



Designation: B 413 – 97a

Standard Specification for Refined Silver¹

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1. Scope

1.1 This specification covers refined silver cast bar² form in three grades as follows:

1.1.1 *Grade 99.90 (UNS P07020)*—Silver having a minimum fineness of 999.0 commonly referred to as “commercial bar” or “bullion.”

1.1.2 *Grade 99.95 (UNS P07015)*—Silver having a minimum fineness of 999.5.

1.1.3 *Grade 99.99 (UNS P07010)*—A premium grade having a minimum fineness of 999.9.

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

2. Referenced Documents

2.1 ASTM Standards:

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications³

E 378 Test Method for Spectrographic Analysis of Silver by the Powder Technique⁴

3. Materials and Manufacture

3.1 The silver shall be produced by any process that yields a product capable of meeting the requirements of this specification.

3.2 The bars shall be of a quality generally acceptable to the trade.

3.3 The manufacturer shall use care to have each shipment of as uniform quality as possible.

4. Chemical Composition

4.1 The refined silver shall conform to the chemical composition prescribed in Table 1.

5. Lots

5.1 A single melt shall constitute a lot for sampling.

TABLE 1 Chemical Requirements

NOTE 1—The following applies to all specified limits in this table: For purposes of determining conformance with this specification, an observed value obtained from analysis shall be rounded off “to the nearest unit” in the last right-hand place of figures used in expressing the limiting value, in accordance with the rounding-off method of Practice E 29.

Element ^{A,B}	Composition, %		
	Grade 99.90 (UNS P07020)	Grade 99.95 (UNS P07015)	Grade 99.99 (UNS P07010)
Silver, min	99.90	99.95	99.99
Silver and copper, min	99.95	...	...
Bismuth, max	0.001	0.001	0.0005
Copper, max	0.08	0.04	0.010
Iron, max	0.002	0.002	0.001
Lead, max	0.025	0.015	0.001
Palladium, max	...	...	0.001
Selenium, max	...	...	0.0005
Tellurium, max	...	...	0.0005

^AImpurities other than those listed above may be included by special agreement between purchaser and manufacturer.

^BIn this specification, it is to be noted that while oxygen is neither specified nor determined analytically, it is known to be present in the refined silver. When calculating the purity of refined silver by difference, oxygen will be considered as silver.

6. Method of Analysis

6.1 The composition of the bars or samples shall be determined by any destructive or nondestructive method agreed upon between the manufacturer and the purchaser. Unless otherwise specifically agreed, chemical methods will be used for analysis. The chemical composition of the materials set forth in this specification shall be determined, in case of disagreement, in accordance with Test Method E 378. The selection of methods for the determination of elements not covered by that test method shall be a matter of agreement between the manufacturer and the purchaser.

7. Sampling

7.1 The value of this material is such that special attention must be paid to sampling procedures. If the purchaser and the manufacturer agree that samples most representative of the assay value of a melt are required, the samples should be taken from the silver melt as it is ready for pouring into molds. The samples should consist of shot or cast pins.

7.2 On agreement between manufacturer and purchaser, an alternative sampling procedure may be used.

¹ This specification is under the jurisdiction of ASTM Committee B-2 on Nonferrous Metals and Alloys and is the direct responsibility of Subcommittee B02.05 on Precious Metals.

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² Other forms of unfabricated silver of commerce are not to be excluded under this specification.

³ *Annual Book of ASTM Standards*, Vol 14.02.

⁴ *Annual Book of ASTM Standards*, Vol 03.06.