



Designation: A610 – 79 (Reapproved 2004)

Standard Test Methods for Sampling and Testing Ferrous Alloys for Determination of Size¹

This standard is issued under the fixed designation A610; 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 These test methods cover procedures for the sampling and testing of the various ferrous alloys for sizing, either before or after shipment from the plants of the manufacturers.

1.2 They are designed to give results representative of each lot that will be comparable with the manufacturer's certified analysis for the same lot.

1.3 The purchaser may use any sampling procedure he desires, but the results obtained on such samples shall not be a basis for complaint or rejection, unless the procedure followed is of an accuracy equivalent to that prescribed in these test methods.

1.4 The values stated in inch-pound units are to be regarded as the standard. The SI equivalents of inch-pound units may be approximate.

1.5 *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:*²

[E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves](#)

[E32 Practices for Sampling Ferrous Alloys and Steel Additives for Determination of Chemical Composition](#)

3. Unit Quantities for Sampling and Testing

3.1 Each shipment, except as otherwise agreed upon by the purchaser and the manufacturer, shall constitute a unit for sampling and testing. It is recommended that shipments of any alloy exceeding 100 tons (91 000 kg) be divided into smaller lots for sampling according to some plan best adapted to the material and conditions, such as each cast, each carload, each

ladleful or each binful. The division of samples should be in accordance with Practices [E32](#).

4. Sampling for Size Analysis

4.1 *Lumps*—Conformance of lump material to sizing standards normally shall be judged by visual examination. The inspection judgment shall be made on an increment selected at random. Unless otherwise required, the increment shall be the contents of a unit container of 2000 lb (910 kg) minimum quantity. When more precise data are required for checking on the visual examination, a sizing test shall be made on material from a unit container (usually 2000 to 3000 lb (910 to 1360 kg) of alloy) selected at random.

4.2 *Crushed or Plates*—Sampling for conformance of crushed or plates material to size requirements shall be in accordance with Practices [E32](#) or by alternative methods which are demonstrated to yield equivalent results. A representative portion of the lot sample (before any reduction in particle size) shall be obtained for screen testing. If necessary, the percentage of sample taken shall be increased to provide sufficient sample in the half reserved for screen testing.

4.2.1 [Table 1](#) lists the amount of material that is to be used for size analysis.

4.2.2 If the top size of the material is 2 in. (50.8 mm) or smaller, the portion for screen test shall be taken from the lot sample by riffling; in larger sizes, by mixing and quartering. Prior to riffling, the starting amount each time must be mixed by coning at least twice.

5. Testing for Size Analysis

5.1 Samples used for screen testing must be dry. If there is a question as to whether the material is suitably dry, a criterion of 0.25 % loss in weight at 230°F (110°C) applies.

5.2 With respect to size characteristics, ferrous alloys are usually classified as either "lump" or "crushed" sizes. Although the line of demarcation may vary somewhat, the crushed category refers usually to those sizes that have an upper limit of 4 in. (102 mm) or less. The lump sizes involve all of the other categories that are coarser than 4 in. in top size.

5.3 *Lumps*—Using either weight or lineal measurements as criterion, hand select all pieces from the container that exceed the upper limit of this size category. Determine the total weight percent of the oversize material for conformance against the maximum permitted by these test methods. Determine the

¹ These test methods are under the jurisdiction of ASTM Committee [A01](#) on Steel, Stainless Steel, and Related Alloys and are the direct responsibility of Subcommittee [A01.18](#) on Castings.

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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.