



UL 1175

STANDARD FOR SAFETY

Buoyant Cushions

[ULNORM.COM](https://www.ulnorm.com) : Click to view the full PDF of UL 1175 2020

[ULNORM.COM](https://www.ulnorm.com) : Click to view the full PDF of UL 1175 2020

UL Standard for Safety for Buoyant Cushions, UL 1175

Fourth Edition, Dated April 20, 2007

Summary of Topics

This revision to ANSI/UL 1175 dated January 10, 2020 includes a New Supplement [SA](#), Inflatable Buoyant Cushion.

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.

The new requirements are substantially in accordance with Proposal(s) on this subject dated May 17, 2019 and October 4, 2019.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form by any means, electronic, mechanical photocopying, recording, or otherwise without prior permission of UL.

UL provides this Standard "as is" without warranty of any kind, either expressed or implied, including but not limited to, the implied warranties of merchantability or fitness for any purpose.

In no event will UL be liable for any special, incidental, consequential, indirect or similar damages, including loss of profits, lost savings, loss of data, or any other damages arising out of the use of or the inability to use this Standard, even if UL or an authorized UL representative has been advised of the possibility of such damage. In no event shall UL's liability for any damage ever exceed the price paid for this Standard, regardless of the form of the claim.

Users of the electronic versions of UL's Standards for Safety agree to defend, indemnify, and hold UL harmless from and against any loss, expense, liability, damage, claim, or judgment (including reasonable attorney's fees) resulting from any error or deviation introduced while purchaser is storing an electronic Standard on the purchaser's computer system.

No Text on This Page

ULNORM.COM : Click to view the full PDF of UL 1175 2020

APRIL 20, 2007
(Title Page Reprinted: January 10, 2020)



ANSI/UL 1175-2020

1

UL 1175

Standard for Buoyant Cushions

Previous numbered and unnumbered editions of standards covering buoyant cushions have been published since October, 1974.

First Edition – October, 1974
Second Edition – August, 1978
Third Edition – October, 1999

Fourth Edition

April 20, 2007

This ANSI/UL Standard for Safety consists of the Fourth Edition including revisions through January 10, 2020.

The most recent designation of ANSI/UL 1175 as an American National Standard (ANSI) occurred on January 10, 2020. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, and Title Page.

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 <https://csds.ul.com>.

UL's Standards for Safety are copyrighted by UL. Neither a printed nor electronic copy of a Standard should be altered in any way. All of UL's Standards and all copyrights, ownerships, and rights regarding those Standards shall remain the sole and exclusive property of UL.

COPYRIGHT © 2020 UNDERWRITERS LABORATORIES INC.

No Text on This Page

ULNORM.COM : Click to view the full PDF of UL 1175 2020

CONTENTS**INTRODUCTION**

1	Scope	7
2	Units of Measurement	7
3	Undated References	7
4	Components	7
5	General	7
6	Glossary	8

CONSTRUCTION

7	Material	8
8	Kapok or Fibrous Glass Cushions	10
9	Unicellular Plastic Foam Cushions	29
10	Scrap Foam Cushions	31

PERFORMANCE

11	General	32
12	Buoyancy Test	32
13	Tensile Test	33
14	Insert Envelope Seam Strength Test	33
15	Throw Test	33
16	Release Test	34
17	Temperature Tests	34
	17.1 General	34
	17.2 High temperature test	34
	17.3 Low temperature test	34
18	Flame Exposure Test	34
19	Seam Strength Test	35
20	Tests for Adhesive Material of Scrap Foam Cushions	35
	20.1 General	35
	20.2 Air oven exposure	35
	20.3 Cold chamber exposure	35
	20.4 Humidity chamber exposure	35
	20.5 Tensile test	35

