

42 644

ORDER OF DATA

[illegible]



Underwriters Laboratories Inc.®

A not-for-profit organization dedicated to public safety
and committed to quality service

May 16, 1995

Revision pages for

Standard for

Container Assemblies for LP-Gas

UL 644, Seventh Edition

Attached to this transmittal notice is a revision of the seventh edition of UL 644.

A CHANGE ON A PAGE DATED MAY 16, 1995 IS INDICATED BY A SMALL PRINT NOTE FOLLOWING THE AFFECTED ITEM, PRECEDED AND FOLLOWED BY AN ASTERISK.

THIS REVISION IS BEING ISSUED TO CORRECT THE NUMBERING OF PARAGRAPHS IN SECTION 2. THE REQUIREMENTS ARE NOW IN EFFECT.

Attention is directed to the note on the title page of this standard outlining the procedure to be followed to retain the approved text of ANSI/UL 644-1994.

Attention is directed to the note on the title page of this standard identifying that the Department of Defense has adopted the text of UL 644.

Revised and/or additional pages may be issued from time to time.

With the inclusion of the accompanying material, the standard consists of pages dated as shown in the following checklist:

Page	Date
1	December 29, 1994 (Reprinted May 16, 1995)
2	—
3 – 5	December 29, 1994
6	May 16, 1995
6A	December 30, 1994
7 – 15, A1	December 29, 1994

DECEMBER 29, 1994
(Title Page Reprinted: May 16, 1995)



1

UL 644

Standard for

Container Assemblies for LP-Gas

First Edition – May, 1959
Second Edition – August, 1971
Third Edition – June, 1972
Fourth Edition – June, 1977
Fifth Edition – January, 1982
Sixth Edition – April, 1986

Seventh Edition

December 29, 1994

Approval as an American National Standard (ANSI) covers the numbered paragraphs on pages dated December 29, 1994. These pages should not be discarded when revised or additional pages are issued if it is desired to retain the ANSI approved text.

An effective date included as a note immediately following certain requirements is one established by Underwriters Laboratories Inc.

Approved as ANSI/UL 644-1994, August 4, 1994

The Department of Defense (DoD) has adopted UL 644 on February 10, 1976. The publication of revised pages or a new edition of this standard will not invalidate the DoD adoption.

Revisions of this standard will be made by issuing revised or additional pages bearing their date of issue. A UL Standard is current only if it incorporates the most recently adopted revisions, all of which are itemized on the transmittal notice that accompanies the latest published set of revision pages.

ISBN 1-55989-710-4

COPYRIGHT © 1977, 1995 UNDERWRITERS LABORATORIES INC.

INTRODUCTION

1 Scope

1.1 These requirements cover aboveground, underground, and interchangeable (aboveground or underground) stationary container assemblies for liquefied petroleum gases which include any material having a vapor pressure not exceeding that allowed for commercial propane composed predominately of the following hydrocarbons, either by themselves or as mixtures: propane, propylene, butane (normal butane or isobutane), and butylenes. These container assemblies are provided with tanks constructed under the appropriate provisions of the current edition of the Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers (ASME).

1.2 Container assemblies covered by these requirements are those using fuel storage tanks having a water capacity of 2000 gallons (7.57 m³) or less and designed for delivery of fuel in the gaseous phase, but they may also incorporate a liquid take-off in addition to a vapor take-off.

1.3 Container assembly installations are intended to be made in accordance with the Standard of the National Fire Protection Association for the Storage and Handling of Liquefied Petroleum Gases, NFPA 58. They are not intended for use in chemical, petrochemical, petroleum, or utility power plants; nor pipeline or marine terminals; nor related storage facilities at such plants or terminals.

1.4 A product that contains features, characteristics, components, materials, or systems new or different from those covered by the requirements in this standard, and that involve a risk of fire, electric shock, or injury to persons, shall be evaluated using the appropriate additional component and end-product requirements as determined necessary to maintain the acceptable level of safety as originally anticipated by the intent of this standard. A product whose features, characteristics, components, materials, or systems conflict with specific requirements or provisions of this standard cannot be judged to comply with this standard. Where considered appropriate, revision of requirements shall be proposed and adopted in conformance with the methods employed for development, revision, and implementation of this standard.

