



Standard Test Method for Analysis of Nickel Alloys by Flame Atomic Absorption Spectrometry¹

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1. Scope

1.1 This test method covers analysis of nickel alloys by flame atomic absorption spectrometry (FAAS) for the following elements:

Element	Composition Range, %
Aluminum	0.2 to 4.0
Chromium	0.01 to 4.0
Cobalt	0.01 to 4.0
Copper	0.01 to 4.0
Iron	0.1 to 4.0
Manganese	0.1 to 4.0
Silicon	0.2 to 1.0
Vanadium	0.05 to 1.0

1.2 The composition ranges of these elements can be expanded by the use of appropriate standards.

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.* For specific hazards associated with the use of this test method, see Practices E50 and the warning statements included in this test method.

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 Consid-

¹ This test method is under the jurisdiction of ASTM Committee E01 on Analytical Chemistry for Metals, Ores, and Related Materials and is the direct responsibility of Subcommittee E01.08 on Ni and Co and High Temperature Alloys.

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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.

erations for Chemical Analysis of Metals, Ores, and Related Materials

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

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

E1601 Practice for Conducting an Interlaboratory Study to Evaluate the Performance of an Analytical Method

E1812 Practice for Optimization of Flame Atomic Absorption Spectrometric Equipment (Withdrawn 2004)³

2.2 *ISO Standards:*⁴

ISO 5725:1986 Precision of Test Methods—Determination of Repeatability and Reproducibility for a Standard Test Method by Inter-laboratory Tests

ISO 7530 Parts 1 through 9—Nickel Alloys—Flame Atomic Absorption Spectrometric Analysis

3. Terminology

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

4. Summary of Test Method

4.1 The sample is dissolved in a mixture of HCl and HNO₃. The solution is aspirated into an appropriate flame of an atomic absorption spectrometer. The absorbance of the resonant line energy from the spectrum of the analyte is measured and compared with that of calibration solutions.

5. Significance and Use

5.1 This test method is used for the analysis of nickel alloy samples by FAAS to check compliance with compositional specifications. It is assumed that all who use the procedure will be trained analysts capable of performing common laboratory procedures skillfully and safely. It is expected that the work will be performed in a properly equipped laboratory and that proper waste disposal procedures will be followed. Appropriate quality control practices must be followed such as those described in Guide E882.

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

⁴ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.