MARKINGS

21	General	36
----	---------------	----

SUPPLEMENTARY INFORMATION

22	General	37
23	Required Texts	38

SUPPLEMENT SA – INFLATABLE BUOYANT CUSHION

SA1	Scope	43
SA2	Glossary	43

CONSTRUCTION

SA3	Inflatable Devices	44
SA4	Buoyancy	45
SA5	Inflation	45

PHYSICAL PROPERTIES TESTS

SA6	Automatic, Manual-Auto, and Manual Inflation Test	45
SA7	Manual Inflation test	46
	SA7.1 Principle	46
	SA7.2 Apparatus	46
	SA7.3 Procedure	46
	SA7.4 Basis for acceptability	46
SA8	Automatic Inflation test	46
	SA8.1 Principle	46
	SA8.2 Procedure	46
	SA8.3 Basis for acceptability	46
SA9	Buoyancy Test	46
	SA9.1 Principle	46
	SA9.2 Apparatus	46
	SA9.3 Procedure – Oral inflation	47
	SA9.4 Basis for acceptability	47
	SA9.5 Procedure – CO ₂ inflation	47
	SA9.6 Basis for acceptability	47
SA10	Uninflated Buoyancy Test	48
	SA10.1 Principle	48
	SA10.2 Procedure	48
	SA10.3 Basis for acceptability	48
SA11	Strength of Attachment Test	48
	SA11.1 Principle	48
	SA11.2 Procedure	48
	SA11.3 Basis for acceptability	48
SA12	Attachment Means	48
SA13	Tensile Test	49
	SA13.1 Principle	49
	SA13.2 Procedure	49
	SA13.3 Basis for acceptability	50
	SA13.4 Inflated condition	50
	SA13.5 Basis for acceptability	50
	SA13.6 Grab strap to body tensile	50
SA14	Temperature Resistance / Stability Test	52
	SA14.1 Principle	52
	SA14.2 Procedure	52
	SA14.3 Basis for acceptability	53
SA15	Solvent Resistance Test	53
	SA15.1 Principle	53
	SA15.2 Procedure	53
	SA15.3 Basis for acceptability	53
SA16	Flame Resistance Test	53
	SA16.1 Principle	53
	SA16.2 Apparatus	53
	SA16.3 Procedure	53
	SA16.4 Basis for acceptability	54
SA17	Puncture Resistance Test	54
	SA17.1 Principle	54

SA17.2	Procedure	55
SA17.3	Basis for acceptability	55
SA18	Over-Pressure Test.....	55
SA18.1	Principle.....	55
SA18.2	Procedure	55
SA18.3	Basis for acceptability	56
SA19	Air Retention Test	56
SA19.1	General	56
SA19.2	Method 1 (Method 1 – change in buoyancy).....	56
SA19.3	Basis for acceptability	56
SA19.4	Air retention test (Method 2 – change in pressure).....	57
SA19.5	Basis for acceptability	57
SA20	Environmental Tests	57
SA20.1	General	57
SA20.2	Procedure	57
SA20.3	Apparatus	58
SA20.4	Basis for acceptability	61
SA21	Rotating Shock Bin Test	61
SA21.1	Principle.....	61
SA21.2	Apparatus	61
SA21.3	Procedure.....	61
SA21.4	Basis for acceptability	62

HUMAN SUBJECT PERFORMANCE TESTS

SA22	Throw Test	62
SA22.1	Principle.....	62
SA22.2	Procedure	62
SA22.3	Basis for acceptability	62
SA23	Stability Test.....	63
SA23.1	Principle.....	63
SA23.2	Procedure	63
SA23.3	Basis for acceptability	63
SA24	Rearming and Repacking Test.....	63
SA24.1	Principle.....	63
SA24.2	Procedure	63
SA24.3	Basis for acceptability	64

REARMING KITS

SA25	General.....	64
------	--------------	----

MARKINGS

SA26	General.....	65
SA27	User Identification and Service Record Area	67
SA28	Inflation Medium Chamber Area Identification	67
SA29	Inflation Medium Chamber Identification	67
SA30	Visibility of Manual Actuation Means	67
SA31	Sewn Labels	67
SA32	Hang Tags.....	68
SA33	Owner's Manual.....	68
SA33.1	General	68
SA33.2	Required text.....	68

No Text on This Page

[ULNORM.COM](https://www.ulnorm.com) : Click to view the full PDF of UL 1175 2020

INTRODUCTION

1 Scope

1.1 These requirements cover buoyant cushions using unicellular plastic foam, kapok, or fibrous glass flotation material that are intended to be used in accordance with the applicable regulations of the United States Coast Guard (USCG).

