1. Scope

1.1 This specification covers zinc alloys in ingot form for remelting for the manufacture of Spin Castings as specified and designated, as shown in Table 1. Seven alloy compositions are specified, designated as follows:

<table>
<thead>
<tr>
<th>Common Traditional UNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spin Casting Alloy SC-A</td>
</tr>
<tr>
<td>Spin Casting Alloy SC-B</td>
</tr>
<tr>
<td>Spin Casting Alloy SC-C</td>
</tr>
<tr>
<td>Spin Casting Alloy SC-D</td>
</tr>
<tr>
<td>Spin Casting Alloy SC-E</td>
</tr>
<tr>
<td>Spin Casting Alloy SC-F</td>
</tr>
<tr>
<td>ZA-73</td>
</tr>
</tbody>
</table>

1.2 Zinc alloys #2, #3, #5, and ZA-8 specified in Specification B240 are also used in the spin casting process.

1.3 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the 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 become familiar with all hazards including those identified in the appropriate Material Safety Data Sheet (MSDS) for this product/material as provided by the manufacturer, to establish appropriate safety and health practices, and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

2.1 The following documents of the issue in effect on date of order acceptance form a part of this specification to the extent referenced herein:

2.2 ASTM Standards:

- B240 Specification for Zinc and Zinc-Aluminum (ZA) Alloys in Ingot Form for Foundry and Die Castings
- B899 Terminology Relating to Non-ferrous Metals and Alloys
- B908 Practice for the Use of Color Codes for Zinc Casting Alloy Ingot
- B949 Specification for General Requirements for Zinc and Zinc Alloy Products
- E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications
- E88 Practice for Sampling Nonferrous Metals and Alloys in Cast Form for Determination of Chemical Composition
- E536 Test Methods for Chemical Analysis of Zinc and Zinc Alloys
- E634 Practice for Sampling of Zinc and Zinc Alloys by Spark Atomic Emission Spectrometry

2.3 ISO Standards:

- ISO 3815-1 Zinc and zinc alloys—Part 1: Analysis of solid samples by optical emission spectrometry
- ISO 3815-2 Zinc and zinc alloys—Part 2: Analysis by inductively coupled plasma optical emission

3. Terminology

3.1 Terms shall be defined in accordance with Terminology B899.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 spin casting, n—a casting process in which molten metal is poured into a rubber, polymer, graphite or metal mold and spun centrifugally until solidified, also a product produced by such a process.

4. Ordering Information

4.1 Orders for zinc alloy ingot under this specification shall include information as specified in Specification B949, Section 4.

1 This specification is under the jurisdiction of ASTM Committee B02 on Nonferrous Metals and Alloys and is the direct responsibility of Subcommittee B02.04 on Zinc and Cadmium.


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.

5. Materials and Manufacture

5.1 The alloys may be made by any approved process.

5.2 The material covered by this specification shall be of uniform quality and shall be free from dross or other harmful contamination.

6. Chemical Requirements

6.1 Limits—The alloy shall conform to the requirements as to chemical composition prescribed in Table 1.

6.2 Chemical requirement procedures shall be in compliance with the provisions of Specification B949, Section 6.

6.3 Methods of Sampling—Sampling procedures shall be in compliance with the provisions of Specification B949, Section 6.

6.4 Method of Analysis—Approved methods include: Test Methods E536, ISO 3815-1, or ISO 3815-2.

NOTE 1—Test Methods E536 is directly applicable in an unmodified form, only to alloys 3, 5, and 7. ISO 3815-1 and ISO 3815-2 are generic methods applied to zinc and zinc alloys. Each of the methods may be modified and formatted for the alloy to be assayed. An experienced chemist, using suitable and/or traceable standards along with valid quality assurance techniques, will be able to perform and validate the methods and demonstrate acceptable precision and accuracy.

7. Source Inspection

7.1 Source inspection shall be in compliance with the provisions of Specification B949, Section 7.

8. Rejection and Rehearing

8.1 Claims to be considered in accordance with the provisions of Specification B949, Section 8.

9. Investigation of Claims

9.1 Claims shall be investigated in accordance with the provisions of Specification B949, Section 8.

10. Settlement of Claims

10.1 Claims shall be settled in accordance with the provisions of Specification B949, Section 8.

11. Product Identification Marking and Packaging

11.1 Each slab, block, jumbo or ingot shall be marked for identification in accordance with the provisions of Specification B949, Section 10.

