


AWS D8.1M:2021  
An American National Standard



# Specification for Automotive Weld Quality Resistance Spot Welding of Steel



**AWS D8.1M:2021**  
**An American National Standard**

**Approved by**  
**American National Standards Institute**  
**May 5, 2021**

**Specification for**  
**Automotive Weld Quality—**  
**Resistance Spot Welding of Steel**

**3rd Edition**

**Revises AWS D8.1M:2013**

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

Under the Direction of the  
AWS Technical Activities Committee

Approved by the  
Board of Directors

**Abstract**

This document contains both visual and measurable acceptance criteria for resistance spot welds in steels. The information contained herein may be used as an aid by designers, resistance welding equipment manufacturers, welded product producers, and others involved in the automotive industry and resistance spot welding of steels.



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## Foreword

This foreword is not part of this standard, but is included for informational purposes only.

This publication supersedes the second edition of the D8.1M:2013, *Specification for Automotive Weld Quality-Resistance Spot Welding of Steel*. The content of the standard has changed in the areas with vertical lines adjacent to the text.

This document has been prepared to establish acceptance criteria for resistance spot welds in automotive structures fabricated from steels including the Advanced High Strength Steels (AHSS). As a specification, the criteria and techniques contained are obligatory when cited as a normative reference on a drawing or in a contract.

This specification was prepared by the D8D Subcommittee on Automotive Resistance Spot Welding of the AWS D8 Committee on Automotive Welding. This publication is issued under the auspices of the AWS D8 Committee on Automotive Welding.



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# Specification for Automotive Weld Quality—Resistance Spot Welding of Steel

## 1. General Requirements

**1.1 Scope** This specification defines quality characteristics and metrics pertinent to resistance spot welds on steels used in automotive applications. The evaluation methods and inspection criteria specified herein can be used to evaluate the effectiveness of particular welding equipment and procedures used to weld a particular base material combination. The criteria and metrics are the same for all welds regardless of the service load. The quality standards established by this specification do not constitute a lower bound of suitability for service; welds that do not meet the weld quality criteria of this specification may be satisfactory for certain applications. The acceptance criteria of this standard are not intended for applications outside this scope (such as post-crash weld quality assessment): attempts to do so may lead to an erroneous result.

The specific type and number of tests that are required shall be at the discretion of the specifying party. While the test methods were developed to compare the welding behavior of different steel grades, they can be judiciously applied to evaluate other aspects of welding behavior. Not all of the above mentioned tests are required to establish the resistance spot welding behavior of a given grade of steel.

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

**1.3 Safety** Safety issues and concerns are addressed in this standard, although health issues and concerns are beyond the scope of this standard. Safety and health information is available from the following sources:

American Welding Society:

- (1) ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*
- (2) AWS Safety and Health Fact Sheets
- (3) Other safety and health information on the AWS website

Material or Equipment Manufacturers:

- (1) Safety Data Sheets (SDS) supplied by materials manufacturers
- (2) Operating Manuals supplied by equipment manufacturers

Applicable Regulatory Agencies

Work performed in accordance with this standard may involve the use of materials that have been deemed hazardous, and may involve operations or equipment that may cause injury or death. This standard does not purport to address all safety and health risks that may be encountered. The user of this standard should establish an appropriate safety program to address such risks as well as to meet applicable regulatory requirements. ANSI Z49.1 should be considered when developing the safety program.

## 2. Normative References

The documents listed below are referenced within this publication and are mandatory to the extent specified herein. 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.