



Standard Practice for Fire Assay Silver Corrections in Analysis of Metal Bearing Ores, Concentrates, and Related Metallurgical Materials by Silver Determination in Slags and Cupels¹

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1. Scope

1.1 This practice covers the determination of silver corrections for fire assay of metal bearing ores, concentrates and related metallurgical materials using the spent slags and cupels from the fire assay process, by gravimetry and atomic absorption spectrophotometry.

1.2 The test methods appear in the following order:

	Sections
Gravimetric Method	10–11
Atomic Absorption Method	12–13

1.3 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.4 *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 establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* (See Practices E50 and ISO Guide 35:1989.)

2. Referenced Documents

2.1 *ASTM Standards:*²

D1193 Specification for Reagent Water

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

E50 Practices for Apparatus, Reagents, and Safety Considerations for Chemical Analysis of Metals, Ores, and Related Materials

E135 Terminology Relating to Analytical Chemistry for Metals, Ores, and Related Materials

¹ This practice is under the jurisdiction of ASTM Committee E01 on Analytical Chemistry for Metals, Ores, and Related Materials and is the direct responsibility of Subcommittee E01.02 on Ores, Concentrates, and Related Metallurgical Materials.

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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.

E882 Guide for Accountability and Quality Control in the Chemical Analysis Laboratory

E1024 Guide for Chemical Analysis of Metals and Metal Bearing Ores by Flame Atomic Absorption Spectrophotometry (Withdrawn 2004)³

E1335 Test Methods for Determination of Gold in Bullion by Fire Assay Cupellation Analysis

2.2 *ISO Documents:*⁴

ISO Guide 35:1989 Certification of Reference Materials—General and Statistical Principles

ISO 10378:1994 Copper Sulfide Concentrates—Determination of Gold and Silver Contents—Fire Assay Gravimetric and Atomic Absorption Spectrometric Method

3. Terminology

3.1 *Definitions*—For definitions of terms used in this practice, refer to Terminology E135.

4. Summary of Practice

4.1 In the process of fire assay fusion slags and cupels are collected, retreated and silver is determined in them to provide a correction value for the fire assay determination of silver (see Guide E1024, Test Methods E1335, ISO 10378:1994, Bugbee,⁵ and Smith⁶).

5. Significance and Use

5.1 These methods are primarily intended to be used for the determination of silver correction in the fire assay silver determination. Silver assays are determined by fire assay for the purpose of metallurgical exchange between seller and buyer.

³ The last approved version of this historical standard is referenced on www.astm.org.

⁴ Available from International Organization for Standardization (ISO), 1, ch. de la Voie-Creuse, Case postale 56, CH-1211, Geneva 20, Switzerland, http://www.iso.ch.

⁵ Bugbee, E. E., *A Textbook of Fire Assaying*, Third Ed., John Wiley and Sons, Inc., Hoboken, NJ, 1946.

⁶ Smith, E. A., *The Sampling and Assay of the Precious Metals*, Second Ed., Charles Griffin and Co., Ltd., 1947.