

ANSI/AWS B2.1-1-002-90 (R2006)
An American National Standard

Standard Welding Procedure
Specification (WPS) for

**Gas Tungsten Arc
Welding of Carbon
Steel (M-1/P-1,
Group 1 or 2),
3/16 through 7/8 inch,
in the As-Welded
Condition, With or
Without Backing**

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American Welding Society

Key Words—Welding procedure specification, base metal, allowable joint designs, filler metal, carbon steel, plate and pipe, manual shielded metal arc welding

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**Approved by the
American National Standards Institute
December 18, 1989**

**Standard Welding Procedure
Specification (WPS)
Gas Tungsten Arc Welding of Carbon Steel,
(M-1/P-1, Group 1 or 2),
3/16 through 7/8 inch, in the As-Welded Condition,
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Prepared by the
American Welding Society (AWS) B2 Committee on Welding Qualification

Under the Direction of the
AWS Technical Activities Committee

Approved by the
AWS Board of Directors

Abstract

This standard contains the essential welding variables for carbon steel plate and pipe in the thickness range of 3/16 through 7/8 in., using manual gas tungsten arc welding. It cites the base metals and operating conditions necessary to make the weldment, the filler metal specifications, and the allowable joint designs for fillet and groove welds.



American Welding Society

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Foreword

This foreword is not a part of ANSI/AWS B2.1-1-002 (R2006), *Standard Welding Procedure Specification (WPS) Gas Tungsten Arc Welding of Carbon Steel, (M-1/P-1, Group 1 or 2), 3/16 through 7/8 inch, in the As-Welded Condition, With or Without Backing*, but is included for informational purposes only.

The American Welding Society and the Welding Research Council have joined in a cooperative effort to generate standard welding procedures for industry. The need for pretested welding procedures that are supported by adequate test data and that satisfy the technical requirements for the commonly used construction codes and specifications has been expressed by many individuals and organizations. The purpose of a welding procedure qualification is to provide test data for assessing the properties of a weld joint.

This Welding Procedure Specification is an outgrowth of the coordinated work of the Welding Procedures Committee of the WRC and the Committee on Welding Qualification of the AWS. The Welding Procedures Committee has provided the test data documented on the Summary of Procedure Qualification Records.

The welding terms used in this specification shall be interpreted in accordance with the definitions given in the latest edition of ANSI/AWS A3.0, *Standard Welding Terms and Definitions*. Welding symbols shall be those shown in the latest edition of ANSI/AWS A2.4, *Symbols for Welding and Nondestructive Testing*.

The AWS Committee on Welding Qualification was formed in 1979 to provide welding standards concerning the subject of qualification. The primary document developed by this committee is AWS B2.1, *Standard for Welding Procedure and Performance Qualification*. This document established the foundation and framework for Standard Welding Procedure Specifications.

Comments and suggestions for the improvement of this standard are welcome. They should be sent to the Secretary, AWS B2 Committee on Welding Qualification, American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

Standard Welding Procedure Specification (WPS)

Gas Tungsten Arc Welding of Carbon Steel (M-1/P-1, Group 1 or 2), 3/16 through 7/8 inch, in the As-Welded Condition, With or Without Backing.

Welding Research Council¹ — Supporting PQR Numbers: 003B, 004A, 029A, 030A

Application

The data to support this Standard Welding Procedure Specification (WPS) have been derived from two or more Procedure Qualification Records (PQR's) completed according to the requirements in AWS B2.1 under the auspices of the Welding Research Council. This Standard WPS is not valid using conditions and variables outside the ranges listed. The American Welding Society considers that this Standard WPS presents information for producing an acceptable weld using the conditions and variables listed. The user needs a significant knowledge of welding and accepts full responsibility for the performance of the weld and for providing the engineering capability, qualified personnel, and proper equipment to implement this Standard Welding Procedure Specification.

The referencing fabrication code or specification and the engineering requirements are intended to specify any requirements related to design, need for heat-treatment, fabricating, tolerances, quality control, safe welding and

testing practices, and examinations and tests applicable to the end product.

A Standard WPS does not replace or substitute for fabrication codes, specifications, contract requirements, or capability and judgement on the part of the user. A Standard WPS is to be used only as permitted by the applicable fabrication code, specification, or contract document. The ability to produce production welds having properties suitable for the application depends upon supplementing the Standard WPS with appropriate performance qualification tests and sound engineering judgement.

A Standard WPS may be supplemented by attached or referenced information and instructions that may be necessary to make an acceptable weldment.

Safety precautions shall conform to the latest edition of ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*, published by the American Welding Society.

This specification may involve hazardous materials, operations, and equipment. The specification does not purport to address all of the safety problems associated with its use. It is the responsibility of the user to establish appropriate safety and health practices. The user should determine the applicability of any regulatory limitations prior to use.

1. Welding Research Council, P.O. Box 201547, Shaker Heights, OH 44120.