

SCOPE

- I 1.1 This practice covers criteria for metallic piping selection and design.
- I 1.2 **An asterisk (*)** indicates that additional information is required. If a job is contracted, this additional information is furnished in the Job Specification.

SUMMARY OF ADDITIONAL REQUIREMENTS

- I 2.1 **Table 1** lists the documents which shall be used with this practice. Where specific references to ASME, ANSI, API or ASTM requirements are made in this practice, the Owner's Engineer may authorize the use of equivalent or more stringent provisions of other applicable recognized codes or standards.

TABLE 1

PRACTICES	
IP 3-18-1	Piping Fabrication Shop or Field
IP 18-10-1	Additional Requirements for Materials
CODE, STANDARDS, AND SPECIFICATION	
ASME Code	
B31.3	Process Piping
ASME Standards	
B1.20.1	Pipe Threads, General Purpose (Inch)
B16.3	Malleable-Iron Threaded Fittings, Class 150 and 300
B16.5	Pipe Flanges and Flanged Fittings
B16.9	Factory-Made Wrought Steel Buttwelding Fittings
B16.11	Forged Steel Fittings, Socket-Welding and Threaded
B16.39	Malleable Iron Threaded Pipe Unions, Class 150,250 and 300
B16.47	Large Diameter Steel Flanges, NPS 26 Through NPS 60
ANSI / AWWA Standards	
C110	Ductile Iron and Gray Iron Fittings, 3 in. Through 48 in. for Water and Other Liquids
C111	Rubber Gasket Joints for Cast-Iron and Ductile-Iron Pressure Pipe and Fittings
C151	Ductile Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids
API Specification	
5L	Specification for Line Pipe
ASTM Standards	
A 53	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless
A 106	Seamless Carbon Steel Pipe for High-Temperature Service
A 312 / A 312M	Seamless and Welded Austenitic Stainless Steel Pipe
A 333 / A 333M	Seamless and Welded Steel Pipe for Low-Temperature Service
A 335 / A 335M	Seamless Ferritic Alloy-Steel Pipe for High-Temperature Service
A 358 / A 358M	Electric-Fusion-Welded Austenitic Chromium-Nickel Alloy Pipe for High-Temperature Service
A 426	Centrifugally Cast Ferritic Alloy Steel Pipe for High-Temperature Service
A 451	Centrifugally Cast Austenitic Steel Pipe for High-Temperature Service
A 671	Electric-Fusion-Welded Steel Pipe for Atmospheric and Lower Temperatures
A 672	Electric-Fusion-Welded Steel Pipe for High-Pressure Services at Moderate Temperatures
A 691	Carbon and Alloy Steel Pipe, Electric-Fusion Welded for High-Pressure Service at High Temperatures
B 165	Nickel-Copper Alloy (UNS N04400) Seamless Pipe and Tube
B 167	Nickel-Chromium-Iron Alloy (UNS N06600) Seamless Pipe and Tube
B 241 / B 241M	Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube
B 407	Nickel-Iron-Chromium Alloy Seamless Pipe and Tube
B 423	Nickel-Iron-Chromium-Molybdenum-Copper Alloy (UNS N08825 and N08221) Seamless Pipe and Tube
B 705	Nickel-Alloy (UNS N06225 and N08825) Welded Pipe

- I * 2.2 **Table 2** lists the documents which shall be used with this practice as specified by the Purchaser.

TABLE 2

PRACTICE	
IP 18-4-1	Postweld Heat Treatment of Equipment Handling Alkaline Solutions
CODES AND STANDARDS	
ASME Codes	
Section I	Power Boilers
B31.1	Power Piping
ASTM Standard	
D1869	Rubber Rings for Asbestos-Cement Pipe
NACE Standards	
TM-01-77	Testing of Metals for Resistance to Sulfide Stress Corrosion Cracking at Ambient Temperatures
TM-02-84	Evaluation of Pipeline Steels for Resistance to Stepwise Cracking

- I * 2.3 **All piping within the property limits of a plant site** shall comply with **ASME B31.3**, except that piping for steam boilers that come within the scope of **ASME Code Section I** and **ASME B31.1** shall comply with that Code and applicable local requirements.
- I * 2.4 The additional requirements for "**Category M Fluid Service**" shall not be used unless specified.

MATERIALS

- R * 3.1 Unless otherwise specified, piping shall comply with **Table 3**. The Owner's Engineer shall approve proposed specifications for materials not listed.

TABLE 3

MATERIAL	REQUIREMENTS
Cast Iron	Proposed material specifications shall be approved by the Owner's Engineer
Ductile Iron	ANSI/AWWA C151
Carbon Steel	API 5L; ASTM A 53, A 106, A 333 / A 333M, A 671, A 672, A 691
Ferritic Alloy Steel	ASTM A 335 / A 335M: A 671, A 672, or A 691: Classes 11, 22, 32, or 42; ASTM A 426
Austenitic Cr-Ni Steel	ASTM A 312 / A 312M, A 358 / A 358M; A 451
Monel	ASTM B 165
3 1/2 Ni or 9 Ni	ASTM A 333 / A 333M
Inconel	ASTM B 167
Aluminum	ASTM B 241 / B 241M
Incoloy	ASTM B 407, B 423, B 705