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Chemical Composition of Magnesium Alloy (%) ASTM standard

Type	Al	Mn	Zn	Fe	Cu	Si	Ni	Be	Other
AZ91D	8.5-9.5	0.17-0.40	0.45-0.9	0.004	0.025	0.08	0.001	0.0005-0.0015	0.01
AM60B	5.6-6.4	0.26-0.50	0.2	0.004	0.008	0.08	0.001	0.0005-0.0015	0.01
AM50A	4.5-5.3	0.28-0.50	0.2	0.004	0.008	0.08	0.001	0.0005-0.0015	0.01
AZ63	5.3-6.7	0.15-0.7	2.5-3.5	0.003	0.02	0.1	0.002	-	-
AZ31	2.5-3.5	0.2-1.0	0.6-1.4	0.005	0.05	0.1	0.005	-	-
AS31	3.3-4.0	0.25-0.50	0.05-0.20	0.003	0.008	0.7-1.2	0.001	0.0005-0.0015	0.01

The chemical composition of magnesium alloy (%) according to national standard GB/T19078-2003

Type	Al	Zn	Mn	Sn	Fe	Cu	Ni	Single rest Impurity	Total amount of impurities	Maximum
AZ91D	8.5-9.5	0.45-0.90	0.17-0.40	0.05	0.004	0.015	0.001	--	Margin	0.023
AM60B	5.6-6.4	＜ 0.2	0.26-0.50	0.05	0.004	0.008	0.001	0.01	--	0.015
AM50A	4.5-5.3	＜ 0.2	0.28-0.50	0.05	0.004	0.008	0.001	0.01	--	0.015
AS41A	3.7-3.8	＜ 0.1	0.22-0.48	0.6-1.4	--	0.04	0.001	--	0.3	--
AM20	1.7-2.2	＜ 0.1	＞ 0.5	0.05	0.004	0.008	0.001	0.01	--	＜ 0.008

Mechanical properties of magnesium alloys

Type	Tensile strength (MPa	Yield strength (MPa)	Elongation (%)
AZ91D	200-250	150-170	0.5-3.0
AM60B	190-230	120-150	4-8
AM50A	180-220	110-140	5-9
AS41A	230-260	120-150	3-6
AM20	160-210	90-120	8-12

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Common Questions on Magnesium Alloy Specifications

Q: What is the aluminum (Al) and manganese (Mn) content for AZ91D magnesium alloy under ASTM standards?

A: According to the ASTM standard table, AZ91D magnesium alloy contains 8.5-9.5% Aluminum (Al) and 0.17-0.40% Manganese (Mn).

It also includes 0.45-0.9% Zinc (Zn) and very low levels of impurities such as Iron (Fe) and Copper (Cu).

Q: Which magnesium alloy grade provides the highest tensile strength among the listed types?

A: Based on the mechanical properties table, AS41A offers the highest tensile strength range of 230-260 MPa. In comparison, AZ91D provides a tensile strength of 200-250 MPa.

Q: How do the elongation properties differ between AM60B and AM20 magnesium alloys?

A: The data shows that AM20 has superior ductility with an elongation of 8-12%, whereas AM60B features an elongation of 4-8%.

Lower aluminum content in AM20 contributes to its higher elongation compared to AM60B and AM50A.