

AWS D8.14M:2008
An American National Standard



Specification for Automotive Weld Quality— Arc Welding of Aluminum



American Welding Society



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Specification for
Automotive Weld Quality—
Arc Welding of Aluminum

2nd Edition

Supersedes AWS D8.14M/D8.14:2000

Prepared by the
American Welding Society (AWS) D8 Committee on Automotive Welding

Under the Direction of the
AWS Technical Activities Committee

Approved by the
AWS Board of Directors

Abstract

This specification covers the arc welding of automotive and light truck components that are manufactured from aluminum alloys.



American Welding Society

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Foreword

This foreword is not part of AWS D8.14M:2008, *Specification for Automotive Weld Quality—Arc Welding of Aluminum*, but is included for informational purposes only.

This specification supersedes D8.14M/D8.14:2000, *Specification for Automotive and Light Truck Components Weld Quality—Aluminum Arc Welding*, and was revised and enhanced by the D8C Subcommittee on Automotive Arc Welding of the AWS D8 Committee on Automotive Welding. This edition makes sole use of the International System of Units (SI).

Recent changes in automotive design caused by the desire to reduce fuel consumption have resulted in new automotive structures being made of aluminum. This specification was undertaken to prepare minimum standards for manual, automatic, and robotic arc welding of aluminum components associated with the body and supporting structural members such as body panels, bumpers, frames, space frames, cradles, wheels, drive shafts, and suspensions.

One objective of the committee was to prepare a specification that could be used by smaller suppliers of automotive components, who generally have no standards of their own for minimum arc welding quality.

All revisions to the 2000 edition are identified by a vertical line in the margin next to the text.

Comments and suggestions for the improvement of this standard are welcome. They should be sent to the Secretary, AWS D8 Committee on Automotive Welding, American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

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Specification for Automotive Weld Quality— Arc Welding of Aluminum

1. Scope

The purpose of this specification is to provide the minimum acceptance criteria for arc welding of various types of structural automotive parts made of aluminum for passenger cars, light trucks, and other types of vehicles.

This standard makes sole use of the International System of Units (SI).

Safety and health issues may not be fully addressed by this standard. Users of this standard should consult ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*, applicable federal, state, and local regulations and other relevant documents concerning safety and health issues not addressed herein.

2. Normative References

The following standards contain provisions which, through reference in this text, constitute mandatory 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.

AWS documents:¹

AWS A3.0, *Standard Welding Terms and Definitions, Including Terms for Adhesive Bonding, Brazing, Soldering, Thermal Cutting, and Thermal Spraying*; and

AWS A5.10/A5.10M, *Specification for Bare Aluminum and Aluminum-Alloy Welding Electrodes and Rods*.

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

3. Terms and Definitions

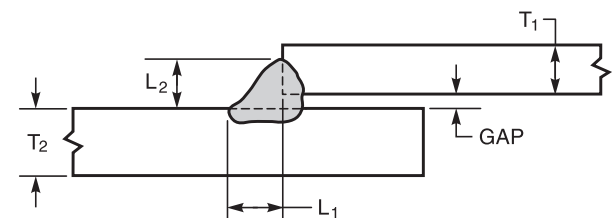
All of the terms in this clause are used in various parts of this document and require definitions for correct interpretation of the instructions. Most of these terms are not contained in AWS A3.0, *Standard Welding Terms and Definitions, Including Terms for Adhesive Bonding, Brazing, Soldering, Thermal Cutting, and Thermal Spraying*. Some of the terms are listed in AWS A3.0 but their definitions have been enhanced to clarify their use in this document.

discrepant weld. A weld differing from the requirements of this standard. Even though this weld differs, it still may have useful engineering properties.

effective weld length. That portion of a weld meeting all the minimum acceptance requirements of the specification.

gap. The distance or air space between two base components (see Figure 1). Note: For butt weld joints, this distance can be referred to as the *root opening*.

meltback. This occurs where the base metal melts back from an edge, but does not become part of the weld. This condition leaves a void between the weld deposit and the base metal (see Figure 2).



Minimum Acceptable Leg Lengths:
 $L_1 = 0.9 T_1$
 $L_2 = 0.9 T_1 + \text{GAP}$

T_1 = Thickness of thinner sheet

Figure 1—Minimum Acceptable Leg Length Requirements in a Lap Joint