CAN/ULC 653:2024

Standard for Aboveground Horizontal Steel Contained Tank Assemblies for Flammable and Combustible Liquids

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Standard for Aboveground Horizontal Steel Contained Tank Assemblies for Flammable and Combustible Liquids, CAN/ULC 653

Third Edition, Dated January 1, 2016

Summary of Topics

This revision of CAN/ULC 653 dated June 18, 2024 includes the following changes:

– Tank Type/Shape Corrections; 2.2, 3.3, 4.1.1, and TABLE B.1

– Terminology & Requirement Corrections; 1.3, 2.2, 3.3, 4.6.1, 5.2.1, 5.2.2, 5.3.1, 5.3.2, 5.3.3, 5.3.4, and 5.3.5

– Revision to Paint Protection; 4.4.3

– Editorial Corrections; 2.1, 2.2, 3.5, and 3.7

Text that has been changed in any manner or impacted by ULSE's electronic publishing system is marked with a vertical line in the margin.

The new and revised requirements are substantially in accordance with Proposal(s) on this subject dated September 15, 2023 and March 29, 2024.

PLEASE NOTE THAT CERTAIN CODES MAY REFER TO A SUPERSEDED VERSION OF THIS STANDARD. IN THOSE INSTANCES, THE RELEVANT VERSIONS ARE AVAILABLE FOR PURCHASE.

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CAN/ULC 653:2024

Standard for Aboveground Horizontal Steel Contained Tank Assemblies for Flammable and Combustible Liquids

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APPENDIX D (INFORMATIVE) INSTALLATION, USE AND MAINTENANCE OF A CONTAINED TANK ASSEMBLY

APPENDIX E (INFORMATIVE) PROTECTIVE COATINGS

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This list represents the membership at the time the Committee balloted on the final text of this edition. Since that time, changes in the membership may have occurred.

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PREFACE

This is the Third Edition of the Standard for Aboveground Horizontal Steel Contained Tank Assemblies for Flammable and Combustible Liquids, CAN/ULC 653.

This Edition of the Standard has been formally approved by the ULC Standards Committee on Stationary Steel Storage Containers for Flammable and Combustible Liquids.

This Standard has been developed in compliance with the requirements of Standards Council of Canada (SCC) for accreditation of a Standards Development Organization.

Only metric SI units of measurement are used in this Standard. If a value for measurement is followed by a value in other units in parentheses, the second value may be approximate. The first stated value is the requirement.

Appendices A and B, identified as Normative, forms a mandatory part of this Standard.

Appendices C, D, and E, identified as Informative, are for information purposes only.

In Canada, there are two official languages, English and French. All safety warnings must be in French and English. Attention is drawn to the possibility that some Canadian authorities may require additional markings and/or installation instructions to be in both official languages.

This Third Edition National Standard of Canada is based on, and now supersedes, the Second Edition.

Attention is drawn to the possibility that some of the elements of this Canadian standard may be the subject of patent rights. ULC Standards shall not be held responsible for identifying any or all such patent rights.

Requests for interpretation of this Standard should be sent to ULC Standards. The requests should be worded in such a manner as to permit a “yes” or “no” answer based on the literal text of the requirement concerned.

This CAN/ULC 653 Standard is under continuous maintenance, whereby each revision is approved in compliance with the requirements of SCC for accreditation of a Standards Development Organization. In the event that no revisions are issued for a period of four years from the date of publication, action to revise, reaffirm, or withdraw the standard shall be initiated.

Comments or proposals for revisions on any part of the Standard may be submitted at any time. Proposals should be submitted via a Proposal Request in the Collaborative Standards Development System (CSDS) at https://csds.ul.com.

This Standard is intended to be used for conformity assessment.

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1 SCOPE

1.1 This Standard sets forth the minimum requirements for steel contained tank assemblies that are used for aboveground storage of flammable and combustible liquids such as gasoline, fuel oil, or similar products with a relative density not greater than 1.0.

1.2 This Standard does not cover requirements for accessory devices and appurtenances such as overfill protection, spill containment and sumps.

