Designation: A 922 – 05

Standard Specification for Silicon Metal[1]

This standard is issued under the fixed designation A 922; 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 several grades of silicon metal.

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

2. Referenced Documents

2.1 *ASTM Standards:* [2]

A 1025 Specification for Ferroalloys, General Requirements

E 11 Specification for Wire Cloth and Sieves for Testing Purposes

E 50 Practices for Apparatus, Reagents, and Safety Considerations for Chemical Analysis of Metals, Ores, and Related Materials

E 60 Practice for Analysis of Metals, Ores, and Related Materials by Molecular Absorption Spectrometry

E 360 Test Methods for Chemical Analysis of Silicon and Ferrosilicon

3. General Conditions for Delivery

3.1 Materials furnished to this specification shall conform to the requirements of Specification A 1025, including any supplementary requirements that are indicated in the purchase order. Failure to comply with the general requirements of Specification A 1025 constitutes nonconformance with this specification. In case of conflict between the requirements of this specification and Specification A 1025, this specification shall prevail.

4. Chemical Composition

4.1 The grades shall conform to the requirements as to the chemical composition specified in Table 1.

4.2 The manufacturer shall furnish an analysis of each shipment showing the percentage of each element specified.

4.3 Upon request of the purchaser, the manufacturer shall furnish an analysis of any trace elements on a schedule mutually agreed upon between the supplier and the purchaser.

5. Size

5.1 The various grades are available in sizes listed in Table 2.

5.2 The sizes listed in Table 2 are typical as shipped from the manufacturer's plant. The various grades can exhibit different 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 silicon metal. A code system has been developed, therefore, for this purpose, and a number rating for each product type is shown in Table 3. Definitions applicable to these code numbers are given in Specification A 1025.

6. Chemical Analysis

6.1 The chemical analysis of the material shall be made in accordance with the procedure for silicon metal as described in Test Methods E 360 or alternative methods that will yield equivalent results.

6.2 If alternative methods of analysis are used, in case of discrepancy, Test Methods E 360 shall be used for referee.

6.3 Where a method is not given in Test Methods E 360 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.

NOTE 1—For further information, see Practices E 50 and E 60.

7. Keywords

7.1 silicon; silicon metal

[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.

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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.

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

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TABLE 1 Chemical Requirements

Element	Composition %		
	Grade A	Grade B	Grade C
Silicon	>98.00	89.00 to 97.99	80.00 to 88.99
Iron	. . .	4.00 max	4.00 max

TABLE 2 Standard Sizes and Tolerances[A]

Standard Sizes	Tolerances	
8 by 2 in. (200 by 50 mm)	60 lb. (27.2 kg) lump, max	10 % max, passing 2 in. (50 mm) sieve
6 in. (150 mm) by down	10 % max, retained on 6 in. (150 mm) sieve	12 % max, passing 8 M sieve
4 in. (100 mm) by down	10 % max, retained on 4 in. (100 mm) sieve	12 % max, passing 8 M sieve
4 by ½ in. (100 by 12.5 mm)	10 % max, retained on 4 in. (100 mm) sieve	10 % max, passing ½ in. (12.5 mm) sieve
4 by 1 in. (100 by 25 mm)	10 % max, retained on 4 in. (100 mm) sieve	10 % max, passing 1 in. (25 mm) sieve
3 by ½ in. (75 by 12.5 mm)	12 % max, retained on 3 in. (75 mm) sieve	15 % max, passing ½ in. (12.5 mm) sieve
3 by 1 in. (75 by 25 mm)	12 % max, retained on 3 in. (75 mm) sieve	15 % max, passing 1 in. (25 mm) sieve
2 by ½ in. (50 by 12.5 mm)	12 % max, retained on 3 in. (75 mm) sieve	15 % max, passing ½ in. (12.5 mm) sieve
1 in. (25 mm) by No. 8	10 % max, retained on 1 in. (25 mm) sieve	10 % max, passing No. 8.
1 in. (25 mm) by down	12 % max, retained on 1 in. (25 mm) sieve	20 % max, passing No. 8.
No. 8 by down	10 % max, retained on No. 8 sieve	. . .
No. 20 by down	10 % max, retained on No. 20 sieve	. . .

[A] Tolerances and sieve sizes defined by Specification E 11.

TABLE 3 Friability Ratings

Product Grade	Proposed Friability Rating
A	5
B	5
C	5

SUMMARY OF CHANGES

Committee A01 has identified the location of selected changes to this standard since the last issue, A 922 - 93(2004), that may impact the use of this standard. (Approved May 1, 2005.)

(1) Sections 1-10 were either modified or deleted.

(2) Table 3 was modified.

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