### Specifications

**ANSI (American National Standard Institute) / ASME (American Society of Mechanical Engineers)**

- **ANSI / ASME B1.20.1**  Pipe Threads, General Purpose (Inch)
- **ASME B16.10**  Face-to-Face and End-to-End Dimensions of Valves
- **ASME B16.11**  Forged Fittings, Socket-Welding and Threaded
- **ASME B16.25**  Buttwelding Ends
- **ANSI / ASME B16.28**  Wrought Steel Buttwelding Short Radius Elbows and Returns
- **ANSI / ASME B16.34**  Valves -Flanged, Threaded, and Welding End
- **ASME B16.36**  Orifice Flanges.  Coverage is limited to the following: (a) welding neck flanges Classes 300, 400, 600, 900, 1500, and 2500 (b) slip-on and threaded Class 300
- **ASME B16.47**  Large Diameter Steel Flanges: NPS 2 through NPS 60 Metric/Inch Standard
- **ASME B16.48**  Line Blanks
- **ASME B16.5**  Pipe Flanges and Flanged Fittings: NPS 1/2 through 24 - Metric/Inch Standard
- **ANSI / ASME B16.9**  Factory-Made Wrought Steel Buttwelding Fittings.  Butt welding fittings, e.g. elbows 90° and returns 180°, long radius (correspond to ISO 3d), tees and crosses, concentric and eccentric reducers, end caps, lap joint stub ends.
- **ASME B36.10M**  Welded and Seamless Wrought Steel Pipe
- **ASME B36.19M**  Stainless Steel Pipe.  This Standard covers the standardization of dimensions of welded and seamless wrought stainless steel pipe
- **ASME BPE**  Bioprocessing Equipment

**API (American Petroleum Institute)**

- **API Spec 5L**  Line Pipe
- **API Spec. 6D**  Pipeline Valves.  API Specification 6D is an adoption of ISO 14313: 1999, Petroleum and Natural Gas Industries-Pipeline Transportation Systems-Pipeline Valves. This International Standard specifies requirements and gives recommendations for the design, manufacturing, testing and documentation of ball, check, gate and plug valves for application in pipeline systems
- **API Spec. 6FA**  Fire Test for Valves.  The standard covers the requirements for testing and evaluating the performance of API Spec 6A and Spec 6D valves when exposed to specifically defined fire conditions
- **ANSI/API 574**  Inspection Practices for Piping System Components. The standard covers the inspection of piping, tubing, valves (other than control valves) and fittings used in petroleum refineries
- **ANSI/API 590**  Steel Line Blanks
- **ANSI/API STD 594**  Check Valves: Flanged, Lug, Wafer and Butt-welding
- **API 598**  Valve Inspection and Testing.  The standard covers inspection, supplementary examination, and pressure test requirements for both resilient-seated and metal-to-metal-seated valves of the gate, globe, plug, ball, check, and butterfly valves
ANSI/API 600  Bolted Bonnet Steel Gate Valves for Petroleum and Natural Gas Industries - Modified National Adoption of ISO 10434:1998

API 602  Compact Steel Gate Valves-Flanged Threaded, Welding, and Extended-Body Ends. The standard covers threaded-end, socket-welding-end, butt-welding-end, and flanged-end compact carbon steel gate valves in sizes NPS4 and smaller

API 603  Corrosion-Resistant, Bolted Bonnet Gate Valves - Flanged and Butt-Welding Ends

API 608  Metal Ball Valves-Flanged and Butt-Welding Ends

API 609  Butterfly Valves: Double Flanged, Lug- and Wafer-Type

**ASTM (American Society for Testing and Materials)**

ASTM A53 / A53M  Standard Specification for Pipe, Steel, Black and Hot Dipped, Zinc Coated, Welded and Seamless

ASTM A105 / A105M  Standard Specification for Carbon Steel Forgings for Piping Applications


ASTM A153/A153M  Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

ASTM A164  Specification for Electrodeposited Coatings of Zinc on Steel

ASTM A182 / A182M  Standard Specification for Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High Temperature Service

ASTM A234 / A234M  Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service

ASTM A240 / A240M  Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications


ASTM A262  Standard Practices for Detecting Susceptibility to Intergranular Attack in Austenitic Stainless Steels

ASTM A262  practice E: Copper–Copper Sulfate–Sulfuric Acid Test for Detecting Susceptibility to Intergranular Attack in Austenitic Stainless Steels

ASTM A269  Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service

ASTM A270 / A270M  Standard Specification for Seamless and Welded Austenitic Stainless Steel Sanitary Tubing

ASTM A276  Standard Specification for Stainless Steel Bars and Shapes

ASTM A312 / A312M  Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes


ASTM A351 / A351M  Standard Specification for Castings, Austenitic, for Pressure Containing Parts


ASTM A403 / A403M  Standard Specification for Wrought Austenitic Stainless Steel Piping Fittings

ASTM A420 / A420M  Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Low Temperature Service

ASTM A480 / A480M  Standard Specification for General Requirements for Flat Rolled Stainless and Heat Resisting Steel Plate, Sheet, and Strip
Steel Bars, Billets, and Forgings

