



Designation: A 713 – 93 (Reapproved 1998)

# Standard Specification for Steel Wire, High-Carbon Spring, for Heat-Treated Components<sup>1</sup>

This standard is issued under the fixed designation A 713; 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 round carbon spring steel wire in coils intended for the manufacture of mechanical springs and wire forms that are heat treated (austenitized, quenched, and tempered) after fabrication.

1.2 The values stated in inch-pound units are to be regarded as the standard.

## 2. Referenced Documents

### 2.1 ASTM Standards:

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products<sup>2</sup>

A 510 Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel<sup>2</sup>

A 700 Practices for Packaging, Marking, and Loading Methods for Steel Products for Domestic Shipment<sup>3</sup>

A 919 Terminology Relating to Heat Treatment of Metals<sup>4</sup>

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance With Specifications<sup>5</sup>

E 30 Test Methods for Chemical Analysis of Steel, Cast Iron, Open-Hearth Iron, and Wrought Iron<sup>6</sup>

E 112 Test Methods for Determining Average Grain Size<sup>7</sup>

E 350 Test Methods for Chemical Analysis of Carbon Steel, Low-Alloy Steel, Silicon Electrical Steel, Ingot Iron, and Wrought Iron<sup>5</sup>

E 527 Practice for Numbering Metals and Alloys (UNS)<sup>8</sup>

2.2 Society of Automotive Engineers Standard:<sup>9</sup>

J 1086 Numbering Metals and Alloys

2.3 AIAG Standard:

AIAGB-5 02.00 Primary Metals Identification Tag Application Standard<sup>10</sup>

## 3. Terminology

### 3.1 Definitions:

3.1.1 *heat-treated components*—mechanical springs or wire forms that are austenitized, quenched, and tempered after fabrication.

3.2 Refer to Terminology A 919 for a more detailed description of heat-treating terms.

## 4. Ordering Information

4.1 Orders for material under this specification should include the following information:

4.1.1 Quantity (weight),

4.1.2 Name of material (Sections 1 and 6),

4.1.3 Diameter (Table 1),

4.1.4 Packaging, marking, and loading (Section 12),

4.1.5 ASTM designation and date of issue,

4.1.6 Special requirements (Sections 7 and 8), and

4.1.7 End use.

NOTE 1—A typical ordering description is as follows: Steel Wire, High Carbon Spring, for Heat-Treated Components, Grade 1070, to ASTM A 713 dated \_\_\_\_\_, for Door Closer Springs, 30 000 lb, Size 0.250 in. in 500-lb Catch Weight Coils.

## 5. Materials and Manufacture

5.1 The steel shall be made by the open-hearth, basic-oxygen, or electric-furnace process.

5.2 The wire, prior to fabrication, shall be thermally treated or thermally treated and drawn.

5.3 The condition or wire (metallurgical and mechanical properties) to be used is at the discretion of the purchaser and is generally dependent on the severity of the component part to be formed.

## 6. Chemical Composition

6.1 The steel shall conform to the requirements for chemical composition prescribed in Table 2 for the grade ordered.

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee A-1 on Steel, Stainless Steel and Related Alloys, and is the direct responsibility of Subcommittee A01.03 on Steel Rod and Wire.

Current edition approved July 15, 1993. Published September 1993. Originally published as A 713 – 75. Last previous edition A 713 – 91.

<sup>2</sup> Annual Book of ASTM Standards, Vol 01.03.

<sup>3</sup> Annual Book of ASTM Standards, Vol 01.05.

<sup>4</sup> Annual Book of ASTM Standards, Vol 01.02.

<sup>5</sup> Annual Book of ASTM Standards, Vol 14.02.

<sup>6</sup> Annual Book of ASTM Standards, Vol 03.05.

<sup>7</sup> Annual Book of ASTM Standards, Vol 03.01.

<sup>8</sup> Annual Book of ASTM Standards, Vol 01.01.

<sup>9</sup> Available from Society of Automotive Engineers (SAE), 400 Commonwealth Dr., Warrendale, PA 15096.

<sup>10</sup> Available from the Automotive Industry Action Group, 26200 Lahser, Suite 200, Southfield, MI 48034.