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An American National Standard

Guide for Welding Mild Steel Pipe

American Welding Society

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Guide for Welding Mild Steel Pipe

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Approved by
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Abstract

This document presents recommended practices for welding mild steel pipe. It is intended to cover piping systems such as for low pressure heating, air conditioning, refrigeration, water supplies, as well as some gas or chemical systems. It provides welding techniques for oxyacetylene, shielded metal arc, gas tungsten arc, gas metal arc, and flux cored arc welding. This document does not address the needs of pipe steels or service conditions which may require Post Weld Heat Treatment (PWHT).

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1. Scope

This guide is intended to cover such piping systems as low pressure heating, air-conditioning, refrigeration, and water supply, as well as some gas and chemical systems. These procedures include detailed welding process techniques that may be useful for teaching welders. Processes included are Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW), Gas Tungsten Arc Welding (GTAW), Gas Shielded Flux Cored Arc Welding (FCAW-G) Flux Cored Arc Welding—Self-Shielded (FCAW-S), and Oxyfuel Welding (OFW). Qualification of these procedures to any welding standard is the responsibility of the user. This document does not address the needs of pipe steels or service conditions which may require post weld heat treatment (PWHT).

This standard makes use of both the International System of Units (SI) and U.S. Customary Units. The measurements may not be exact equivalents; therefore, each system must be used independently of the other without combining in any way. The standard with the designation D10.12:2000M uses SI Units. The standard designation D10.12M:2000 uses U.S Customary Units. The latter are shown within brackets ( ) or in appropriate columns in tables and figures. Pipe sizes are listed as DN (diameter nominal) and NPS (nominal pipe size). The exact pipe diameters are in Table C1.

2. Reference Documents

AWS D10.11, *Recommended Practices for Root Pass Welding of Pipe Without Backing*

AWS A3.0, *Standard Welding Terms and Definitions*

ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes* (available from the American Welding Society)

AWS *Safety and Health Facts Sheets*

AWS A5.1, S*pecification for Carbon Steel Electrodes for Shielded Metal Arc Welding*

AWS A5.2, *Specification for Carbon and Low-Alloy Steel Rods for Oxyfuel Gas Welding*

AWS A5.12/A5.12M, *Specification for Tungsten and Tungsten Alloy Electrodes for Arc Welding and Cutting*

AWS A5.18, *Specification for Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding*

AWS A5.20, S*pecification for Carbon Steel Electrodes for Flux Cored Arc Welding*

AWS A5.32/A5.32M, *Specification for Welding Shielding Gases*

AWS B1.10, *Guide for Nondestructive Examination of Welds*

AWS B1.11, *Guide for the Visual Inspection of Welds*

AWS B2.1, *Standard for Welding Procedure and Performance Qualification*

AWS B4.0, *Standard Methods for Mechanical Testing of Welds*

AWS F4.1, *Recommended Safe Practices for Preparation for Welding and Cutting of Containers and Piping*

ASME Boiler and Pressure Vessel Code; Section IX, *Qualification Standard for Welding and Brazing Procedures, Welders, Brazers, and Welding and Brazing Operators*[1]

API 1104, *Standard for Welding Pipelines and Related Facilities*[2]

1. American Society of Mechanical Engineers, 3 Park Avenue, New York, NY 10016, (212) 591-8500.
2. Available from the American Welding Society and from the American Petroleum Institute, 1220 L Street NW, Washington DC 20005, (202) 682-8000.