Welcome

to the online seminar
transportation and shipping of lithium batteries

New developments 2025/2026
Status as of 9th October 2024

www.lithium-battery-service.de

www.strober-partner.de

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E-Scooter in public transport

Explosion and fire hazard: e-scooters are already banned from local transport in several German cities.

- **Munich and Leipzig are also banning e-scooters.**
- **The Association of German Transport Companies (VDV) recommends a ban on e-scooters on public transport in Germany**
- **Reason: low safety standards and serious incidents abroad**
- **ADAC: recommendation makes sense for fire safety reasons**
  The Association of German Transport Companies (VDV) is in favour of a ban on e-scooters on public transport. The reason for this is 'the low safety standard of the lithium-ion batteries used and the associated increased risk of fire and explosion, as well as the release of harmful exhaust fumes'.

Source: ADAC, VDV

E-Scooter in public transport
Would a prohibition make sense?

Dangerous goods regulations - Overview

UNO

EU
Brussels
RL 2008/68

ICAO
Montreal

IATA
Montreal

IMO
London

ECE
Genf

OTIF
Bern

ICAO-
TI

IATA-
DGR

IMDG-
Code

International
regulations

ADN

ADR

RID

German National Regulations - Gefahrgutbeförderungsgesetz

GGV-See

National
regulations

GGVSEB

Legal bases

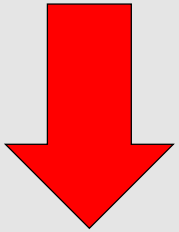
UN Recommendations 23rd edition, 2023

Recommendations on the
TRANSPORT OF DANGEROUS GOODS
Model Regulations – *Twenty-third revised edition*

ADR 2025 30. ÄndV	RID 2025 24. ÄndV	IMDG-Code Amdt. 42-24	IATA-DGR 66. Edition
Effective as of			
01.01.2025	01.01.2025	01.01.2026	01.01.2025
Transition periods			
30.06.2025	30.06.2025	Applicable as of Jan. 01, 2025	none

Colours used in the slides

2023



2025

No changes

LITHIUM BATTERY SERVICE

Road transport according to ADR

ADR

UN Numbers for lithium ion batteries

UN 3480 LITHIUM ION BATTERIES
(including lithium ion polymer batteries)

UN 3481 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT
(including lithium ion polymer batteries)

or

UN 3481 LITHIUM ION BATTERIES PACKED WITH EQUIPMENT
(including lithium ion polymer batteries)

UN Numbers for lithium metal batteries

UN 3090 LITHIUM METAL BATTERIES
(including lithium alloy batteries)

UN 3091 LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT
(including lithium alloy batteries)

or

UN 3091 LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT
(including lithium alloy batteries)

UN 3536 LITHIUM BATTERIES INSTALLED IN CARGO TRANSPORT UNIT

New UN Numbers for vehicles

UN 3171	BATTERY-POWERED VEHICLE
UN 3166	VEHICLE, FLAMMABLE GAS POWERED or FLAMMABLE LIQUID POWERED incl. hybrid vehicles
UN 3556	VEHICLE, LITHIUM ION BATTERY POWERED
UN 3557	VEHICLE, LITHIUM METAL BATTERY POWERED
UN 3558	VEHICLE, SODIUM ION BATTERY POWERED

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Dangerous goods list ADR 2025

New entries in the dangerous goods list ADR

(1)	(Z1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9a)	(9b)	(15)
3556	S3011-00	VEHICLE, LITHIUM ION BATTERY POWERED	9	M11		9A	388 666 667 669	0	E0	P912			- (-)
3557	S3012-00	VEHICLE, LITHIUM METAL BATTERY POWERED	9	M11		9A	388 666 667 669	0	E0	P912			- (-)
3558	S3013-00	VEHICLE, SODIUM ION BATTERY POWERED	9	M11		9A	388 404 666 667 669	0	E0	P912			- (-)

- **New special provision 400, 401, 404**
- **New packing instruction P912**

Hazard label for vehicles
(Dangerous goods list)

2023

No entry in column 5

IATA DGR

2025

New meaning for UN 3171

UN 3171 BATTERY-POWERED VEHICLE or
BATTERY-POWERED EQUIPMENT

UN 3166 VEHICLE, FLAMMABLE GAS POWERED or FLAMMABLE LIQUID POWERED incl. hybrid vehicles

UN 3171 only applies to vehicles and devices powered by wet batteries, sodium metal batteries or batteries with sodium alloys

UN 3166 remains unchanged

Adjustment of SP 388

New Special Provisions

New Special Provision 404 for vehicles sodium ion battery powered

Vehicles powered by sodium ion batteries, containing no other dangerous goods, are not subject to other provisions of these Regulations, if the battery is short-circuited in a way that the battery does not contain electrical energy.
The short-circuiting of the battery shall be easily verifiable (e.g. busbar between terminals).

