



Standard Specification for Anodes, Sacrificial Zinc Alloy¹

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1. Scope

1.1 This specification covers the requirements for zinc anodes in the form of slabs, plates, discs, and rods for corrosion protection (cathodic protection) of metals and alloys.

1.2 The anodes are primarily intended to reduce corrosion of surface ship and submarine hulls, steel and aluminum equipment and structures, sea chests, sonar domes, and the seawater side of condensers and other heat exchangers.

1.3 The values stated in inch-pound units are to be regarded as standard. The metric (SI) units, given in parentheses, are for information purposes only and may be approximate.

1.4 *This standard does not purport to address the safety concerns associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *Order of Precedence*—In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

2.2 ASTM Standards

A 36/A36M Specification for Carbon Structural Steel²

B 21 Specification for Naval Brass Rod, Bar, and Shapes³

B 103 Specification for Phosphor Bronze Plate, Sheet, Strip, and Rolled Bar³

D 3951 Practice for Commercial Packaging⁴

E 290 Test Method for Semi-Guided Bend Test for Ductility of Metallic Materials⁵

E 536 Test Method for Chemical Analysis of Zinc and Zinc Alloys⁶

2.3 Military Standards:⁷

MIL-STD-105 Sampling Procedures and Tables for Inspection by Attributes

MIL-STD-129 Marking for Shipment and Storage

MIL-STD-1186 Cushioning, Anchoring, Bracing, Blocking, and Waterproofing; With Appropriate Test Methods

2.4 Military Specification:

MIL-P-15011 Pallets Material Handling, Wood Post Construction, 4-Way Entry⁷

2.5 Federal Specifications:⁷

PPP-B-601 Boxes, Wood, Cleated Plywood

PPP-B-621 Boxes, Wood, Nailed and Lock-Corner

PPP-B-636 Boxes, Shipping, Fiberboard

2.6 American National Standards Institute Standard:

ANSI/ASME B1.20.1—Pipe Threads, General Purpose (Inch)⁸

3. Classification

3.1 The anodes shall be of the following classes and types, as specified (see 4.1.2):

3.1.1 Class 1—Cast-in cores:

3.1.1.1 *Type ZHS*—Zinc, hull slab, steel straps, 23 and 42-lb (10 and 19-kg) sizes.

3.1.1.2 *Type ZHB*—Zinc, hull slab, brass straps, 23-lb (10-kg) size.

3.1.1.3 *Type ZHC*—Zinc, hull slab, core strap, 23 and 42-lb (10 and 19-kg) sizes.

3.1.1.4 *Type ZSS*—Zinc, submarine slab, steel strap, 12 and 24-lb (5 and 11-kg) sizes.

3.1.1.5 *Type ZTS*—Zinc, teardrop shape, steel strap, 5-lb (2-kg) size.

3.1.1.6 *Type ZEP*—Zinc, heat exchanger or fair water disc, (pipe core or pipe bushing core):

Style A square slab, 9-lb (4-kg) size

Style B circular slab, various sizes

Style C semicircular slab, 23-lb (10-kg) size

3.1.1.7 *Type ZBP*—Zinc, bar, pipe core, 8-lb (4-kg) size.

3.1.1.8 *Type ZDM*—Zinc, segmented disc, machine formed interlocking core, various sizes.

3.1.2 Class 2—Plain, no cores;

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² *Annual Book of ASTM Standards*, Vol 01.04.

³ *Annual Book of ASTM Standards*, Vol 02.01.

⁴ *Annual Book of ASTM Standards*, Vol 15.09.

⁵ *Annual Book of ASTM Standards*, Vol 03.01.

⁶ *Annual Book of ASTM Standards*, Vol 03.05.

⁷ Available from Standardization Documents, Order Desk, Building 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

⁸ Available from American National Standards Institute, 25 W. 43rd St., 4th Floor, New York, NY 10036.