0 Ga	693	450	0.2823	7.26									
183	356	E	80.0 Au	12.0 Cu	673	673	0.5350	14.67									10.56
241	340	302	80.0 Sn	11.0 Ag	680	564	0.3660	9.80									9.4
184	363	E	80.0 Au	3.0 Sn	685	685	0.5564	15.40									12.04
179	364	306	80.0 Pb	3.0 Ag	687	581	0.4083	11.30									
229	365	304	80.0 Pb	6.0 Ag	690	579	0.4101	11.25	8	23	30	4420					
176	362	E	80.0 Cu	8.0 Al	720	720	0.2985	8.60									
185	395	340	80.0 Cu	6.0 Ag	743	644	0.3754	9.71									
186	424	E	424	80.0 Ga	46.0 Al	798	796	0.3340	3.71								
177	465	451	75.0 Au	25.0 In	699	844	0.4950	13.70									
178	485	465	80.0 Au	18.0 Ga	695	844	0.5383	14.90									
187	525	E	525	40.0 Au	17.0 Ga	677	677	0.3625	10.58								
188	577	E	577	80.0 Al	11.0 Bi	1,071	1,071	0.6861	2.86								
189	665	621	60.0 Al	10.0 Bi	1,065	670	0.6504	2.75									
190	810	577	80.0 Al	7.0 Bi	1,130	1,071	0.6966	2.68									
215	820	605	60.0 Al	24.0 Cu	1,146	1,121	0.5207	5.10									
191	830	577	80.0 Al	5.0 Sn	1,106	1,071	0.6977	2.68									
216	835	625	60.0 Ag	18.0 Cu	1,175	1,157	0.5350	6.19									
192	860	600	100.0 Al	22.0 Cu	1,200	1,146	0.5308	6.20									
219	700	605	20.0 Ag	28.0 Cu	1,202	1,121	0.5308	6.88									3.0 Bi
219	700	605	20.0 Ag	28.0 Cu	1,202	1,121	0.5308	6.88									3.0 Bi
211	705	640	80.0 Cu	19.0 Ag	1,301	1,184	0.2753	7.62									
242	710	605	80.0 Ag	20.0 Sn	1,310	1,320	0.5168	8.97									20.0 Cd
214	720	600	60.0 Ag	30.0 Sn	1,328	1,112	0.3461	9.58									
194	800	370	80.0 Au	2.0 Sn	1,432	668	0.3817	10.91									
229	785	775	71.5 Ag	28.0 Cu	1,445	1,427	0.3817	10.91									
194	800	370	80.0 Au	2.0 Sn	1,472	668	0.3817	10.92									
221	800	690	60.0 Ag	28.0 Cu	1,472	1,274	0.3508	9.77									2.5 Ni
196	860	E	860	80.0 Au	1.0 Sn	1,504	1,634	0.5662	15.82								
198	950	E	950	82.0 Au	18.0 Ni	1,742	1,742	0.5752	15.92								
207	981	MP	160.0 Au		1,762		0.5794	16.02									
209	865	665	60.0 Cu	8.0 Sn	1,805	1,220	0.3205	8.87									
188	1020	1600	80.0 Au	8.0 Ag	1,868	1,832	0.4674	13.60									
199	1020	360	80.0 Au	0.8 Bi	1,880	680	0.6894	19.03									
222	1020	1600	80.0 Au	1.0 Ga	1,886	1,877	0.6818	18.87									
223	1051	MP	80.0 Au	0.2 P	1,945		0.6843	18.94									
206	1046	MP	140.0 Au		1,946		0.6907	19.30	73.4	3.18	14	20000	11.2	30 to 45(20)			0.13
532			see Industry #230														

NOTES
note 1: Brinell hardness, 2mm ball, 4kg load
note 2: Modified Brinell hardness, using 100 kg load, 1/2 min.
note 3: Depends on specimen preparation
note 4: Elongation on 5.65 (ie. root area) gauge length
Conversions:
Resistivity of IACS = elec. conductivity / IACS = resistivity of alloy
ex: 1.72 x 100 / IACS = micro ohm - cm