



Designation: A 3 – 87 (Reapproved 1995)

Standard Specification for Steel Joint Bars, Low, Medium, and High Carbon (Non-Heat-Treated)¹

This standard is issued under the fixed designation A 3; 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.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers steel joint bars for connecting steel rails in mine, industrial, and standard railroad track.

1.2 Three grades of joint bars are defined for applications where non-heat treated bars are suitable:

1.2.1 Grade 1, low-carbon, primarily for industrial and mine use.

1.2.2 Grade 2, medium-carbon, primarily for industrial and mine use.

1.2.3 Grade 3, high-carbon, for general use in standard railroad track. They may be used in the production of insulated track joints.

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

2. Referenced Documents

2.1 ASTM Standards:

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products²

2.2 U.S. Military Standards:

MIL-STD-129 Marking for Shipment and Storage³
MIL-STD-163 Steel Mill Products, Preparation for Shipment and Storage³

2.3 U.S. Federal Standards:

Federal Standard No. 123 Marking for Shipments (Civil Agencies)³

3. Ordering Information

3.1 Orders for joint bars under this specification shall include the following information as appropriate:

3.1.1 *Quantity*—number of pairs of bars,

3.1.2 *Type*—design or type bar along with section designation and weight of rails being joined,

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² *Annual Book of ASTM Standards*, Vol 01.03.

³ Available from Naval Publications and Forms Center, 5801 Tabor Ave., Philadelphia PA 19120.

3.1.3 *Grade*—in accordance with 1.2 and Table 1 and Table 2,

3.1.4 *Dimension*—overall length,

3.1.5 *Punching*—type (elliptical, oval, round, or combinations), size, number, location, spacing, and elevation of punched holes, with dimensional drawing if necessary,

3.1.6 *Special Requirements*—notching, shearing, bundling, etc., including details, and

3.1.7 *Certification and Test Report Requirements*—(See 11.1 and 12.1).

4. Manufacture

4.1 The steel shall be made by one or more of the following processes: open-hearth, basic-oxygen, or electric-furnace.

4.1.1 The steel may be cast by a continuous process, or in ingots.

4.2 Grade 2, medium-carbon, joint bars may be punched, slotted, and shaped in the case of special designs, either hot or cold. Joint bars that are punched, slotted, or shaped cold shall be subsequently annealed.

4.3 Grade 3, high-carbon, joint bars shall be uniformly heated for punching, slotting, and shaping.

5. Chemical Requirements

5.1 The steel shall conform to the requirements as to chemical composition prescribed in Table 1.

5.2 *Heat or Cast Analysis*—An analysis of each heat or cast shall be made by the manufacturer to determine the percentages of carbon, manganese, phosphorus, and sulfur. The analysis shall be made from a test sample taken preferably during the pouring of the heat or cast. The chemical composition thus determined shall conform to the requirement in Table 1. Manganese and sulfur determinations are for information only.

5.3 *Product Analysis*—When ladle tests are not available, finished material representing the heat may be product tested. The product analysis allowance beyond the limits of the specified ladle analysis shall be within the limits for product analyses specified in Table 2.

5.3.1 An analysis may be made by the purchaser from a sample taken from a finished joint bar representing each heat or cast. The chemical composition thus determined shall conform