CAN/ULC 655:2015 (R2024)

Standard for Aboveground Protected Tank Assemblies for Flammable and Combustible Liquids

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The intended primary application of this standard is stated in its scope. It is important to note that it remains the responsibility of the user of the standard to judge its suitability for the particular application.

Copies of this National Standard of Canada may be ordered from ULC Standards.

CETTE NORME NATIONALE DU CANADA EST DISPONIBLE EN VERSIONS FRANÇAISE ET ANGLAISE

Standard for Aboveground Protected Tank Assemblies for Flammable and Combustible Liquids, CAN/ULC 655

Second Edition, Dated September 1, 2015

Summary of Topics

This revision of CAN/ULC 655 dated April 2, 2024 is being issued to update the title page to reflect the reaffirmation of this Second Edition National Standard of Canada. No changes in requirements are involved.

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 requirements are substantially in accordance with Proposal(s) on this subject dated January 12, 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PLEASE NOTE THAT CERTAIN CODES MAY REFER TO A SUPERSEDED VERSION OF THIS STANDARD.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 655:2015 (R2024)

Standard for Aboveground Protected Tank Assemblies for Flammable and Combustible Liquids

ICS 23.020.10

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SECOND EDITION . . . . . SEPTEMBER 2015
Revision . . . . . .March 2019
REAFFIRMATION . . . . . APRIL 2, 2024

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ULC STANDARDS COMMITTEE ON STATIONARY STEEL STORAGE CONTAINERS FOR FLAMMABLE AND COMBUSTIBLE LIQUIDS

NAME	AFFILIATION	CATEGORY	REGION
L. Werner (Chair)	UL Standards & Engagement	Non-voting	Ontario
E. Bourassa	Granby Industries LP	Producer	Québec
J. Burton	AGI Envirotank, Ltd.	Producer	Saskatchewan
A. Crimi	AC Consulting Solutions Inc.	General Interest	Ontario
C. Deschamps	Régie de batiment du Québec	AHJ/Regulator	Québec
J. Duarte	Lanxess Canada	Commercial / Industrial User	Ontario
J. Dutton	Consultant	General Interest	Newfoundland & Labrador
S. Fournier	Les Industries Desjardins	Producer	Québec
N. Gervais	IMI Manufacturing	Producer	Ontario
S. Jones	SDJ Associates / blueprint2build Inc.	Commercial / Industrial User	Ontario
N. Klassen	Westeel	Producer	Manitoba
P. Legault	Integrated Review Services – Consulting	User	Ontario
L. Lorentz	Steelcraft Inc.	Producer	Ontario
M. Mailvaganam	Consultant	General Interest	Ontario
G. Nikolic	MHCC Consultants Inc.	Commercial / Industrial User	Ontario
D. Northcotte	Heartland Farm Mutual Insurance	Consumer	Ontario
S. Pollock	Steel Tank Institute	Producer	USA
R. Riegel	UL Solutions	Testing & Standards Org	USA
D. St. Onge	Regal Tanks	Producer	British Columbia
C. Stevenson	Apex Corrosion	General Interest	Ontario
H. Sukhu	STEM/CAN	Producer	Ontario
R. Sumabat	Technical Standards & Safety Authority (TSSA)	AHJ/Regulator	Ontario
W. Trussler	Ship’s Point Consulting	User	Canada
C. Treuthardt (Project Manager)	UL Standards & Engagement	Non-voting	USA

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 Second Edition of the Standard for Aboveground Protected Tank Assemblies for Flammable and Combustible Liquids, CAN/ULC 655.

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.

Appendix A, identified as Normative, forms a mandatory part of this Standard.

Appendices B and C, identified as Informative, is for guidance and informational 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 Second Edition National Standard of Canada is based on, and now supersedes, the First 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 655 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 On-Line 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 covers minimum requirements for shop fabricated aboveground *protected tank assemblies* that are used for the storage of *flammable* and *combustible liquids* with a specific gravity not greater than 1.0, that are compatible with the material of construction.

In addition to this Standard's traditional safety requirements for aboveground steel tanks that primarily evaluate structural integrity and mitigate 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 included in Appendix C.

1.2 These *protected tank assemblies* consist of *primary tanks* provided with *secondary containment* and *protective encasement* constructed to meet this standard and shall be tested to demonstrate a 2 h fire rating and provide limited resistance to impact and ballistic attack.

1.3 The requirements in this Standard are for the construction and performance of stationary tanks. The installation, operation, and maintenance of these *protected tank assemblies* may be covered by the requirements of the *authority having jurisdiction* and may include by reference, but 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 These requirements and tests shall not be construed as having determined suitability for use of a *protected tank assembly* after fire exposure, physical damage, or misuse.

