# Material Verification Program for New and Existing Alloy Piping Systems

API RECOMMENDED PRACTICE 578
SECOND EDITION, MARCH 2010



AMERICAN PETROLEUM INSTITUTE

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**Downstream Segment**

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Suggested revisions are invited and should be submitted to the Standards Department, API, 1220 L Street, NW, Washington, DC 20005, standards@api.org.

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# Material Verification Program for New and Existing Alloy Piping Systems

## 1 Scope

The purpose of this recommended practice (RP) is to provide the guidelines for a material and quality assurance system to verify that the nominal composition of alloy components within the pressure envelope of a piping system is consistent with the selected or specified construction materials to minimize the potential for catastrophic release of toxic or hazardous liquids or vapors.

This RP provides the guidelines for material control and material verification programs on ferrous and nonferrous alloys during the construction, installation, maintenance, and inspection of new and existing process piping systems covered by the ASME B31.3 and API 570 piping codes. This RP applies to metallic alloy materials purchased for use either directly by the owner/user or indirectly through vendors, fabricators, or contractors and includes the supply, fabrication, and erection of these materials. Carbon steel components specified in new or existing piping systems are not specifically covered under the scope of this document unless minor/trace alloying elements are critical to component corrosion resistance or similar degradation.

## 2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

API 570, *Piping Inspection Code: Inspection, Repair, and Rerating of In-service Piping Systems*

API Publ 581, *Risk-Based Inspection—Base Resource Document*

API RP 571, *Damage Mechanisms Affecting Fixed Equipment In the Refining Industry*

API RP 939-C, *Guidelines for Avoiding Sulfidation Corrosion Failures in Oil Refineries*

ASME[1] *Boiler and Pressure Vessel Code: Section II, Material Specifications Part A, Ferrous Materials Part B, Nonferrous Materials Part C, Welding Rods, Electrodes, and Filler Metals*

ASME B31.3, *Process Piping*

CSB[2] Chemical Safety Board Bulletin 2005-04-B, "Positive Material Verification: Prevent Errors During Alloy Steel Systems Maintenance"

NACE[3] Paper No 03551, "Specification for Carbon Steel Materials for Hydrofluoric Acid Alkylation Units"

PFI[4] ES20, *Recommended Practice for Color Coding of Piping Materials*

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1 ASME International, 3 Park Avenue, New York, New York 10016-5990, www.asme.org.

2 U.S. Chemical Safety and Hazard Investigation Board, Office of Prevention, Outreach, and Policy, 2175 K Street NW, Suite 400, Washington, D.C. 20037-1848, 202-261-7600, www.csb.gov. Most CSB publications are posted on, and can be downloaded from the CSB web site, http://www.csb.gov/safety_publications/docs/SB-Nitrogen-6-11-03.pdf.

3 NACE International (formerly the National Association of Corrosion Engineers), 1440 South Creek Drive, Houston, Texas 77218-8340, www.nace.org.

4 Pipe Fabrication Institute, 511 Avenue of the Americas, #601, New York, New York 10011. www.pfi-institute.org.