



Standard Specification for Anodes, Sacrificial Zinc Alloy¹

This standard is issued under the fixed designation F1182; 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 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 values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

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

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

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*:²

A36/A36M Specification for Carbon Structural Steel

B21/B21M Specification for Naval Brass Rod, Bar, and Shapes

¹ This specification is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.07 on General Requirements.

Current edition approved May 1, 2023. Published June 2023. Originally approved in 1988. Last previous edition approved in 2019 as F1182 – 07 (2019). DOI: 10.1520/F1182-07R23.

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.

B103/B103M Specification for Phosphor Bronze Plate, Sheet, Strip, and Rolled Bar

D3951 Practice for Commercial Packaging

E290 Test Methods for Bend Testing of Material for Ductility

E536 Test Methods for Chemical Analysis of Zinc and Zinc Alloys

2.3 *Military Standards*:³

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*:³

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

2.5 *Federal Specifications*:³

PPP-B-601 Boxes, Wood, Cleated Plywood

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

PPP-B-636 Boxes, Shipping, Fiberboard

2.6 *ASME Standard*:⁴

B1.20.1 Pipe Threads, General Purpose, Inch

2.7 *ASQ Standard*:⁵

ASQ/ANSI Z1.4 Sampling Procedures and Tables for Inspection by Attributes

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 lb and 42 lb (10 kg 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 lb and 42 lb (10 kg and 19 kg) sizes.

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

³ Available from DLA Document Services, Building 4/D, 700 Robbins Ave., Philadelphia, PA 19111-5094, <http://quicksearch.dla.mil>.

⁴ Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Two Park Ave., New York, NY 10016-5990, <http://www.asme.org>.

⁵ Available from American Society for Quality (ASQ), 600 N. Plankinton Ave., Milwaukee, WI 53203, <http://www.asq.org>.

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;

3.1.2.1 *Type ZRN*—Zinc, rod, no core, extruded, drawn or rolled.

3.1.2.2 *Type ZPN*—Zinc, plate, no core, rolled.

3.2 The letter designations of types of anodes have the following meanings:

3.2.1 The first letter designates anode metal:

Z zinc

3.2.2 The second letter designates the shape or general use:

H hull slab
S submarine slab
T teardrop shape
E heat exchanger slab
R rod, cylindrical
P plate
B bar, square
D disc, segmented

3.2.3 The third letter designates the core:

B brass straps
S steel straps
C core strap
P pipe core
M machine formed interlocking core
N no core

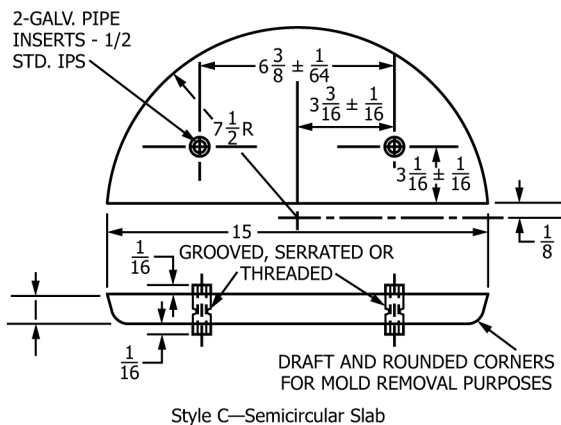
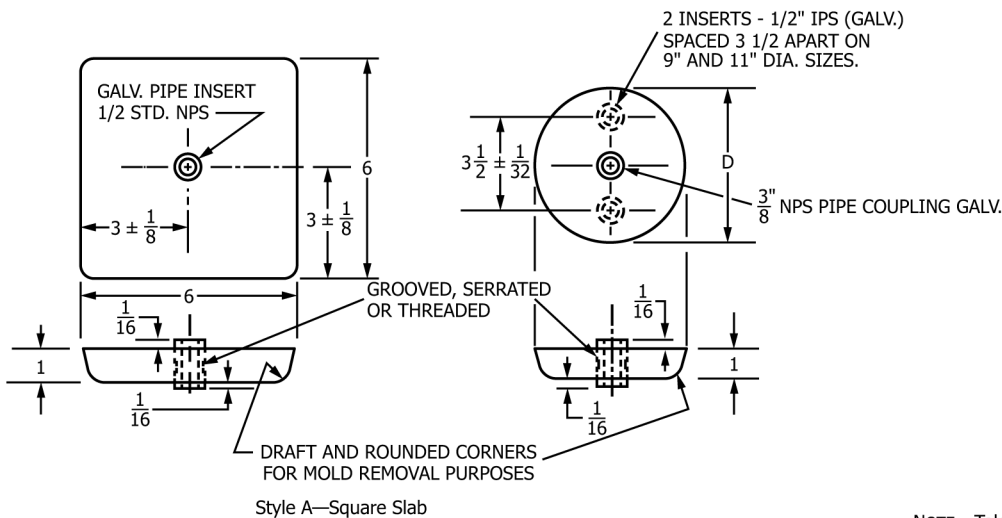
4. Ordering Information

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

4.1.1 ASTM designation and year of issue,

4.1.2 Class and type (see 3.1),

4.1.3 Style of Type ZEP, if required (see 3.1.1.6 and Fig. 1),



NOTE 1—1 in. = 25.4 mm.

NOTE 2—1 lb. = 0.45 kg.

NOTE 3—Approximate weight for Style A is 9 lb; approximate weight for Style C is 23 lb.

NOTE 4—All dimensions are in inches.

NOTE—Tolerance for center $\pm 1/8$ in.

Diameter, D, in., $\pm 1/8$ in.	Approximate Weight, lb	Surface Area, in. ²
11	24	130
9	16	92
6	7.1	47
5	4.9	36
4	3.19	26
3	1.78	16
2	0.79	9

Style B—Circular Slab

FIG. 1 ZEP Heat Exchanger Slab