



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

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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 Weight	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 Weight, by the Weigh-Strip-Weigh Method (20.0 to 45.0 g/m ²)	8-18
Nickel by the Atomic Absorption Method (11.0 to 13.5 % of Coating Weight Ranging from 20 to 45 g/m ²)	19-29

1.3 The values stated in SI units are to be regarded as standard. In some cases, exceptions allowed in Practice E 380 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:

- A 917 Specification for Steel Sheet, Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface (General Requirements)²
- A 918 Specification for Steel Sheet, Zinc-Nickel Alloy Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface²
- D 1193 Specification for Reagent Water³
- E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications⁴
- E 50 Practices for Apparatus, Reagents, and Safety Precau-

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 Zn, Sn, Pb, Cd, Be, and Other Metals. Current edition approved Jan. 10, 2000. Published March 2000. Originally published as E 1659 – 95. Last previous edition E 1659 – 95.

² Annual Book of ASTM Standards, Vol 01.06.

³ Annual Book of ASTM Standards, Vol 11.01.

⁴ Annual Book of ASTM Standards, Vol 14.02.

tions for Chemical Analysis of Metals⁵

E 173 Practice for Conducting Interlaboratory Studies of Methods for Chemical Analysis of Metals⁶

E 380 Practice for Use of the International System of Units (SI) (the Modernized Metric System)⁴

E 663 Practice for Flame Atomic Absorption Analysis⁷

E 882 Guide for Accountability and Quality Control in the Chemical Analysis Laboratory⁸

E 1024 Guide for Chemical Analysis of Metals and Metal Bearing Ores by Flame Atomic Absorption Spectrophotometry⁸

E 1452 Practice for Preparation of Calibration Solutions for Spectrophotometric and for Spectroscopic Atomic Analyses⁸

3. Significance and Use

3.1 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 A 918, particularly those under the jurisdiction of ASTM Committee A-5 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 skillfully and safely. It is expected that work will be performed in a properly equipped laboratory under appropriate quality control practices such as those described in Guide E 882.

3.2 These test methods must be applied twice, once to each side of the specimen if coating weight and composition are required for both sides of a coated sheet. Two separate specimens are required for this purpose.

4. Apparatus, Reagents, and Instrumental Practices

4.1 *Apparatus*—Specialized apparatus requirements are listed in the apparatus section in each individual test method.

4.2 Reagents:

4.2.1 *Purity of Reagents*—Unless otherwise indicated, all reagents used in these test methods shall conform to the

⁵ Annual Book of ASTM Standards, Vol 03.05.

⁶ Discontinued; see 1997 Annual Book of ASTM Standards, Vol 03.05.

⁷ Discontinued; see 1997 Annual Book of ASTM Standards, Vol 03.06.

⁸ Annual Book of ASTM Standards, Vol 03.06.