



# UL 1746

## **STANDARD FOR SAFETY**

External Corrosion Protection Systems for Steel  
Underground Storage Tanks

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UL Standard for Safety for External Corrosion Protection Systems for Steel Underground Storage Tanks, UL 1746

Third Edition, Dated January 17, 2007

### **Summary of Topics**

**These revisions to the Standard for External Corrosion Protection Systems for Steel Underground Storage Tanks, UL 1746, include the following:**

- 1. Revisions to the scope section to clarify and update the requirements**
- 2. Revisions to the glossary section to clarify, update, and provide consistency with other underground storage tank standards**
- 3. Addition of a capacity and dimensions section and relocation of the requirements into this section**
- 4. Revisions to the lift lug tests which includes the use of calculations for evaluating lift lugs**
- 5. Deletion of abrasion test**
- 6. Alternative to Lift Lug Test**
- 7. Revision to indentation test for Part IV coated tanks**
- 8. Deletion of terms Type I Tank and Type II Tank**
- 9. Clarification of requirements for FRP matrix (resin & fibers)**

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin. Changes in requirements are marked with a vertical line in the margin and are followed by an effective date note indicating the date of publication or the date on which the changed requirement becomes effective.

The new and revised requirements are substantially in accordance with Proposal(s) on this subject dated November 22, 2013 and August 15, 2014.

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The requirements in this Standard are now in effect, except for those paragraphs, sections, tables, figures, and/or other elements of the Standard having future effective dates as indicated in the note following the affected item. The prior text for requirements that have been revised and that have a future effective date are located after the Standard, and are preceded by a "SUPERSEDED REQUIREMENTS" notice.

The following table lists the future effective dates with the corresponding reference.

<b>Future Effective Dates</b>	<b>References</b>
December 19, 2018	Paragraphs 23.1 and 33.10

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**UL 1746**

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**Underground Storage Tanks**

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**Third Edition**

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Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at <http://csds.ul.com>.

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## INTRODUCTION

### 1 Scope

1.1 These requirements cover pre-engineered corrosion protection systems intended to be factory installed on the exterior surface of steel underground atmospheric-type storage tanks intended for flammable and combustible liquids.

1.1 revised December 19, 2014

1.2 These requirements cover the following systems:

- a) Part I for galvanic-type cathodic protection systems.
- b) Part II for fiber-reinforced plastic (FRP) composite systems.
- c) Part III for polyurethane (PUR), polyurea, high density polyethylene (HDPE) or fiber-reinforced plastic (FRP) jacketed systems.
- d) Part IV for polyurethane (PUR) coated systems.

1.2 revised December 19, 2014

1.3 These tanks are intended for installation and use in accordance with one or more of the following: Standard for the Installation of Oil-Burning Equipment, NFPA 31; Flammable and Combustible Liquids Code, NFPA 30; Code for Motor Fuel Dispensing Facilities and Repair Garages, NFPA 30A; International Fire Code, published by the International Code Council.

1.3 revised December 19, 2014

1.4 These tanks are completely fabricated, inspected and tested for protection system defects and/or tank leakage before shipment from the factory as completely assembled vessels and are intended for burial in accordance with the manufacturers instructions.

1.4 revised December 19, 2014

## 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.

2.1.2 A component is not required to comply with a specific requirement that:

- a) Involves a feature or characteristic not required 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 rating established for the intended conditions of use.

2.1.4 Specific components are 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.

## 2.2 Units of measurements

2.2.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.

## 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.

## 2.4 Terminology

2.4.1 In the following text, a requirement that applies only to a particular type of tank is so identified by a specific reference in that requirement to the type or types of tank involved. Absence of such specific reference or use of the term "tank" indicates that the requirement applies to all underground storage tanks unless indicated otherwise.

## 3 Glossary

3.1 For the purpose of this standard the following definitions apply.

3.1 revised December 19, 2014

3.1.1 **ATMOSPHERIC TANK** – A storage tank that has been designed to operate at pressures of negative 0.5 psig to 1.0 (negative 3.4 kPa to 6.8 kPa) psig measured at the top of the tank.

3.1.1 added December 19, 2014

3.1.2 **CATHODICALLY PROTECTED TANK** – A steel tank with a pre-engineered, factory installed galvanic type cathodic protection system consisting of anodes, dielectric coatings, isolated devices and accessories applied to outer tank shell which provides external corrosion protection. Cathodically protected tank requirements are found in Part I.

