



Standard Test Methods for Coating Mass and Chemical Analysis of Zinc-Nickel Alloy Electrolytically Coated on Steel Sheet¹

This standard is issued under the fixed designation E1659; 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 independently the chemical analysis of each surface of zinc-nickel alloy electrolytically coated on steel sheet. The coatings have chemical compositions within the following limits:

Analyte	Concentration Range
Coating mass	0.0 to 80 g/m ²
Nickel	7.0 to 17.0 %

1.2 These test methods are in the following sections:

	Sections
Coating mass, by the Weigh-Strip-Weigh Method (20.0 to 45.0 g/m ²)	10-20
Nickel by the Atomic Absorption Method (11.0 to 13.5 % of Coating mass Ranging from 20 to 45 g/m ²)	21-31

1.3 The values stated in SI units are to be regarded as standard. In some cases, exceptions allowed in Practice E380 are also used.

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.*

2. Referenced Documents

2.1 ASTM Standards:²

A917 Specification for Steel Sheet, Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface (General Requirements)

A918 Specification for Steel Sheet, Zinc-Nickel Alloy Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface

¹ These test methods are under the jurisdiction of ASTM Committee E01 on Analytical Chemistry for Metals, Ores, and Related Materials and are the direct responsibility of Subcommittee E01.05 on Cu, Pb, Zn, Cd, Sn, Be, their Alloys, and Related Metals.

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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.

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

E173 Practice for Conducting Interlaboratory Studies of Methods for Chemical Analysis of Metals (Withdrawn 1998)³

E380 Practice for Use of the International System of Units (SI) (the Modernized Metric System) (Withdrawn 1997)³

E663 Practice for Flame Atomic Absorption Analysis (Withdrawn 1997)³

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

E1452 Practice for Preparation of Calibration Solutions for Spectrophotometric and for Spectroscopic Atomic Analysis (Withdrawn 2005)³

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

3. Terminology

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

4. Significance and Use

4.1 These test methods for the chemical analysis of zinc-nickel alloy coating on sheet steel are primarily intended as referee methods to test such materials for compliance with compositional specifications such as found in Specification A918, particularly those under the jurisdiction of ASTM Committee A05 on Metallic-Coated Iron and Steel Products. It is assumed that all who use these test methods will be trained analysts capable of performing common laboratory procedures

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