



## Properties of Metals

### Application Guide

#### Reference Data

#### Physical Properties of Solids, Liquids and Gases

Continued

Properties of Metals—Ref. 133

Material	Density lb./ft <sup>3</sup>	Specific Heat Btu lb.-°F	*Thermal Conductivity Btu-in hr.-ft <sup>2</sup> -°F	Melting Point °F (Lowest)	Latent Heat of Fusion Btu/lb.	Thermal Expansion in/in/°F X10 <sup>-6</sup>
Aluminum 1100-0	169	0.24	1536	1190	169	13.1
Aluminum 2024	173	0.24	1344	935	167	12.6
Antimony	413	0.049	131	1166	69	5.0
Babbitt-Lead Base	640	0.039	165.6	470		10.9
Babbitt-Tin Base	462	0.071	278.4	465		
Barium	225	0.068		1562	24	10.0
Beryllium	113.5	0.052	1121.0	2345	58	6.6
Bismuth	610	0.031	59	520	22.4	7.4
Boron	144	0.309		4172	898	4.6
Brass (80-20)	535	0.091	82	1700±		
Brass (70-30)	525	0.10	672	1700±		10.6
Brass (Yellow)	529	0.096	828	1710		11.2
Bronze (75% Cu, 25% Sn)	541	0.082	180	1832	75	
Cadmium	540	0.055	660	610	23.8	17.2
Calcium	96.7	0.149	912	1564	140	12.2
Carbon	138	0.165	173	>6422		2.3
Carbonyl (Cemented Carbide)	875	0.052	420 636	>6422		
Chromium	450	0.11	484	2822	111.7	3.6
Cobalt	554	0.099	499	2696	115.2	6.9
Constantan (55% Cu, 45% Ni)	555	0.098		2237-2372		8.3
Copper	559	0.10	2688	1981	91	9.8
German Silver	537	0.109	168 204	1761	44.2	10.6
Gold	1203	0.030	2028	1945	29	7.9
Incoloy 800	501	0.12	97	2475		7.9
Inconel 600	525	0.11	109	2470		5.8
Invar 36% Ni	506	0.126	73	2600		1.1
Iron, Cast	450	0.13	396	2300±	40	6.0
Iron, Wrought	480	0.12	432	2800±		
Lead	708	0.032	240	620	9.8	16.4
Linotype	627	0.04		480		
Lithium	367	0.79	516	367	59	31
Magnesium	109	0.232	1092	1202	155	14.0
Manganese	463	0.115	80.6	2268	116	12.7
Mercury	844	0.033	60.8	-38	5.0	33.8
Molybdenum	638	0.061	980	4750	126	2.9

Reference Data

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\* At or near room temperature  
 To convert to kg/m<sup>3</sup> multiply lb/ft<sup>3</sup> by 16.02  
 To convert to kJ/kg multiply Btu/lb by 2.326  
 To convert to kJ/kg-°C multiply Btu/lb-°F by 4.187  
 To convert to W/m-°C multiply Btu-in/hr-ft<sup>2</sup>-°F by 0.1442

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Continued

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Monel® 400	551	0.11	151	2370		6.4
Muntz Metal (60% Cu, 40% Zn)	523	0.096	852	1660		11.5
Nickel 200	554	0.11	468	2615	1335.8	7.4
Nichrome (80% Ni, 20% Cr)	524	0.11	104.4	2550	7.3	7.8
Platinum	1338	0.32	492	3225	49	4.9
Potassium	750	0.058	720	146	26.2	4.6
Rhodium	776	0.059	636	3570	90	4.7
Silicon	14.5	0.162	600	2570	709	4.2
Silver	655	0.057	2904	1760	38	10.8
Sodium	60	0.295	972	207	49.5	39
Solder (50% Sn, 50% Pb)	552	0.040	336	420	17	13.1
Solder (60% Sn, 40% Pb)	540	0.045	355	375	28	13.3
Steel, Mild Carbon	490	0.12	456	2760		6.7
Steel, Stainless 304, 316, 321	500	0.12	105.6	2550		9.6
Steel, Stainless 430	475	0.11	150	2650		6.0
Tantalum	1036	0.036	372	5425	74.8	3.6
Tin	455	0.056	432	450	26.1	13.0
Titanium	283	0.126	111.6	3035	156.9	4.7
Tungsten	1200	0.032	1130	6170	79	2.5
Type Metal (85% Pb, 15% Sb)	670	0.040	180	500	14	
Uranium	1170	0.028	193.2	3075	22.5	7.4
Zinc	445	0.095	112	787	43.3	22.1
Zirconium	400	0.066	264	3350	108	3.2

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To convert to W/m-°C multiply Btu-in/hr-ft<sup>2</sup>-°F by 0.1442

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