



Standard Specification for Low Melting Point Alloys¹

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1. Scope

1.1 This specification covers low-melting point metal alloys and solders, including bismuth–tin, bismuth–lead, bismuth–tin–lead, bismuth–tin–lead–cadmium, bismuth–tin–lead–indium–cadmium, bismuth–tin–lead–indium, indium–lead, and indium–lead–silver, and indium–tin joining together two or more metals at temperatures below their melting points; blocking for support and removable borders; radiation shielding; fusible plugs; fuses; tube bending; and punch setting.

1.1.1 This specification shall include those alloys having a liquidus temperature not exceeding 361°F (183°C), the melting point of the tin lead eutectic.

1.1.2 This specification includes low-melting point alloys in the form of solid bars, ingots, powder and special forms, and in the form of solid ribbon and wire.

1.2 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 *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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

E 55 Practice for Sampling Wrought Nonferrous Metals and Alloys for Determination of Chemical Composition²

E 88 Practice for Sampling Nonferrous Metals and Alloys in Cast Form for Determination of Chemical Composition²

2.2 Military Standard:

MIL-STD 129 Marking for Shipment and Storage³

2.3 Federal Standard:

Fed. Std. No. 123 Marking for Shipment (Civil Agencies)³

¹ This specification is under the jurisdiction of ASTM Committee B02 on Nonferrous Metals and Alloys and is the direct responsibility of Subcommittee B02.02 on Refined Lead, Tin, Antimony, and Their Alloys.

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² Annual Book of ASTM Standards, Vol 03.05.

³ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

3. Terminology

3.1 Definition:

3.1.1 *producer*—the primary manufacturer of the material.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *liquidus*—the lowest temperature at which an alloy is fully transformed from a solid to a liquid.

3.2.2 *lot*—the term “lot” as used in this specification shall be defined as follows: *for solid alloy metal*, a lot shall consist of all the metal of the same time designation, produced from the same batch of raw materials under essentially the same conditions, and offered for inspection at one time.

3.2.3 *lot number*—the term “lot number” as used in this specification refers to a numerical designation for a lot that is traceable to a date of manufacture.

3.2.4 *solidus*—The highest temperature at which an alloy is fully transformed from a liquid to a solid.

4. Classification

4.1 *Type Designation*—The type designation shall use the following symbols to properly identify the material:

4.1.1 *Alloy Composition*—The composition is identified by three numbers that relate to the melting point in degrees Fahrenheit where it is eutectic or six numbers where it is a range alloy.

4.1.2 *Form*—The form is indicated by a single letter in accordance with Table 1.

4.1.3 *Powder Mesh Size*—The powder mesh size is identified by a size symbol number (Table 2).

5. Ordering Information

5.1 Orders for material under this specification shall indicate the following information, as required, to adequately describe the desired material:

5.1.1 Type designation (see 4.1),

5.1.2 Detailed requirements for special forms,

5.1.3 Dimensions of ribbon and wire solder (see 9.2),

5.1.4 Unit weight,

5.1.5 Packaging (see Section 18),

5.1.6 Marking (see Section 17),

5.1.7 ASTM specification designation and year of issue, marked on the purchase order and on the package or spool, and