



Designation: B 691 – 95

Standard Specification for Iron-Nickel-Chromium-Molybdenum Alloys (UNS N08366 and UNS N08367) Rod, Bar, and Wire¹

This standard is issued under the fixed designation B 691; 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 This specification covers iron-nickel-chromium-molybdenum alloys (UNS N08366 and UNS N08367)* in the form of hot-finished and cold-finished rounds, squares, hexagons, octagons, and rectangles.

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 pertains only to the test methods portion, Section 12, of this specification: *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 8 Test Methods for Tension Testing of Metallic Materials²

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications³

E 140 Hardness Conversion Tables for Metals (Relationship Between Brinell Hardness, Vickers Hardness, Rockwell Hardness, Rockwell Superficial Hardness, and Knoop Hardness)²

E 1473 Test Methods for Chemical Analysis of Nickel, Cobalt, and High-Temperature Alloys⁴

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 The terms rod, bar, and wire, as used in this specification, are described as follows:

3.1.1.1 *bar*—hot-finished or cold-finished material of

round, square, hexagon, octagon, or rectangular solid section in straight lengths.

3.1.1.2 *rod*—hot-finished material of round, square, hexagon, octagon, or rectangular solid section furnished in coils for subsequent cold drawing into finished products.

3.1.1.3 *wire*—cold-finished material of round, square, hexagon, octagon, or rectangle solid section furnished in coils.

4. Ordering Information

4.1 Orders for material under this specification shall include the following information, as required:

4.1.1 Quantity (feet, metres, or number of pieces),

4.1.2 Form (rod, bar, wire),

4.1.3 Name of material or UNS number,

4.1.4 Finish (see 8.2),

4.1.5 Dimensions, including length,

4.1.6 Certification, if required (Section 15),

4.1.7 Purchaser's inspection, if required (Section 13),

4.1.8 ASTM designation and year of issue, and

4.1.9 Samples for product analysis, if required.

5. Chemical Composition

5.1 The material shall conform to the composition limits specified in Table 1.

5.2 If a product (check) analysis is made by the purchaser, the material shall conform to the permissible variations for product (check) analysis in Table 1.

6. Mechanical Properties and Other Requirements

6.1 The material shall conform to the mechanical property requirements specified in Table 2.

7. Dimensions and Permissible Variations

7.1 *Size:*

7.1.1 *Rounds*—The permissible variations in size of cold-finished round shall be as given in Table 3. For hot-finished round bars and rod, they shall be as given in Table 4.

7.1.2 *Squares*—The permissible variations in size of cold-finished square bars shall be as given in Table 5. For hot-finished square bars and rods, they shall be as given in Table 4.

7.1.3 *Hexagons and Octagons*—The permissible variations in size of cold-finished hexagons and octagons shall be as given in Table 5. For hot-finished bar and rod hexagons and

¹ This specification is under the jurisdiction of ASTM Committee B-2 on Nonferrous Metals and Alloys and is the direct responsibility of Subcommittee B02.07 on Refined Nickel and Cobalt, and Alloys Containing Nickel or Cobalt, or Both, as Principal Constituents.

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* New designation established in accordance with ASTM E 527 and SAE J1086, Practice for Numbering Metals and Alloys.

² *Annual Book of ASTM Standards*, Vol 03.01.

³ *Annual Book of ASTM Standards*, Vol 14.02.

⁴ *Annual Book of ASTM Standards*, Vol 03.06.