



Standard Specification for Aluminum Scrap for Use in Deoxidation and Alloying of Steel¹

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1. Scope

1.1 This specification covers aluminum and aluminum alloys in the form of processed scrap designated as shown in Table 1, for use in the manufacture of steel.

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

2. Referenced Documents

2.1 *ASTM Standards:*

E 34 Test Methods for Chemical Analysis of Aluminum and Aluminum-Base Alloys²

3. Ordering Information

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

- 3.1.1 Quantity,
- 3.1.2 Name or form of material,
- 3.1.3 Size desired,
- 3.1.4 Requirement for packaging, and
- 3.1.5 Reports requested with shipment.

3.2 The basis of payment shall be per pound of alloy.

4. Materials and Manufacture

4.1 The material may be in the form of cut up wire, cans, or other aluminum scrap of suitable purity; or cut up rolled sections, with individual weight tolerance as agreed between the buyer and seller.

4.2 The material may be delivered loose or pressed into pieces, as agreed between buyer and seller. If pressed, the bulk density of individual pieces shall be not less than 0.082 lb/in.³ (85 % of density of pure wrought aluminum). The density of pressed pieces shall be determined as follows:

4.2.1 Each sample piece shall be weighed on a scale capable of accuracy of 1 g weight.

4.2.2 The piece shall be completely sprayed with a lacquer and allowed to dry.

TABLE 1 Chemical and Physical Requirements The usual source of Grade 1W is chopped electrical wire (W); of Grade 1C chopped food cans (C).

| Grade (Note 1) | Al, % min | Mg, % max | Si, % max | Zn, % max | Bulk Density, lb/ft ³ , min (see 4.2) |
|-------------------|--------------|--------------|--------------|--------------|---|
| 1W | 99.0 | ... | ... | ... | 90 |
| 1C | 96.0 | 2.0 | 1.0 | ... | 90 |
| 1 | 95.0 | 1.5 | 3.0 | 1.5 | 90 |
| 2 | 90.0 | 2.5 | 5.0 | 3.0 | ... |

4.2.3 A container of diameter at least twice the size of the tested piece and equipped with an overflow spout shall be filled with water until the overflow ceases; a measuring cylinder capable of ICC accuracy shall be placed under the spout.

4.2.4 The sample piece shall be suspended on a thin wire and gently lowered into the water.

4.2.5 The volume of the overflow, *V*, shall be read off.

4.2.6 The weight of the sample piece divided by the volume of the overflowed water, g/cc, multiplied by 0.036, is the density of the sample piece, that is $D = W \times 0.036/V$ in lb in.³.

5. Chemical Composition

5.1 The material shall conform to the requirements as to chemical composition and physical properties prescribed in Table 1.

6. Sampling

6.1 If the metal is shipped in carload lots of the same grade, not less than five samples of a minimum of 2 lb each shall be taken at random from the carload for sampling. If the shipment is in less than carload lots, one sample shall be taken for each 6000 lb (2700 kg) or fraction thereof. When it is deemed necessary, a sample may be taken from each melt of 500 lb (230 kg) or more of the alloy.

6.2 If the manufacturer has made an analysis of the material during the course of manufacture, he shall not be required to sample and analyze the finished product.

6.3 If a saw, drill, or cutter is used for taking the sample, it shall be thoroughly cleaned. No lubricant shall be used in the operation, and the sawings or metal chips shall be carefully treated with a magnet to remove any particles of iron introduced in taking the sample.

¹ This specification is under the jurisdiction of ASTM Committee A-1 on Steel, Stainless Steel, and Related Alloys and is the direct responsibility of Subcommittee A01.18 on Castings.

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² *Annual Book of ASTM Standards*, Vol 03.05.



7. Methods of Chemical Analysis

7.1 The chemical analysis shall be made in accordance with Test Methods E 34, or by any other approved method agreed upon by the manufacturer and the purchaser. The analysis may be made by instrumental methods, provided that, in case of dispute, the results secured by Test Methods E 34 shall be the basis for acceptance.

8. Inspection

8.1 If the purchaser desires to make an inspection of the material at the manufacturer's works where the material is processed, it shall be so stated in the contract or purchase order.

8.2 If the purchaser elects to make an inspection made at the manufacturer's plant, the manufacturer shall afford the inspector representing the purchaser all reasonable facilities to satisfy him that the material is being furnished in accordance with this specification. All tests and inspection shall be so conducted as not to interfere unnecessarily with the operation of the works.

9. Rejection

9.1 Material that does not conform to the requirements of this specification may be rejected, and if rejected, shall be

replaced by the manufacturer. The full weight of the rejected material shall be returned to the manufacturer.

10. Packaging and Package Marking

10.1 The material shall be packaged in such a manner as to prevent damage in ordinary handling and transportation. The type of packing and gross weight of individual containers shall be left to the discretion of the manufacturer unless otherwise agreed upon. Packaging methods and containers shall be so selected as to permit maximum utility of mechanical equipment in unloading and subsequent handling. Each package or container shall contain only one size or grade of material when packed for shipment unless otherwise agreed upon.

10.2 Each package or container shall be marked with the specification number or grade, net weight, and the name of the manufacturer.

10.3 Packages or containers shall be such as to ensure acceptance by common or other carriers for safe transportation at the lowest rate to the point of delivery.

10.4 The weight tolerance of individual packages shall be $\pm 3\%$ or ± 1 lb, whichever greater.

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