ASTM A554 Standard Specification for Welded Stainless Steel Mechanical Tubing

ASTM A774 / A774M Standard Specification for As Welded Wrought Austenitic Stainless Steel Fittings for General Corrosive Service at Low and Moderate Temperatures

ASTM A778 Standard Specification for Welded, Unannealed Austenitic Stainless Steel Tubular Products

BS (British Standards)

BS 10 Specification for flanges and bolting for pipes, valves and fittings

BS 21 Specification for pipe threads for tubes and fittings where pressure-tight joints are made on the threads (metric dimensions)

BS 1042 Measurement of fluid flow in closed conduits. Pressure differential devices. Method of measurement of pulsating fluid flow in a pipe, by means of orifice plates, nozzles or Venturi tubes

BS 3293 Specification for carbon steel pipe flanges (over 24 inches nominal size) for the petroleum industry

BS 3799 Specification for steel pipe fittings, screwed and socket-welding for the petroleum industry

BS 4504 Circular flanges for pipes, valves and fittings (PN designated). Steel, cast iron and copper alloy flanges. Specification for steel flanges

BS 4825-1 Stainless steel tubes and fittings for the food industry and other hygienic applications. Specification for tubes (British Standard)
Specifies dimensions, tolerances, surface finish and materials requirements of seamless and longitudinally welded austenitic stainless steel tubes to BS 3605, from 12.7 mm to 406.4 mm o.d inclusive.

BS 4825-2 Stainless steel tubes and fittings for the food industry and other hygienic applications. Specification for bends and tees (British Standard)
Specifies dimensions, tolerances, surface finish and materials requirements for bends and tees for use with stainless steel tubes specified in BS 4285-1.

BS 4825-3 Stainless steel tubes and fittings for the food industry and other hygienic applications. Specification for clamp type couplings
Specifies dimensions, tolerances, surface finish, hygienic, assembly and materials requirements for welded and expanded type clamp liners and seals in tube couplings for use with stainless steel tubes specified in BS 4285-1.

BS 4825-4 Stainless steel tubes and fittings for the food industry and other hygienic applications. Specification for threaded (IDF type) coupling (British Standard)
Dimensions, tolerances, surface finish, hygienic, assembly and materials requirements for welded and expanded type male parts and liners, nuts and seals for threaded IDF type couplings for use with stainless steel tubes specified in BS 4825-1.

BS 4825-5 Stainless steel tubes and fittings for the food industry and other hygienic applications. Specification for recessed ring joint type couplings (British Standard)
Specifies dimensions, tolerances, surface finish, hygienic, assembly and materials requirements for welded and expanded type male parts and liners, nuts and seals for recessed ring joint type fittings for use with stainless steel tubes specified in BS 4825-1.
DIN (Deutsches Insititut for Normung)

