



UL 1642

STANDARD FOR SAFETY

Lithium Batteries

UL Standard for Safety for Lithium Batteries, UL 1642

Sixth Edition, Dated September 29, 2020

Summary of Topics

This revision of UL 1642 dated October 12, 2022 includes new test requirements for a Round Bar Crush Test instead of the Impact Test for soft-case pouch cells; [5.1.2](#), [Table 6.1](#), [Table 6.2](#), [14.2](#), and Section [14A](#).

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 and revised requirements are substantially in accordance with Proposal(s) on this subject dated July 1, 2022.

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1

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Standard for Lithium Batteries

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Fifth Edition – March, 2012

Sixth Edition

September 29, 2020

This UL Standard for Safety consists of the Sixth Edition including revisions through October 12, 2022.

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>.

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CONTENTS

INTRODUCTION

1	Scope	5
2	General	5
	2.1 Units of measurement	5
	2.2 Terminology	5
	2.3 Components	5
3	Glossary	6

CONSTRUCTION

4	General	8
	4.1 Casing	8
	4.2 Electrolyte	8
	4.3 Use	8

PERFORMANCE

5	General	9
	5.1 Technician-replaceable batteries	9
	5.2 User-replaceable batteries	9
	5.3 Multicell installations	10
6	Samples	10
7	Conditioning of Samples	12
	7.1 Discharge	12
	7.2 Charge-discharge cycling	12
8	Important Test Considerations	12
9	Temperature Measurements	13

TESTS FOR TECHNICIAN-REPLACEABLE AND USER-REPLACEABLE BATTERIES

ELECTRICAL TESTS

10	Short-Circuit Test	13
11	Abnormal Charging Test	13
12	Forced-Discharge Test	15

MECHANICAL TESTS

13	Crush Test	15
14	Impact Test	16
14A	Round Bar Crush Test	17
15	Shock Test	18
16	Vibration Test	19

ENVIRONMENTAL TESTS

17	Heating Test	19
18	Temperature Cycling Test	19
19	Low Pressure (Altitude Simulation) Test	20

FIRE EXPOSURE TEST

20	Projectile Test	20
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MARKING

21	General	22
22	Primary Batteries.....	22

Annex A Standards for Components

INTRODUCTION

1 Scope

1.1 These requirements cover primary (nonrechargeable) and secondary (rechargeable) lithium batteries for use as power sources in products. These batteries contain metallic lithium, or a lithium alloy, or a lithium ion, and may consist of a single electrochemical cell or two or more cells connected in series, parallel, or both, that convert chemical energy into electrical energy by an irreversible or reversible chemical reaction.

1.2 These requirements cover lithium batteries intended for use in technician-replaceable or user-replaceable applications.

1.3 These requirements are intended to reduce the risk of fire or explosion when lithium batteries are used in a product. The final acceptability of these batteries is dependent on their use in a complete product that complies with the requirements applicable to such product.

1.4 These requirements are also intended to reduce the risk of injury to persons due to fire or explosion when user-replaceable lithium batteries are removed from a product and discarded.

1.5 These requirements cover technician-replaceable lithium batteries that contain 5.0 g (0.18 oz) or less of metallic lithium. A battery containing more than 5.0 g (0.18 oz) of lithium is judged on the basis of compliance with the requirements in this standard, insofar as they are applicable, and further examination and test to determine whether the battery is acceptable for its intended uses.

1.6 These requirements cover user-replaceable lithium batteries that contain 4.0 g (0.13 oz) or less of metallic lithium with not more than 1.0 g (0.04 oz) of metallic lithium in each electrochemical cell. A battery containing more than 4.0 g (0.13 oz) or a cell containing more than 1.0 g (0.04 oz) lithium may require further examination and test to determine whether the cells or batteries are acceptable for their intended uses.

1.7 These requirements do not cover the toxicity risk that may result from the ingestion of a lithium battery or its contents, nor the risk of injury to persons that may occur if a battery is cut open to provide access to the metallic lithium.

2 General

2.1 Units of measurement

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

2.2 Terminology

2.2.1 The terms "lithium battery(ies)" and "battery(ies)" refer to both user-replaceable and technician-replaceable lithium batteries.

2.3 Components

2.3.1 A component of a product covered by this standard shall comply with the requirements for that component. See Annex [A](#) for a list of standards covering components generally used in the products covered by this standard.