Packing instruction P912

New packing instruction P912

- Strong, rigid outer packaging
- 4.1.1.3 not applicable =>

- Load securing
- Net mass also > 400 kg
- Unpacked transport possible, if battery ≥ 30 kg

Vehicles – add-on parts

Battery must be installed in the vehicle

Other parts of the vehicle may be removed from the frame to fit better into the packaging.

=> See SP 388

New dangerous good: Sodium ion batteries

UN 3551 SODIUM ION BATTERIES

UN 3552 SODIUM ION BATTERIES CONTAINED IN EQUIPMENT

UN 3552 SODIUM ION BATTERIES PACKED WITH EQUIPMENT

New entries for sodium ion batteries

(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9a)	(9b)	(15)
3551	**SODIUM ION BATTERIES** with organic electrolyte	9	M4		9A	188 230 310 348 360 376 377 400 401 636	0	E0	P903 P908 P909 P910 P911 LP903 LP904 LP905 LP906			2 (E)
3552	**SODIUM ION BATTERIES CONTAINED IN EQUIPMENT** or **SODIUM ION BATTERIES PACKED WITH EQUIPMENT** with organic electrolyte	9	M4		9A	188 230 310 348 360 376 377 400 401 670	0	E0	P903 P908 P909 P910 P911 LP903 LP904 LP905 LP906			2 (E)

New dangerous good:
Sodium ion batteries

Multilateral agreement M354

initiated from Germany on Jun. 28, 2023

Became valid on 25th April 2024
when France signed it.

