Designation: A 324 – 08

Standard Specification for Ferrotitanium[1]

This standard is issued under the fixed designation A 324; 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 four grades of ferrotitanium, designated A, B, C, and D.

2. Referenced Documents

2.1 *ASTM Standards:* [2]

A 1025 Specification for Ferroalloys and Other Alloying Materials, General Requirements

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 Requirements

4.1 The chemical requirements are shown in Tables 1 and 2.

5. Size

5.1 The various grades are available in sizes as listed in Table 3.

5.2 The sizes listed in Table 3 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, for this purpose, and a number rating each product type is shown in the last column of Table 4. 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 in accordance with a procedure agreed upon between the manufacturer and the purchaser.

7. Keywords

7.1 ferrotitanium

[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

Grade	Composition, %			
	Titanium	Carbon, max	Silicon, max	Aluminum, max
A	65.0–75.0	0.15	0.25	0.50
B	65.0–75.0	0.20	0.25	5.0
C	35.0–45.0	0.15	5.0	8.0
D	15.0–25.0	5.0	5.0	8.0

TABLE 2 Supplementary Chemical Requirements

Grade	Composition, %[A]																
	Mn	P	S	Cr	Ni	Mo	Cu	Co	V	Pb	As	Bi	Sn	Zn	Zr	B	N
A	0.50	0.050	0.050	1.0	0.050	0.050	0.15	0.030	0.50	0.010	0.010	0.010	0.050	0.010	0.10	0.010	0.15
B	1.5	0.050	0.050	1.0	0.050	0.25	0.20	0.050	1.5	0.030	0.010	0.010	0.050	0.020	0.50	0.020	0.20
C	1.5	0.10	0.050	1.0	0.050	0.25	0.20	0.050	1.5	0.030	0.010	0.010	0.050	0.020	0.50	0.020	0.20
D	1.5	0.10	0.050	1.0	0.050	0.25	0.20	0.050	1.5	0.050	0.010	0.010	0.050	0.020	0.50	0.020	0.20

[A] Maximum limits.

TABLE 3 Size Requirements (All Grades)

Category	Tolerances
2 in. (50 mm) by down	10 %, max retained on USA Standard 2 in. (50 mm) Sieve 10 %, max passing USA Standard No. 20 (850 µm) Sieve
1 in. (25 mm) by down	10 %, max retained on USA Standard 1 in. (25.0 mm) Sieve 10 %, max passing USA Standard No. 20 (850 µm) Sieve
½ in. (12.5 mm) by down	10 %, max retained on USA Standard ½ in. (12.5 mm) Sieve 15 %, max passing USA Standard No. 30 (600 µm) Sieve
8 M (2.36 mm) by down	10 %, max retained on USA Standard No. 8 (2.36 mm) Sieve 10 %, max passing USA Standard No. 200 (75 µm) Sieve

TABLE 4 Friability Rating

All grades	Number 3

SUMMARY OF CHANGES

Committee A01 has identified the location of selected changes to this standard since the last issue (A 324-73 (2004)) that may impact the use of this standard. (Approved March 1, 2008.)

(*1*) Section 2: Reference standards E 29 and E 32 deleted. A 1025 added.
(*2*) Section 3: Title change and text to reflect inclusion of A 1025.
(*3*) Section 4: Title and text change to identify Table 1 and Table 2 only for chemical requirements.
(*4*) Section 5: Title change and reference to A 1025 included.
(*5*) Section 6: Former content deleted due to inclusion of A 1025. New title added.
(*6*) Sections 7 – 9: Former content deleted due to inclusion of A 1025. Keywords section added.
(*7*) Table 1: Footnotes deleted.
(*8*) Table 2: Chemical symbols used in place of names. Footnote A shortened.

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