

Evaluation of Welding Requirements as Applicable to API Product Specifications

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Introduction

This Task Group reviewed specific API Specifications to identify consistency of referenced welding requirements. It was determined that some requirements were more consistently referenced, while others were inconsistently referenced. The requirements were grouped into those consistently noted or not, to allow the API Specification Chairs to identify and address these gaps as appropriate.

The API Product Specifications selected for use in this document are a result of agreement between the API staff and Subcommittee 18, Task Group for Welding TG 6 (hereafter known as TG 6). There is no attempt made to evaluate all product specifications. The specifications are selected based upon:

- a) criticality of the products identified within the specifications;
- b) welding processes already identified within the specifications;
- c) different types of welding processes identified between the specifications.

The members of TG 6 were experienced professionals, with welding, materials, and/or engineering experience, background, and knowledge.

The following is the charge provided by Subcommittee 18 to TG 6:

“To review all API Product Specifications and Recommended Practices and to cross-functionally identify requirements for welding, brazing, and soldering; the purpose is to identify criteria to be recommended for use in where these processes are required.”

Additionally, further clarification was provided to TG 6:

To identify for the API Monogram Program Product Specification Subcommittee chairpersons the following for their use in the future revision of API Product Specifications that address welding:

- rationale and methodology used to illustrate the differences in welding requirements between sample product specifications;
- information that would assist in the creation of robust welding requirements across the API Monogram Program product specifications and recommended practices.

NOTE While the API Recommended Practices were included the charge, direction was provided by Subcommittee 18 to address them at a later date.

By nature, Technical Reports are not auditable documents; therefore, there is no intention for this Technical Report to be used to perform audits.

Evaluation of Welding Requirements as Applicable to API Product Specifications

1 Scope

This Technical Report is a result of an evaluation of the consistency of welding requirements between API Product Specifications that are primarily used in exploration and production. The intent of the evaluation was to identify a means to standardize welding requirements across API Product Specifications.

The product specifications selected are identified in Table 1.

2 Normative References

The following documents contain provisions that, through reference in this text, constitute provisions of this Technical Report. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply.

API Advisory 8¹, *Implementation and Maintenance of Quality Management System*

API Product Specifications—see *Table 1, API Product Specifications Evaluated*

API Specification Q1, 8th Edition, *Specification for Quality Programs for the Petroleum, Petrochemical and Natural Gas Industry*

API Specification Q1, 9th Edition, *Specification for Quality Management System Requirements for Manufacturing Organizations for the Petroleum and Natural Gas Industry*

ASME Section IX², *ASME Boiler and Pressure Vessel Code (BPVC), Section IX: Welding, Brazing, and Fusing Qualifications: Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing and Fusing Operators*

ASNT-TC 1A³, *Personnel Qualification and Certification in Nondestructive Testing*

AWS D1.1⁴, *Structural Welding Code - Steel*

AWS B2.3, *Specification for Soldering Procedure and Performance Qualification*

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

IPC-A-610, Cl. 2⁵, *Acceptability of Electrical Assemblies*

IPC-A-620, *Requirements and Acceptance for Cable and Wire Harness Assemblies*

ISO 9001:2008⁶, *Quality management systems—Requirements*

¹ American Petroleum Institute, 1220 L Street NW, Washington, DC 20005.

² ASME International, 345 East 47th Street, New York, New York 10017-2392.

³ American Society for Nondestructive Testing, 4153 Arlinggate Plaza, Columbus, Ohio 43228-0518.

⁴ American Welding Society, 550 Northwest LeJeune Road, Box 351040, Miami, Florida 33135.

⁵ Association Connection Electronics Industries, 3000 Lakeside Drive, 105 N, Bannockburn, IL 60015.

⁶ International Organization for Standardization (ISO), 1, rue de Varembe, Case postale 56, CH-1211 Geneva 20, Switzerland.