DIN 2527 Blank flanges; nominal pressure 6 to 100
DIN 2528 Steel flanges; technical delivery conditions
DIN 2543 Cast Steel Flanges; Nominal Pressure 16
DIN 2544 Cast steel flanges. nominal pressure 25
DIN 2545 Cast steel flanges. nominal pressure 40
DIN 2558 Oval threaded plate - PN 6
DIN 2561 Oval Screwed Flanges with Socket; Nominal Pressure 10 and 16
DIN 2566 Screwed Flanges with Socket; Nominal Pressure 10 and 16
DIN 2573 Plain face flanges for brazing or welding; Nominal pressure 6
DIN 2576 Flanges; Slip-on Type for Brazing or Welding. Nominal Pressure 10
DIN 259 Threads corresponding to ISO228
DIN 2609 Steel butt-welding pipe fittings; technical delivery conditions
DIN 2614 Cement mortar linings for ductile iron and steel pipes and fittings; application, requirements and testing
DIN 2605-1 Steel Butt-welding Pipe Fittings/Elbows and Bends with Reduced Pressure Factor
DIN 2615-1 Steel butt-welding pipes fittings; tees with reduced pressure factor
DIN 2615-2 Steel butt-welding pipe fittings; tees for use at full service pressure
DIN 2616-1 Steel butt-welding pipe fittings; eccentric reducers with reduced pressure factor
DIN 2616-2 Steel butt-welding pipe fittings; reducers for use at full service pressure
DIN 2617 Steel butt-welding pipe fittings; caps
DIN 2627 Welding Neck Flanges. Nominal Pressure 400
DIN 2628 Welding Neck Flanges; Nominal Pressure 250
DIN 2629 Welding Neck Flanges; Nominal Pressure 320
DIN 2630 Welding Neck Flanges; Nominal Pressure 1 and 2.5
DIN 2631 Welding Neck Flanges; Nominal Pressure 6
DIN 2632 Welding Neck Flanges; Nominal Pressure 10
DIN 2633 Welding Neck Flanges; Nominal Pressure 16
DIN 2634 Welding Neck Flanges; Nominal Pressure 25
DIN 2635 Welding Neck Flanges; Nominal Pressure 40
DIN 2636 Welding Neck Flanges; Nominal Pressure 64
DIN 2637 Welding Neck Flanges; Nominal Pressure 100
DIN 2638 Welding Neck Flanges; Nominal Pressure 160
DIN 2642 Slip-on Flanges; Upturned Welding Flanges. Plain Collars; Nominal Pressure 10
DIN 2655 Lapped Flanges. Plain Collars. Nominal Pressure 25
DIN 2656 Lapped Flanges. Plain Collars. Nominal Pressure 40
DIN 2673 Loose Flanges with Welding Neck; Nominal Pressure 10
DIN 2999 Threads corresponding to ISO7
DIN 3202-4 Face-to-face and center-to-face dimensions of valves; Valves with female thread connection
DIN EN 10253-4 Butt-welding pipe fittings - Part 4: Wrought austenitic and austenitic-ferritic (duplex) stainless steels with specific inspection requirements; German version EN 10253-4:2008 EN10253
DIN EN 10204  Metallic products - Types of inspection documents; German version EN 10204:2004
DIN 11850  Stainless steel tubes for the food and chemical industries - Dimensions, materials
DIN 11852  Fittings for the food and chemical industries - Fittings of stainless steel - Tees, bends and reducers for welding
DIN 11853-1  Stainless steel fittings for the food and chemical industry - Part 1: Hygienic screwed pipe connection, short type
DIN 11853-2  Stainless steel fittings for the food and chemical industry - Part 2: Hygienic flanged pipe connection, short type
DIN 11853-3  Stainless steel fittings for the food and chemical industry - Part 3: Hygienic clamp pipe connection, short type
DIN 11864-1  Fittings of stainless steel for the aseptic, chemical and pharmaceutical industry - Part 1: Aseptic screwed pipe connection, standard type
DIN 11864-2  Stainless steel fittings for the aseptic, chemical and pharmaceutical industries - Part 2: Aseptic flanged pipe connection, standard type
DIN 11864-3  Stainless steel fittings for the aseptic, chemical and pharmaceutical industries - Part 3: Aseptic clamp pipe connection, standard type
DIN 11866  Stainless steel tubes for aseptic, chemical and pharmaceutical industries - Dimensions, materials
DIN 28115  Carbon steel nozzles - PN 10 to PN 40
DIN 50049  Metallic products; types of inspection documents; products; german version of EN 10204:1991
DIN 50049  Carbon steel nozzles - PN 10 to PN 40
DIN 50049  Metallic products; types of inspection documents; products; german version of EN 10204:1991
DIN 50049  Hubbed slip-on flanges for welding; nominal pressure 10
DIN 50049  Hubbed slip-on flanges for welding; nominal pressure 16

**EN (European Standard)**

EN 1092-1  Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, PN designated - Part 1: Steel flanges
EN 10204  Metallic products - Types of inspection documents
EN 10216-5  Seamless steel tubes for pressure purposes – technical delivery conditions Part 5: stainless steel tubes
EN 10253-4  Butt-welding pipe fittings - Part 4: Wrought austenitic and austenitic-ferritic (duplex) stainless steels with specific inspection requirements

**ISO (International Organization for Standardization)**

ISO 7  Pipe threads where pressure-tight joints are made on the threads.
ISO 228-1  Pipe threads where pressure-tight joints are not made on the threads - Part 1: Dimensions, tolerances and designation
ISO 228-2  Pipe threads where pressure-tight joints are not made on the threads; Part 2: Verification by means of limit gauges
ISO 1127  Stainless steel tubes; dimensions, tolerances and conventional masses per unit length
ISO 2037  Stainless steel tubes for the industry
ISO 4144  Pipework - Stainless steel fittings threaded in accordance with ISO 7-1

ISO 5251  Stainless steel butt-welding fittings. Specifies the dimensions, tolerances and generally used grades of stainless steel for bends /type 3D (90 and 180°) with and without straight ends and type 5D (90°); concentric and eccentric reducers, tees, caps and stub ends with quality requirements as used for piping work.

ISO 15156  Petroleum and natural gas industries - Materials for use in H2S-containing environments in oil and gas production

**JIS (Japanese Industrial Standard)**

| JIS B2002 | Ace-to-face and end-to-end dimensions of valves |
| JIS B2220 | Steel welding pipe flanges |
| JIS B2312 | Steel Butt Welding Pipe Fittings |
| JIS B2313 | Steel Plate Butt Welding Pipe Fittings |
| JIS G3459 | Stainless Steel Pipes |

**MSS (Manufacturer’s Standardization Society)**

| MSS SP-43 | Wrought and Fabricated Butt-Welding Fittings for Low Pressure, Corrosion Resistant Applications |
| MSS SP-44 | Steel Pipeline Flanges |
| MSS SP-79 | Socket Welding Reducer Inserts. |
| MSS SP-83 | Class 3000 Steel Pipe Unions Socket Welding and Threaded. |
| MSS SP-95 | Swage(d) Nipples and Bull Plugs |
| MSS SP-97 | Integrally Reinforced Forged Branch Outlet Fittings - Socket Welding, Threaded and Butt welding Ends |

**NACE (National Association of Corrosion Engineers)**