

Technical Brief: Physical and Mechanical Properties of Solid Zinc Strip- Comparison to Other Metals

English Units	Rolled Strip Zinc Alloys				Brass	Copper	Stainless Steel	DQ Steel	Aluminum
	190	500	710	750	70/30	ETP	304	1008	3003
Physical Properties									
Density (lb/in ³)	0.259	0.259	0.259	0.259	0.308	0.321	0.290	0.284	0.099
Melting Point (°F)	792	786	792	792	1680	1950	2550	2730	1190
Coefficient of Thermal Expansion (µin/in · °F)	17.6	16.7	15.4	12.7	11.1	9.4	9.6	7.0	12.9
Electrical Conductivity (% IACS)	27	27	26	26	28	100	2	10	42
Electrical Resistivity (Ω · cir. Mil/ft)	37.20	38.68	39.58	39.70	36.99	10.23	431.88	107.07	24.72
Thermal Conductivity (BTU/ft · hr · °F)	60.5	60.5	60.5	60.5	70.0	224.0	9.4	33.4	94.1
Specific Heat (BTU/lb · °F)	0.096	0.094	0.096	0.096	0.090	0.092	0.120	0.115	0.213
Specific Gravity	7.18	7.14	7.18	7.18	8.47	8.89	7.90	7.90	2.74
Mechanical Properties									
Tensile Strength (ksi)	22-29	10-22	21-28	21-32	44-99	32-57	75-150	38-50	16-29
% Elongation (in 2")	35-70	15-75	30-45	30-50	3-68	4-45	0-40	35-45	4-40
Hardness (HR15T)	59-69	20-45	50-68	58-72	60-91	50-80	88 max.	73-77	40-75
Shear Strength (ksi)	24-28	12-21	24-28	24-28	31-48	22-29	60-120	45-52	11-16

Special Mechanical Test Parameters: Ref. ASTM B69-98a, Section 7.1.1: for Tensile Properties testing, the recommended rate of separation of the heads should be 0.125 in./in./min., which is equivalent to a cross head speed of 0.250 in./min.; and Section 7.1.2: for Hardness testing, the dwell time of the major load should be 15 seconds.

• Note: All data for "Other Metals" was taken from ASM Metals Handbook, with the exception of Olsen Ductility and Hardness (HR15T). Hardness testing method (HR15T) is only valid at 0.018" and thicker material.



P.O. Box 1890
Greeneville, TN 37744-1890
T: 423.639.8111
F: 423.639.3125

Technical Brief: Physical and Mechanical Properties of Solid Zinc Strip – Comparison to Other Metals

Metric Units	Rolled Strip Zinc Alloys				Brass	Copper	Stainless Steel	DQ Steel	Aluminum
	190	500	710	750	70/30	ETP	304	1008	3003
Physical Properties									
Density (g/cm ³)	7.17	7.14	7.17	7.17	8.52	8.89	8.00	7.87	2.73
Melting Point (°C)	422	419	422	422	916	1065	1400	1500	643
Coefficient of Thermal Expansion (µm/m · K)	31.6	30.0	27.7	22.8	19.9	17.0	17.2	12.6	23.2
Electrical Conductivity (% IACS)	27	27	26	26	28	100	2	10	42
Electrical Resistivity (µΩ · cm)	6.35	6.43	6.58	6.60	6.15	1.70	71.80	17.80	4.11
Thermal Conductivity (W/m · K)	105	105	105	105	120	388	16	58	163
Specific Heat (J/kg · K)	400	392	400	400	375	380	500	481	893
Specific Gravity	7.18	7.14	7.18	7.18	8.47	8.89	7.90	7.90	2.74
Mechanical Properties									
Tensile Strength (MPa)	152-200	69-152	145-193	145-220	303-683	221-393	517-1034	262-345	110-200
% Elongation (in 50mm)	35-70	15-75	30-45	30-50	3-68	4-45	0-40	35-45	4-40
Hardness (HR15T)	59-69	20-45	50-68	58-72	60-91	50-80	88 max.	73-77	40-75
Shear Strength (MPa)	165-193	83-145	165-193	165-193	214-331	152-200	414-827	310-359	76-110

Special Mechanical Test Parameters: Ref. ASTM B69-98a, Section 7.1.1: for Tensile Properties testing, the recommended rate of separation of the heads should be 0.125 in./in./min., which is equivalent to a cross head speed of 0.250 in./min.; and Section 7.1.2: for Hardness testing, the dwell time of the major load should be 15 seconds.

• Note: All data for "Other Metals" was taken from ASM Metals Handbook, with the exception of Olsen Ductility and Hardness (HR15T). Hardness testing method (HR15T) is only valid at 0.018" and thicker material.



P.O. Box 1890
Greeneville, TN 37744-1890
T: 423.639.8111
F: 423.639.3125