New proper shipping name for UN 3292

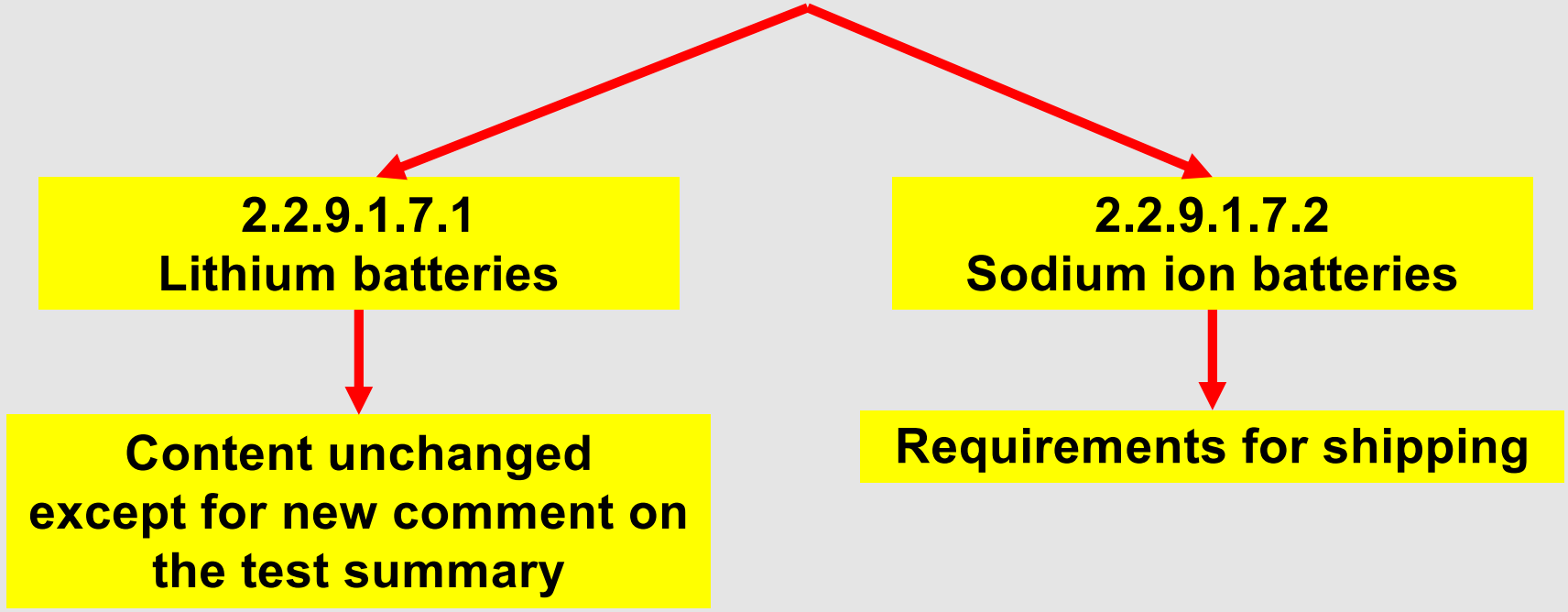
UN 3292

BATTERIES, CONTAINING SODIUM or CELLS, CONTAINING SODIUM

BATTERIES, CONTAINING METALLIC SODIUM OR SODIUM ALLOY or CELLS, CONTAINING METALLIC SODIUM OR SODIUM ALLOY

New structure of section 2.2.9.1.7

2.2.9.1.7 Lithium batteries and sodium ion batteries



New comment on 2.2.9.1.7 g)

New comment on the test summery

„NOTE: The term **„make available“** means that manufacturers and subsequent distributors ensure that the test summary for lithium cells or batteries or equipment with installed lithium cells or batteries is accessible so that the consignor or other persons in the supply chain can confirm compliance.“

New structure of section 2.2.9.1.7

New section 2.2.9.1.7.2
Sodium ion batteries

If sodium ion batteries do not contain metallic sodium or sodium alloy and an organic, non aqueous electrolyte is present, the batteries must be assigned to UN Nos. 3551 or 3552 and fulfil the following requirements:

a) UN 38.3 test
b) Safety ventilation opening
c) Prevention of external short circuits
d) No dangerous reverse currents in parallel circuits
e) Quality management program
f) Test summary

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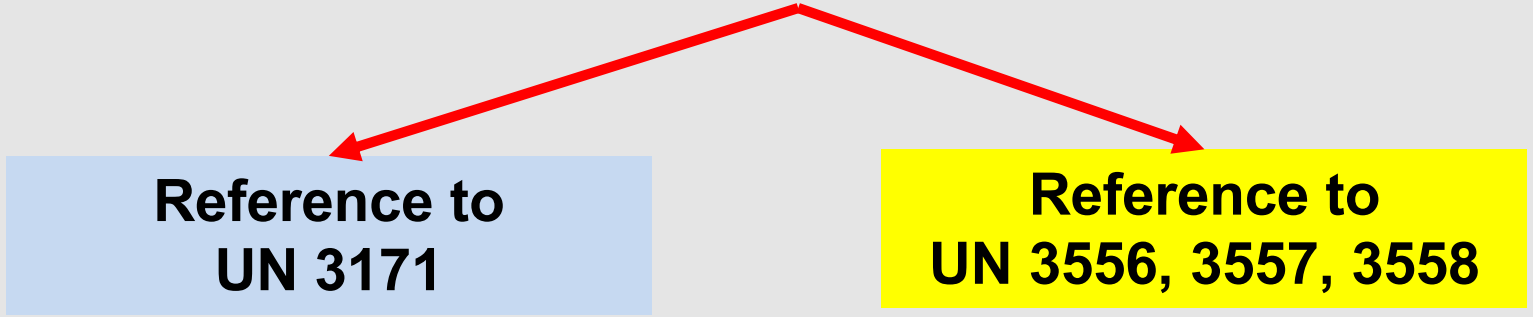
Adjustment SP 360

Special provision 348

Sodium ion batteries must be labelled with the Wh number on the outer casing if manufactured after Dec. 31, 2025.

Adjustment SP 360

Special provision 360



New special provisions

New special provision 400 for sodium ion batteries

Sodium ion cells and batteries and sodium ion cells and batteries contained in or packed with equipment, prepared and offered for transport, are not subject to other provisions of the ADR regulations if they meet the following:

New special provisions

New special provision 400 for sodium ion batteries

a) The cell or battery is short-circuited, in a way that the cell or battery does not contain electrical energy. The short-circuiting of the cell or battery must be easily verifiable (e.g., busbar between terminals);

b) Each cell or battery meets the provisions of section 2.2.9.1.7.2 a), b), c), d), e) and f);

c) Each package shall be marked according to subsection 5.2.1.9;

New special provisions

New special provision 400 for sodium ion batteries

c) Each package shall be marked according to subsection 5.2.1.9;

d) 1.2 m drop test, except the cell or battery is installed in equipment;

e) If cell or battery is installed in equipment
=> strong outer packaging or the cell/battery adequately protected by the equipment;

New special provisions

New special provision 400 for sodium ion batteries

f) Each cell, including when it is a component of a battery, shall only contain dangerous goods that are authorized to be transported in accordance with the provisions of chapter 3.4 and in a quantity not exceeding the quantity specified in chapter 3.2, table A, column 7a.

