

Transport of lithium and sodium-ion batteries - changes to dangerous goods legislation

TÜV Rheinland LGA Products - Information

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It has been clear for some time that lithium cells and batteries must undergo rigorous testing to ensure their safety and reliability in operation. At the heart of these test procedures is the "UN 38.3 test", as specified in the UN Manual of Tests and Criteria, Part III, Section 38.3, the passing of which is an essential seal of quality and safety.

This comprehensive series of tests assesses and evaluates the performance of the energy storage units under a wide range of conditions and ensures that there is no danger to the user or the environment, even under extreme circumstances.

In addition, 1 January 2025 marks another milestone in the safety assessment of battery technologies.

From this date, the scope of application of this important safety standard will be extended to sodium-ion batteries.

Since 01.01.2020, formalised test summaries have been required for all lithium batteries instead of or in addition to the safety data sheets or UN 38.3 test reports (often very extensive, usually only available to the battery manufacturer), which manufacturers and subsequent distributors must provide. An exception has existed since 01/01/2023 for installed button cells. Since 1 January 2025, this has also been required for the sodium-ion batteries newly included in the dangerous goods regulations.

The term "make available" means that manufacturers and downstream distributors ensure that the test summary is accessible so that the consignor or others in the supply chain can confirm compliance.

This means that the up-and-coming and promising sodium-ion technology, which is becoming increasingly important as an alternative to lithium-ion batteries, is now also subject to the same stringent safety tests.

For the following explanations, both the

- Lithium-ion cells,
- Lithium-ion batteries,
- Lithium metal cells (also lithium metal button cells),
- Lithium metal batteries and
- Sodium-ion batteries

The generic term "lithium-ion and sodium-ion batteries" is used here, as the regulations only differ in the details of the test procedure.

These are still subject to the same construction and testing regulations, but a test summary no longer needs to be provided. For enclosed button cells or button cells shipped without equipment, there is still a requirement to provide a test summary.

This is not a document accompanying the transport, but various parties involved in the transport of dangerous goods must ensure that the lithium batteries and sodium-ion batteries are correctly classified. This includes checking that they are UN38.3 compliant transport safe batteries and not prototypes without UN38.3 testing. The latter would be subject to different packaging and transport requirements. Requests for this test summary can therefore also be made to distributors of such batteries or articles with lithium or sodium-ion batteries, so that these documents should be kept available there in any case. Such requests may come from logistics service providers, for example.

EXCEPTIONS

- Prototype batteries that have not yet undergone UN38.3 testing
- Damaged lithium batteries that no longer comply with UN38.3 because they are defective

For such lithium or sodium-ion batteries there are specific transport regulations with higher requirements regarding packaging, labelling etc., deviating from the requirements for new/new batteries.

Since 1 January 2020, batteries that do not fully comply with the requirements of dangerous goods legislation (including a correct test summary) are no longer permitted for transport or must be considered "defective".

It is possible that logistics service providers and commercial customers will not accept lithium and sodium-ion batteries without a test summary or will request written confirmation of the existence of a correct test summary or even the test summaries themselves for verification.

QUERY THE TEST SUMMARY OF LITHIUM BATTERIES/SODIUM-ION BATTERIES

Suggested text for requesting the test summary Manufacturer and/or distributor

Since 1 January 2020, manufacturers and subsequent distributors of lithium batteries or cells (rechargeable lithium-ion batteries and non-rechargeable lithium-metal batteries) and since 1 January 2025 for sodium-ion batteries must provide a test summary (Test Report Summary) on the successful completion of the test series in accordance with the UN Manual of Tests and Criteria Part III, Section 38.3 - "UN 38.3 Test" for short.

Please send us the relevant test summary/s for the following products promptly, preferably by e-mail:

- ...
- ...

If you are not a battery manufacturer, please contact them to obtain the test summary/s.

The legal basis for the necessity of this test summary can be found in the relevant dangerous goods transport regulations:

- Road/ rail/ inland waterway: ADR, RID, ADN 2025 2.2.9.1.7.1 g) or 2.2.9.1.7.2 f)
- See: IMDG Code 42nd Amendment: 2.9.4.7 or 2.9.5.6
- Air: IATA-DGR 66th edition: 3.9.2.6.1 (g) or 3.9.2.7.1 (f)

TEST SUMMARY

The following information must be provided in this test summary:

- (a) Name of the cell, battery or product manufacturer, if applicable;
- (b) Contact information of the cell, battery or product manufacturer, including address, telephone number, e-mail address and website for further information;
- (c) Name of the testing laboratory, including address, telephone number, e-mail address and website for further information;
- (d) a unique test report identification number;
- (e) Date of the test report;
- (f) A description of the cell or battery containing at least the following:
 - I. Lithium-ion or lithium-metal or sodium-ion or -battery
 - II. mass of the cell or battery
 - III. Nominal energy/watt-hour specification (for lithium-ion cells and batteries) or lithium content (lithium-metal cell or battery)
 - IV. physical description of the cell/battery and
 - V. Model number
- (g) List of tests performed and results (pass/fail)
- (h) Reference to the test requirements for composite batteries, if applicable (tests UN Manual 38.3.3 (f) and 38.3.3 (g))
- (i) Reference to the revised edition of the Manual of Tests and Criteria used and any amendments*;
and
- (j) Name and title of the responsible person as an indication of the validity of the information provided

* As of 01/2025: Subsection 38.3 of the Manual of Tests and Criteria, third revised edition, *change/addition/ amendment 1* or the subsequent revised edition and change/ amendment applicable at the time of type testing.

Batteries that correspond to a type that has been tested in accordance with the requirements of subsection 38.3 of the Manual of Tests and Criteria, third revised edition (without change/addition/ amendment 1) may only be transported if they were manufactured before 1 July 2003.

The above information must be included, but there is no set form or binding model.

The English version of the 8th edition of the UN Manual of Tests and Criteria and Changes and Amendments can be found here:

Section 38.3.5 describes the content of the test summary.

Note:

Simple informal confirmations in letters or blanket statements in safety data sheets about successful testing in accordance with UN 38.3 are not sufficient.

The test requirements according to UN 38.3 and the corresponding requirement for the test summary apply to "small" cells (<20 Wh nominal energy for lithium and sodium-ion cells / <1 g lithium for lithium-metal cells), "small" batteries (<100 Wh nominal energy for lithium and sodium-ion batteries / <2 g lithium for lithium-metal batteries) as well as to large cells and batteries.

For the sake of completeness, we would like to point out that all lithium batteries and sodium-ion batteries are subject to further requirements under dangerous goods legislation for shipping/transportation. The specific conditions depend, among other things, on the performance data of the battery and the mode of transport used.

Further information on current legal changes can also be found on our homepage at www.tuv.com or <https://www.tuv.com/regulations-and-standards/en/>

For further technical information, please contact:

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