

TABLE 1

The chemical composition of dual-phase Mg-Li alloy LZ91

Li	Zn	Mg
9.1	1.2	Balance

TABLE 2

Mechanical properties of dual-phase Mg-Li alloy LZ91

Density ($\rho/\text{g}\cdot\text{cm}^3$)	Ultimate strength (MPa)	Yield strength (MPa)	Poisons ratio	Elongation (%)	Modulus of elasticity (GPa)	Hardness (HV)
1.48	172.3	118.5	0.33	15	49.3	75

TABLE 3

Phase	HV	Hardness (GPa)	Modulus (GPa)
α -Mg	76	0.79	51.0
β -Li	74	0.78	49.8

TABLE 4

Material	Ultimate strength (MPa)	Yield Strength (MPa)	Fatigue limit (MPa)	Fatigue ratio
LZ91 (present work)	172.3	118.5	78	0.46
LAZ832-0.5Y (Ref. 31)	222.5	198.1	65	0.29
ZK60 (Ref. 32)	348.5	286.3	95	0.27
AZ31 (Ref. 19)	294.5	187.2	88.7	0.30

TABLE5

Specimen No.	σ_a / MPa	N_f / cycles	A_a / mm^2	A_β / mm^2	A_a / A_β
1	95	5.08×10^7	0.0189	0.0445	0.4237
2	95	2.64×10^6	0.0134	0.0526	0.2542
3	90	1.07×10^6	0.0085	0.0568	0.1491
4	90	2.88×10^7	0.0259	0.0374	0.6933
5	90	2.12×10^6	0.0153	0.0484	0.3164
6	90	1.06×10^8	0.0207	0.0427	0.4858
7	90	1.65×10^6	0.0156	0.0490	0.3184
8	90	9.65×10^6	0.0174	0.0451	0.3869
9	90	1.44×10^6	0.0154	0.0481	0.3207

10	85	5.45×10^6	0.0114	0.0531	0.2141
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