

GENERAL REQUIREMENTS FOR CARBON AND ALLOY STEEL BARS, HOT ROLLED AND COLD - FINISHED

1. SCOPE

This standard covers general chemical, mechanical, dimensional, inspection and testing packing and loading, and identification requirements, which unless otherwise specified in an individual standard or specification, shall apply to carbon and alloy steel bars in the hot-rolled and cold-finished conditions. This standard applies to inch or imperial size material only.

2. RELATED SPECIFICATIONS

2.1 REFERENCED STANDARDS

ASTM A29: General Requirements for Steel Bar, Carbon and Alloy, Hot-Rolled and Cold-finished.

ASTM A370: Methods and Definitions for Mechanical Testing of Steel Products.

2.2 Replaces Versatile Standard MS-640.

3. DEFINITIONS

3.1 Hot Rolled Steel Bars: Steel bars produced by hot rolling ingots, blooms, billets, or other semifinished forms to yield straight lengths (or coils, depending upon size, section, and mill equipment) in sections which are uniform through their length, and in the following sections and sizes:

3.1.1 Rounds: 7/32 to 10 in. (5.6 to 254 mm), inclusive.

3.1.2 Squares: 7/32 to 6 in. (5.6 to 152 mm), inclusive.

3.1.3 Flats: 1/4 to 8 in. (6.4 to 203 mm),

inclusive, in width, 13/64 (0.2031) in. (5.159 mm) in minimum thickness up to 6 in. (152 mm) in width; and 0.230 in. (5.842 mm) in minimum thickness for over 6 to 8 in. (152 to 230 mm) in width, inclusive. Maximum thickness for all widths is 4 in. (102 mm).

3.1.4 Bar Size Shapes, angles channels, tees, zees, when their greatest cross-sectional dimension is under 3 in. (76 mm).

3.2 Cold-Finished Steel Bars: Steel bars produced by cold finishing previously hot-rolled bars by means of cold drawing, cold rolling, turning, grinding, or polishing (single or in combination) to yield straight lengths or coils in sections which are uniform throughout their length and in the following sections and sizes:

3.2.1 Rounds, 9 in. (229 mm) and under in diameter.

3.2.2 Squares, 4 in. (102 mm) and under between parallel surfaces.

3.2.3 Flats, 1/8 in. (3.2 mm) and over in thickness and not over 12 in. (305 mm) in width.

3.2.4 Hexes, 1/4 in. (6.4 mm) and over, to 3 1/8 (80 mm) .

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					 NEW HOLLAND			ENGINEERING SPECIFICATION	
ALL	C	TH	115167	10/00					
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4. REQUIREMENTS**4.1 CHEMICAL REQUIREMENTS**

4.1.1 The chemical composition of carbon steel and alloy steel bars shall conform to the requirements specified in the applicable Engineering Standards.

4.1.2 For grade designations and chemical compositions of carbon steel and alloy steel bars which are not covered in the applicable Engineering Standards refer to Tables 1 and 2 in ASTM A29 respectively.

4.1.3 Compositions other than those shown in Tables 1 and 2 of ASTM A29 shall be supplies according to the heat analysis chemical ranges and limits prescribed for carbon steel and alloy steel bars in Tables 3 and 4 of ASTM A29 respectively.

4.2 MECHANICAL REQUIREMENTS

4.2.1 The mechanical properties shall be in accordance with the mechanical properties specified in the applicable Engineering Standards as referenced in Section 1.2.1 of this standard.

4.2.2 Test Specimens

4.2.2.1 Selection: test specimens shall be select in accordance with the requirements of the applicable product specification or in accordance with Supplement 1 of the latest issue of ASTM A370, Methods and Definitions for Mechanical Testing of Steel Products.

4.2.2.2 Preparation: Unless otherwise specified in the applicable Engineering Standard, test specimens shall be prepared in accordance with the latest issue of A370, and especially Supplement 1 thereof, on steel bar products.

4.3 DIMENSIONS

4.3.1 HOT-ROLLED BARS: The permissible variations for dimensions of hot-rolled carbon and alloy steel bars shall not exceed the applicable limits stated in Tables 1 through 7, inclusive.

4.3.2 COLD-FINISHED BARS: The permissible variations for dimensions of cold-finished carbon steel and alloy steel bars shall not exceed the applicable limits stated in Tables 8 through 12, inclusive.

