



Standard Guide for Specifying the Chemical Compositions and Selecting Sampling Practices and Quantitative Analysis Methods for Metals, Ores, and Related Materials¹

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1. Scope

1.1 This guide covers procedures for specifying compositional requirements and identifying appropriate sampling and quantitative analysis test methods to be referenced in product specification standards for metals, ores, and related materials. It is not intended to replace or conflict with either individual product specifications or standards covering broad classifications of products such as Test Methods [A751](#).

1.2 *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.*

2. Referenced Documents

2.1 ASTM Standards:²

- [A276](#) Specification for Stainless Steel Bars and Shapes
- [A751](#) Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products
- [E34](#) Test Methods for Chemical Analysis of Aluminum and Aluminum-Base Alloys
- [E135](#) Terminology Relating to Analytical Chemistry for Metals, Ores, and Related Materials
- [E255](#) Practice for Sampling Copper and Copper Alloys for the Determination of Chemical Composition
- [E342](#) Test Method for Determination of Chromium Oxide in Chrome Ores by Permanganate Titrimetry
- [E350](#) Test Methods for Chemical Analysis of Carbon Steel, Low-Alloy Steel, Silicon Electrical Steel, Ingot Iron, and Wrought Iron
- [E1601](#) Practice for Conducting an Interlaboratory Study to

Evaluate the Performance of an Analytical Method

3. Terminology

3.1 Definitions:

3.1.1 For definitions of terms used in this guide see Terminology [E135](#).

4. Significance and Use

4.1 This guide is intended to assist those writing or revising compositional specifications, sampling practices, and test methods for ferrous and non-ferrous metals, ores, and related materials. It is directed toward those areas that must be addressed to properly coordinate compositional specification, sampling practice, and test methods. Its use will help ensure that compositional requirements are clearly defined and that sampling practices and test methods are available to meet product specifications.

4.2 This guide does not attempt to define which elements should be controlled, where samples should be taken, or how they should be analyzed. These items are addressed in standards such as Specification [A276](#), Methods, Practices and Terminology [A751](#), Test Method [E34](#), Practice [E255](#), Test Method [E342](#), and Test Methods [E350](#).

4.3 A primary purpose for ASTM sampling practices and test methods is to provide widely-accepted and tested methodology for use in meeting ASTM product specifications. Although it is recognized that individual laboratories are free to use other methods, the availability of ASTM approved methodology is essential for referee purposes and to demonstrate that properly equipped laboratories can make the required measurements.

4.4 Sampling practices and test methods to be recommended for use in testing a given product are most easily selected cooperatively by the specification-writing and the methods-writing committees that have jurisdiction over the product. When existing sampling or test methods do not meet the needs of the new product specification standard, the specification-writing committee should request that the methods-writing committee develop the required standards. ASTM Committee E01 is responsible for test methods and

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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.