12. Preparation for Delivery

12.1 Packaging—Unless otherwise specified, the ingot shall be packaged to provide adequate protection during normal handling and transportation. Each package shall contain only one alloy unless otherwise agreed upon.

13. Keywords

13.1 casting; casting alloys; centrifugal casting; prototyping; rubber mold; SC-A; SC-B; SC-C; silicon mold; spin casting; ZA alloys; Zamak; ZA-73; zinc; zinc-aluminum alloys

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**TABLE 1 Chemical and North American Color Code Requirements**

<table>
<thead>
<tr>
<th>UNS</th>
<th>Alloy SC-A</th>
<th>Alloy SC-B</th>
<th>Alloy SC-C</th>
<th>ZA-73</th>
<th>Alloy SC-D</th>
<th>Alloy SC-E</th>
<th>Alloy SC-F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color Code</td>
<td>Z35550</td>
<td>Z35551</td>
<td>Z35534</td>
<td>Z56500</td>
<td>Z35547</td>
<td>Z35548</td>
<td>Z35552</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element</th>
<th>SC-A</th>
<th>SC-B</th>
<th>SC-C</th>
<th>ZA-73</th>
<th>SC-D</th>
<th>SC-E</th>
<th>SC-F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al</td>
<td>3.9-4.3</td>
<td>3.9-4.3</td>
<td>3.4-4.8</td>
<td>7.7-8.0</td>
<td>3.2-3.8</td>
<td>3.2-3.8</td>
<td>3.25-3.75</td>
</tr>
<tr>
<td>Mg</td>
<td>0.1-0.2</td>
<td>0.4-0.6</td>
<td>0.4-0.43</td>
<td>0.02-0.03</td>
<td>0.15-0.30</td>
<td>0.45-0.75</td>
<td>0.45-0.75</td>
</tr>
<tr>
<td>Cu</td>
<td>2.6-2.9</td>
<td>2.7-3.3</td>
<td>1.3-1.4</td>
<td>3.0-3.3</td>
<td>1.2-1.8</td>
<td>2.5-3.25</td>
<td>4.25-4.75</td>
</tr>
<tr>
<td>Fe, max</td>
<td>0.035</td>
<td>0.035</td>
<td>0.10</td>
<td>0.075</td>
<td>0.035</td>
<td>0.075</td>
<td>0.035</td>
</tr>
<tr>
<td>Pb, max</td>
<td>0.004</td>
<td>0.004</td>
<td>0.015</td>
<td>0.005</td>
<td>0.004</td>
<td>0.005</td>
<td>0.004</td>
</tr>
<tr>
<td>Cd, max</td>
<td>0.0030</td>
<td>0.0030</td>
<td>0.005</td>
<td>0.003</td>
<td>0.003</td>
<td>0.003</td>
<td>0.003</td>
</tr>
<tr>
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<td>0.0015</td>
<td>0.005</td>
<td>0.002</td>
<td>0.002</td>
<td>0.003</td>
<td>0.002</td>
</tr>
<tr>
<td>Ni, max</td>
<td>...</td>
<td>...</td>
<td>0.02</td>
<td>...</td>
<td>...</td>
<td>0.02</td>
<td>...</td>
</tr>
<tr>
<td>Zn, Remainder</td>
<td>Remainder</td>
<td>Remainder</td>
<td>Remainder</td>
<td>Remainder</td>
<td>Remainder</td>
<td>Remainder</td>
<td>Remainder</td>
</tr>
</tbody>
</table>

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*Per Practice B908.
*For purposes of acceptance and rejection, the observed value or calculated value obtained from analysis should be rounded to the nearest unit in the last right-hand place of figures, used in expressing the specific limit in accordance with the rounding procedure prescribed in Practice E29.*
SUMMARY OF CHANGES

Committee B02 has identified the location of selected changes to this standard since the last issue (B952/B952M – 12) that may impact the use of this standard. (Approved February 1, 2013.)

(1) UNS numbers were added.

Committee B02 has identified the location of selected changes to this standard since the last issue (B952/B952M – 10) that may impact the use of this standard. (Approved May 1, 2012.)

(1) Revisions have been made to Sections 2, 4, 6, 7, 8, 9, 10, and 11 to reference Specification B949 and delete certain portions of these sections formerly a part of this standard.

(2) The titles of Sections 7 and 9 have been revised to be in agreement with a standard format for Subcommittee B02.04 standards.