RULES FOR

MATERIALS AND WELDING
2017

PART 2

American Bureau of Shipping
Incorporated by Act of Legislature of
the State of New York 1862

ABS Plaza
16855 Northchase Drive
Houston, TX 77060 USA

5.21 Fillet Weld Ends *(2010)*

The ends of fillet welds should be seal welded at terminations of structural members and in way of cut-outs or air, drainage, or lightening holes etc.

5.23 Post Weld Heat Treatment of Welds in Dissimilar Materials *(2011)*

Post weld heat treatment of welds between dissimilar materials, carbon steel to stainless steels or high alloy steels, including weld metal overlay clad base material or parts, requires the prior approval of ABS Materials.

7 Butt Welds

7.1 Manual Welding Using Covered Electrodes

Manual welding using covered electrodes may be ordinarily employed for butt welds in members not exceeding 6.5 mm ($^1/_4$ in.) in thickness without beveling the abutting edges. Members exceeding 6.5 mm ($^1/_4$ in.) are to be prepared for welding in a manner acceptable to the Surveyor by using an appropriate edge preparation, root opening and root face (land) to provide for welding from one or both sides. For welds made from both sides, the root of the first side welded is to be removed to sound metal by an approved method before applying subsequent weld passes on the reverse side. Where welding is to be deposited from one side only, using ordinary welding techniques, appropriate backing (either permanent or temporary) is to be provided. The backing is to be fitted so that spacing between the backing and the members to be joined is in accordance with established procedures. Unless specially approved otherwise, splices in permanent backing strips are to be welded with full penetration welds prior to making the primary weld.

7.3 Submerged-arc Welding

Submerged-arc welding, using wire-flux combinations for butt welds in members not exceeding 16 mm ($^5/_8$ in.) in thickness, may be ordinarily employed without beveling the abutting edges. Members exceeding 16 mm ($^5/_8$ in.) are normally to be prepared for welding in a manner acceptable to the Surveyor by using an appropriate edge preparation, root opening and root face (land) to provide for welding from one or both sides. When it is determined that sound welds can be made without back gouging, the provisions of 2-4-1/5.9 are not applicable. Where the metal is to be deposited from one side only, using ordinary welding techniques, backing (either permanent or temporary) is to be provided and the members are to be beveled and fitted in accordance with established procedures.

7.5 Gas Metal-arc and Flux Cored-arc Welding *(2005)*

Semiautomatic or mechanized gas metal-arc welding and flux cored-arc welding using wire-gas combinations and associated processes may be ordinarily employed utilizing the conditions as specified in 2-4-1/7.1, except that specific joint designs may differ between processes.

Short circuit gas metal arc welding (GMAW-S) is to be restricted to welding thickness up to 6.5 mm ($^1/_4$ in.) unless specially approved otherwise (see 2-4-3/11.3 for special requirement for welder qualification).

7.7 Electroslag and Electrogas Welding

The use of electroslag and electrogas welding processes will be subject to special consideration, depending upon the specific application and the mechanical properties of the resulting welds and heat-affected zones. See 2-4-1/1.9.

7.9 Special Welding Processes and Techniques *(2008)*

Special welding techniques employing any of the basic welding processes mentioned in 2-4-1/7.1 through 2-4-1/7.7 will also be specially considered, depending upon the extent of the variation from the generally accepted technique. Such special techniques include narrow-gap welding, tandem-arc welding and consumable guide electroslag welding. In addition, the use of gas tungsten arc welding will be subject to special consideration, depending upon the application and whether welding is manual or mechanized. Welding processes such as friction stir welding and hybrid laser welding will be specially considered.