

Material 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 26 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 A106 / A106M	Standard Specification for Seamless Carbon Steel Pipe for High Temperature Service
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 A249 / A249M	Standard Specification for Welded Austenitic Steel Boiler, Superheater, Heat Exchanger, and Condenser Tubes
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 A350 / A350M	Standard Specification for Carbon and Low Alloy Steel Forgings, Requiring Notch Toughness Testing for Piping Components
ASTM A351 / A351M	Standard Specification for Castings, Austenitic, for Pressure Containing Parts
ASTM A358 / A358M	Standard Specification for Electric Fusion Welded Austenitic Chromium Nickel Stainless Steel Pipe for High Temperature Service and General Applications
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 ASTM A484 / A484M - 11 Standard Specification for General Requirements for Stainless 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 Insitut 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 2641	Lapped Flanges. Welding Neck Flanges. Plain Collars. Nominal Pressure 6
DIN 2642	Slip-on Flanges; Uprturned 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 EN10204
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 DIN50049
DIN 86029	Hubbed slip-on flanges for welding; nominal pressure 10
DIN 86030	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)

ISO7	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 H ₂ S-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 Buttwelding Ends



NACE (National Association of Corrosion Engineers)

ANSI/NACE MR0175/ISO 15156, Petroleum and natural gas industries—Materials for use in H₂S-containing environments in oil and gas production



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