



Designation: F1091 – 12

# Standard Specification for Wrought Cobalt-20Chromium-15Tungsten-10Nickel Alloy Surgical Fixation Wire (UNS R30605)<sup>1</sup>

This standard is issued under the fixed designation F1091; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope\*

1.1 This specification covers the chemical, mechanical, and metallurgical requirements for the manufacture of wrought cobalt-20chromium-15tungsten-10nickel surgical fixation wire.

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

## 2. Referenced Documents

2.1 *ASTM Standards*:<sup>2</sup>

- E8 Test Methods for Tension Testing of Metallic Materials
- E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications
- F86 Practice for Surface Preparation and Marking of Metallic Surgical Implants
- F90 Specification for Wrought Cobalt-20Chromium-15Tungsten-10Nickel Alloy for Surgical Implant Applications (UNS R30605)

2.2 *USP Standards*:<sup>3</sup>

Nonabsorbable Surgical Suture, *U.S. Pharmacopeia*

2.3 *ISO Standard*:<sup>4</sup>

ISO 9001 Quality Management Systems—Requirements

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee F04 on Medical and Surgical Materials and Devices and is the direct responsibility of Subcommittee F04.12 on Metallurgical Materials.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> Available from U.S. Pharmacopeia (USP), 12601 Twinbrook Pkwy., Rockville, MD 20852-1790, <http://www.usp.org>.

<sup>4</sup> Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

## 3. General Requirements for Delivery

3.1 In addition to the requirements of this specification, all requirements of the current editions of Specification F90 shall apply.

3.2 In cases where a conflict exists between this specification and the standards listed in Section 2, this specification shall take precedence.

## 4. Terminology

4.1 *Definitions of Terms Specific to This Standard*:

4.1.1 *lot, n*—the total number of mill products produced from the same melt heat under the same conditions at essentially the same time.

## 5. Ordering Information

5.1 Inquiries and orders for material under this specification shall include the following information:

- 5.1.1 Quantity,
- 5.1.2 ASTM designation and date of issue,
- 5.1.3 Material requirements (see Section 6),
- 5.1.4 Mechanical properties (see Section 7),
- 5.1.5 Form,
- 5.1.6 Dimensional requirements, including diameter and diameter tolerance,
- 5.1.7 Surface condition and handling,
- 5.1.8 Special tests (if applicable), and
- 5.1.9 Other requirements.

## 6. Material Requirements

6.1 The starting material used to make fixation wire must meet Specification F90.

6.2 Surgical fixation wire shall conform to the specified chemical requirements of Specification F90.

## 7. Mechanical Requirements

7.1 Surgical fixation wire shall conform to the appropriate mechanical properties specified in Table 1.

7.2 Perform tension tests in accordance with Test Methods E8 using a 254-mm (10-in.) gage length and crosshead speed of 254 mm/min (10 in./min). Should any of the test specimens not meet the specified requirements, test two additional test

\*A Summary of Changes section appears at the end of this standard