

QQ-S-635B
June 28, 1976
SUPERSEDING
Fed. Spec. QQ-S-635A
April 5, 1961

FEDERAL SPECIFICATION

STEEL PLATE, CARBON

This specification was approved by the Commissioner,
Federal Supply Service, General Services Administration,
for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers forging quality, flat-rolled carbon steel plate for use in the heat-treated or non heat-treated condition.

1.2 Classification. Unless otherwise specified (see 6.2), the chemical composition of the steel shall conform to that of a standard non-resulphurized carbon plate steel as listed in Fed. Std. No. 66 under the following AISI and SAE identification numbers:

1009	1035	1045
1020	1040	1050

2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

Federal Standards:

Fed. Std. No. 66 - Steel: Chemical Composition and Hardenability
Fed. Test Method Std. No. 151 - Metals; Test Methods

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402.

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(Single copies of this specification and other product specifications required by activities outside the Federal Government for bidding purposes are available without charge from Business Service Centers at the General Services Administration Regional Offices in Boston, New York, Washington, DC, Atlanta, Chicago, Kansas City, MO., Ft. Worth, Denver, San Francisco, Los Angeles, and Seattle, WA.

(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

Military Standards:

MIL-STD-129 - Marking for Shipment and Storage

MIL-STD-163 - Steel Mill Products, Preparation for Shipment and Storage

(Copies of Military Specifications and Standards required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

American Society for Testing and Materials (ASTM) Standards:

A 6 - General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling and Bars for Structural Use.

E 8 - Tension Testing of Metallic Materials

E 10 - Brinell Hardness of Metallic Materials

E 23 - Notched Bar Impact Testing of Metallic Materials

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

3. REQUIREMENTS

3.1 Material. The steel shall be a killed steel produced by either the open-hearth, basic oxygen, or electric-furnace processes.

3.2 Surface condition. Unless otherwise specified (see 6.2), plates shall be furnished in the as-rolled condition. Surface conditioning shall be permitted providing the conditioned plate meets each of the requirements of section 3.

3.3 Chemical composition.

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3.3.1 Heat analysis. The chemical composition of the steel shall be as specified by the purchaser (see 6.2), and shall, unless otherwise indicated, conform to the requirements of Fed. Std. No. 66 for non-resulphurized carbon steel for plate. A chemical analysis shall be made by the manufacturer on each heat and the composition shall be reported to the purchaser.

3.3.2 Product analysis. The chemical composition of the steel plate shall conform to the ordered composition, within the check analysis limits of Fed. Std. No. 66.

3.4 Mechanical properties. When mechanical tests are required, the hardness, tensile properties, bend properties and Charpy V-notched bar impact value of the steel plate shall be as specified in the contract or order (see 6.2).

3.5 Surface finish. When specified, surface finish shall be as specified in the contract or order.

3.6 Dimensions and tolerances. Dimensions and tolerances of the carbon steel plate shall be in accordance with the applicable portions of ASTM A 6.

3.6.1 Restrictive thickness. When sheared or universal mill plate is ordered rolled to a restrictive thickness tolerance, the plate shall not vary from the ordered thickness by more than the amounts shown in table I.

TABLE I. Permissible variations in thickness of sheared and universal mill plates ordered to "restrictive" thickness

Ordered thickness	Permissible variations ^{1/} from ordered thickness, plus and minus for widths given, in inches			
	12 and under	Over 12 to 24, exclusive	24 to 36 exclusive	36 to 60 exclusive
Inches	Inch	Inch	Inch	Inch
To 3/8, exclusive	0.012	0.012	0.014	0.016
3/8 to 1/2, exclusive	.012	.014	.016	.018
1/2 to 3/4, exclusive	.014	.016	.018	.020
3/4 to 1, exclusive	.016	.018	.020	.022
1 to 1-1/2, exclusive	.020	.022	.024	.026
1-1/2 to 2, exclusive	.024	.026	.028	.030

^{1/} A minus variation of 0.01 inch is sometimes specified. In such cases, the permissible plus variation shall be twice the above tabular values minus 0.01 inch.

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3.7 Identification marking. Each plate shall be marked with the steel heat number, manufacturer's name, SAE steel identification number, size and thickness, and any additional information specified (see 6.2).