1.2 The buoyant cushions covered by these requirements are intended for USCG approval under 46 CFR 160.048 or 160.049.

1.3 These requirements do not cover buoyant cushions that employ entrapped air as the prime buoyant means.

2 Units of Measurement

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

3 Undated References

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.

4 Components

4.1 Except as indicated in 4.2, a component of a product covered by this standard shall comply with the requirements for that component.

4.2 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.

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

4.4 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.

4.5 A component used in a device covered by this standard shall comply with the applicable requirements in the Standard for Components for Personal Flotation Devices, UL 1191.

5 General

5.1 A buoyant cushion shall be of the box, rectangular, or trapezoidal type and shall have a top, a bottom, and sides. A pillow type cushion having a top and bottom cover only does not comply with the requirement.

5.2 A cushion shall be constructed so that within 1 minute a swimmer is able to be oriented to the device in such a manner that the face is out of the water without the necessity for constant use of either hand.

5.3 A device shall not incorporate means obviously intended for fastening or securing the device to a boat, nor shall instructions accompanying the device indicate such intent.

Exception: A Type IV buoyant cushion may be provided with hook and pile fastener tapes, or the equivalent, on the cushion's bottom surface when the cushion complies with the requirements specified in the Release Test, Section [16](#), and is marked in accordance with [21.7](#).

5.4 A device shall be constructed to reduce the likelihood of shifting or bunching of internal materials.

6 Glossary

6.1 For the purpose of this Standard, the following definitions apply.

6.2 BAR TACK – A type of stitching sewn in a zig-zag pattern that is at least 3/32 inch (2.4 mm) wide, 5/8 inches (15.9 mm) long, and 18 stitches of a lock type stitch, such as Type 301, Federal Standard 751.

6.3 DEVICE – Any buoyant cushion.

6.4 FOAM – Closed-cell foamed polymeric material.

6.5 GROUP APPROVAL – A single approval granted by the USCG for buoyant cushions using foam, kapok, or fibrous glass flotation materials; and that are in accordance with all of the applicable established dimensions and specifications of this standard.

6.6 INSERT – A quantity of buoyant material that has been cut or formed for insertion into a device.

6.7 JOINING SEAM – A seam that serves a functional purpose in the end product as distinguished from a decorative function.

6.8 LOCK TYPE STITCH – A stitch that will not unravel when a force is applied in the direction of the seam on any of the threads forming the stitch.

6.9 SCRAP FOAM – Material obtained from production remnants.

6.10 SEAM – A joint consisting of a sequence or series of stitches uniting two or more pieces of material.

6.11 SPECIAL APPROVAL – A single approval granted by the USCG for a buoyant cushion that is more than 2 inches (50.8 mm) thick, or has dimensions other than those covered in [Table 8.1](#) and [Table 8.2](#).

CONSTRUCTION

7 Material

7.1 Material used in a cushion shall be new.

7.2 Buoyant materials shall be fibrous glass, kapok, or foam.

7.3 Fibrous buoyant material shall be completely encased in flexible heat-sealed film complying with the requirements for plastic film in the requirements in the Standard for Components for Personal Flotation Devices, UL 1191, or be in accordance with the requirements of Federal Specification LP375C.

7.4 Flexible film shall comply with the requirements for flexible film in the Standard for Components for Personal Flotation Devices, UL 1191.

7.5 Kapok used shall be raw fiber, long, clean, lustrous, creamy white, free from discoloration and other fiber, and shall be in accordance with 46 CFR 164.003. The kapok shall be processed by the "Air-Blow" method and shall separate fiber from masses and leave no more than 5 percent by weight of sticks, seeds, or other foreign matter. Processing shall not break down the fiber or cause undue powdering or pulverizing.

