



Material Properties

Mechanical Properties	Magnesium										Aluminum		Zinc	
	AZ91D	AM50A	AM60B	AM20	AE42	AE44	MRI 153M	MRI 230D	AS21	AJ62	A380	A383	AG40A	ZA27
Ultimate Tensile Strength (Mpa)	240	210	225	190	230	245	250	245	175	234	320	310	283	426
Yield Strength (Mpa)	160	125	130	90	145	142	170	180	110	140	160	150		365
Elongation % ub 2 in (51mm)	3	10	8	12	10	10	6	5	9	7	3.5	3.5	10	2
Hardness Brinell	70	60	65	45	60	62	72	71	55	61	80	75	82	115
Elastic Modulus (Gpa)	45	45	45	45	45	45	45	45	45	45	71	71		78
Charpy Impact (unnotched) (J)	6	18	17	18	5	15	8	6	5	13.3	4	4	53	4

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	AZ91D	AM50A	AM60B	AM20	AE42	AE44	MRI 153M	MRI 230D	AS21	AJ62	A380	A383	AG40A	ZA27
Density (g / cm ³)	1.81	1.77	1.80	1.75	1.79	1.82	1.82	1.82	1.76	1.80	2.74	2.74	6.60	5.00
Melting Range														
F	815-1,108	815-1,238	815-1,139	815-1,180	1,094-1,157	1,071-1,148	946-1,116	977-1,123	815-1,170	959-1,134	1,004-1,103	1,035-1,105	718-732	707-903
C	435-598	435-620	435-615	435-638	590-625	577-620	508-602	525-606	435-632	515-612	540-595	557-596	381-389	375-484
Specific Heat (kJ/kg k)	1.02	1.02	1.02	1.02	1.02	1.02	1.09	1.04	1.02	1.15	0.963	0.963	0.418	0.522
Coefficient of Thermal Expansion (um / m - k)	26.0	26.0	26.0	26.0	26.1	25.2	25.9	25.1	26.1	27.3	22.0	22.0	27.4	26.0
Thermal Conductivity (W / m - k)	51	65	61	94	84	85	64	77	84	77	96	96	113	123
Electrical Conductivity MS/m	6.60	9.10	nm	13.10	11.70	11.70	nm	nm	10.80	nm	nm	nm	nm	nm
Corrosion Rate mg/cm ² /day	0.05	0.10	0.09	0.60	0.06	0.05	0.09	0.10	0.20	0.04	0.34	0.33	nm	nm

Sources: Hydro Magnesium September 2005, ASM Handbook; Magnesium & Magnesium Alloys, Dead Sea Magnesium, Noranda Magnesium Data
 The mechanical properties of a die cast alloy depend strongly on the fabrication variables involved, as well as on the alloy composition. *Hydro Magnesium
 nm: not measured