



Designation: A 2 – 02

Standard Specification for Carbon Steel Girder Rails of Plain, Grooved, and Guard Types¹

This standard is issued under the fixed designation A 2; 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 carbon steel girder rails² of three classes based on type or type and weight, and chemistry defined as follows and in Table 1:

1.1.1 Unless otherwise specified by the purchaser, girder-guard rails shall be Class A.

1.1.2 Plain and grooved-girder rails under 135 lb/yd (67.1 kg/m) in weight shall be specified by the purchaser as either Class A or Class B.

1.1.3 Plain and grooved-girder rails of 135 lb/yd in weight and heavier shall be Class C, unless otherwise specified.

1.2 The values states 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 700 Practices for Packaging, Marking, and Loading Methods for Steel Products for Domestic Shipments³

E 10 Test Method for Brinell hardness of Metallic Materials⁴

3. Classification of Rails

3.1 *No. 1 Rails*—Rails that are free of injurious imperfections and flaws of all kinds.

3.2 *No. 2 Rails*—Rails that contain surface imperfections in such number or of such character that shall not, in the judgment of the inspector, render them unfit for recognized uses.

4. Ordering Information

4.1 Orders for girder rails under this specification shall include the following information as appropriate:

4.1.1 ASTM designation and date of issue,

¹ This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel, and Related Alloys and is the direct responsibility of Subcommittee A01.01 on Steel Rails and Accessories.

Current edition approved November 10, 2002. Published December 2002. Originally approved in 1912. Last previous edition approved in 1990 as A 31 – 90 (1997).

² Design details for carbon steel girder rails are indicated in the girder rail catalogs of individual manufacturers.

³ *Annual Book of ASTM Standards*, Vol 01.05.

⁴ *Annual Book of ASTM Standards*, Vol 03.01.

TABLE 1 Chemical Requirements, %

	Class A	Class B	Class C
Carbon	0.60–0.75	0.70–0.85	0.75–0.90
Manganese	0.60–0.90	0.60–0.90	0.60–0.90
Phosphorus, max	0.04	0.04	0.04
Silicon	0.10–0.40	0.10–0.40	0.10–0.40

4.1.2 Quantity (tons or pieces as appropriate),

4.1.3 Complete identification of section with dimensional drawing if required,

4.1.4 Arrangement of bolt holes, bond holes, and tie rod holes with dimensional drawings, if required,

4.1.5 Class (in accordance with 1.1 and Table 1), and

4.1.6 Certification and Test Report (see 12.1).

5. Manufacture

5.1 *Melting Practice*—The steel shall be made by any of the following processes: open-hearth, basic-oxygen, or electric-furnace.

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

5.2 *Discard*—Sufficient discard shall be made to secure freedom from injurious segregation and piping.

6. Chemical Composition

6.1 *Heat or Cast Analysis*—An analysis for each heat or cast of steel shall be made by the manufacturer to determine the percentage of the elements specified in Table 1. The analysis shall be made from a test sample representing the heat or cast and shall conform to the requirements in Table 1.

6.2 Upon request by the purchaser, similar samples shall be provided to verify the heat or cast analysis as determined in 6.1.

6.3 *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.

7. Hardness Properties

7.1 Test Specimens:

7.1.1 Three representative sections of rail from each heat shall be selected as test specimens.

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