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Recommended Practices for Surfacing and Reconditioning of Industrial Mill Rolls



American Welding Society



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Recommended Practices for Surfacing and Reconditioning of Industrial Mill Rolls

1st Edition

Prepared by the
American Welding Society (AWS) D14 Committee on Machinery and Equipment

Under the Direction of the
AWS Technical Activities Committee

Approved by the
AWS Board of Directors

Abstract

This standard provides guidance, based upon experience, for preparing, building up and overlaying by welding, postweld heat treating, finish machining, inspecting, and record-keeping of new and reconditioned industrial mill rolls.



American Welding Society

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Recommended Practices for Surfacing and Reconditioning of Industrial Mill Rolls

1. Scope

An industrial mill roll can be defined as any roll or cylindrical body that transports, processes, guides or performs a function in creating a product in the heavy metals, paper, plastic, or lumber industries. These rolls can come in many shapes and sizes (as shown in Figure 1), and include, but are not limited to, table rolls, guide rolls, caster rolls, pinch rolls, leveler rolls, straightener rolls, bridle rolls, and blocker rolls.

This standard provides guidance, based upon experience, for preparing, building up and overlaying by welding, postweld heat treating (PWHT), finish machining, inspecting, and record-keeping of new and reconditioned industrial mill rolls. While mainly used in the primary metal-working industry, industrial mill rolls are also used in other applications. Because common practice predominately employs submerged arc welding (SAW), this document emphasizes SAW. However many of the principles are applicable, with suitable modifications, to gas metal arc welding (GMAW), flux cored arc welding (FCAW), and electroslag cladding.

This standard makes use of both U.S. Customary Units and the International System of Units (SI). The measurements may not be exact equivalents; therefore each system should be used independently of the other without combining in any way. The designation D14.7 uses U.S. Customary Units. The designation D14.7M uses SI Units. The latter are shown in appropriate columns in tables and figures or within brackets []. Detailed dimensions on figures are in inches. A separate tabular form that relates the U.S. Customary Units with SI Units may be used in tables and figures.

Safety and health issues and concerns are beyond the scope of this standard, and therefore are not fully addressed herein. Safety and health information is available from other sources, including, but not limited to, ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*, and applicable federal and state regulations.

Welding symbols shown on drawings should be compatible with those shown in AWS A2.4, *Standard Symbols for Welding, Brazing, and Nondestructive Examination*. Special conditions or deviations should be fully explained by added notes, details, or definitions.

2. Normative References

The following standards contain provisions which, through reference in this text, constitute provisions of this AWS standard. For undated references, the latest edition of the referenced standard shall apply. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply.

2.1 AWS References¹

1. AWS A2.4, *Standard Symbols for Welding, Brazing, and Nondestructive Examination*
2. AWS A3.0, *Standard Welding Terms and Definitions*
3. AWS A5.17, *Specification for Carbon Steel Electrodes and Fluxes for Submerged Arc Welding*
4. AWS A5.23, *Specification for Low Alloy Steel Electrodes and Fluxes for Submerged Arc Welding*
5. AWS B4.0, *Standard Methods for Mechanical Testing of Welds*

2.2 ASTM References²

1. ASTM A 388, *Standard Practice for Ultrasonic Examination of Heavy Steel Forgings*

¹ AWS standards are published by the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

² ASTM standards are published by the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.