

Multilateral Agreement M 340

under section 1.5.1 of ADR concerning the carriage of SODIUM-ION BATTERIES and SODIUM-ION CELLS USING AN ORGANIC ELECTROLYTE or SODIUM-ION BATTERIES and SODIUM-ION CELLS USING AN ORGANIC ELECTROLYTE CONTAINED IN EQUIPMENT or PACKED WITH EQUIPMENT

- (1) By derogation from the provisions of Section 3.2.1. of ADR (Table A, Dangerous Goods List), SODIUM-ION BATTERIES and SODIUM-ION CELLS USING AN ORGANIC ELECTROLYTE or SODIUM-ION BATTERIES and SODIUM-ION CELLS USING AN ORGANIC ELECTROLYTE CONTAINED IN EQUIPMENT or PACKED WITH EQUIPMENT, may be carried without being assigned to a UN number and without applying the requirements assigned to “UN 3292 BATTERIES, CONTAINING SODIUM or CELLS, CONTAINING SODIUM”, under the conditions defined in this multilateral agreement, provided the construction and testing requirements defined in the Annex are complied with, as appropriate.
- (2) Special provisions 188, 230, 296, 328, 360, 348, 376 and 377 of Section 3.3.1 of ADR are applicable reading “Sodium-ion” in place of “Lithium-ion”.
- (3) SODIUM-ION BATTERIES and SODIUM-ION CELLS USING AN ORGANIC ELECTROLYTE or SODIUM-ION BATTERIES and SODIUM-ION CELLS USING AN ORGANIC ELECTROLYTE CONTAINED IN EQUIPMENT or PACKED WITH EQUIPMENT are considered belonging to Class 9, the tunnel restriction code to be used shall be “E”.
- (4) No UN number needs indicating in the transport document; the proper shipping name used in the document shall be, as appropriate:
 - SODIUM-ION CELLS USING AN ORGANIC ELECTROLYTE or,
 - SODIUM-ION BATTERIES USING AN ORGANIC ELECTROLYTE or,
 - SODIUM-ION CELLS USING AN ORGANIC ELECTROLYTE CONTAINED IN EQUIPMENT or,
 - SODIUM-ION BATTERIES USING AN ORGANIC ELECTROLYTE CONTAINED IN EQUIPMENT
 - SODIUM-ION CELLS USING AN ORGANIC ELECTROLYTE PACKED WITH EQUIPMENT
 - SODIUM-ION BATTERIES USING AN ORGANIC ELECTROLYTE PACKED WITH EQUIPMENT
- (5) Marking with the UN number according to 5.2.1.1 is not necessary.
Labelling according to 5.2.2 shall be done by using label 9A.
When using special provision 188 packagings shall be marked with the Lithium battery mark in Figure 5.2.1.9.2 of ADR without mentioning the UN number.
- (6) Packing instructions P903, P905, P908, P909, P910, P911, LP903, LP904, LP905 and LP906 of ADR 4.1.4.1 are applicable reading « Sodium-ion » in place of « Lithium-ion »
- (7) SODIUM-ION BATTERIES and SODIUM-ION CELLS USING AN ORGANIC ELECTROLYTE or SODIUM-ION BATTERIES and SODIUM-ION CELLS USING AN ORGANIC ELECTROLYTE CONTAINED IN EQUIPMENT prepared and offered for carriage short-circuited, in a way that the system (cell or battery) does not contain electrical energy, may be carried without applying any provisions of ADR provided:
 - (a) The short-circuiting of the cell/battery is easily verifiable (e.g., busbar between terminals);

- (b) Each cell or battery meets the provisions of 2.2.9.1.7 (a), (e) and (f) reading Sodium-ion in place of Lithium-ion;
- (c) Each package shall be marked according to 5.2.1.9.2 without mentioning a UN number;
- (d) Except when cells or batteries are installed in equipment, each package shall be capable of withstanding a 1.2 m drop test in any orientation without damage to cells or batteries contained therein, without shifting of the contents so as to allow battery to battery (or cell to cell) contact and without release of contents.
- (e) Each cell, including when 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 the quantity of the dangerous goods in the cell shall not exceed the quantity specified in Chapter 3.2 Table A Column 7a.
- (f) The following sentence shall be mentioned in the transport document
“Carriage in accordance with Multilateral Agreement M340 (7)”

(8) The consignor shall include the following entry in the transport document:

“Carriage in accordance with Multilateral Agreement M340”

- (9) All other relevant requirements of ADR shall be complied with.
- (10) This agreement shall be valid until 31 December 2022 for carriage on the territory of those ADR Contracting Parties signatory to this Agreement. If it is revoked before that date by one of the signatories, it shall remain valid until the above-mentioned date only for carriage on the territory of those ADR Contracting Parties signatory to this Agreement, which have not revoked it.

Paris, on July 20th, 2021
The competent authority for ADR in France,

La Sous-directrice des risques accidentels
Delphine RUEL

ANNEX to Multilateral Agreement M 340

Transport of “SODIUM ION BATTERIES and CELLS USING ORGANIC ELECTROLYTE”

Cells and batteries, cells and batteries contained in equipment, or cells and batteries packed with equipment, which are a rechargeable electrochemical system where the positive and negative electrode are both intercalation or insertion compounds (intercalated sodium exists in an ionic or quasi-atomic form in the lattice of the electrode material) constructed with no metallic sodium (or sodium alloy) in either electrode and using an organic non aqueous compound as electrolyte, may be assigned to one of the following proper shipping names:

- SODIUM-ION CELLS USING AN ORGANIC ELECTROLYTE ,
- SODIUM-ION BATTERIES USING AN ORGANIC ELECTROLYTE,
- SODIUM-ION CELLS USING AN ORGANIC ELECTROLYTE CONTAINED IN EQUIPMENT or PACKED WITH EQUIPMENT,
- SODIUM-ION BATTERIES USING AN ORGANIC ELECTROLYTE CONTAINED IN EQUIPMENT or PACKED WITH EQUIPMENT.

