Designation: B843 – 13

Standard Specification for Magnesium Alloy Anodes for Cathodic Protection[1]

This standard is issued under the fixed designation B843; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 This specification covers magnesium alloy anodes in the form of cast and extruded shapes.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

B951 Practice for Codification of Unalloyed Magnesium and Magnesium-Alloys, Cast and Wrought

B953 Practice for Sampling Magnesium and Magnesium Alloys for Spectrochemical Analysis

B954 Test Method for Analysis of Magnesium and Magnesium Alloys by Atomic Emission Spectrometry

E55 Practice for Sampling Wrought Nonferrous Metals and Alloys for Determination of Chemical Composition

E88 Practice for Sampling Nonferrous Metals and Alloys in Cast Form for Determination of Chemical Composition

G97 Test Method for Laboratory Evaluation of Magnesium Sacrificial Anode Test Specimens for Underground Applications

E527 Practice for Numbering Metals and Alloys in the Unified Numbering System (UNS)

3. Significance and Use

3.1 This specification is prescriptive and not performance in nature.

4. Ordering Information

4.1 Orders for anodes under this specification shall include the following information:

4.1.1 Grade (Section 5 and Table 1),

4.1.2 Quantity (number of pieces), and

4.1.3 Size, form, and shape as negotiated between purchaser and supplier.

5. Chemical Composition

5.1 *Limits*—The material shall conform to the chemical composition requirements prescribed in Table 1.

5.2 *Sampling:*

5.2.1 Sufficient samples shall be taken by the manufacturer to ensure conformance to the chemical composition requirements of the metal. Samples may be taken from the molten metal when the cast anode or extrusion ingot is poured following Practice B953, or from the finished anode following the requirements of Specifications B954, E55, or E88. Samples shall be representative of the material.

5.2.2 *Method of Analysis*—Any suitable method of chemical analysis may be used. In case of dispute, the results secured by Test Method B954 shall be the basis of acceptance.

6. Property Testing

6.1 Sufficient samples may be taken for property testing as negotiated between purchaser and supplier. Testing will be done in compliance with Test Method G97.

7. General Quality

7.1 Magnesium cast and extruded anodes shall have a clean surface and be commercially free of dirt, slag, or other foreign material.

8. Rejection

8.1 Material that does not conform to the requirements of this specification may be rejected, and if rejected, the conditions of replacement shall be as agreed upon between the purchaser and the supplier.

9. Packaging and Package Marking

9.1 The material shall be packaged in such a manner as to prevent damage in ordinary handling and transportation. The type of packing and gross weight of the individual container shall be left to the discretion of the supplier, unless otherwise agreed upon between the purchaser and the supplier. Packing methods and containers shall be so selected as to permit maximum utility of mechanical equipment in unloading and subsequent handling.

9.2 Packages or containers shall be such as to ensure acceptance by common or other carriers for safe transportation at the lowest rate to the point of delivery.

[1] This specification is under the jurisdiction of ASTM Committee B07 on Light Metals and Alloys and is the direct responsibility of Subcommittee B07.04 on Magnesium Alloy Cast and Wrought Products.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

***A Summary of Changes section appears at the end of this standard**

TABLE 1 Chemical Requirements[A]

NOTE 1—ASTM alloy designations were established in accordance with Practice B951. UNS designations were established in accordance with Practice E527.

Element	Grade					
	AZ63B[B]	AZ63C[B]	AZ63D[B]	M1C	AZ31B	AZ31D
	UNS					
	M11632	M11634	M11636	M15102	M11311	M11313
Aluminum	5.3–6.7	5.3–6.7	5.0–7.0	0.01	2.5–3.5	2.5–3.5
Zinc	2.5–3.5	2.5–3.5	2.0–4.0	...	0.6–1.4	0.6–1.4
Manganese	0.15–0.7	0.15–0.7	0.15–0.7	0.50–1.3	0.20–1.0	0.20–1.0
Silicon	0.10	0.30	0.30	0.05	0.10	0.05
Copper	0.02	0.05	0.10	0.02	0.05	0.04
Nickel	0.002	0.003	0.003	0.001	0.005	0.0010
Iron	0.003	0.003	0.003	0.03	0.005	0.002
Calcium	...	...	...	...	0.04	0.04
Other metallic impurities, each				0.05	...	0.01
Others, total	0.30	0.30	0.30	0.30	0.30	0.30
Magnesium	remainder	remainder	remainder	remainder	remainder	remainder

[A]Limits are given as maximum weight percent unless shown as a range.
[B]Alloys AZ63B, AZ63C, and AZ63D are commonly known as H1A, H1B, and H1C, respectively.

9.3 Each shipment shall be marked with the purchaser's order number, form, quantity, specification number, gross and net weights, and the name of the manufacturer.

10. Keywords

10.1 cathodic protection; magnesium anodes

SUMMARY OF CHANGES

Committee B07 has identified the location of selected changes to this standard since the last issue (B843–07) that may impact the use of this standard. (Approved May 1, 2013.)

(1) Added reference to Practice B953 and Test Method B954.
(2) Deleted references to withdrawn Test Method E35 (Withdrawn 2008).