New special provisions

New special provision 401 for sodium ion batteries

Sodium ion cells and batteries with an organic electrolyte must be transported as UN Nos. 3551 or 3552.
Sodium ion cells and batteries with aqueous alkali electrolyte must be transported as
UN 2795 BATTERIES, WET, FILLED WITH ALKALI, electric storage.

Articles containing other dangerous goods and lithium cells/batteries

Articles containing other DG and lithium cells/batteries

2.1.5.2 ADR
new text

For articles containing pre-production prototype lithium cells or batteries transported for testing, or for articles containing lithium cells or batteries manufactured in production runs of not more than 100 cells or batteries, the requirements of special provision 310 of chapter 3.3 shall apply.

Articles containing other DG and lithium cells/batteries

Articles of the following UN Nos. may ALSO contain lithium batteries in the form of prototypes or small production runs without UN 38.3 test:

- UN 3537
- UN 3538
- UN 3540
- UN 3541
- UN 3546
- UN 3547
- UN 3548

➢ Changed SP 310

➢ New section (5) of PI P006

➢ New section (4) of LP03

Changes SP 310

New regulations in the SP 310

- **In the QM program, the sentences relating to UN 38.3-tested cells or batteries are deleted.**
- **New note: ”Transported for testing" includes, but is not limited to, the tests, integration tests and product performance tests described in the Manual of Tests and Criteria Part III Subpart 38.3.**
- **Articles (UN Nos. 3537, 3538, 3540, 3541, 3546, 3547 or 3548) may contain such cells or batteries, provided that the applicable parts of packing instruction P006 of subsection 4.1.4.1 or packing instruction LP03 of subsection 4.1.4.3 are met.**

Articles with dangerous goods

New section (5) of PI P006

Articles containing pre-production prototype or small production runs must fulfil the following additional requirements:

- **P006 (1) must be met, that means** 

- **Cushioning material must be non-flammable and not electrically conductive**
- **Unpacked only with approval, which may contain additional requirements**

Articles with dangerous goods

New section (4) of PI LP03

Articles containing pre-production prototype or small production runs must fulfil the following additional requirements :

- **LP03 (1) must be met, that means** 

- **Cushioning material must be non-flammable and not electrically conductive**
- **Non-combustibility according to a standard**

Articles with dangerous goods

Articles of the following UN numbers may NOT contain lithium cells/batteries in the form of prototypes or small production runs without UN 38.3 test :

- **UN 3539 (Class 2.3)**
- **UN 3542 (Class 4.2)**
- **UN 3543 (Class 4.3)**
- **UN 3544 (Class 5.1)**
- **UN 3545 (Class 5.2)**

New special provision 677
(Critically defective cells/batteries, SP 376)

Previously regulated in SP 376:

„In both cases, the cells and batteries are assigned to transport category 0 “.

New SP 677:

The following must also be entered in the transport document:
"Transport category 0"

Packing instruction LP 903

Sentence 1:
This instruction applies to UN Nos. 3090, 3091, 3480 and 3481.

Sentence 1:
This instruction applies to
- Large cells with a gross mass of more than 500 g
- Large batteries with a gross mass of more than 12 kg
- Equipment containing large cells or large batteries

Basic requirements for all cells/batteries

Tests according to the Manual of Test and Criteria Part III Sub-Section 38.3

- Altitude simulation
- Thermal test
- Vibration
- Shock
- External short circuit
- Impact or Crush
- Overcharge
- Forced discharge

Exception: prototypes and small production runs

7. Edition Amdt.1

8. Edition

Test summary

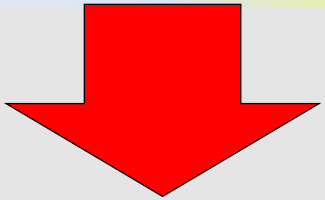
UN 38.3 Test summary

New note

The term **„make available“** means that manufacturers and subsequent distributors ensure that the test summary for lithium cells or batteries or equipment with installed lithium cells or batteries is accessible so that the consignor or other persons in the supply chain can confirm compliance.

