

QQ-T-580C  
May 25, 1977  
SUPERSEDING  
QQ-T-580B  
August 26, 1968

## FEDERAL SPECIFICATION

### TOOL STEEL, CARBON AND CARBON-VANADIUM

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 water-hardening, wrought, carbon tool steel as described in ASTM A686.

1.2 Classification. Material in accordance with this specification is classified by chemical composition. Types correspond to respective AISI designations.

1.2.1 Type W1 is an unalloyed carbon steel available in several carbon ranges.

1.2.2 Type W2 is characterized by a nominal vanadium content of 0.25 percent and is also available in several carbon ranges.

1.2.3 Type W5 is characterized by a nominal chromium content of 0.50 percent.

1.2.4 A suffix following the type designation is added to denote the minimum carbon content of the carbon range to be specified.

1.2.5 Types W1 and W2 are further classified by quality levels, namely, Grade A and Grade C.

1.2.5.1 Grade A is sometimes referred to as Extra or Special. It is controlled for hardenability; the chemical composition is held to closest limits; and it is subject to rigid tests to ensure uniformity. Grade A is available with three degrees of hardenability, namely, shallow hardening, regular hardening, and deep hardening.

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1.2.5.2 Grade C is sometimes referred to as Regular or Standard. It is intended for applications that do not require controlled hardenability and where some latitude in uniformity is permissible.

## 2. APPLICABLE DOCUMENTS

2.1 In addition to the applicable documents shown in ASTM A 686, Tool Steel, Carbon and Carbon-Vanadium, 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. Unless otherwise specified in the contract or order, the latest revision of A 686 accepted by the Government shall apply.

### Federal standards:

Fed. Std. No. 123 - Marking for Shipment (Civil Agencies.)

Fed. Std. No. 183 - Continuous Identification Marking of Iron and Steel Products.

(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.

(Single copies of this specification and other Federal 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, Fort Worth, Denver, San Francisco, Los Angeles and Seattle, WA.

(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and Index of Federal Specifications and Standards from the 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 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 document forms 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.

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American Society for Testing and Materials (ASTM):

A 700 - Recommended Practices for Packaging, Marking, and Loading Methods for Steel Products for Domestic Shipment.

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

## 3. REQUIREMENTS

3.1 The requirements for chemical composition, hardness, macrostructure, and decarburization shall be as specified in A 686.

3.2 Dimensions and dimensional tolerances shall be in accordance with the requirements of A 686, section 10 and tables 4, 5, 6, 7, 9, 11, 13, 15, 16, 17, 18, 19, and 20.

3.3 Workmanship. Carbon tool steels shall meet the workmanship requirements of section 11 of A 686.

3.4 When ultrasonic or cleanliness requirements and tests are specified in the contract or order, they shall be in accordance with the supplementary requirements of A 686.

3.5 Identification marking. The tool steel material shall be marked with the name or brand of manufacturer, number of this specification, heat number, grade or type, and where appropriate, the size, length, and weight. Unless otherwise specified in the contract or order, the method of marking is at the option of the manufacturer.

3.5.1 For Government procurement by the Defense Supply Agency, steel shall be continuously marked for identification in accordance with Fed. Std. No. 183.

## 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract the contractor 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 supplies and services conform to prescribed requirements.

4.2 Lot. Unless otherwise specified in the contract or order, a lot shall consist of all material submitted for inspection at the same time, of the same heat, type, finish, and size, and when heat treated, subjected to the same heat treatment.

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#### 4.3 Sampling.

4.3.1 For Chemical Analysis. At least one sample shall be selected from each heat to determine compliance with the requirements of table I of A 686.

4.3.2 For hardness test. Five samples or five percent (whichever is less) of the pieces in a lot shall be randomly selected for hardness tests.

4.3.3 For macrostructure examination. One sample shall be selected from each lot as described in A 686.

4.3.4 For decarburization examination. One sample shall be selected from each lot as described in A 686.

4.3.5 Examination, inspection, and test procedures for the carbon tool steel material shall be conducted in accordance with A 686.

4.3.6 Rejection and retest shall be in accordance with sections 15 and 16 of A 686.

#### 5. PREPARATION FOR DELIVERY

##### 5.1 Packaging and loading.

5.1.1 Unless otherwise specified, shipments shall be packaged and loaded in accordance with Recommended Practices A 700.

5.1.2 When specified in the contract or order, and for direct procurement by or direct shipment to the Government, when level A is specified, preservation, packaging, and loading shall be in accordance with the level A requirements of MIL-STD-163.

##### 5.2 Marking.

5.2.1 When specified in the contract or order, and for direct procurement by or direct shipment to the Government, marking for shipment, in addition to any requirements specified in the contract or order, shall be in accordance with MIL-STD-129 for Military agencies, and in accordance with Fed. Std. No. 123 for Civil agencies.

#### 6. NOTES

##### 6.1 Procurement documents should specify the following:

- a. Title, number, and date of this specification.
- b. Type of tool steel and its carbon content and grade when applicable.
- c. When a revision other than the latest revision of the document is to be used (see 2.1).
- d. Form, dimensional requirements, finish, condition, and supplementary requirements shown in section 4 of A 686.

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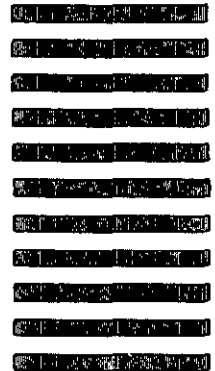
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