



# Standard Specification for Precipitation Hardening Cobalt-Containing Alloys (UNS R30155 and UNS R30816) Rod, Bar, Forgings, and Forging Stock for High-Temperature Service<sup>1</sup>

This standard is issued under the fixed designation B 639; 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 hot- and cold-worked precipitation hardenable cobalt-containing alloys (UNS R30155 and UNS R30816) rod, bar, forgings, and forging stock for high-temperature service.

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 *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 become familiar with all hazards including those identified in the appropriate Material Safety Data Sheet for this product/material as provided by the manufacturer, to establish appropriate safety and health practices, and determine the applicability of regulatory limitations prior to use.*

## 2. Referenced Documents

### 2.1 ASTM Standards:

B 880 Specification for General Requirements for Chemical Check Analysis Limits for Nickel, Nickel Alloys and Cobalt Alloys<sup>2</sup>

E 8 Test Methods for Tension Testing of Metallic Materials<sup>3</sup>

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications<sup>4</sup>

E 139 Test Methods for Conducting Creep, Creep-Rupture, and Stress-Rupture Tests of Metallic Materials<sup>3</sup>

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee B02 on Nonferrous Metals and Alloys and is the direct responsibility of Subcommittee B02.07 on Refined Nickel and Cobalt and Their Alloys.

\* New designation established in accordance with Practices E 527 and SAE J1086. Practice for Numbering Metals and Alloys (UNS).

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<sup>2</sup> Annual Book of ASTM Standards, Vol 02.04.

<sup>3</sup> Annual Book of ASTM Standards, Vol 03.01.

<sup>4</sup> Annual Book of ASTM Standards, Vol 14.02.

E 1473 Test Methods for Chemical Analysis of Nickel, Cobalt, and High-Temperature Alloys<sup>5</sup>

## 3. Terminology

### 3.1 Definitions of Terms Specific to This Standard:

3.1.1 *bar*—material of rectangular (flats), hexagonal, octagonal, or square solid section in straight lengths.

3.1.2 *rod*—material of round solid section furnished in straight lengths.

## 4. Ordering Information

4.1 It is the responsibility of the purchaser to specify all requirements that are necessary for material ordered under this specification. Examples of such requirements include, but are not limited to, the following:

4.1.1 *Alloy Name or UNS Number* (see Table 1).

4.1.2 *ASTM Designation*, including year of issue. Table 2 Table 3

4.1.3 *Condition* (temper) (Table 4).

4.1.4 *Section*—Rod or bar (round, rectangle, square, hexagon, octagon).

4.1.4.1 *Forging* (sketch or drawing).

4.1.5 *Dimensions*, including length.

4.1.6 *Quantity* (mass or number of pieces).

4.1.7 *Forging stock*—Specify if material is stock for reforging.

4.1.8 *Finish*.

4.1.9 *Certification*—State if certification or a report of test results is required (Section 15).

4.1.10 *Samples for Product (Check) Analysis*—Whether samples for product (check) analysis should be furnished (9.2).

4.1.11 *Purchaser Inspection*—If the purchaser wishes to witness the tests or inspection of material at the place of manufacture, the purchase order must so state indicating which tests or inspections are to be witnessed (Section 13).

<sup>5</sup> Annual Book of ASTM Standards, Vol 03.05.