



## Designation: ~~A100 – 07 (Reapproved 2012)~~ A100 – 07 (Reapproved 2018)

# Standard Specification for Ferrosilicon<sup>1</sup>

This standard is issued under the fixed designation A100; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope\*

1.1 This specification covers grades of ferrosilicon for steelmaking and foundry uses.

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

1.3 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

## 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

[A1025/A1025/A1025M](#) Specification for Ferroalloys and Other Alloying Materials, General Requirements

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

[E360](#) Test Methods for Chemical Analysis of Silicon and Ferrosilicon (Withdrawn 2006)<sup>3</sup>

## 3. General Conditions of Delivery

3.1 Materials furnished to this specification shall conform to the requirements of Specification [A1025/A1025/A1025M](#), including any supplementary requirements that are indicated in the purchase order. Failure to comply with the general requirements of Specification [A1025/A1025/A1025M](#) constitutes nonconformance with this specification. In case of conflict between the requirements of this specification and Specification [A1025/A1025/A1025M](#), this specification shall prevail.

## 4. Chemical Composition

4.1 The various grades shall conform to the requirements as to chemical composition prescribed in [Table 1](#).

4.2 The manufacturer shall furnish an analysis of each shipment showing the silicon content and, when required, such of the other elements specified in [Table 1](#).

## 5. Size

5.1 The various grades are available in sizes as listed in [Table 2](#).

5.2 The sizes listed in [Table 2](#) are typical as shipped from the manufacturer's plant. These alloys exhibit varying degrees of friability; therefore, some attrition may be expected in transit, storage, and handling. A quantitative test is not available for rating relative friability of ferroalloys. A code system has been developed, therefore, for this purpose, and a number rating for each product type is shown in the last column of [Table 2](#). Definitions applicable to these code numbers are given in Specification [A1025/A1025/A1025M](#).

## 6. Chemical Analysis

6.1 Unless otherwise agreed upon, the chemical analysis of the material shall be made in accordance with Test Methods [E360](#).

6.2 If alternative methods of analysis are used, Methods [E360](#) shall be used for referee.

<sup>1</sup> 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.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> The last approved version of this historical standard is referenced on [www.astm.org](http://www.astm.org).

\*A Summary of Changes section appears at the end of this standard

TABLE 1 Chemical Requirements

Element	Grade																
	C	CA	CB	C1	C2	D	DA	E	EA	E1	F	F1	F1A	G	GA	G1	G1A
	Composition, % <sup>A,B</sup>																
Silicon	74.0– 79.0	74.0– 79.0	74.0– 79.0	74.0– 79.0	74.0– 79.0	65.0– 70.0	65.0– 70.0	47.0– 51.0	47.0– 51.0	47.0– 51.0	20.0– 24.0	20.0– 24.0	20.0– 24.0	14.0– 17.0	14.0– 17.0	14.0– 17.0	14.0– 17.0
Carbon	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.010	0.010	0.10	0.50	0.50	0.50	0.70	0.70	0.70	0.70
Sulfur	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
Phosphorous	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.040	0.040	0.040	0.120	0.120	0.120	0.120	0.120	0.120	0.120
Aluminum	1.50	0.50	0.10	1.00– 1.50	1.00– 1.50	1.25	0.10	1.25	0.40	1.25	1.00	1.00	1.00	0.75	0.75	0.75	0.75
Manganese	0.40	0.40	0.40	0.40	0.40	0.50	0.50	0.75	0.75	0.75	1.00	1.00	1.00	1.25	—	1.25	—
Calcium <sup>C</sup>	—	—	—	0.50	1.50	—	—	—	—	—	—	—	—	—	—	—	—
Boron	—	—	—	—	—	—	—	—	—	0.04– 0.10	—	0.04– 0.10	0.04– 0.10	—	—	0.04– 0.10	0.04– 0.10

<sup>A</sup> A single value indicates a maximum, except for calcium.

