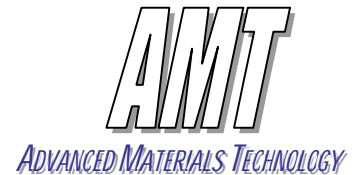


Magnesium alloys

Category:

High strength
High modulus
Low density



Magnesium-alloy Mg-CNT1

Magnesium alloy Mg-CNT1 is a Magnesium alloy reinforced with 1% Multi walled Carbon Nanotubes. The Carbon Nanotubes are added to increase the strength and the modulus. Because of the low density of the Nanotubes the density is virtually the same than for Magnesium. The advantage of Nanotubes are their extremely high elastic modulus of 1.200 GPa and very high strength of up to 60.000 MPa. The Nanotubes are Nickel coated to have a better bonding to the matrix alloy. Virtually the same modulus and strength than for conventional Aluminum makes this alloy attractive for many parts. The reinforcement content is less than 2%. This fulfils even the FIA restrictions for engine materials with less than 2% of not soluble particles in the liquid phase of the matrix. Even if the price of multi-walled Carbon Nanotubes is high, around 1.000,- USD/Kg, due to the comparable low amount of them the alloys could be competitive.

General properties

- High strength
- High modulus

Comparison with Standard alloy AZ91

Advantages: - Higher strength, AZ91
- Higher modulus, AZ91

Disadvantages: - More expensive

Chemical Composition: Mg-AZ91+1.2% CNT (multi-wall)

Mechanical properties

	UTS	YS	Elong.	E-Modulus
	MPa	MPa	%	GPa
Mg-AZ91-SiC	365	324	4	68

Physical data

Density: 1.82 g/cm³

CTE: 24x10⁻⁶

Applications

- Aircraft Structural Parts
- Replacement of AZ91, A2017
- Automotive Structural Parts

Delivery form

- Billets