1.5 Except for optional Climate Change Adaptation requirements in Appendix C, these requirements do not cover special evaluations for resistance to, or use after, earthquakes, floods, high wind events, or other natural disasters.

NOTE: See the Note at the beginning of Appendix C for further information on the terms "Adaptation" and "Mitigation", as they pertain to Climate Change.

2 REFERENCE PUBLICATIONS

2.1 The documents shown below are referenced in the text of this Standard. Unless otherwise stated elsewhere in this Standard such reference shall be considered to indicate the edition and/or revisions of the document available at the date on which the Committee approved this ULC Standard.

Document Published by the American Society of Mechanical Engineers (ASME)
3 Park Avenue, New York, NY 10016-5990 U.S.A.
Telephone: 800-843-2763
www.asme.org

• ANSI/ASME B36.10M-2004 (R2010), Standard for Welded and Seamless Wrought Steel Pipe

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Documents Published by the American Society for Testing and Materials (ASTM)
100 Barr Harbour Drive, PO Box C700, West Conshohocken, PA 19428-2959 U.S.A.
Telephone: (610) 832-9585
www.astm.org

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• ASTM B117-11, Standard Practices for Operating Salt Spray (Fog) Apparatus

• ASTM C39/C39M REV A-15, Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens

• ASTM C495/C495M-12, Standard Test Method for Compressive Strength of Lightweight Insulating Concrete

• ASTM G155-13, Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials

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Document Published by the Canadian Council of Ministers of the Environment (CCME)
326 Broadway, Suite 400, Winnipeg, MB R3C 0S5 Canada
Telephone: (204) 948-2090
www.ccme.ca

• CCME PN 1326-2003 (UPD 2013), Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products

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Document Published by the Canadian General Standards Board (CGSB)
11 Laurier Street, Hull, QC K1A 0S5 Canada
Telephone: (819) 956-0425
www.pwgsc.gc.ca

• CAN/CGSB-3.2-2015, Heating fuel oil

Documents Published by the Canadian Standards Association (CSA)
5060 Spectrum Way, Mississauga, ON L4W 5N6 Canada
Telephone: (416) 747-4000 or 1-800-469-6727
www.csa.ca

• CSA A23.1-14/A23.2-14, Concrete materials and methods of concrete construction/Test methods and standard practices for concrete

• CSA B139-15, Installation code for oil-burning equipment

• CSA C22.2 No. 0.15-15, Adhesive labels

Document Published by the National Research Council Canada (NRC)
1200 Montreal Road, Bldg. M-58, Ottawa, ON K1A 0R6 Canada
Telephone: (613) 993-2463 or 1-877-672-7990
www.nrc-cnrc.gc.ca

• National Fire Code of Canada, 2015

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E-mail: publications@ulc.ca
www.ulc.ca

• CAN/ULC-S601-14, Standard for Shop Fabricated Steel Aboveground Tanks for Flammable and Combustible Liquids

• CAN/ULC-S615-14, Standard for Fibre Reinforced Plastic Underground Tanks for Flammable and Combustible Liquids

• CAN/ULC-S668-12, Standard for Liners Used for Secondary Containment of Aboveground Flammable and Combustible Liquid Tanks

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Documents Published by Published by Underwriters Laboratories Inc. (ULI)
333 Pfingsten Road, Northbrook, IL 60062-2096 U.S.A.
Telephone: (847) 272-8800
www.ul.com

• UL 969-1995 (R2014), Standard for Marking and Labeling Systems

• UL 1709-2007 (R2011), Standard for Rapid Rise Fire Tests of Protection Materials for Structural Steel

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3 GLOSSARY

NOTE: Terms used in this Standard that are in *italic* print are defined as follows:

3.1 *AUTHORITY HAVING JURISDICTION* – The governmental body responsible for the enforcement of any part of the Standard or the official or 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 *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.

3.4 *NON-PRESSURE TANK* – A tank that is normally vented to atmosphere and is not intended to accommodate internal pressures at the top of the tank greater than 7 kPa (gauge) nor internal vacuum greater than 300 Pa (gauge).

3.5 *PRIMARY TANK* – The product storage tank.

3.6 *PROTECTED TANK ASSEMBLY / ASSEMBLY* – Aboveground *non-pressure tank (primary tank)* provided with *secondary containment* and enclosed in a *protective encasement*.

3.7 *PROTECTIVE ENCASEMENT / ENCASEMENT* – Construction that is external to the *primary tank* and designed for protection against fire, vehicle impact and ballistic attack.

3.8 *SECONDARY CONTAINMENT / CONTAINMENT* – Construction that is external to the *primary tank* intended to capture and contain leakage in case of failure of the *primary tank*.

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