

Sizing, Selection, and Installation of Pressure-relieving Devices

Part I—Sizing and Selection

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Foreword

API Standard 520, *Sizing, Selection, and Installation of Pressure-relieving Devices*, is the result of several years' work by engineers in the petroleum industry. The information in this standard is intended to supplement the information contained in Section VIII—*Pressure Vessels*, of the ASME *Boiler and Pressure Vessel Code*. The recommendations presented in this publication are not intended to supersede applicable laws and regulations.

Users of this standard are reminded that no publication of this type can be complete, nor can any written document be substituted for qualified engineering analysis.

Shall: As used in a standard, "shall" denotes a minimum requirement in order to conform to the specification.

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The current edition of this standard, published in two parts, has been updated with respect to the practices generally used in the installation of all devices covered in the previous editions; the current edition also contains additional information based on revisions suggested by many individuals and several organizations.

The First Edition of this standard was initially released as a recommended practice in 1955. The Second Edition was published in two parts: Part I, *Design*, in 1960 and Part II, *Installation*, in 1963. The Third Edition of Part I was issued in November 1967 and reaffirmed in 1973. The Fourth Edition was issued in December 1976, the Fifth Edition was issued in July 1990, the Sixth Edition was issued in March 1993, the Seventh Edition was issued in January 2000, and the Eighth Edition was issued in December 2008.

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Suggested revisions are invited and should be submitted to the Standards Department, API, 1220 L Street, NW, Washington, DC 20005, standards@api.org.

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Sizing, Selection, and Installation of Pressure-relieving Devices

Part I—Sizing and Selection

1 Scope

This standard applies to the sizing and selection of pressure-relief devices used in refineries, chemical facilities, and related industries for equipment that has a maximum allowable working pressure (MAWP) of 15 psig (103 kPag) or greater. The pressure-relief devices covered in this standard are intended to protect unfired pressure vessels and related equipment against overpressure from operating and fire contingencies.

This standard includes basic definitions and information about the operational characteristics and applications of various pressure-relief devices. It also includes sizing procedures and methods based on steady state flow of Newtonian fluids.

Pressure-relief devices protect a vessel against overpressure only; they do not protect against structural failure when the vessel is exposed to extremely high temperatures such as during a fire. See API 521 for information about appropriate ways of reducing pressure and restricting heat input.

Atmospheric and low-pressure storage tanks covered in API 2000 and pressure vessels used for the transportation of products in bulk or shipping containers are not within the scope of this standard.

The rules for overpressure protection of fired vessels are provided in ASME *BPVC*, Section I and are not within the scope of this standard.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

API Standard 520, *Sizing, Selection, and Installation of Pressure-relieving Devices in Refineries, Part II—Installation*

API Standard 521, *Pressure-relieving and Depressuring Systems*

API Standard 526, *Flanged Steel Pressure-relief Valves*

API Standard 527, *Seat Tightness of Pressure-relief Valves*

API Standard 2000, *Venting Atmospheric and Low-pressure Storage Tanks*

ASME *Boiler and Pressure Vessel Code (BPVC)*¹, *Section I: Power Boilers*

ASME *Boiler and Pressure Vessel Code (BPVC)*, *Section VIII: Pressure Vessels; Division 1*

ASME *Boiler and Pressure Vessel Code (BPVC)* Code Case 2203², *Omission of Lifting Device Requirements for Pressure Relief Valves on Air, Water Over 140°F, or Steam Service*

ASME B31.1, *Power Piping*

ASME B31.3, *Process Piping*

ASME PTC 25, *Pressure Relief Devices*

¹ ASME International, 3 Park Avenue, New York, New York 10016, www.asme.org.

² Code Cases are temporary in nature and may not be acceptable in all jurisdictions. The user should verify the current applicability of the referenced Code Cases.