They may be transported under these proper shipping names if they meet the following provisions:

- (a) Each cell or battery is of the type proved to meet the requirements of applicable tests of the Manual of Tests and Criteria, part III, sub-section 38.3;
- (b) Each cell and battery incorporates a safety venting device or is designed to preclude a violent rupture under conditions normally encountered during transport;
- (c) Each cell and battery is equipped with an effective means of preventing external short circuits;
- (d) Each battery containing cells or a series of cells connected in parallel is equipped with effective means as necessary to prevent dangerous reverse current flow (e.g., diodes, fuses, etc.);
- (e) Cells and batteries shall be manufactured under a quality management program that includes the same items as for Li-ion cells (2.9.4 (e) i to ix);
- (f) Manufacturers and subsequent distributors of cells or batteries shall make available the test summary as specified in the Manual of Tests and Criteria, Part III, sub-section 38.3, paragraph 38.3.5.

Testing requirements based on the Manual of Tests and Criteria

Section 38.3 of the Manual of Tests and Criteria applies with the following modifications:

- reading sodium-ion in place of lithium-ion.

- When a sodium ion cell or battery type is to be tested under this sub-section of the Manual of Tests and Criteria, the number and condition of cells and batteries of each type to be tested are as follows:

1. When testing rechargeable sodium ion cells and batteries under tests T.1 to T.5 the following shall be tested in the quantity indicated:

- (i) three cells at first cycle, in fully charged states;
- (ii) three cells after 25 cycles ending in fully charged states;
- (iii) three small batteries at first cycle, in fully charged states;
- (iv) three small batteries after 25 cycles ending in fully charged states;
- (v) two large batteries at first cycle, in fully charged states; and
- (vi) two large batteries after 25 cycles ending in fully charged states.

2. When testing rechargeable sodium ion cells or rechargeable single cell sodium ion batteries under test T.6, the following shall be tested in the quantity indicated:

- (i) three cells or single cell batteries at first cycle, in fully charged states;
- (ii) three cells or single cell batteries after 25 cycles ending in fully charged states; and
- (iii) for component cells of rechargeable batteries, three cells at first cycle at 50 % of the design rated capacity and three cells after 25 cycles ending at 50 % of the design rated capacity.

3. When testing rechargeable sodium ion batteries or rechargeable single cell sodium ion batteries under test T.7, the following shall be tested in the quantity indicated:

- (i) three single cell batteries at first cycle, in fully charged states;
- (ii) three small batteries at first cycle, in fully charged states;
- (iii) three small batteries after 25 cycles ending in fully charged states;
- (iv) two large batteries at first cycle, in fully charged states; and
- (v) two large batteries after 25 cycles ending in fully charged states.

Batteries or single cell batteries not equipped with battery overcharge protection that are designed for use only as a component in another battery or in equipment, which affords such protection, are not subject to the requirements of this test.

4. When testing a fully charged sodium ion battery assembly, with a Watt-hour rating of not more than 6 200 Wh, that is assembled from batteries that have passed all applicable tests, one assembled battery in a fully charged state shall be tested under tests T.3, T.4 and T.5, and, in addition, test T.7 in the case of a rechargeable battery.

5. When sodium ion batteries that have passed all applicable tests are electrically connected to form a fully charged battery, with a Watt-hour rating of more than 6 200 Wh, the assembled battery does not need to be tested if the assembled battery is of a type that has been verified as preventing:

- (i) Overcharge;
- (ii) Short circuits; and
- (iii) Over discharge between the batteries

Required tests for sodium-ion batteries are presented in the following table:

Rechargeable cells and batteries										
		T.1	T.2	T.3	T.4	T.5	T.6	T.7 ^a	T.8	Sum ^d
Cells not transported separately from a battery	first cycle, 50 % charged state						3			6
	25th cycle, 50 % charged state						3			
Cells	first cycle, fully charged state	3					3			12
	25th cycle, fully charged state	3					3			
Single cell batteries ^b	first cycle, fully charged state	3					3	3		15
	25th cycle, fully charged state	3					3			
Small batteries	first cycle, fully charged state	3						3		12
	25th cycle, fully charged state	3						3		
Large batteries	first cycle, fully charged state	2						2		8
	25th cycle, fully charged state	2						2		
Batteries assembled with tested batteries ≤ 6 200 Wh	fully charged state			1				1		2
Batteries assembled with tested batteries > 6 200 Wh ^c										0

^a Batteries or single cell batteries not equipped with battery overcharge protection that are designed for use only as a component in another battery or in equipment, which affords such protection, are not subject to the requirements of this test;

^b Except for the T.7 Overcharge test, a single cell battery containing one tested cell does not require testing unless a change in cell design could result in the failure of any test;

^c If the assembled battery is of a type that has been verified as preventing:

- (i) Overcharge;
- (ii) Short circuits; and
- (iii) Over discharge between the batteries.

^d The sum represents the number of tests required, not the number of cells or batteries tested.