sical constants of metals

same decade for the whole column

Elements	Density[1] g/cm³ (or rel. to water)	Coeff. of linear expansion	Specific heat kj/kg °C	Specific heat cal/g °C = Btu/lb °F	Thermal conductivity[2] w/m °C	Thermal conductivity[2] cal/cm sec °C	Thermal[3] diffusivity cm²/sec
Aluminum	2.69	23.7×10^{-6}	0.896	0.214	210	0.50	0.87
Antimony	6.69	10.8	0.21	0.050	18	0.042	0.13
Beryllium	1.84	12.3	1.66	0.397	170	0.40	0.56
Bismuth	9.80	13.4	0.121	0.029	8.0	0.019	0.067
Cadmium	8.64	31.6	0.23	0.055	92	0.22	0.46
Calcium	1.55	—	0.67	0.16	96	0.23	0.92
Chromium	7.1	8.5	0.46	0.11	—	—	—
Cobalt	8.8	12.6	0.419	0.100	—	—	—
Copper	8.93	16.2	0.39	0.092	380	0.91	1.09
Gold	19.3	14.4	0.130	0.031	290	0.70	1.15
Iron (comp. below)	7.86	12.3	0.448	0.107	71	0.17	0.20
Lead	11.34	28.9	0.130	0.031	34	0.083	0.23
Magnesium	1.74	26.1	1.05	0.25	160	0.38	0.88
Mercury	13.55	181 (vol)	0.14	0.033	—	—	—
Molybdenum	10.2	4.9	0.260	0.062	150	0.35	0.57
Nickel	8.90	12.9	0.452	0.108	59	0.14	0.15
Platinum	21.37	8.99	0.13	0.032	71	0.17	0.26
Silver	10.50	18.8	0.23	0.056	420	1.01	1.74
Sodium	0.97	70	1.26	0.30	130	0.30	1.1
Tantalum	16.6	6.5	0.14	0.033	54	0.13	0.23
Tin (tetragonal)	7.31	27	0.226	0.054	63	0.15	0.38
Uranium	18.7	—	0.117	0.028	—	—	—
Wolfram (Tungsten)	19.3	4.3	0.134	0.032	200	0.48	0.77
Zinc	7.14	26.2	0.385	0.092	110	0.27	0.40
Alloys[4]							
Aluminum Bronzes	7.5–8.2	18	0.41	0.10	84	0.20	0.26
Brass, yellow	8.5	21	0.38	0.09	130	0.30	0.40
Aluminum Alloy	2.65	19	0.88	0.21	160	0.39	0.69
Magnesium Alloy	1.82	26	1.0	0.24	120	0.28	0.67
Carbon Steel 1040	7.8	12	0.46	0.11	55	0.13	0.15
Stainless Steel	7.75	10	0.46	0.11	50	0.12	0.14
Gray Cast Iron	7.0	11	0.50	0.12	59	0.14	0.15
Invar	8.0	0.2	0.50	0.12	16	0.039	0.04

g/cm³ = 1 kg/dm³ = 0.03613 lb/in³; [2]) 1 cal/cm sec °C = 0.8062 Btu in/ft² sec °F.

hermal diffusivity, defined as thermal conductivity / (density) (specific heat), is important for non-stationary cases, being the ent in the equation $d\vartheta/dt = (k/\rho c)\nabla^2\vartheta$.

ecause the alloys vary greatly, these are given only as examples. See Electrical materials p. 74.

same decade for the whole column

Physical constants of metals

Melting point °C[5])	Heat of fusion[6]) kj/kg	Heat of fusion[6]) cal/g	Resistivity ohm mm²/m	Resistivity temp.coeff.	Tensile[7]) strength lbf/in²	Young's[7]) modulus lbf/in²	Sound[8]) velocity m/sec	Chem. symbol	Atomic No.
658	322	77	2.7×10^{-2}	4.3×10^{-3}	$30–40 \times 10^{4}$	$8–11 \times 10^{6}$	5100	Al	13
630	163	39	41.7	4.7	—	19	3400	Sb	51
1350	—	—	6.3	0.4	—	42	—	Be	4
271.0	54	13	119	4.5	—	4.5	1800	Bi	83
320.7	57	13.7	7.46	4.2	—	10	2310	Cd	48
810	328	79	4.5	3.3	—	—	—	Ca	20
1615	134	32	2.8	—	—	36	—	Cr	24
1489	280	67	6.8	6.6	—	—	4720	Co	27
1083	180	43	1.72	3.9	60–70	17–23	3560	Cu	29
1064	66	15.8	2.21	4.0	—	11	1740	Au	79
1538	276	66	10.5	6.6	—	—	5130	Fe	26
327.4	24.7	5.9	20.7	4.2	—	2.2	1320	Pb	82
651	209	50	4.6	4.0	—	6.1	4600	Mg	12
−38.87	11.7	2.8	95.8	0.89	—	—	—	Hg	80
2620	—	—	5.7	4.0	—	43	—	Mo	42
1435	310	74	7.8	6.7	—	30	4970	Ni	28
1773	113	27	10.8	3.8	50	24	2690	Pt	78
960.5	105	25	1.59	3.8	42	11	2610	Ag	47
97.5	134	32	4.6	5.5	—	—	—	Na	11
2996	—	—	15.5	3.1	130	27	3400	Ta	73
231.8	59	14	11.5	4.6	4–5	7.8	2600	Sn	50
1690	—	—	—	—	—	—	—	U	92
3370	—	—	5.51	4.5	590	51	—	W	74
419.4	117	28	5.8	3.7	22–30	11–15	3700	Zn	30
							Composition %:		
1050	—	—	11	—	72–80	16.8	88–96 Cu, 2–10 Al, Fe, Sn		
940	—	—	6	2	54–62	11.3	55–70 Cu, 30–45 Zn, some Pb		
570	—	—	48	—	19–23	12.0	12.5 Si, 0.8 Ni, rest Al		
610	—	—	70	—	24–32	6.3	91 Mg, 6 Al, 3 Zn		
1430	—	—	15	—	90	30	0.40 C, 0.75 Mn, max 0.05 P, S		
1510	—	—	—	—	120	30	C max 0.15, Mn max 1.00, Si max 1.0, Cr range 11.5–13.5		
1230	—	—	—	—	—	—	94 Fe, 3.5 C, 2.5 Si		
1450	—	—	10	2	50	21	63.8 Fe, 36 Ni, 0.4 C		

5) Conversion °C → °F p. 98. 6) 1 cal/g = 1.8 Btu/lb.

7) 1 lbf/in² = 0.0703 kgf/cm². 8) 1 m/sec = 2.237 mi/hr = 3.281 ft/sec.

When not otherwise stated, the tables on pp. 48–53 consist of quantities measured at 20°C.