7.6 Fibrous glass buoyant materials shall be in accordance with the requirements of Military Specification MIL-B-2766.

7.7 Welting, when used, shall be of a fiber or plastic material acceptable for the purpose.

7.8 Thread shall have a minimum breaking strength after 100 hours of accelerated weathering of 4.7 pounds-force (20.9 N), wet, dry, or both, as applicable, and shall be in accordance with the applicable requirements for thread in 46 CFR 160.048 and 160.049.

7.9 Cover materials shall have a minimum breaking strength after 100 hours of accelerated weathering of 105 pounds-force (467 N) in the direction of greater thread count and 70 pounds-force (311 N) in the direction of lesser thread count and shall be in accordance with the applicable requirements in 46 CFR 160.048 and 160.049 for cover materials.

7.10 Fabrics shall comply with the requirements for fabrics in the requirements in the Standard for Components for Personal Flotation Devices, UL 1191. Name, denier, thread count, weight per square yard, and type and mount of coating shall be used to identify fabrics.

7.11 In addition to the requirements in [7.10](#), the adhesion of the coating shall be such as to require no less than 8 pounds-force (35 N) to separate it from the cloth backing in accordance with the applicable requirements in 46 CFR 160.048 and 160.049 for coated cover materials.

7.12 Liquid elastomeric compounds employed as dip coatings shall be applied to all external surfaces of buoyant material to provide a minimum thickness of 0.010 inches (0.25 mm) and shall be in accordance with the applicable requirements in 46 CFR 160.049 for dip materials.

7.13 To determine compliance with the requirements of [7.12](#), a piece of glass or other equivalent material shall be dipped following the same procedure used to dip the personal flotation device. Glass or equivalent material is to be used so that the vinyl coating separates from the material to allow the thickness to be measured accurately.

7.14 No less than 48 hours after dipping, the vinyl is then to be peeled off the glass, and the thickness measured at the center and four points around the perimeter. The average of the five values shall be the value checked for compliance with the requirements of [7.12](#).

7.15 Adhesives shall be all-purpose waterproof vinyl type in accordance with Subpart 160.049.

7.16 When used for vinyl-dip coated cushions, reinforcing vinyl shall have a minimum thickness of 0.040 inch (1.02 mm) and shall be attached to the foam by adhesive. See [7.15](#).

7.17 Uncoated 70 denier fabrics shall:

- a) Have 3/4 inch (19.1 mm) seams; or
- b) Incorporate two rows of lockstitch, or the equivalent.

7.18 Thread used for structural seams shall comply with the requirements for thread in the requirements in the Standard for Components for Personal Flotation Devices, UL 1191. See [1.2](#).

7.19 Monofilament thread shall not be used for structural seams.

7.20 Thread and fabric combinations shall be compatible. Cotton threads shall be used only with cotton fabrics; synthetic threads may be used with all fabrics.

