



TYPICAL PHYSICAL PROPERTIES OF COMMONLY USED SAND AND PERMANENT MOLD CASTING ALLOYS

These typical properties are not guaranteed, and should not be used for design purposes but only as a basis for general comparison of alloys and tempers with respect to any given characteristic.

Alloy	Temper	Specific Gravity [Ⓐ]	Density [Ⓐ] lb. per cu. in.	Approximate Melting Range °F	Electrical Conductivity % IACS	Thermal Conductivity at 25°C, CGS [Ⓑ]	Coeff. of Thermal Expansion, per °F × 10 ⁻⁶	
							68-212 °F	68-572 °F
201.0	T6	2.80	0.101	1060-1200	27-32	0.29	19.3	24.7
	T7	2.80	0.101	1060-1200	32-34	0.29	—	—
204.0	T4	—	—	985-1200	—	—	—	—
208.0	F	2.79	0.101	970-1160	31	0.30	12.4	13.4
222.0	T61	2.95	0.107	965-1155	33	0.31	12.3	13.1
242.0	T571 [Ⓒ]	2.81	0.102	990-1175	34	0.32	12.6	13.6
	T77	2.81	0.102	990-1175	38	0.36	12.6	13.6
295.0	T6	2.81	0.102	970-1190	35	0.33	12.7	13.8
296.0	T6 [Ⓒ]	2.80	0.101	970-1170	33	0.31	12.2	13.3
308.0	F	2.79	0.101	970-1135	37	0.35	11.9	12.9
319.0	F	2.79	0.101	960-1120	27	0.26	11.9	12.7
328.0	F	2.70	0.098	1025-1105	30	0.29	11.9	12.9
332.0	T5 [Ⓒ]	2.76	0.100	970-1080	26	0.25	11.5	12.4
* 333.0	F [Ⓒ]	2.77	0.100	960-1085	26	0.25	11.4	12.4
	T5 [Ⓒ]	2.77	0.100	960-1085	29	0.28	11.4	12.4
	T6 [Ⓒ]	2.77	0.100	960-1085	29	0.28	11.4	12.4
	T7 [Ⓒ]	2.77	0.100	960-1085	35	0.33	11.4	12.4
336.0	T551 [Ⓒ]	2.72	0.098	1000-1050	29	0.28	11.0	12.0
354.0	T61	2.71	0.098	1000-1105	32	0.30	11.6	12.7
355.0	T51	2.71	0.098	1015-1150	43	0.40	12.4	13.7
	T6	2.71	0.098	1015-1150	36	0.34	12.4	13.7
	T6 [Ⓒ]	2.71	0.098	1015-1150	39	0.36	12.4	13.7
	T61	2.71	0.098	1015-1150	37	0.35	12.4	13.7
	T62 [Ⓒ]	2.71	0.098	1015-1150	38	0.35	12.4	13.7
	T7	2.71	0.098	1015-1150	42	0.39	12.4	13.7
	T71	2.71	0.098	1015-1150	39	0.36	12.4	13.7
C355.0	T61	2.71	0.098	1015-1150	39	0.36	12.4	13.7
356.0	T51	2.68	0.097	1035-1135	43	0.40	11.9	12.9
	T6	2.68	0.097	1035-1135	39	0.36	11.9	12.9
	T6 [Ⓒ]	2.68	0.097	1035-1135	41	0.38	11.9	12.9
	T7	2.68	0.097	1035-1135	40	0.37	11.9	12.9
	T7 [Ⓒ]	2.68	0.097	1035-1135	43	0.40	11.9	12.9
A356.0	T61	2.67	0.097	1035-1135	39	0.36	11.9	12.9
357.0	F	2.67	0.097	1035-1135	39	0.36	11.9	12.9
A357.0	T61	2.67	0.097	1035-1135	39	0.36	11.9	12.9
359.0	T6	2.67	0.097	1045-1115	35	0.33	11.6	12.7
443.0	F	2.69	0.097	1065-1170	37	0.35	12.3	13.4
B443.0	F	2.69	0.097	1065-1170	37	0.35	12.3	13.4
A444.0	F	2.68	0.097	1070-1170	41	0.38	12.1	13.2
512.0	F	2.65	0.096	1090-1170	38	0.35	12.7	13.8
513.0	F [Ⓒ]	2.68	0.097	1075-1180	34	0.32	13.4	14.5
514.0	F	2.65	0.096	1110-1185	35	0.33	13.4	14.5
520.0	T4	2.57	0.093	840-1120	21	0.21	13.7	14.8
535.0	F	2.62	0.095	1020-1165	23	0.23	13.1	14.8
705.0	F	2.76	0.100	1105-1180	25	0.25	13.1	14.3
707.0	F	2.77	0.100	1085-1165	25	0.25	13.2	14.4
710.0	F	2.81	0.102	1105-1195	35	0.33	13.4	14.6
711.0	F [Ⓒ]	2.84	0.103	1120-1190	40	0.37	13.1	14.2
712.0	F	2.81	0.101	1135-1200	35	0.33	13.7	14.8 [Ⓓ]
713.0	F	2.81	0.100	1100-1180	30	0.29	13.4 [Ⓓ]	14.6 [Ⓓ]
771.0	F	2.81	0.102	1120-1190	37	0.33	13.7	14.8 [Ⓓ]
850.0	T5 [Ⓒ]	2.88	0.104	435-1200	47	0.43	13.0	Ⓔ
851.0	T5 [Ⓒ]	2.83	0.103	440-1165	43	0.40	12.6	Ⓔ
852.0	T5 [Ⓒ]	2.88	0.104	400-1175	45	0.41	12.9	Ⓔ

[Ⓐ] Assuming solid (void-free) metal. Since some porosity cannot be avoided in commercial castings, the actual values will be slightly less than those given.

[Ⓑ] Cgs units equals calories per second per square centimeter per centimeter of thickness per degree centigrade.

[Ⓒ] Chill cast samples; all other samples cast in green sand mold.

[Ⓓ] Estimated value.

[Ⓔ] Exceeds operating temperature.

Reference: Aluminum, Volume I. Properties, Physical Metallurgy and Phase Diagrams, American Society for Metals, Metals Park, Ohio (1967). Data for alloy 771.0 supplied by the U.S. Reduction Company, East Chicago, Indiana.