



Standard Specification for Ferroalloys, General Requirements¹

This standard is issued under the fixed designation A 1025; 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 a group of common requirements that, unless otherwise specified in an individual specification, shall apply to ferroalloys and other charge materials under each of the following ASTM specifications:

Title of Specification	ASTM Designation
Ferromanganese	A 99
Ferrosilicon	A 100
Ferrochromium	A 101
Ferrovandium	A 102
Ferromolybdenum	A 132
Molybdenum oxide products	A 146
Ferroboration	A 323
Ferrotitanium	A 324
Chromium metal	A 481
Ferrochrome-silicon	A 482
Silicomanganese	A 483
Calcium-silicon alloys	A 495
Ferrocolumbium	A 550
Electrolytic manganese metal	A 601
Nickel oxide sinter	A 636
Ferromanganese silicon	A 701
Titanium scrap for use in deoxidation and alloying of steel	A 845
Aluminum scrap for use in deoxidation and alloying of steel	A 846
Silicon metal	A 922

1.2 This specification also covers a group of supplementary requirements which may be applied to the above specifications as indicated therein. These are provided for use when additional testing or inspection is desired and apply only when specified individually by the purchaser in the order.

1.3 In case of conflict between the requirements of the individual specification and this general specification, the former shall prevail.

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

2. Referenced Documents

2.1 ASTM Standards:

A 99 Specification for Ferromanganese²

- A 100 Specification for Ferrosilicon²
- A 101 Specification for Ferrochromium²
- A 102 Specification for Ferrovandium²
- A 132 Specification for Ferromolybdenum²
- A 146 Specification for Molybdenum Oxide Products²
- A 323 Specification for Ferroboration²
- A 324 Specification for Ferrotitanium²
- A 481 Specification for Chromium Metal²
- A 482 Specification for Ferrochrome-Silicon²
- A 483 Specification for Silicomanganese²
- A 495 Specification for Calcium-Silicon Alloys²
- A 550 Specification for Ferrocolumbium²
- A 601 Specification for Electrolytic Manganese Metal²
- A 610 Test Methods for Sampling and Testing Ferroalloys for Determination of Size²
- A 636 Specification for Nickel Oxide Sinter²
- A 701 Specification for Ferromanganese-Silicon²
- A 845 Specification for Titanium Scrap for Use in Deoxidation and Alloying of Steel²
- A 846 Specification for Aluminum Scrap for Use in Deoxidation and Alloying of Steel²
- A 922 Specification for Silicon Metal²
- E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications³
- E 32 Practices for Sampling Ferroalloys and Steel Additives for Determination of Chemical Composition⁴

3. Ordering Information

3.1 Orders for material should include the following as required, to describe the material adequately:

- 3.1.1 ASTM designation and year of issue,
- 3.1.2 Grade of material,
- 3.1.3 Size of material,
- 3.1.4 Quantity,
- 3.1.5 Packaging requirements, and
- 3.1.6 Supplementary requirements desired, including the standards of acceptance.

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

Current edition approved September 10, 2002. Published October 2002.

² Annual Book of ASTM Standards, Vol 01.02.

³ Annual Book of ASTM Standards, Vol 14.02.

⁴ Annual Book of ASTM Standards, Vol 03.05.

4. Chemical Analysis

4.1 The chemical analysis method shall be agreed upon by the purchaser and supplier.

4.2 The manufacturer shall furnish a certificate referencing the chemical analysis and appropriate supplementary requirements in the material specification.

4.3 For purposes of determining conformance with this specification, the reported analysis shall be rounded to the nearest unit in the last right-hand place of figures, used in expressing the limiting value, in accordance with the rounding method of Practice E 29.

5. Sampling

5.1 Unless otherwise specified, the material shall be sampled for determination of chemical composition in accordance with Practices E 32 and for determination of size in accordance with Test Methods A 610.

5.2 In the case of a discrepancy, Practices E 32 or Test Methods A 610, as applicable, shall be used for referee.

6. Inspection

6.1 The manufacturer shall afford the inspector representing the purchaser all reasonable facilities, without charge, to satisfy

the purchaser that the material is being furnished in accordance with the material specification.

7. Rejection

7.1 Any rejections based on tests made in accordance with the material specification shall be reported to the manufacturer within 45 days from receipt of material by the purchaser.

8. Certification

8.1 The manufacturer's certification shall be furnished to the purchaser at the time of shipment stating that the material was manufactured, sampled, tested, and inspected in accordance with the material specification and was found to meet the requirements.

9. Packaging and Package Marking

9.1 Each lot/shipment shall be identified with appropriate identification showing the material, the ASTM designation, the size, the lot number, and name brand or trademark.

9.2 When the shipment is made in containers, each shall be marked on the container or on a label or tag attached to the container.

