

MAGNESIUM ALLOYS CHEMICAL & MECHANICAL DATA SHEET



UNIQ MAGNESIUM
Light Weight Solutions

Chemical Composition

Alloy Grade	Magnesium	Aluminium (%)	Zinc (%)	Manganese (%)	Rare Earths (%)	Zirconium (%)	Yttrium (%)	Neodymium (%)	Gadolinium (%)	Copper (%)	Iron (%)	Nickel (%)	Silicon (%)
AZ91E	Remainder	8.1-9.3	0.4-1	0.17-0.35	-	-	-	-	-	0.015	0.005	0.001	0.2
AZ91C	Remainder	8.1-9.3	0.4-1	0.13-0.35	-	-	-	-	-	0.1	-	0.01	0.3
AZ91D	Remainder	8.1-9.7	0.35-1	0.15-0.5	-	-	-	-	-	0.03	0.005	0.002	0.1
AZ31B	Remainder	2.5-3.5	0.6-1.4	0.2-1	-	-	-	-	-	0.05	0.005	0.005	0.1
AZ80A	Remainder	7.8-9.2	0.2-0.8	0.12-0.5	-	-	-	-	-	0.05	0.005	0.005	0.1
AZ92A	Remainder	8.3-9.7	1.6-2.4	0.1 - 3.5	-	-	-	-	-	0.25	-	0.01	0.3
AZ61A	Remainder	5.8-7.2	0.4-1.5	0.15-0.5	-	-	-	-	-	0.05	0.005	0.005	0.1
AZ63A	Remainder	5.3-6.7	2.5-3.5	0.15-0.35	-	-	-	-	-	0.25	-	0.01	0.3
Electron 21	Remainder	-	0.2-0.5	-	-	Saturated	-	2.6-3.1	1-1.7	0.01	0.01	0.002	-
WE43	Remainder	-	0.2	-	2.4-4.4	0.4-1	3.7-4.3	-	-	0.03	0.01	0.005	0.01
ZE41A	Remainder	-	3.5-5	0.15	0.75-1.75	0.4-1	-	-	-	0.1	-	0.01	-

Mechanical Properties

Thermal Properties

Alloy Grade	Temper Condition	Density (g/cm ³)	Mechanical Properties								Thermal Properties	
			UTS (MPa) (Min)	Yield (MPa) (Min)	Elongation (%) (Min)	Hardness Brinell (HB)	Poisson's Ratio (%)	Elastic (Young's, Tensile) Modulus (GPa)	Shear Modulus (GPa)	Specific Heat Capacity (J/kg-k)	Thermal Conductivity (W/m-k)	Thermal Expansion (µm/m°C)
AZ91E	T6	1.81	234	110	3	70	0.35	44.8	17	1000	84	26
AZ91C	T6	1.81	234	110	3	70	0.35	44.8	17	990	73	26
AZ91D	F	1.81	230	160	3	63	0.35	44.8	17	1047	72.7	26
AZ31B	F	1.77	234	131	6	50	0.29	45	17	990	73	26
AZ80A	T5	1.83	290	193	2	82	0.35	46	17	990	76	26
AZ92A	T6	1.82	234	124	1	81	0.29	47	17	980	58	26
AZ61A	F	1.81	262	152	6	50	0.35	44.8	17	990	79	27
AZ63A	T6	1.84	234	110	3	73	0.35	45	17	980	61	26
Electron 21	T6	1.82	280	170	5	70	0.27	44.8	17	1086	116	26
WE43	T6	1.84	250	150	2	85	0.27	45	17	966	51	26
ZE41A	T5	1.84	200	133	2.5	62	0.29	45	17	970	110	27