

# **STANDARD FOR MATERIAL CONTROL AND TRACEABILITY OF PIPING COMPONENTS**

*Prepared by  
Pipe Fabrication Institute Engineering Committee*



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## STANDARD FOR MATERIAL CONTROL AND TRACEABILITY OF PIPING COMPONENTS

### 1.0 SCOPE

- 1.1 This standard provides the criteria for establishing a system of material control and levels of material traceability for pressure containing materials used in the fabrication and erection of piping assemblies when it is otherwise not completely described in an applicable code or specification.
- 1.2 Where the term fabricator is used in this document, it also includes erectors of fabricated piping.
- 1.3 The extent of traceability (as defined below) is not established by this standard but is a matter of agreement between the customer and the fabricator. Specific methods for material control and traceability should be established in the fabricator's quality control system.

### 2.0 DEFINITIONS

- 2.1 **Certified Material Test Report** (sometimes referred to as a Manufacturers Test Report, CMTR, or MTR) - A document written, issued, and certified by the material manufacturer of a piping component. The CMTR describes the chemical properties, mechanical properties, condition of heat treatment, etc., and other tests required by the material specification(s), and provides unique identification (i.e. "heat number") traceable to the component it represents.
- 2.2 **Certificate of Conformance** (sometimes referred to as a Certificate of Compliance or "C of C") - A document written, issued, and certified by the material manufacturer or material supplier of a piping component. A "C of C" normally provides a written statement of general certification that all or specific piping components meet the specified material specification(s) and usually lists the allowable ranges of said specification(s). A "C of C" may or may not provide "heat number" identification.
  - 2.2.1 For weld metal, typical or actual test reports should be specified in accordance with AWS A5.01, Filler Metal Procurement Guidelines.
- 2.3 **Traceability** - a method by which controls can be established to maintain traceable continuity between a material manufacturers document (CMTR's, C of C's, etc.) and piping components used in fabrication.

### 3.0 EXTENT OF TRACEABILITY

- 3.1 The customer specifications should specify the level of traceability required for various service conditions and piping materials. Typical material groups are:
  - A. General carbon steel piping components.
  - B. Carbon steel in low temperature (impact tested) service.
  - C. Carbon Steel in high temperature (above 650°F) service.
  - D. Carbon steel in sour service.
  - E. Ferritic alloy (1 1/4 chrome through 9 chrome).
  - F. Austenitic alloy ( 300 series stainless steels).
  - G. High alloys ( Hastelloy, Inconel, Monel).
- 3.2 The customer should specify which of the following product forms require traceability:
  - A. Pipe
  - B. Fittings and Flanges
  - C. Valves
  - D. Flange bolting materials.
  - E. Weld filler materials
- 3.3 Customer specifications should indicate the extent of traceability required as follows:
  - Level 0** No documentation required. No traceability.
  - Level 1A** Certification of conformance only, at completion of project. No traceability.
  - Level 1B** Certification of conformance traceable to each piping component in the completed piping assembly.
  - Level 2A** Certified Material Test Reports traceable to the project lot only.
  - Level 2B** Certified Material Test Reports traceable to each piping component in the completed piping assembly; total traceability.

**4.0 RECEIVING AND FABRICATION**

- 4.1 Received materials shall be checked for conformance to material specifications and / or specific customer requirements.
- 4.2 Received materials shall be checked for proper markings and identification. If required by the customer specification or fabricator's quality system, positive material identification ("PMI") should be performed. (See PFI Std ES-42 for further information)
- 4.3 Received materials should be properly color coded in accordance with the fabricator's color coding procedures. (See PFI Std. ES-22 for additional information on color coding)

- 4.4 For materials requiring level 1B or 2B traceability, a system should be in place to maintain traceable continuity throughout the fabrication process. The fabricator's Quality Control system should outline the specific methods and marking procedures to identify materials throughout the fabrication/erection process.
- 4.5 Traceable identification of materials to production drawings may occur before or after release of drawings for fabrication. In any case identification assignment records shall be implemented and maintained throughout the performance of the project.

**6.0 FINAL DOCUMENTATION**

- 6.1 For Level 1B or 2B traceability, final trace identifications shall be recorded on as-built drawings or by other records as established by agreement between the customer and fabricator.

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