8 Kapok or Fibrous Glass Cushions

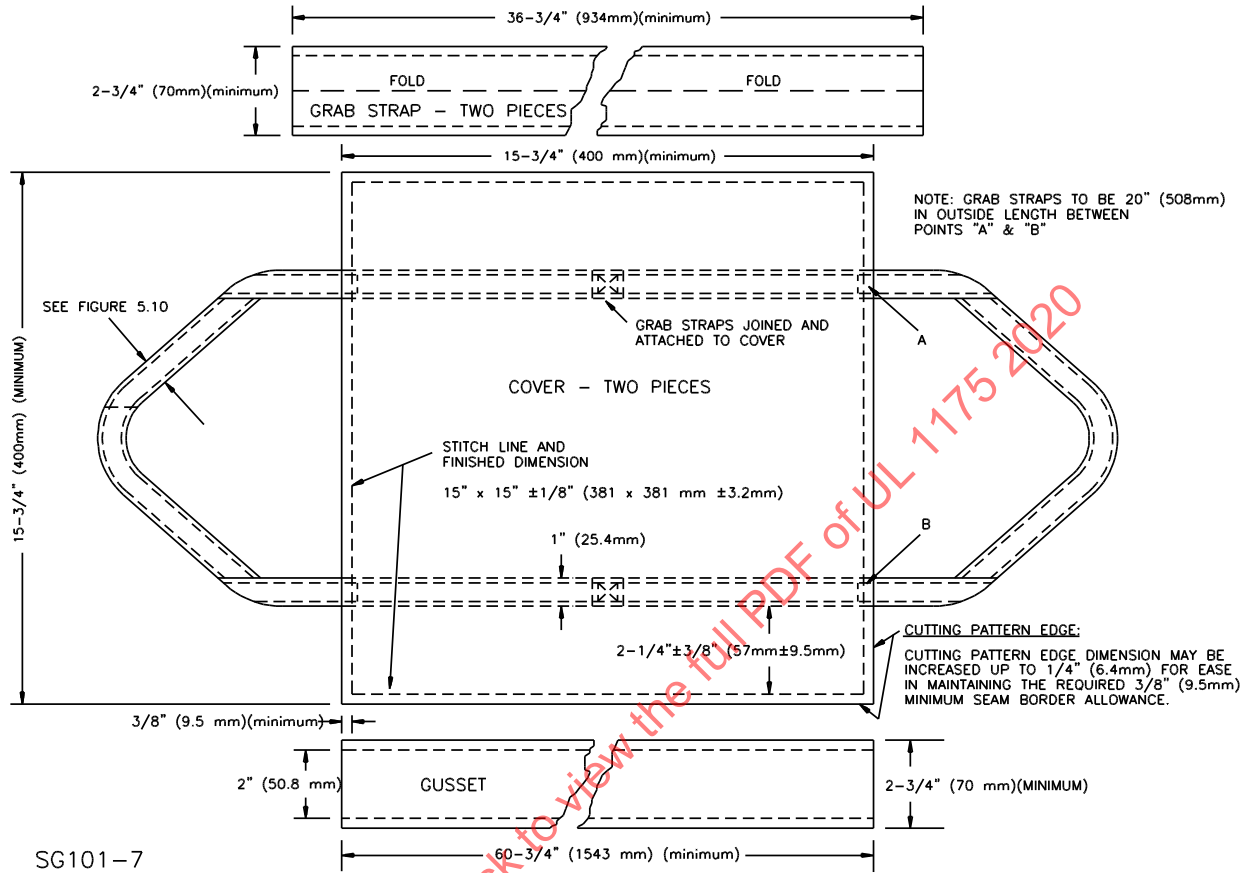
8.1 Kapok or fibrous glass cushions shall be in accordance with the construction requirements of [8.1](#) – [8.17](#).

8.2 Cushions shall have sufficient volume to provide at least 20 pounds-force (89 N) of buoyancy.

8.3 Kapok filled or fibrous glass cushions with group approval shall be constructed in accordance with [Figure 8.1](#).

ULNORM.COM : Click to view the full PDF of UL 1175 2020

Figure 8.1
Buoyant cushions kapok, fibrous glass, or unicellular plastic foam



NOTE 1 – Tolerances on all finished dimensions 6 inches (152.4 mm) or less shall be ±1/8 inch (±3.2 mm) and shall be ±1/4 inch (±6.4 mm) on dimensions greater than 6 inches (152.4 mm), unless otherwise specified.

NOTE 2 – Uncoated 70 denier cover fabrics, other than cotton, shall comply with 8.14 or 9.9. However, the stitching shall be no less than 3/4 inch (19.1 mm) from the edges of the cloth or shall be topstitched (see Figure 8.12).

NOTE 3 – Finished dimension on the gusset width for 15 by 15 by 2 inch (381 by 381 by 50.8 mm) cushions shall be 2, plus 1/2, minus 0 inches (50.8, plus 12.7, minus 0 mm).