<sup>B</sup> When shipped in ~~3000-lb~~ 3000-lb containers, the average boron content of a container shall not vary from the average reported for the entire shipment by more than 0.010 %.

<sup>C</sup> Minimum.

**TABLE 2 Standard Sizes and Tolerances**

Grades	Standard Sizes	Tolerances and Sieve Sizes Defined by ASTM Specification E11		Friability Rating <sup>A</sup>	
C,D,E	8-in. (203-mm) by 4-in. (102-mm)	90-lb (40.8-kg) lump, max	10 %, max, passing 4-in. (102-mm) sieve		
	8-in. (203-mm) by 2-in. (50.8-mm)	90-lb (40.8-kg) lump, max	10 %, max, passing 2-in. (50.8-mm) sieve		
	5-in. (127-mm) by 2-in. (50.8-mm)	10 %, max, retained on 5-in. (127-mm) sieve	10 %, max, passing 2-in. (50.8-mm) sieve		
	4-in. (102-mm) by ½-in. (12.7-mm)	10 %, max, retained on 4-in. (102-mm) sieve	10 %, max, passing ½-in. (12.7-mm) sieve		
	4-in. (102-mm) by down	10 %, max, retained on 4-in. (102-mm) sieve	12 %, max, passing ¼-in. (6.35-mm) sieve		
	3-in. (76.2-mm) by ½-in. (12.7-mm)	10 %, max, retained on 3-in. (76.2-mm) sieve	15 %, max, passing ½-in. (12.7-mm) sieve		
	3-in. (76.2-mm) by down	10 %, max, retained on 3-in. (76.2-mm) sieve	15 %, max, passing No. 8 (2.38-mm) sieve		
	2-in. (50.8-mm) by ½ in. (12.7-mm)	10 %, max, retained on 2-in. (50.8-mm) sieve	15 %, max, passing ½-in. (12.7-mm) sieve		
	2-in. (50.8-mm) by down	10 %, max, retained on 2-in. (50.8-mm) sieve	15 %, max, passing No. 8 (2.38-mm) sieve		
	1-in. (25.4-mm) by No. 8 (2.38-mm)	5 %, max, retained on 1-in. (25.4-mm) sieve	10 %, max, passing No. 8 (2.38-mm) sieve		
	1-in. (25.4-mm) by down	5 %, max, retained on 1-in. (25.4-mm) sieve	20 %, max, passing No. 8 (2.38-mm) sieve		
	C,D,F	Lump or Pig	90-lb (40.8-kg) lump or pig, max		
	C,D,E	½-in. (12.7-mm) by No. 8 (2.38-mm)	5 %, max, retained on ½-in. (12.7-mm) sieve	10 %, max, passing No. 8 (2.38-mm) sieve	
¾-in. (9.51-mm) by No. 6 (3.36-mm)		5 %, max, retained on ¾-in. (9.51-mm) sieve	10 %, max, passing No. 6 (3.36-mm) sieve		
¾-in. (9.51-mm) by No. 12 (1.68-mm)		5 %, max, retained on ¾-in. (9.51-mm) sieve	10 %, max, passing No. 14 (1.41-mm) sieve		
¾-in. (9.51-mm) by down		5 %, max, retained on ¾-in. (9.51-mm) sieve	15 %, max, passing No. 70 (0.21-mm) sieve		
¼-in. (6.35-mm) by down		5 %, max, retained on ¼-in. (6.35-mm) sieve			
No. 8 (2.38-mm) by down		5 %, max, retained on No. 8 (2.38-mm) sieve			
No. 28 (841-µm) by down		5 %, max, retained on No. 20 (841-µm) sieve			
G	pig	90-lb (40.8-kg) pig, max.			

<sup>A</sup> See Appendix X1.

6.3 Where a method is not given in Methods E360 for the analysis for a particular element, the analysis shall be made in accordance with a procedure agreed upon between the manufacturer and the purchaser.

## 7. Keywords

7.1 ferroalloy; ferrosilicon