



Standard Test Methods for Chemical Analysis of Cadmium¹

This standard is issued under the fixed designation E 396; 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 These test methods cover the chemical analysis of cadmium having chemical compositions with the following limits:

Element	Concentration, max, %
Antimony	0.001
Arsenic	0.003
Copper	0.015
Lead	0.025
Silver	0.010
Thallium	0.003
Tin	0.010
Zinc	0.035

1.2 The test methods appear in the following order:

	Sections
Antimony by the Rhodamine B Photometric Method	61-71
Arsenic by the Molybdenum Blue Photometric Method	39-49
Copper by the Neocuproine Photometric Method	9-18
Copper, Lead, Silver, and Zinc by the Atomic Absorption Method	50-60
Lead by the Dithizone Photometric Method	19-28
Thallium by the Rhodamine B Photometric Method	29-38
Tin by the 8-Quinolinol Photometric Method	72-81

1.3 *This standard does not purport to address all of the safety problems, 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.* Specific precautionary information is given in Section 5 and Note 4.

2. Referenced Documents

2.1 ASTM Standards:

- B 440 Specification for Cadmium²
- E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications³
- E 50 Practices for Apparatus, Reagents, and Safety Precautions for Chemical Analysis of Metals⁴
- E 55 Practice for Sampling Wrought Nonferrous Metals and Alloys for Determination of Chemical Composition⁴

¹ These test methods are under the jurisdiction of ASTM Committee E-1 on Analytical Chemistry for Metals, Ores, and Related Materials and are the direct responsibility of Subcommittee E01.05 on Zinc, Tin, Lead, Cadmium, Beryllium, and Other Metals.

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² Annual Book of ASTM Standards, Vol 02.04.

³ Annual Book of ASTM Standards, Vol 14.02.

⁴ Annual Book of ASTM Standards, Vol 03.05.

E 60 Practice for Photometric and Spectrophotometric Methods for Chemical Analysis of Metals⁴

E 88 Practice for Sampling Nonferrous Metals and Alloys in Cast Form for Determination of Chemical Composition⁴

E 173 Practices for Conducting Interlaboratory Studies of Methods for Chemical Analysis of Metals⁴

3. Significance and Use

3.1 These test methods for the chemical analysis of metals and alloys are primarily intended to test such materials for compliance with compositional specifications. It is assumed that all who use these test methods will be trained analysts capable of performing common laboratory procedures skillfully and safely. It is expected that work will be performed in a properly equipped laboratory.

4. Apparatus, Reagents, and Photometric Practice

4.1 Apparatus and reagents required for each determination are listed in separate sections preceding the procedure. The apparatus, standard solutions, and certain other reagents used in more than one procedure are referred to by number and shall conform to the requirements prescribed in Practices E 50, except that photometers shall conform to the requirements prescribed in Practice E 60.

4.2 Photometric practice prescribed in these methods shall conform to Practice E 60.

5. Safety Precautions

5.1 For precautions to be observed in the use of certain reagents in these test methods, refer to Practices E 50.

6. Sampling

6.1 Wrought products shall be sampled in accordance with Practice E 55. Cast products shall be sampled in accordance with Practice E 88. However, these test methods do not supersede any sampling requirements specified in a specific ASTM material specification.

7. Rounding Calculated Values

7.1 Calculated values shall be rounded to the desired number of places as directed in 3.4 to 3.6 of Practice E 29.

8. Interlaboratory Studies

8.1 These test methods have been evaluated in accordance