4.4 IDENTIFICATION

4.4.1 MARKING: Bars of all size, when loaded for shipment shall, shall be properly identified with the following:

Producer's Name, Brand or Trademark and Bulk Material Code; Grade or Specification Number; Size or Section; Length; Heat Number; Weight of Lift.

4.4.2 Unless otherwise specified, the method of marking is at the manufacturer's option and may be made by hot stamping, cold stamping, painting, or marking tags attached to the lifts of bars.

4.5 INSPECTION AND TESTING**4.5.1 HEAT OR CAST ANALYSIS**

4.5.1.1 An analysis of each cast or heat of steel shall be made by the steel manufacturer. In the event that the steel is actually supplies through a steel service center or other distribution center, it is the responsibility of the distribution agency to ensure that the heat is identifiable and the chemical analysis available as required.

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4.5.1.2 With the exception of lead (see Section 4.5.1.3) the manufacturer shall make an analysis for carbon, manganese, phosphorus, sulfur, and for any other elements specified or restricted by the applicable specification. This analysis shall be made from a test ingot taken during the pouring of the heat. The chemical composition thus determined shall be reported to the Quality Manager of New Holland or his representative, and shall conform, as to the elements required or restricted by the applicable specification, to the requirements thereof for heat analysis.

4.5.1.3 Heat analysis for lead is not determinable since lead is added to the ladle stream while each ingot is poured. When specified as an added element to the standard steel, the percentage of lead reported as 0.15 to 0.35 inclusive, which is the range commonly specified for this element.

4.5.2 WORKMANSHIP: The material shall be free of injurious defects and shall have a workmanship finish.

4.6 GENERAL

4.6.1 The steel bars and flats shall meet all applicable specifications in this standard as well as any other requirements from applicable standards.

5. PACKING AND LOADING PRACTICES

5.1 PACKAGE WEIGHT

5.1.1 The package weight shall be shown on the shipping documents.

5.1.2 The maximum package weight is 10,000 lb (4536 kg).

5.2 PROTECTION REQUIREMENTS

5.2.1 Unless otherwise specified, steel bars shall be shipped uncovered.

5.2.2 Ground and polished bars shall be crated or boxed.

5.3 TYPE OF DELIVERING CARRIER

5.3.1 Truck shipments shall be by covered gondola.

5.4 PLACEMENT ON DELIVERY CARRIER

5.4.1 Package length shall be parallel to carrier length.

5.4.2 Spacing shall be 6 in. (15.24 cm) lengthwise and crosswise between packages if applicable.

5.4.3 Coils shall have the eye horizontal and crosswise to the carrier length.

5.4.4 Skids shall be placed lengthwise, and shall have a height of 3 in. (7.62 cm).

5.5 COIL SIZES

5.5.1 Versatile: The maximum coil O.D. shall be 42 in. (106.68 cm).

5.5.2 The maximum and minimum coil I.D.'s shall be 21 in. (53.34 cm) and 19 in. (48.26 cm) respectively.

5.6 DOCUMENTATION

The material code shall appear on all documents.

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- Table 2: Thickness and Width Tolerances for Hot-Rolled Square-Edge Flat Bars of Carbon or Alloy Steel.
- Table 3: Straightness Tolerances for Hot-Rolled Bars and Bar Size Sections of Carbon or Alloy Steel.
- Table 4: Length Tolerances for Hot-Rolled Rounds, Squares, Flats, and Bar Size Sections of Carbon or Alloy Steel.
- Table 5: Thickness, Length, and Out-of-Square Tolerances for Hot-Rolled Bar Size Angles of Carbon Steel.
- Table 6: Cross Section Tolerances for Hot-Rolled Bar Size Channels of Carbon Steel.
- Table 7: Cross Section Tolerances for Hot-Rolled Bar Size Tees of Carbon Steel.

Cold-Finished Steel

- Table 8: Size Tolerances for Cold-Drawn, Cold-Finished Carbon Steel Bar.
- Table 9: Size Tolerances for Cold-Drawn, Cold-Finished Alloy Steel Bar.
- Table 10: Size Tolerances for Cold-Drawn, Ground and Polished Rounds of Cold-Finished Carbon Steel Bars.
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