

Technical Data

STANDARDS IN THE VALVE INDUSTRY

Material standards are developed by organizations as the American Society for Testing and Materials (ASTM), the American Iron & Steel Institute (AISI), the Society of Automotive Engineers (SAE), the National Association of Corrosion Engineers (NACE) and the American Society for Metals (ASM).

Some materials are approved by the American Society of Mechanical Engineers (ASME) for their use in Boilers and Pressure Vessels.

The American National Standards Institute, Inc. (ANSI) serves as the national coordinator for the majority of code and **product** standards related to the Valve and Fittings Industry.

Product standards are also developed and issued by individual user and/or manufacturing agencies such as the American Society of Mechanical Engineers (ASME), American Petroleum Institute (API) and the Manufacturers' Standardization Society (MSS).

Procedural and **safety** standards are issued by ANSI, MSS and ASME.

Following is a partial list of codes and standards that have a direct bearing on the design and production of valves & fittings. The codes and standards are interrelated as the following descriptions project:

ASME Boiler & Vessel Code

- Section I – Power Boilers
- Section II – Material Specifications
- Section III – Nuclear Power Plant Components
- Section V – Nondestructive Examination
- Section VIII – Pressure Vessels
- Section IX – Welding and Brazing Qualifications

The above Codes (Sections I, III & VIII) cover construction requirements for Boilers, Pressure Vessels, and Nuclear Components that require Authorized Inspection Agency involvement. Section I and VIII Codes relate to the boiler and pressure vessel proper and not to external piping. Section III Code includes rules for nuclear components including piping. Section II, V and IX Codes cover material, nondestructive examination and welding requirements, respectively, for ASME construction.

ASME Codes for Pressure Piping

- ASME B31.1 – Power Piping
- ASME B31.3 – Process Piping
- ASME B31.4 – Liquid Transportation Systems for Hydrocarbons, Liquid Petroleum, Gas, Anhydrous Ammonia and Alcohols.
- ASME B31.5-92 – Refrigeration Piping

- ASME B31.8-95 – Gas Transmission and Distribution Piping Systems
- ASME B31.9 – Building Services Piping Systems
- ASME B31.11 – Slurry Transportation Piping Systems

The above are piping construction codes that include requirements for design, materials, fabrication, examination, testing, inspection and components.

Valve Standards

- ASME B16.34 – Valves - Flanged, Threaded and Welding Ends
- API-600 – Steel Gate Valves, Flanged, and Buttwelding Ends
- API-602 – Compact Steel Gate Valves
- API-603 - Corrosion Resistant Gate Valves
- MSS-SP-99 – Instrument Valves
- MSS-SP-118 – Compact Steel Globe and Check Valves

Flanges, Fittings and Unions

- ASME B16.5 – Pipe Flanges and Flanged Fittings
- ASME B16.47- Large diameter Pipe Flanges
- ASME B16.11 – Forged Steel Fittings, Socket Weld and Threaded

Valve, Fitting, Flange and Union Details

- ASME B1.20.1 – Pipe Threads, General Purpose
- ASME B16.10 – Face-to-Face and End-to-End Dimensions of Ferrous Valves
- ASME B16.20 – Ring Joint Gaskets and Grooves for Steel Pipe Flanges
- ASME B16.25 – Buttwelding Ends
- MSS-SP-6 – Standard Finishes for Contact Faces of Pipe Flanges and Connecting End Flanges of Valves
- MSS-SP-25 – Standard Marking System for Valves, Fittings, Flanges and Unions
- MSS-SP-45 – Bypass and Drain Connection Standard

The above standards are detailed dimensional, marking, finish and bypass valve and fittings instructions for use in the manufacture of valves, flanges and fittings. The product standards normally refer to these standards for detailed instructions.

Inspection and Testing

- MSS-SP-61 – Pressure Testing of Valves
- API-598 – Valve Inspection and Test

NACE Standard

- MR-01-75 – Sulfide Stress Cracking Resistant Metallic Material for Oil Field Equipment

Chlorine Institute

PAMPHLET #6 – Piping Systems For Dry Chlorine
This publication is intended to provide useful information concerning the construction of chlorine piping systems including valves.