

Design and Construction of LPG Installations

API STANDARD 2510
EIGHTH EDITION, MAY 2001



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Downstream Segment

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FOREWORD

This standard provides minimum requirements for the design and construction of installations for the storage and handling of liquefied petroleum gas (LPG) at marine and pipeline terminals, natural gas processing plants, refineries, petrochemical plants, and tank farms. This standard takes into consideration the specialized training and experience of operating personnel in the type of installation discussed. In certain instances, exception to standard practices are noted and alternative methods are described.

This standard does not include information on the production or use of liquefied petroleum gas.

It is not intended that this standard be retroactive or that it take precedence over contractual agreements. Wherever practicable, existing codes and manuals have been used in the preparation of this standard.

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CONTENTS

	Page
1 SCOPE.....	1
1.6 Retroactivity.....	1
1.7 Characteristics of LPG.....	1
1.8 Safety.....	1
2 REFERENCED PUBLICATIONS.....	1
3 TERMS AND DEFINITIONS.....	2
4 DESIGN OF LPG VESSELS.....	3
4.1 Applicable Design Construction Codes.....	3
4.2 Design Pressure and Temperature.....	3
4.3 Design Vacuum.....	3
4.4 Materials of Construction.....	3
4.5 Vessel Connections.....	3
4.6 Previously Constructed Vessels.....	3
5 SITTING REQUIREMENTS AND SPILL CONTAINMENT.....	3
5.1 Siting.....	3
5.2 Drainage.....	5
5.3 Spill Containment.....	5
5.4 Remote Impoundment.....	5
5.5 Diking.....	6
6 FOUNDATIONS AND SUPPORTS FOR LPG STORAGE VESSELS AND RELATED PIPING.....	6
6.1 Applicable Codes and Specifications.....	6
6.2 Special Requirements.....	6
7 TANK ACCESSORIES INCLUDING PRESSURE AND VACUUM-RELIEFING DEVICES.....	8
7.1 Mandatory Equipment.....	8
7.2 Tank Necessary Materials.....	10
8 PIPING REQUIREMENTS.....	10
8.1 American Society of Mechanical Engineers Code for Pressure Piping.....	10
8.2 LPG Piping.....	10
8.3 Fittings.....	10
8.4 Plugs.....	10
8.5 Unions.....	11
8.6 Valves.....	11
8.7 Location, Installation, and Flexibility of Piping, Valves, and Fittings.....	11
9 LOADING, PRODUCT TRANSFER, AND UNLOADING FACILITIES.....	11
9.1 Scope.....	11
9.2 Rates of Loading and Unloading.....	11
9.3 Transfer, Loading, and Unloading Equipment.....	12
9.4 Grounding and Bonding.....	12
9.5 Hose and Other Flexible Connectors for Product Transfer.....	13

9.6	Blowdown or Venting of Loading and Unloading Lines	13
9.7	Marking of Valves in Loading and Unloading Systems	13
9.8	Metering Equipment Used in Loading and Unloading	13
9.9	LPG Odorization	13
10	FIRE PROTECTION	13
10.1	General	13
10.2	Access for Fire Fighting	13
10.3	Fire Water Use	14
10.4	Fire Detection Systems	15
10.5	Fire Extinguishers	15
10.6	Fire-Fighting Foam	16
10.7	Fireproofing of LPG Vessels	16
10.8	Fireproofing of Structural Supports	16
10.9	Burying and Mounding	16
10.10	Electrical Installations and Equipment	16
10.11	Critical Wiring and Control Systems	16
10.12	Safety Precaution Signs	17
10.13	Lighting	17
10.14	Fencing	17
10.15	Roadways	17
11	REFRIGERATED STORAGE	17
11.1	General	17
11.2	Design Requirements	17
11.3	Siting Requirements	17
11.4	Thermal Considerations	18
11.5	Tank Accessories	18
11.6	Piping Requirements	19
11.7	Refrigeration System	19
APPENDIX A PIPING, TANKS, VESSELS, FITTINGS, AND OPTIONAL EQUIPMENT		21
Table		
1	Minimum Horizontal Distance Between Shell of Pressurized LPG Tank and Line of Adjoining Property That May Be Developed	4

Design and Construction of LPG Installations

1 Scope

This standard covers the design, construction, and location of liquefied petroleum gas (LPG) installations at marine and pipeline terminals, natural gas processing plants, refineries, petrochemical plants, or tank farms. This standard covers storage vessels, loading and unloading systems, piping, or and related equipment.