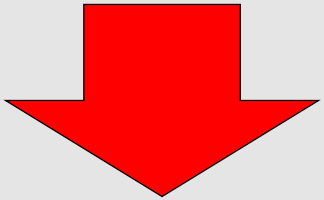
QM program for the manufacture

3.9.2.6.1 IATA-DGR



QM program acc. to 3.9.2.6.1 (e)

Requirement of a quality management programme
for the manufacture of cells / batteries



Applies since 01.01.2013

LITHIUM BATTERY SERVICE

Transport of dangerous goods by seagoing vessels

New developments 2025 / 2026 in maritime transport

IMDG-Code Amendment 42-24

Mandatory from Jan. 01, 2026

Optional from Jan. 01, 2025

New developments 2025 / 2026 in maritime transport

IMDG-Code Amendment 42-24

Mandatory from Jan. 01, 2026

Optional from Jan. 01, 2025

Same changes as in the ADR

New developments 2025 in air transport

66. Edition of the IATA DGR

New developments air transport 2025

New UN numbers for vehicles

UN3171 may still be used until 31st of March 2025 for battery-powered vehicles

2 new Packing Instruction for sodium ion batteries

New wording e.g „battery mark“ to take sodium ion batteries into account

Section 1

1.2.7.1 (i) New exception for data loggers and tracking tools

- When used or planed for usage during flight
- UN 38.3 test and QM program
- Lithium ion cells and batteries max. 20 Wh
- Lithium metal cells and batteries max. 1 g Lithium

- No dangerous evolution of heat and electro magnetic compatability checked (DO 160)

Planned / Discussed new and changed regulations 2027

New classification system

UN Informal Working Group Lithium Ion Batteries (IWG – LiBs)

New classification system worked on since 2017

Development of a hazard-based system of classification for lithium cells and batteries

France and the battery association RECHARGE compiled this document which was discussed at the 62nd meeting of the UN subcommittee in 2023

Source: https://unece.org/sites/default/files/2023-06/UN-SCETDG-62-INF14e.pdf

New classification system

December 2023:
Agreeing on a changed text that should be adopted by the UN TDG in 2024

