Designation: A 550 – 06

Standard Specification for Ferrocolumbium[1]

This standard is issued under the fixed designation A 550; 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 three grades of ferrocolumbium, designated Low-Alloy Steel Grade, Alloy and Stainless Steel Grade, and High-Purity Grade.

1.2 The values stated in inch-pound units are to be regarded as the standard.

2. Referenced Documents

2.1 *ASTM Standards:* [2]

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

E 11 Specification for Wire Cloth and Sieves for Testing Purposes

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 material shall conform to the requirements as to chemical composition specified in Tables 1 and 2. The manufacturer shall furnish an analysis of each shipment showing the percentage of each element specified in Table 1.

4.2 For elements specified in Table 2 an analysis of each lot is not required. Upon request of the purchaser, the manufacturer shall supply the results of an analysis for the elements specified in Table 2 on a cumulative basis over a period mutually agreed upon by the manufacturer and the purchaser.

TABLE 1 Chemical Requirements

Element	Composition, %		
	Low-Alloy Steel Grade	Alloy and Stainless Steel Grade	High-Purity Grade
Columbium[A]	60.0–70.0	60.0–70.0	60.0–70.0
Tantalum, max	5.0	2.0	0.50[B]
Carbon, max	0.5	0.3	0.10
Manganese, max	3.0	2.0	0.50
Silicon, max	4.0	2.5	0.40
Aluminum, max	3.0[C]	2.0[C]	2.0[D]
Tin, max	0.25	0.15	0.02
Phosphorus, max	0.10	0.05	0.02
Sulfur, max	0.10	0.05	0.02

[A] the columbium content of any shipment shall be reported to the nearest 0.1 %.
[B] Or 0.25 % maximum as agreed between purchaser and seller.
[C] Or 1.50 % maximum as agreed between purchaser and seller.
[D] Or 1.0 maximum as agreed between purchaser and seller.

5. Sizing

5.1 Ferrocolumbium is available in sizes and to tolerances shown in Table 3.

6. Keywords

6.1 columbium; ferrocolumbium; tantalum

TABLE 2 Supplemental Chemical Requirements

NOTE—These are maximum limits allowable unless otherwise stated.[A]

Element	Composition, %[A]		
	Low-Alloy Steel Grade	Alloy and Stainless Steel Grade	High-Purity Grade
Chromium	1.00	1.00	0.10
Tungsten	1.00	0.5	0.05
Titanium	1.00	1.0	0.10
Lead	0.25	0.01	0.01
Cobalt	0.25	0.05	0.05

[A] The composition of the ferrocolumbian shall be within these limits; however, an analysis of each lot is not required. Upon request, the manufacturer shall supply the results of an analysis for these elements on terms previously agreed upon by the manufacturer and purchaser.

[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 A 01.18 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 3 Standard Sizes and Tolerances

Standard Size	Tolerance[A]	Friability Rating
2 in. by down	10 % max retained on 2-in. (50-mm) sieve 10 % max passing No. 8 (2.36-mm) sieve	4
½ in. by down	10 % max retained on ½-in. (12.5-mm) sieve	4
¼ in. by down	10 % max retained on ¼-in. (6.3-mm) sieve	4
8 mesh by down	10 % max retained on No. 8 (2.36-mm) sieve	4
20 mesh by down	10 % max retained on No. 20 (0.85-mm) sieve	4

[A]Specifications of sieve sizes used to define tolerances herein are as listed in Specification E 11.

SUMMARY OF CHANGES

Committee A01 has identified the location of selected changes to this standard since the last issue, A 550 – 78 (2000), that may impact the use of this standard. (Approved July 1, 2006.)

(*1*) Deleted three existing references and added A 1025 in paragraph 2.1.
(*2*) Reference to A 1025 included and deleted ordering information in Section 3.
(*3*) Revised statement regarding Tables 1 and 2 in paragraphs 4.1 and 4.2.
(*4*) Paragraph 5.1 revised to reference Table 3 and paragraph 5.2 deleted.
(*5*) Deleted Sections 6 – 9.
(*6*) Revised Tables 1 and 2.

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