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**Underwriters Laboratories Inc.®**A not-for-profit organization dedicated to public safety
and committed to quality service**April 8, 1996****Revision pages for****Standard for****Nonintegral Marine Fuel Tanks****UL 1102, Fourth Edition**

Attached to this transmittal notice is a revision of the Fourth edition of UL 1102.

A CHANGE ON A PAGE DATED APRIL 8, 1996 IS INDICATED BY A SMALL PRINT NOTE FOLLOWING THE AFFECTED ITEM, PRECEDED AND FOLLOWED BY AN ASTERISK.

THIS REVISION IS CONSIDERED NON-SUBSTANTIVE AND IS BEING ISSUED TO ELIMINATE THE OXYGEN BOMB TEST. THE OXYGEN BOMB TEST IS NO LONGER APPROPRIATE IN MOST CASES DUE TO THE ADDITION OF ANTIOXIDANTS TO RUBBER AND POLYMERIC COMPOUNDS. THEREFORE, UL IS ELIMINATING THE OXYGEN BOMB TEST AND REPLACING IT WITH AN AIR OVEN AGING TEST WHICH IS USED FOR THERMOPLASTIC COMPOUNDS. 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 1102-1991.

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	January 31, 1992(Reprinted April 8, 1996)
2	—
3 — 18	January 31, 1992
19	April 8, 1996
20, 21	January 31, 1992

JANUARY 31, 1992
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1

UL 1102

Standard for

Nonintegral Marine Fuel Tanks

First Edition — July, 1972
Second Edition — August, 1978
Third Edition — June, 1980

Fourth Edition

January 31, 1992

Approval as an American National Standard (ANSI) covers the numbered paragraphs on pages dated January 31, 1992. These pages should not be discarded when revised or additional pages are issued if it is desired to retain the ANSI approved text.

Approved as ANSI/UL 1102 — 1980, March 31, 1980
Approved as ANSI/UL 1102 — 1985, April 5, 1985
Approved as ANSI/UL 1102 — 1991, August 1, 1991

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.

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Cold Exposure

19.4 Three samples of the marking plates are to be exposed to air at a temperature of minus 40°C (-40°F) for 48 hours.

Immersion — Water

19.5 Three samples of the marking plates are to be immersed in water at a temperature of $23 \pm 2^\circ\text{C}$ ($73.4 \pm 3.6^\circ\text{F}$) for 48 hours.

Salt Spray

19.6 Three samples of the marking plates are to be subjected to a salt spray test as described in the Standard for Salt-Spray (Fog) Testing, ASTM B117-73 (1979) for 48 hours.

Immersion — Oil

19.7 Three samples of the marking plates are to be immersed in No. 3 Swelling Oil, ASTM D471 — 1979, at a temperature of $23 \pm 2^\circ\text{C}$ ($73.4 \pm 3.6^\circ\text{F}$) for 48 hours.

Accelerated Weathering

19.8 Three samples of the marking plates are to be exposed in a weatherometer for a period of 100 hours. The weatherometer is operated on a 120 minute cycle; 102 minutes of light only and 18 minutes of light and water. The arc lamp accommodates three pairs of carbons consisting of three No. 22 upper carbons and three No. 13 lower carbons, automatically transferring from one pair to another as the carbons are consumed. The arc assembly, which is mounted at the center of a vertical cylinder, is to be energized at 60 amperes, with 50 volts alternating current across the arc. Removable panels of Corex D glass surround the arc. The marking plates are to be mounted on the rack and rotated approximately 18 inches (457 mm) from the arc at one revolution per minute. Water-spray nozzles mounted horizontally spray

the specimens evenly in a fine mist with water at a temperature of $80 \pm 10^\circ\text{F}$ ($26.7 \pm 5.6^\circ\text{C}$), a pressure of 12 — 18 psig (80 — 120 kPa) at a delivery rate of 0.9 — 1.2 gallons/hour (gph) (3.4 — 4.5 liters/hour) per nozzle. Black panel temperature at the exposure plane is to be $155 \pm 10^\circ\text{F}$ ($68 \pm 5.6^\circ\text{C}$). Filters are to be cleaned each 24 hours.

