



PROCESS  
INDUSTRY  
PRACTICES

COMPLETE REVISION  
September 2023

***Piping***

**PIP PNC00005**  
**Design of ASME B31.3 Metallic Piping Systems**

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## PURPOSE AND USE OF PROCESS INDUSTRY PRACTICES

This Practice has been prepared by harmonizing technical requirements from existing standards of major industrial operators, contractors, and standard development organizations. While this Practice is intended to incorporate the majority of requirements, individual applications may have requirements which take precedence over this Practice. Determinations concerning fitness for purpose or application of this Practice to specific project or engineering situations should not be made solely on information contained in this Practice. All Practices are intended to be consistent with applicable laws and regulations. Should this Practice conflict with applicable laws or regulations, such laws or regulations must be followed. Consult an appropriate professional before applying or acting on any material contained in or suggested by this Practice.

Use of trade names should not be viewed as an expression of preference. Other brands having the same specifications are equally correct and may be substituted for those named.

This Practice is subject to revision at any time. For more information refer to PIP ADG001, *Specification for Developing Practices*.

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## 1. Scope

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This Practice provides requirements for designing metallic piping systems to ASME B31.3, Process Piping (hereinafter referred to as the *Code*).

This Practice provides requirements for piping systems arrangement, design conditions, components, and joints. This Practice shall be used in conjunction with the *Code*.

The requirements of this Practice are more stringent than the *Code* for the purpose of standardization and not because the *Code* is considered unsafe.

Piping systems designed in accordance with other piping codes are not included in this Practice.

## 2. References

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Applicable parts of the following Practices, industry codes and standards, and references shall be considered an integral part of this Practice. The edition in effect on the date of contract award shall be used, except as otherwise noted. Short titles will be used herein where appropriate.

### 2.1 Process Industry Practices (PIP)

- PIP PCCIA001 - *Instrument Air Systems Design Criteria*
- PIP PNC00001 - *Pipe Support Criteria for ASME B31.3 Metallic Piping*
- PIP PNC00004 - *Piping Stress Analysis Criteria for ASME B31.3 Metallic Piping*
- PIP PNE00003 - *Process Unit and Offsites Layout Guide*
- PIP PNE00004 - *Steam Trap Guidelines*
- PIP PNE00012 - *Piping Examination and Leak Test Guide*
- PIP PNF0200 - *Valves, Drains, and Instrument Connection Details*
- PIP PNSC0001 - *ASME B31.3 Metallic Piping Fabrication and Examination Specification*
- PIP PNSC0011 - *Installation of ASME B31.3 Metallic Piping*
- PIP PNSC0021 - *Leak Testing of Piping Systems*
- PIP PNSC0035 - *Steam Tracing Specification*
- PIP REIE686 - *Recommended Practices for Machinery Installation and Installation Design*
- PIP Piping Material Specifications (PMSs)

### 2.2 Industry Codes and Standards

- American Lifelines Alliance
  - *Guideline for the Design of Buried Steel Pipe*
- American Petroleum Institute (API)
  - *API 6D - Specification for Pipeline and Piping Valves*