

[54] DUAL-PHASE, MAGNESIUM-BASED ALLOY HAVING IMPROVED PROPERTIES

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[21] Appl. No.: 365,840

[22] Filed: Jun. 14, 1989

[51] Int. Cl.<sup>5</sup> C22C 23/06; C22C 23/02

[52] U.S. Cl. 420/405; 420/408; 420/409; 420/410

[58] Field of Search 420/405, 407, 408, 409, 420/410

[56] References Cited

U.S. PATENT DOCUMENTS

2,011,613	8/1935	Brown et al.	29/181
2,305,825	12/1942	Burkhardt et al.	75/168
2,317,980	5/1943	Dean et al.	75/168
2,376,868	5/1945	Dean et al.	75/168
2,385,685	9/1945	Busk	75/168
2,453,444	11/1948	Loonam	75/168
2,507,714	5/1950	Hesse	75/168
2,604,396	7/1952	Jessup	75/168
2,622,049	12/1952	Hesse	148/21.9
2,961,359	11/1960	Lillie	148/13.1
3,039,868	6/1962	Payne et al.	75/168
3,119,684	1/1964	Foerster	420/408
3,119,689	1/1964	Saia	75/168

4,233,376 11/1980 Atkinson et al. 429/199

FOREIGN PATENT DOCUMENTS

56-120293	9/1981	Japan
258600	12/1969	U.S.S.R.
328193	2/1972	U.S.S.R.
455161	2/1975	U.S.S.R.
485166	8/1976	U.S.S.R.
559986	7/1977	U.S.S.R.
569638	9/1977	U.S.S.R.

OTHER PUBLICATIONS

"Electrochemical Behavior of Alloy MA-21 in Aqueous Solutions of Sodium Fluoride", *Zashchita Metallov (Protection of Metals)*, vol. 22 (1986).

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[57] ABSTRACT

A dual-phase magnesium-based alloy consisting essentially of about 7–12% lithium, about 2–6% aluminum, about 0.1–2% rare earth metal, preferably scandium, up to about 2% zinc and up to about 1% manganese. The alloy exhibits improved combinations of strength, formability and/or corrosion resistance. There is also disclosed a composite matrix whose metal phase consists essentially of the aforementioned composition.

24 Claims, 3 Drawing Sheets

Corrosion Rate of Mg-Li Alloys in Saltwater