2 General

2.1 Components

2.1.1 Except as indicated in 2.1.2, a component of a product covered by this standard shall comply with the requirements for that component. See Appendix A for a list of standards covering components generally used in the products covered by this standard.

2.1.2 A component need not comply with a specific requirement that:

- a) Involves a feature or characteristic not needed in the application of the component in the product covered by this standard or
- b) Is superseded by a requirement in this standard.

2.1.3 A component shall be used in accordance with its recognized rating established for the intended conditions of use.

2.1.4 Specific components are recognized as being incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits and shall be used only under those specific conditions for which they have been recognized.

2.2 Units of measurement

2.2.1 If a value for measurement as given in these requirements is followed by an equivalent value in other units in parenthesis, the second value may be only approximate. The first stated value is the requirement.

2.3 Undated references

2.3.1 Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

2.1A.1 relocated as 2.3.1 May 16, 1995

3 Glossary

3.1 **CONTAINER ASSEMBLY** – An assembly consisting of a certified ASME Code container provided with fittings for all tank openings including a filler valve, a safety-relief valve, a service-line shutoff valve, excess flow valves, a liquid-level gauging device, and a protective housing. It may include either a high-pressure or a low-pressure regulator, or both. When necessary, a copper tubing pigtail is provided for making a connection between the outlet of the service-line shutoff valve and the regulator. A vapor-return valve, a pressure gauge, and a copper tubing connector for making connection between the outlet of the regulator and the fuel service piping may be included in the assembly. Several or all of the parts may be incorporated in the assembly of a multiple-head unit.

3.2 **INTERCHANGEABLE CONTAINER ASSEMBLY** – A container assembly conforming to the requirements for aboveground installation with respect to safety-relief valve capacity and filling density, and to all other requirements for aboveground and underground installation, so as to permit its installation in either location without modification.

CONSTRUCTION

4 Containers

4.1 A container shall be constructed, tested, inspected, and marked to indicate compliance with the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, 1989 Edition. The minimum design pressure shall be in accordance with Table 4.1.

Exception: UG 125-136 of the ASME code do not apply. See Safety-Relief Valves, Section 6.

Table 4.1
Design pressure of containers

Vapor pressure of gas at 100°F (37.8°C) up to:		Minimum design pressure of container	
psig	kPa	psig	kPa
100	689	125	862
125	862	156	1076
150	1034	187	1289
175	1207	219	1510
215	1482	250	1724

**Underwriters Laboratories Inc.®**A not-for-profit organization dedicated to public safety
and committed to quality service**December 30, 1994****Revision pages for****Standard for****Container Assemblies for LP-Gas****UL 644, Seventh Edition**

Attached to this transmittal notice is a revision of the Seventh edition of UL 644.

A CHANGE ON A PAGE DATED DECEMBER 30, 1994 IS INDICATED BY A SMALL PRINT NOTE
FOLLOWING THE AFFECTED ITEM, PRECEDED AND FOLLOWED BY AN ASTERISK.

THESE NEW REQUIREMENTS ARE NOW IN EFFECT.

Attention is directed to the note on the title page of this standard outlining the procedure to be followed to
retain the approved text of ANSI/UL 644-1994.

Revised and/or additional pages may be issued from time to time.

With the inclusion of the accompanying material, the standard consists of pages dated as shown in the
following checklist:

Page	Date
1	December 29, 1994
2	—
3 – 5	December 29, 1994
6, 6A	December 30, 1994
7 – 15, A1	December 29, 1994

INTRODUCTION

1 Scope

1.1 These requirements cover aboveground, underground, and interchangeable (aboveground or underground) stationary container assemblies for liquefied petroleum gases which include any material having a vapor pressure not exceeding that allowed for commercial propane composed predominately of the following hydrocarbons, either by themselves or as mixtures: propane, propylene, butane (normal butane or isobutane), and butylenes. These container assemblies are provided with tanks constructed under the appropriate provisions of the current edition of the Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers (ASME).