3.8 Workmanship. The plates shall be free from injurious defects and shall have a workmanlike finish. Plates may be conditioned by the manufacturer in order to eliminate surface imperfections. When surface conditioning is necessary, the surface shall be well faired and the thickness of the plate shall not be reduced below the permissible minimum thickness. The reduction shall not exceed 5% of the plate nominal thickness or 3/32 inch, whichever is less.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.2 Lot. A lot shall consist of plate of one size, produced from the same heat of steel and processed as a production unit and submitted for inspection at the same time. When plate is heat-treated in a batch furnace, all of the plate in the lot shall be from the same batch. When plate is heat-treated in a continuous furnace, the plate in each lot shall be from the same continuous furnace heat-treat cycle.

4.3 Sampling.

4.3.1 For chemical product analysis. At least one sample shall be taken from each lot for product analysis. Samples shall be taken in accordance with method 111 or 112 of Fed. Test Method Std. No. 151.

4.3.2 For tension tests. When tension tests are specified (see 6.2), two test samples shall be taken from each lot. Samples shall be taken from a corner of the plate in its delivered condition except that when heat-treatment is specified, samples may be taken from full thickness coupons heat-treated simultaneously with the plate.

4.3.3 For bend tests. When bend tests are specified, samples shall be taken in accordance with ASTM A 6 procedures or as otherwise specified in the contract or order (see 6.2).

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4.3.4 For hardness tests. When hardness testing is specified, samples shall be obtained as specified by the purchaser (see 6.2).

4.3.5 For Charpy impact test. When impact tests are specified, samples shall be taken from the steel plate as directed by the purchaser.

4.4 Examination.

4.4.1 Visual. Each steel plate shall be subject to visual inspection for compliance with workmanship requirements (see 3.8).

4.4.2 Dimensional. All material shall be subject to examination for compliance with dimensional requirements (see 3.6).

4.4.3 Preparation for delivery. Prior to shipment, examination shall be made to determine compliance with the requirements of section 5.

4.5 Tests.

4.5.1 Chemical composition. Chemical analysis shall be conducted in accordance with method 111 or 112 of Fed. Test Method Std. No. 151. In case of dispute, the analysis by method 111 shall be the basis for acceptance or rejection.

4.5.2 Tension test. Tension test specimens shall be prepared and tested in accordance with ASTM E 8.

4.5.3 Hardness test. Hardness testing shall be conducted in accordance with ASTM E 10.

4.5.4 Impact test. Charpy V-notch specimens shall be prepared and tested in accordance with ASTM E 23.

4.5.5 Bend test. Bend tests shall be conducted as specified in the contract or order (see 6.2).

5. PREPARATION FOR DELIVERY

5.1 Preservation and packaging. Preservation and packaging shall be level A or C as specified (see 6.2).

5.1.1 Level A. Preservation and packaging for shipment shall be in accordance with MIL-STD-163.

5.1.2 Level C. Preservation and packaging shall be in accordance with supplier's standard practice.

5.2 Packing. Plate shall be packed for shipment in accordance with level A or C as specified (see 6.2).

5.2.1 Level A. Packing for shipment shall be in accordance with MIL-STD-163.

5.2.2 Level C. Packing shall be in accordance with commercial practice adequate to ensure acceptance and delivery by the carrier for the mode of transportation employed.

5.3 Marking. Separate plates and lifts shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. The carbon steel plates covered by this specification are intended for use in the manufacture of items requiring a forging quality heat-treated or non heat-treated carbon steel.

6.2 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in procurement documents:

- a. Title, number, and date of this specification.
- b. Composition of steel plate (see 1.2, 3.3.1 and 3.3.2).
- c. Surface condition if plates are ordered in other than in the as-rolled condition (see 3.2).
- d. Mechanical property requirements (see 3.4, 4.3.2, 4.3.3, 4.3.4, 4.3.5 and 4.5.5).
- e. Surface finish requirements (see 3.5)
- f. Plate thickness, dimensions, quantity and weight required (see 3.6).
- g. Restrictive tolerances on thickness (see 3.6.1).
- h. Additional identification marking required (see 3.7).
- i. Level of preservation and level of packing required (see 5.1).

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Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein. Price 30 cents each.

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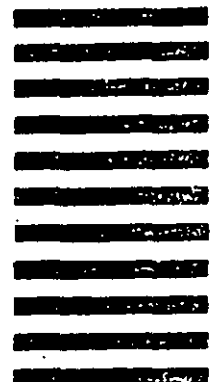
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