10. Keywords

10.1 ferroalloy; general requirements

SUPPLEMENTARY REQUIREMENTS

The following standardized supplementary requirements are for use when desired by the purchaser and when allowed by and listed in the individual specifications. They shall not apply unless specified in order, in which event the specified tests shall be made by the manufacturer before shipping.

S1. Supplementary Chemical Requirements

S1.1 Restrictions on the chemical requirements shall be agreed upon by the purchaser and supplier.

S2. Size

S2.1 Screened products shall conform to the sizes given in Table S2.1.

S2.2 The sizes listed in Table S2.1 are typical as shipped from the manufacturer's plant. The size and friability of the product shall be agreed upon by the purchaser and supplier.

NOTE —Ferroalloys exhibit varying degrees of friability; therefore, some attrition may be expected in transit and handling. A quantitative test is not available for rating friability of ferroalloys. A code system has been developed for this purpose, and a number rating for each product type is given.

TABLE S2.1 Requirements for Screened Products^A

Nominal Size, in.	Standard Ordered Size, in. ^B	Maximum Allowable Oversize		Maximum Allowable Undersize		Friability Rating Code No. ^C
		Size	Percent	Size	Percent	
<i>Lump to Crushed Sizes:</i>						
6	8 by 4	to 10 in.	10 %	through 4 in.	10 %	1-6
5	8 by 2	to 10 in.	10 %	through 2 in.	10 %	1-6
4	6 by 2	to 8 in.	10 %	through 2 in.	10 %	1-6
3½	5 by 2	to 7 in.	10 %	through 2 in.	10 %	1-6
3 (A)	5 by 1	to 7 in.	10 %	through 1 in.	10 %	1-6
3 (B)	4 by 2	to 6 in.	10 %	through 2 in.	10 %	1-6
2½	4 by 1	to 6 in.	10 %	through 1 in.	10 %	1-6
2¼	4 by ½	to 5 in.	10 %	through ½ in.	10 %	1-6
2	3 by 1	to 4 in.	10 %	through 1 in.	10 %	1-6
1½	3 by ½	to 4 in.	10 %	through ½ in.	10 %	1-6
1¼	2 by ½	to 3 in.	10 %	through ½ in.	10 %	1-6
1⅛	2 by ¼	to 3 in.	10 %	through ¼ in.	10 %	1-6
<i>Small Crushed Sizes by Down:</i>						
2	4 by D	to 5 in.	10 %	through ½ in.	15 %	1-6
1½	3 by D	to 4 in.	10 %	through ⅛ in.	15 %	1-6
1	2 by D	to 3 in.	10 %	through ⅛ in.	15 %	1-4
		to 3 in.	8 %	through No. 8	20 %	5,6
½	1 by D	to 1½ in.	10 %	through No. 16	15 %	1-4
		to 1½ in.	8 %	through No. 20	15 %	5,6
	½ by D	to ¾ in.	10 %	through No. 20	15 %	1-4
		to ¾ in.	8 %	through No. 70	20 %	5,6

^A For screened products below ½ in. by down-crushed sizes, size tolerances should be agreed upon between manufacturer and purchaser.

^B 1 in. = 25.4 mm.

^C See Appendix X1 for description of rating code.

APPENDIXES

(Nonmandatory Information)

X1. APPLICABLE SIEVE DESIGNATIONS

X1.1

TABLE X1.1 Sieve Designation

Standard	Alternative
250 mm	10 in.
200 mm	8 in.
175 mm	7 in.
150 mm	6 in.
125 mm	5 in.
100 mm	4 in.
75 mm	3 in.
50 mm	2 in.
25 mm	1 in.
19 mm	¾ in.
12.5 mm	½ in.
6.3 mm	¼ in.
3.1 mm	⅛ in.
2.36 mm	No. 8
1.18 mm	No. 16
850 μm ^A	No. 20
212 μm	No. 70

^A 1000 μm = 1 mm.

X2. FRIABILITY RATINGS OF FERROALLOYS

X2.1 Descriptions of material of each friability rating are given in Table X2.1.

TABLE X2.1 Friability Ratings of Ferroalloys

Friability Code No.	Description
1	Very tough materials which are susceptible to little, if any, breakage during shipment or handling. (Example: low-carbon ferrochrome)
2	Some breakage of large pieces probable in shipping and handling. No appreciable fines produced from either lump or crushed sizes. (Example: chrome metal)
3	Appreciable reduction in size of large pieces possible in shipping and handling. No appreciable production of fines in handling of crushed sizes. (Example: ferrotitanium)
4	Appreciable reduction in size of large pieces upon repeated handling. Some fines produced upon repeated handling of crushed sizes. (Example: standard ferromanganese)
5	Appreciable reduction in size in repeated handling of large pieces. Appreciable fines may be produced in the handling of crushed sizes. (Example: 50 % ferrosilicon)
6	This category represents the most friable alloys. (Example: calcium silicon)

ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org).