1.2 Container assemblies covered by these requirements are those using fuel storage tanks having a water capacity of 2000 gallons (7.57 m³) or less and designed for delivery of fuel in the gaseous phase, but they may also incorporate a liquid take-off in addition to a vapor take-off.

1.3 Container assembly installations are intended to be made in accordance with the Standard of the National Fire Protection Association for the Storage and Handling of Liquefied Petroleum Gases, NFPA 58. They are not intended for use in chemical, petrochemical, petroleum, or utility power plants: nor pipeline or marine terminals; nor related storage facilities at such plants or terminals.

1.4 A product that contains features, characteristics, components, materials, or systems new or different from those covered by the requirements in this standard, and that involve a risk of fire, electric shock, or injury to persons, shall be evaluated using the appropriate additional component and end-product requirements as determined necessary to maintain the acceptable level of safety as originally anticipated by the intent of this standard. A product whose features, characteristics, components, materials, or systems conflict with specific requirements or provisions of this standard cannot be judged to comply with this standard. Where considered appropriate, revision of requirements shall be proposed and adopted in conformance with the methods employed for development, revision, and implementation of this standard.

2 General

2.1 Components

2.1.1 Except as indicated in 2.1.2, a component of a product covered by this standard shall comply with the requirements for that component. See Appendix A for a list of standards covering components generally used in the products covered by this standard.

2.1.2 A component need not comply with a specific requirement that:

- a) Involves a feature or characteristic not needed in the application of the component in the product covered by this standard, or
- b) Is superseded by a requirement in this standard.

2.1.3 A component shall be used in accordance with its recognized rating established for the intended conditions of use.

2.1.4 Specific components are recognized as being incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits and shall be used only under those specific conditions for which they have been recognized.

2.1A Undated references

2.1A.1 Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

2.1A.1 added December 30, 1994

2.2 Units of measurement

2.2.1 If a value for measurement as given in these requirements is followed by an equivalent value in other units in parenthesis, the second value may be only approximate. The first stated value is the requirement.

3 Glossary

3.1 CONTAINER ASSEMBLY – An assembly consisting of a certified ASME Code container provided with fittings for all tank openings including a filler valve, a safety-relief valve, a service-line shutoff valve, excess flow valves, a liquid-level gauging device, and a protective housing. It may include either a high-pressure or a low-pressure regulator, or both. When necessary, a copper tubing pigtail is provided for making a connection between the outlet of the service-line shutoff valve and the regulator. A vapor-return valve, a pressure gauge, and a copper tubing connector for making connection between the outlet of the regulator and the fuel service piping may be included in the assembly. Several or all of the parts may be incorporated in the assembly of a multiple-head unit.

3.2 INTERCHANGEABLE CONTAINER ASSEMBLY – A container assembly conforming to the requirements for aboveground installation with respect to safety-relief valve capacity and filling density, and to all other requirements for aboveground and underground installation, so as to permit its installation in either location without modification.

CONSTRUCTION

4 Containers

4.1 A container shall be constructed, tested, inspected, and marked to indicate compliance with the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, 1989 Edition. The minimum design pressure shall be in accordance with Table 4.1.

Exception: UG 125-136 of the ASME code do not apply. See Safety-Relief Valves, Section 6.

Table 4.1
Design pressure of containers

Vapor pressure of gas at 100°F (37.8°C) up to:		Minimum design pressure of container	
psig	kPa	psig	kPa
100	689	125	862
125	862	156	1076
150	1034	187	1289
175	1207	219	1510
215	1482	250	1724

4.2 A container having a water capacity of 125 gallons (0.47 m³) or greater shall be equipped with means, other than a plugged opening, for liquid evacuation, which shall be no smaller than 3/4 inch nominal pipe size. See Table 4.2.