Standard Specification for
Refined Silver

This standard is issued under the fixed designation B413; 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 refined silver cast bar form in
three grades as follows:

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

1.1.2 Grade 99.95 (UNS P07015)—Silver having a mini-
mum fineness of 999.5.

1.1.3 Grade 99.99 (UNS P07010)—A premium grade hav-
ing a minimum fineness of 999.9.

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

1.3 This standard does not purport to address all of the
safety concerns, if any, associated with its use. It is the
responsibility of the user of this standard to become familiar
with all hazards, including those identified in the appropriate
Material Safety Data Sheet (MSDS) for this product/material
as provided by the manufacturer, to establish appropriate
safety and health practices, and determine the applicability of
regulatory limitations prior to use.

2. Referenced Documents

2.1 ASTM Standards:

E29 Practice for Using Significant Digits in Test Data to
Determine Conformance with Specifications

E378 Test Method for Spectrographic Analysis of Silver by
the Powder Technique (Withdrawn 2004)

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 specifi-
cation.

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 com-
position prescribed in Table 1.

5. Lots

5.1 A single melt shall constitute a lot for sampling.

6. Method of Analysis

6.1 The composition of the bars or samples shall be deter-
mined 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 E378. 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.

7.3 The amount of sample taken shall be sufficient to supply
three portions for analysis; the mass of each portion shall be
sufficient to permit the determination of its composition as set
forth in Table 1.
7.4 After mixing thoroughly, the sample shall be divided into three parts, each placed in a package and sealed, one for the manufacturer, one for the purchaser, and one for the umpire.

8. Product Marking

8.1 A brand shall be cast or otherwise legibly marked upon each bar, by which the manufacturer can be identified. The bar shall be marked with the minimum fineness together with the melt number, bar number, and weight to the nearest 0.1 oz troy.

9. Claims

9.1 Claims to be considered shall be made to the manufacturer in writing within 30 days of receipt of the material at the purchaser’s plant, and the results of the tests made by the purchaser shall accompany such claims. The manufacturer shall be given 1 week from the date of receipt of the complaint to investigate his records, and shall then agree either to satisfy the claim or to submit samples to an umpire. No claim shall be considered unless a portion of the original silver bars can be shown to the representative of the manufacturer.

9.2 Where the silver satisfies the requirements of this specification, it shall not be condemned for defects in the products in which it is used.

10. Investigation of Claims

10.1 In a question of chemical composition, a new sample shall be drawn by representatives of both parties in accordance with Section 7. The properly mixed and quartered sample shall be separated into three parts, each of which shall be placed in a sealed package, one for the manufacturer, one for the purchaser, and one for an umpire, if necessary. The manufacturer and the purchaser shall each make an analysis, and if the results do not establish or dismiss the claim to the satisfaction of both parties, the third sample shall be submitted to a mutually agreeable umpire, who shall determine the question of fact, and whose determination shall be final.

11. Settlement of Claims

11.1 The expenses of the manufacturer’s representative and of the umpire shall be paid by the loser or divided in proportion to the concession made in case of compromise. In the case of rejection being established, the damages shall be limited to the payment of freight both ways by the producer for substitution of an equivalent weight of silver conforming to this specification.

APPENDIX

(Nonmandatory Information)

X1. SAMPLING

X1.1 When sampling is to be done on bars, the sampling preferably shall be by drilling. This shall be done by a procedure that will avoid errors due to segregation of impurities within the bars and also will avoid surface contamination.

X1.2 Drilling Procedure—At least one bar of each melt shall be sampled. The bar or bars to be drilled shall be thoroughly brushed with a stiff fiber brush having bristles which are set in a nonmetallic holder.

X1.3 Single Bar—The bar shall be drilled at least six times with a 0.635 cm high-speed drill in a pattern similar to that shown in Fig. X1.1. Three holes shall be drilled half way through the top face of the bar for the hole positions marked “T.” The bar shall be turned end over end and three holes drilled through the bottom face for the positions marked “B.” The bar shall be drilled while on a clear surface of a material such as polyethylene sheeting or a lint-free paper.

X1.4 Several Bars From Same Melt—The same precautions and procedure as that outlined for single bars shall be followed, except that the drillings representing the different orientation of the bar will be made on six different bars. For example, when six bars are sampled, the sampling positions corresponding to those in Fig. X1.1 are used except that only one hole will be drilled in each bar corresponding to one of the six positions.
FIG. X1.1 Sample Drilling Template

T in circle—Hole position in top of bar.
B in broken circle—Hole position in bottom of bar.