



Standard Specification for Ferromanganese-Silicon¹

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1. Scope

1.1 This specification covers a manganese-silicon alloy designated as ferromanganese-silicon.

2. Referenced Documents

2.1 *ASTM Standards:*

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications²

E 31 Methods for Chemical Analysis of Ferroalloys³

E 32 Practices for Sampling Ferroalloys and Steel Additives for Determination of Chemical Composition³

3. Ordering Information

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

- 3.1.1 Quantity,
- 3.1.2 Name of material,
- 3.1.3 ASTM designation and year of issue,
- 3.1.4 Size desired,
- 3.1.5 Requirement for packaging, and
- 3.1.6 Reports requested with shipment.

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

4. Chemical Requirements

4.1 The alloy shall conform to the chemical requirements as shown in Table 1.

4.2 The manufacturer shall furnish an analysis of each shipment as requested by the customer.

4.3 The values shown in Table 2 are expected maximums for the elements listed.

5. Size

5.1 The alloy is available in the sizes shown in Table 3.

5.2 The sizes listed in Table 3 are typical of the product as shipped from the seller's plant. Some deterioration of size can be expected in transit. This system is based on the relative friability as indicated in the Appendix.

TABLE 1 Recommended Specification for Ferromanganese-Silicon

Element	Composition, %
Manganese	63 to 66
Carbon, max	0.08
Silicon	28 to 32
Phosphorus, max	0.05

6. Sampling

6.1 The material shall be sampled in accordance with Practices E 32.

6.2 Other methods of sampling may be used if mutually agreed upon between the purchaser and the seller. In case of discrepancies, Practices E 32 shall be used as the referee.

7. Chemical Analysis

7.1 Chemical procedures for analysis of ferroalloy components are not standardized. The chemical content procedures

TABLE 2 Recommended Supplementary Chemical Requirements for Ferromanganese-Silicon

Element	Composition, max, %
Arsenic	0.15
Tin	0.010
Lead	0.050
Chromium	0.50

TABLE 3 Ferromanganese-Silicon Sizes

Sizes	Tolerance
75 lb by 2 in. (34.0 kg by 50.8 mm)	
50 lb by 1 in. (22.7 kg by 25.4 mm)	
6 by 1/2 in. (152.4 mm by 12.70 mm)	
3 in. by down (76.2 mm by down)	10 % passing 1/4 in. (6.3 mm)
	screen, max
2 in. by down (50.8 mm by down)	10 % passing 1/4 in. (6.3 mm)
	screen, max

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² *Annual Book of ASTM Standards*, Vol 14.02.

³ *Annual Book of ASTM Standards*, Vol 03.05.



must be mutually agreed upon between the purchaser and the manufacturer if there are differences in results.

7.2 *Special Analysis Requirements*—Analysis for additional elements other than those listed in Table 1 and Table 2 shall be agreed upon between the purchaser and the manufacturer. Such elements in trace quantities shall be reported as less than “<” the limit of analytical equipment. This shall be mutually agreed upon between the purchaser and the manufacturer.

7.3 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.

8. Inspection

8.1 The manufacturer shall afford the inspector representing the purchaser all reasonable facilities, without charge, to satisfy him that the material is being furnished in accordance with this specification.

9. Rejection

9.1 Any claim or rejection shall be made to the seller within 45 days from receipt of material by the purchaser.

10. Packaging and Package Marking

10.1 The material shall be packed in containers suitably designed to withstand shipping handling or shipped in bulk so that no material is lost or contaminated in transit.

11. Keywords

11.1 ferromanganese-silicon

APPENDIX

(Nonmandatory Information)

X1. FRIABILITY RATINGS

Code No.	Definition
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: ferrovanadium)
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 percent ferrosilicon)
6	This category represents the most friable alloys. (Example: calcium-silicon)

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