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MILITARY STANDARD

WELDING, GAS: STEELS, CONSTRUCTIONAL,
READILY WELDABLE, FOR LOW-STRESSED JOINTS



FSC THJM

MIL-STD-1183(AT)

DEPARTMENT OF DEFENSE
WASHINGTON, DC 20301

Welding, Gas: Steels, Constructional, Readily Weldable,
for Low-Stressed Joints
MIL-STD-1183(AT)

1. This Military Standard is approved for use by US Army Tank-Automotive Materiel Readiness Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.
2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: US Army Tank-Automotive Materiel Readiness Command, ATTN: DRSTA-GSS, Warren, MI 48090, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document, or by letter.

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FOREWARD

This book form standard contains instructions intended to standardize the recording and use of welding procedures on welding of readily weldable steels. This is not a procurement document.

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1. SCOPE

1.1 Coverage. This standard covers oxy-acetylene gas welding of readily weldable constructional steels when joint strength is not a consideration in the function of the part.

1.2 Usage. Examples of weldments for which this standard may be used are as follows:

- a. Attachments and brackets.
- b. Fenders.
- c. Heater ducts.
- d. Safety shields.
- e. Most types of sheet metal assemblies.

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2. REFERENCED DOCUMENTS

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

SPECIFICATIONS

MILITARY

- | | |
|------------|--|
| MIL-R-5031 | - Rods and Wire, Welding, Corrosion and Heat Resisting Alloys. |
| MIL-R-5632 | - Rod and Wire, Steel Welding (for Aircraft). |

(Copies of specifications and publications required by the 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 standard to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

AMERICAN WELDING SOCIETY

- | | |
|----------|------------------------------------|
| AWS A5.2 | - Iron and Steel Gas Welding Rods. |
|----------|------------------------------------|

(Application for copies should be addressed to American Welding Society, 2501 N.W. 7th Street, Miami, FL 33125.)

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3. DEFINITIONS

3.1 Contractor, manufacturer. The term "contractor" as used in this standard is defined as the organization having a direct contract with one Government agency. The term "manufacturer" is defined as the organization actually performing the operations covered by this standard. The contractor may or may not be the manufacturer.

3.2 Readily weldable steels. Readily weldable steels are those with a maximum carbon equivalent of 0.40% (percent). Carbon equivalent (CE) shall be determined by the following formula:

$$CE = \%C + \frac{\%Mn}{6} + \frac{\%Mo}{4} + \frac{\%Cr}{5} + \frac{\%Ni}{15} + \frac{\%Cu}{3} + \frac{\%P}{3}$$

When phosphorous does not exceed 0.06 percent, the value "%P" may be omitted.

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4. GENERAL REQUIREMENTS

4.1 Welding operator. Qualification of welding operators shall be the responsibility of the contractor.

4.2 Welding procedure. When specified, a welding procedure shall be recorded prior to production of any weldment. No procedure qualification, other than a workmanship specimen, shall be required.

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5. DETAIL REQUIREMENTS

5.1 Recorded welding procedures. The following factors shall be included in the recorded welding procedure:

- a. Joint sketch.
- b. Joint type and preparation.
- c. Base metal type.
- d. Filler metal: size and type.
- e. Gas mixture and flow.
- f. Position of welding.
- g. Torch type and size.
- h. Tip type and size.
- i. Method and material of backing.

5.1.1 Use of procedures. The recorded joint welding procedure shall be retained by the contractor or manufacturer. This information shall not be submitted to the Government but the recorded joint welding procedure shall be made available upon request by the contracting officer or his authorized representative.

5.2 Workmanship specimen. The contractor or manufacturer shall prepare workmanship specimens using the recorded welding procedure. The specimens shall be free of cracks and shall represent the minimum acceptable weld quality and cleaning procedure to be used in production.

5.3 Filler metals. Unless otherwise specified, filler metals for the purpose used shall conform to MIL-R-5031, MIL-R-5632 or AWS A5.2, as applicable. If filler metal for the process is not available in the above documents, suitable commercial filler metal may be selected. Selected filler metal shall meet the lowest yield strength of the base metal being welded, but shall not exceed the yield strength of a 60,000 psi yield strength class of electrodes.

5.4 Repair welding procedures. All repair welds shall be made in accordance with 5.1 and the following procedures shall be used:

- a. Burn-through:
Remove slag and oxides and clean by either grinding or drilling out the burned-through area to clean, solid metal and reweld.
- b. Excessive porosity:
Remove slag and oxides, and prepare imperfections for rewelding by grinding to solid metal.
- c. Undercutting:
Remove slag and oxides, clean and reweld.

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5.5 Inspection.

5.5.1 Weld quality. Appearance of welded and repaired areas shall equal or exceed that exhibited by workmanship specimens. Inspection shall be made prior to application of any protective coating and the procedures of 5.1 or 5.4 shall be followed.

5.5.2 Welding operator. The welding operators work shall be checked to assure that the weldments are equal to or better than the approved workmanship specimen.

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