



Standard Specification for 42 % Nickel-6 % Chromium-Iron Sealing Alloy ¹

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1. Scope

1.1 This specification covers an iron-nickel-chromium alloy (UNS K94760) used primarily for glass-sealing applications in electronic devices.

1.2 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 The following safety hazards caveat applies only to Section 13. *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:

E 18 Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials ²

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications ³

E 38 Methods for Chemical Analysis of Nickel-Chromium and Nickel-Chromium-Iron Alloys ⁴

E 112 Test Methods for Determining the Average Grain Size ²

E 228 Test Method for Linear Thermal Expansion of Solid Materials with a Vitreous Silica Dilatometer ³

F 14 Practice for Making and Testing Reference Glass-Metal Bead-Seal ⁵

F 140 Practice for Making Reference Glass-Metal Butt Seals and Testing for Expansion Characteristics by Polarimetric Methods ⁵

F 144 Practice for Making Reference Glass-Metal Sandwich Seal and Testing for Expansion Characteristics by

Polarimetric Methods ⁵

3. Ordering Information

3.1 Orders for material under this specification shall include the following information:

3.1.1 Size,

3.1.2 Temper (Section 6),

3.1.3 Surface finish (Section 8),

3.1.4 Marking and packaging (Section 13), and

3.1.5 Certification if required.

4. Chemical Composition

4.1 The material shall conform to the requirements of Table 1 as to chemical composition.

TABLE 1 Chemical Composition

Element	Composition, %
Nickel, nominal	42.0
Chromium, nominal	5.6
Carbon, max	0.07
Manganese, max	0.25
Phosphorus, max	0.025
Sulfur, max	0.025
Silicon, max	0.30
Aluminum, max	0.20
Iron	remainder

NOTE 1—The major constituents of this alloy may be adjusted by the manufacturer so that the alloy meets the requirement for thermal expansion.

5. Chemical Analysis

5.1 Chemical analysis shall be made, when desired, in accordance with Methods E 38.

6. Surface Lubricants

6.1 All lubricants used during cold-working operations such as drawing, rolling, or spinning, shall be capable of being removed readily by any of the common organic degreasing solvents.

7. Temper

7.1 The desired temper of the material shall be specified on the purchase order. Unless otherwise specified, wire, rod, and

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² Annual Book of ASTM Standards, Vol 03.01.

³ Annual Book of ASTM Standards, Vol 14.02.

⁴ Discontinued; see 1988 Annual Book of ASTM Standards, Vol 03.05.

⁵ Annual Book of ASTM Standards, Vol 15.02.