3.1.2 added December 19, 2014

3.1.3 **COATED TANK** – A steel tank with a polyurethane (PUR) layer directly bonded to the exterior of the tank which provides external corrosion protection. The polyurethane (PUR) layer does not provide an interstitial space. Coated tank requirements are found in Part IV.

3.1.3 added December 19, 2014

3.1.4 **COMPOSITE TANK** – A steel tank with a fiber reinforced plastic (FRP) layer or laminate directly bonded to the exterior of the tank which provides external corrosion protection. The FRP layer or laminate does not provide an interstitial space. Composite tank requirements are found in Part II.

3.1.4 added December 19, 2014

3.1.5 HOLIDAY – A small fault, crack, pin hole, or other defect in a non metallic dielectric coating, coating, covering or structural layer, that results in a spark detection when tested with high voltage apparatus as defined in this standard.

3.1.5 added December 19, 2014

3.1.6 INTERSTITIAL SPACE (aka ANNULAR SPACE, INTERSTICE) – A space between the walls of a multiple wall tank that is capable of communicating fluid from a leak in an adjacent wall to a collection point for monitoring.

3.1.6 added December 19, 2014

3.1.7 JACKETED TANK – A steel tank in a fiber reinforced plastic (FRP), high density polyethylene (HDPE), polyurea, or polyurethane (PUR) that forms an interstitial space, where the jacket provides secondary containment and external corrosion protection. Jacketed tank requirements are found in Part III.

3.1.7 added December 19, 2014

3.1.8 PRIMARY CONTAINMENT – The ability of an enclosed design or construction to directly contact and contain a liquid while in normal use.

3.1.8 added December 19, 2014

3.1.9 PRIMARY TANK – An inner wall of a tank construction that provides containment of the product being stored.

3.1.9 added December 19, 2014

3.1.10 SECONDARY CONTAINMENT – The ability of a design or construction to directly contact and contain a liquid to a minimum of 300 degrees only in abnormal use (from primary containment leakage or rupture).

3.1.10 added December 19, 2014

3.1.11 STORAGE TANK (TANK) – A vessel having a liquid capacity that exceeds 60 gallons (230 L), is intended for fixed installation, and is not used for processing.

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3.1.11 added December 19, 2014

3.1.12 UNDERGROUND TANK (aka UNDERGROUND STORAGE TANK or UST) – A storage tank that is intended for installation at least 12 inches (304.8 mm) below grade and in direct contact with backfill.

3.1.12 added December 19, 2014

3.2 *deleted December 19, 2014.*

3.3 *deleted December 19, 2014.*

3.4 *deleted December 19, 2014.*

3.5 *deleted December 19, 2014.*

3.6 *deleted December 19, 2014.*

3.7 *deleted December 19, 2014.*

## CONSTRUCTION

### 4 General

4 effective January 17, 2009

4.1 The construction and assembly of an external corrosion protection system shall be evaluated based on its intended application on the outside of a steel tank and use in underground flammable liquid storage systems.

4.2 Only new materials and components shall be used in the fabrication of external corrosion protection systems described in the applicable parts of this Standard.

4.3 All tanks and integral accessories or components to which the external corrosion protection system is applied shall be designed and built in accordance with the Standard for Steel Underground Tanks for Flammable and Combustible Liquids, UL 58.

4.4 The overall length of a tank shall not be greater than 8 times its diameter.

4.5 *deleted December 19, 2014.*

4.6 Any opening shall not be blocked or covered by the external corrosion protection system.

### 4A Capacities and Dimensions

4A added December 19, 2014

4A.1 The addition of the external corrosion protection system to the tank shall not be taken into account for measuring or calculation purposes, or revised for rating or marking purposes for compliance with capacity and dimension requirements per Capacity and Dimensions, Section 4, in the Standard for Safety for Steel Underground tanks for Flammable and Combustible Liquids, UL 58.

4A.1 added December 19, 2014

### 5 Compartments

5 effective January 17, 2009

5.1 All tanks with compartments shall comply with Compartment Tanks, Section 13, in the Standard for Steel Underground Tanks for Flammable and Combustible Liquids, UL 58.