New classification system

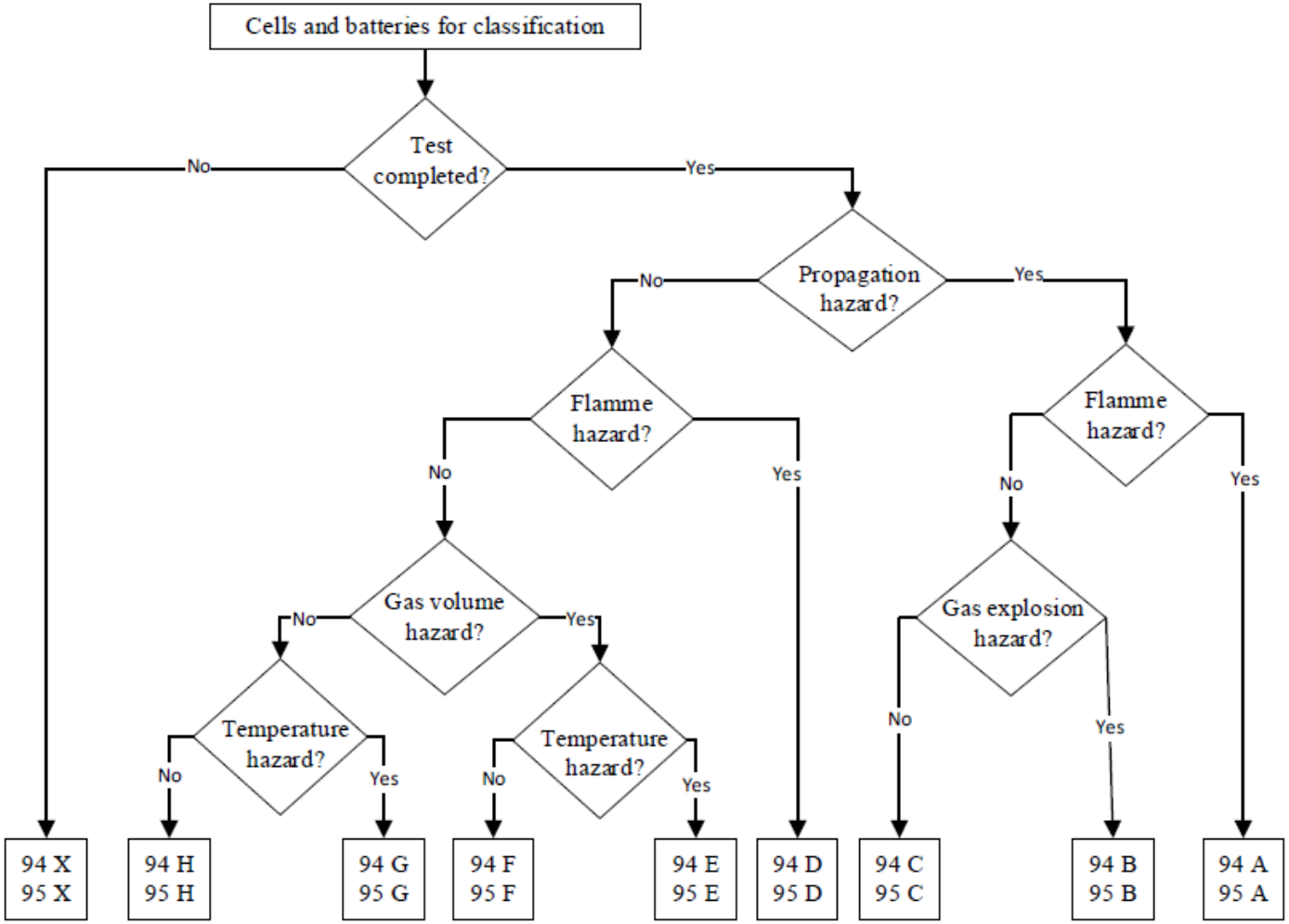
9 categories

Increasing hazard

9X: untested, prototypes, damaged/defective

New and changed regulations in 2027

Figure 38.3.6 : Classification criteria for lithium metal, lithium ion and sodium ion cells and batteries



New classification system

9A 9B 9C 9D 9E 9F 9G 9H | 9X

Classification based on tests

UN Manual of Tests and Criteria

New classification system

Evaluation criteria

⇒ Propagation
⇒ Flames
⇒ Gas volume released
⇒ Flammability of the gas (Gas explosion)
⇒ Temperature

New classification system

9A 9B 9C 9D 9E 9F 9G 9H 9X

Influence of a lower SoC

Limits still under discussion

New classification system

32 new UN numbers with separate ones for cells and batteries

9A	9B	...	9H
UN4000 Cell alone UN4008 Battery alone	UN4001 Cell alone UN4009 Battery alone		UN4007 Cell alone UN4015 Battery alone
UN4016 Cell „in“ and „with“ UN4024 Battery „in“ and „with“	UN4017 Cell „in“ and „with“ UN4025 Battery „in“ and „with“		UN4023 Cell „in“ and „with“ UN4031 Battery „in“ and „with“

New classification system

Keeping the UN numbers for category 9X

9X

UN3090
UN3480

UN3091
UN3481

New classification system

Outstanding issues:

- Transport regulations for the different categories?
- New labels for the categories?
- New special provisions?
- New tests in the UN Manual of Tests and Criteria(T9-T…)?

(Document ST/SG/AC.10/C.3/2024/13)

Protocol - Actions:

The working group will develop detailed testing protocols and classification criteria for lithium and sodium ion batteries. The group is tasked with finalizing the new classification system by the end of 2025, with an interim report to be presented in mid-2025.

(Dokument ST/SG/AC.10/C.3/2024/13)

Protocol - Time Frames: The new classification system is expected to be implemented in stages, with initial testing and feedback phases completed by 2025, followed by full integration into the UN Model Regulations by 2026. These actions are intended to ensure that the new classification system not only addresses the identified gaps but also aligns with global safety and regulatory standards for the transport of dangerous goods.

Inofficial status quo in the discussion

(Dokument ST/SG/AC.10/C.3/2024/13)

Protokoll-Übersicht im Blog auf unserer Webseite (Auswahl Newsletter):

https://www.lithium-batterie-service.de/de/newsblog/vereinte-nationen-protokoll-zusammenfassung-der-tagung-des-un-expertenunterausschusses-fuer-die-befoerderung-gefaehrlicher-gueter-vierundsechzigste-tagung-genf-24-juni-3-juli-2024

For license customers
Question Time
restarted

Next dates:

https://www.lithium-batterie-service.de/en/learning-opportunities/

Thank you
for your attention and
sucess in implementing the changes!

www.lithium-battery-service.com