As-Received

19.9 Three samples of the marking plates are to be tested in the as-received condition.

20. Gasket Tests

20.1 Gaskets shall show no evidence of wicking or leakage when subjected to a 3 foot (0.91 m) head of reference Fuel C for 24 hours.

20.2 A gasket made of synthetic rubber shall not crack or show visible evidence of deterioration such as discoloration, shrinking, swelling, melting, or warping following exposure in an air oven for 70 hours at $100^\circ\text{C} \pm 2^\circ\text{C}$ ($212^\circ\text{F} \pm 3.6^\circ\text{F}$).

Paragraph 20.2 revised April 8, 1996

20.3 A synthetic rubber gasket that contacts any of the fluids listed in Table 20.1 shall not show a volume change or loss of weight that would impair its function following partial immersion to approximately one-half its longest dimension for 70 hours at $23 \pm 2^\circ\text{C}$ ($73.4 \pm 3.6^\circ\text{F}$) in the specified test liquid.

TABLE 20.1

TEST LIQUIDS FOR SYNTHETIC RUBBER MATERIALS

Fluid in Contact With Part	Test Liquid ^a
Fuel Oils, Nos. 1,2,4—6 and Kerosene	No. 3 Swelling Oil
Gasoline	Reference Fuel C

^aASTM D471 — 1979, Test for Rubber Property — Effects of Liquids.

20.4 A change in volume of not more than 40 percent swelling or 1 percent shrinkage, and a weight loss (extraction) of not more than 10 percent shall confirm compliance with paragraph 20.3.

MANUFACTURING AND PRODUCTION TESTS

21. General

21.1 To verify compliance with these requirements in production, the manufacturer shall provide the necessary production control, inspection, and tests. The program shall include at least the following:

A. **LEAKAGE TEST** — Each fuel tank, assembled with all specified attachments, shall be tested for leakage in the following manner:

1. Each assembly shall be attached to a regulated pressure source of either air or inert gas and subjected to a test pressure equal to the test pressure marked on the tank label. All seams, fittings, and joints shall be tested for leakage by a leak detection method other than the pressure drop method. If the tank top, sides, and bottom are fabricated by a hand lay-up method, as in the case of glass fiber reinforced plastic fuel tanks, all surfaces shall be examined in addition to the seams and fittings.

2. Assemblies that permit leakage shall be rejected, but tanks that are found to be leaking may be repaired and retested.

B. **INSPECTION AND TEST RECORDS** — Unless marked on each fuel tank, see paragraph 22.5, the manufacturer shall maintain records of the Inspection and Production Test results for each fuel tank.

MARKING

22. General

22.1 Each fuel tank shall be plainly marked with:

- A. The manufacturer's name or trademark and address,
- B. Model designation,
- C. Type of fuel with which it is to be used,
- D. Capacity in U. S. gallons,
- E. Month (or lot number) and year of manufacture,
- F. Material from which fabricated,
- G. Minimum wall thickness, in inches,
- H. Maximum test pressure in pounds per square inch gauge,
- I. The statement, "This tank has been tested under 33 CFR 183.510(a)-1988,"
- J. The statement, "Must be installed aft of the boat's half length," if the representative Shock Tests were conducted at less than 25 g (245 m/s²) in accordance with the provisions of item B of paragraph 14.4.

22.2 Each letter and number on the label shall be at least 1/16 inch (1.6 mm) high and shall either contrast in color with the basic color of the label or be embossed on the label.

UL 1102



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Nonintegral Marine Fuel Tanks

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January 31, 1992

STANDARD FOR
NONINTEGRAL MARINE FUEL TANKS
UL 1102, FOURTH EDITION

Accompanying this transmittal notice is a copy of the fourth edition of UL 1102.

THIS EDITION OF THE STANDARD IS NOW IN EFFECT.

As indicated on the title page, this UL Standard for Safety is an American National Standard.

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1

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