1.2A This Standard does not cover open secondary containments with or without integral primary tanks per ULC/ORD C142.20.

1.3 The stationary installation and use of contained tank assemblies may be covered by the requirements of the authority having jurisdiction and may include by reference, but are not limited to:

A National Fire Code of Canada, Part 4;

B CSA B139, Installation code for oil-burning equipment; and

C CCME PN 1326, Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products.

1.4 The Standard for the primary tank to be incorporated into these tank assemblies is identified in Subsection 4.1, The Primary Tank. As a result of revisions to that Standard published in 2019, in addition to traditional safety requirements for tanks that primarily evaluate functional operation, structural integrity, and mitigate fire & environmental hazards from loss of liquid containment under expected normal conditions; optional construction and/or performance requirements, and associated ratings, intended to address more severe conditions associated with the effects of Climate Change are now specified in an optional Climate Change Adaptation Appendix in each of those Standards

2 REFERENCE PUBLICATIONS

2.1 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.

2.2 The following publications are referenced in this Standard:

CCME PN 1326, *Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products*

CSA B139, *Installation code for oil-burning equipment*

National Building Code of Canada

National Fire Code of Canada

ULC/ORD C142.20*, Secondary Containment for Aboveground Flammable and Combustible Liquid Storage Tanks*

ULC-S601, *Shop Fabricated Steel Aboveground Tanks for Flammable and Combustible Liquids*

ULC-S602, *Aboveground Steel Tanks for Fuel Oil and Lubricating Oil*

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ULC 652, *Tanks Assemblies for the Collection, Storage and Removal of Used Oil*

3 GLOSSARY

3.1 AUTHORITY HAVING JURISDICTION – The governmental body responsible for the enforcement of any part of this Standard or the official agency designated by that body to exercise such a function.

3.2 COMBUSTIBLE LIQUID – Any liquid having a flash point at or above 37.8 °C and below 93.3 °C, and as defined in the National Fire Code of Canada.

3.3 CONTAINED TANK ASSEMBLY – A primary tank mounted within a steel secondary containment having a capacity of not less than 110 % of the capacity of the primary tank. The calculation of this capacity includes any part of the primary tank that would be submerged in the containment.

NOTE: The contained tank assembly secondary containment may either be capable or not capable of normally being pressurized but is designed to resist entry of water and debris into the interstitial space.

3.4 FLAMMABLE LIQUID – Any liquid having a flash point below 37.8 °C and a vapour pressure not exceeding 276 kPa (absolute) at 37.8 °C, and as defined in the National Fire Code of Canada.

3.5 *Deleted*

3.6 PRIMARY TANK – The product storage tank.

3.7 SECONDARY CONTAINMENT / CONTAINMENT – Construction, external to the primary tank and designed to prevent the contents of the primary tank from leaking outside the containment.

4 CONSTRUCTION

4.1 THE PRIMARY TANK

4.1.1 The primary tank shall be constructed and tested for full compliance with the applicable requirements of the following standards for its shape and type (general use or special use):

a) ULC-S601, for horizontal cylindrical, vertical cylindrical or rectangular tank shapes, and if a special purpose type, the additional requirements for Generator Base, Work Bench or Utility Tanks;

b) ULC-S602, for obround tanks; except venting which shall meet the requirements of ULC-S601 for a horizontal cylindrical tank of the same capacity; or

c) Tanks designed in accordance with 4.1.1(a) or 4.1.1(b) and adapted in accordance with ULC 652.

4.2 THE CONTAINMENT

4.2.1 The minimum design of the secondary containment shall be such that any leak from a perforation in the lower half of the primary tank shall be contained.

4.2.2 Where the underside of a secondary containment is less than 100 mm from or in contact with the ground, the floor plate shall be not less than 6 mm nominal thickness for all capacities.

4.2.3 The minimum nominal thickness for the floor and walls of a secondary containment shall be determined in accordance with TABLE 1. Where the containment is cylindrical, the head and shell

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