1.1 The size and type of the installation; the related facilities on the site; the commercial, industrial, and residential population density in the surrounding area; the terrain and climate conditions; and the type of LPG handled shall be considered. Generally speaking, the larger the installation and the greater the population density of the surrounding area, the more stringent are the design requirements.

1.2 Design and construction considerations peculiar to refrigerated storage, including autorefrigerated storage, are covered in Section 9 of this standard.

1.3 In this standard, numerical values are presented with U.S. customary units only. These U.S. customary values are to be regarded as the standard values.

1.4 This standard shall not apply to the design, construction, or relocation of frozen earth pits, underground storage caverns or wells, underground or mounded storage tanks, and aboveground concrete storage tanks.

1.5 This standard does not apply to the following installations:

- Those covered by NFPA 58 and NFPA 59
- U.S. Department of Transportation (DOT) containers.
- Gas utility company facilities; refinery process equipment; refinery and gas plant processing equipment, and transfer systems from process equipment upstream LPG storage.
- Those tanks with less than 2000 gallons of storage capacity.

1.6 RETROACTIVITY

The provisions of this standard are intended for application to new installations. This standard can be used to review and evaluate existing storage facilities. However, the feasibility of applying this standard to facilities, equipment, structures, or installations that were already in place or that were in the process of construction or installation before the date of this publication, must be evaluated on a case-by-case basis considering individual circumstances and sites.

1.7 CHARACTERISTICS OF LPG

LPG is customarily handled in a liquid state achieved by its liquefaction under moderate pressure. Upon release of the

pressure, LPG is readily converted into the gaseous phase at normal ambient temperature.

1.8 SAFETY

The safety of LPG storage installations is enhanced by the employment of good engineering practices, such as those recommended by this standard, during design and construction.

2 Referenced Publications

The most recent edition or revision of each of the following manuals, codes, recommended practices, publications, standards, and specifications shall form a part of this standard to the extent specified:

API	
RP 500	<i>Classification of Locations for Electrical Installations at Petroleum Facilities</i>
RP 505	<i>Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities Classified as Class I, Zone 0, Zone 1 and Zone 2</i>
RP 520	<i>Sizing, Selection, and Installation of Pressure-Relieving Devices in Refineries</i>
RP 521	<i>Guide for Pressure-Relieving and Depressuring Systems</i>
RP 550	<i>Manual on Installation of Refinery Instruments and Control Systems</i> (out of print)
RP 551	<i>Process Measurement Instrumentation</i>
Std 607	<i>Fire Test for Soft-Seated Quarter-Turn Valves</i>
Std 620	<i>Design and Construction of Large, Welded, Low-Pressure Storage Tanks</i>
RP 752	<i>Management of Hazards Associated with Location of Process Plant Buildings, CMA Manager's Guide</i>
RP 1102	<i>Steel Pipelines Crossing Railroads and Highways</i>
Std 2000	<i>Venting Atmospheric and Low-Pressure Storage Tanks: Nonrefrigerated and Refrigerated</i>
RP 2003	<i>Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents</i>
Publ 2218	<i>Fireproofing Practices in Petroleum and Petrochemical Processing Plants</i>
Publ 2510A	<i>Fire Protection Considerations for the Design and Operation of Liquefied Petroleum Gas (LPG) Storage Facilities</i>
Spec 6FA	<i>Specification for Fire Test for Valves</i>
	<i>Manual of Petroleum Measurement Standards, Chapter 5, "Metering"</i>