

DGTA Summary of Lithium Battery Classification Proposals UN 64th Session

07-11-2024



Compiled by Jim Powell, Vice Chair, DGTA
Email jim@dgta.org or jim@dgtraining.com with
any comments.

This is a guide to assist the user in understanding the significant proposals offered at the UN this month in the 64th meeting of the UN subcommittee on the transportation of dangerous goods. DGTA has consultative status with this body, was present for the meeting, and participated in the plenary session and the lunchtime informal working group meetings. There is so much to consider, this summary document is just for the convenience of our members and is by no means the comprehensive guide to all this. Just a tool to help you comprehend where this is today and where it's going. We welcome your feedback as our DGTA members, and we can advance this at the UN and in the IWG.

Table of Contents

Topics of Discussion	2
Let's start with the most proposals WP 13 and INF 26.....	3
Inf 26: Table of Lithium Batteries	3
Inf 26: Table of Sodium Batteries	4
Another way to look at it is shown below.	5
Keep to the Left.....	6
Proposed DG List (Lithium and Sodium Batteries).....	8
New Class 9 Labels with Divisions and Categories	18
Additional Background Information	19
Comments from MDTC INF. 31 – Countervailing points.....	20
Conclusion.....	21

Topics of Discussion

There is certainly a lot to unpack. Some of the important topics that were discussed during the lunchtime informal working group meetings over two days discussed (amongst many other things) transitioning from the status quo to the new system. The system is designed to incentivize manufacturers to make safer batteries, in other words, batteries that either through design or through state of charge limitations pose less of a hazard during transportation.

One of the considerations was whether there should be a dual system where you have the current system of basically one hazard class in several UN numbers with no further categorization according to hazard risk. And while there is a state of charge limitation for air transport and some batteries, that's about it.

So, if the idea is to incentivize people to make safer batteries, one of the comments that DGTA made was to question whether, in order to make the carrot and stick approach actually work, you have to make things tougher. Right now, manufacturers understand the system that we have and for the most part, accept it. So why should they change? What benefits are they going to get from this new system?

If they are already accustomed to using UN specification packaging and familiar with the cargo aircraft-only restrictions, why would they want to spend the money to retest their batteries according to the new classification scheme?

This is something that the lithium battery working group and the subcommittee will have to consider further. In an intervention on behalf of DGTA, I mentioned that it might be similar to the system back in the old days where the airlines once allowed to choose your seat, bring two bags without extra charge, and in some cases, change your ticket without penalty.

However, the passenger airline system evolved--or perhaps *devolved*--to a point where they increased the inconvenience (pain) by denying passengers the ability to choose their seats. You now have to pay to avoid the middle seat, or the back of the plane, and are also charged for baggage, among other changes. So, would it take to get people who are currently accepting of the current system, restrictions and all, to move to the new system?

Also discussed in the luncheon meeting was how the state of charge (SoC) of the battery was going to be verified. In an intervention, DGTA suggested that given the supply chain; manufacturer to distributor to wholesaler to retailer/reseller there were a lot of intermediate points. If the manufacturer sent the battery out at a 30% stated charge, who's to say that it *stays* that way? So obviously this is going to be a shipper's responsibility, but some members of the informal working group wondered if something needed to be marked on the battery casing itself, much the way the watt-hour rating is marked now.

Let's start this summary document with proposals WP 13 and INF 26.

<https://unece.org/sites/default/files/2024-05/ST-SG-AC10-C3-2024-13E.pdf>

<https://unece.org/sites/default/files/2024-06/UN-SCETDG-64-INF26e.pdf>

- 9 new divisions proposed for lithium batteries (94A through 94H, then X)
- 9 new divisions proposed for sodium batteries (95A through 95H, then X)

These are the proposed hazard divisions with letter categories. Each letter corresponds with the hazard presented by the battery or cell when tested according to NEWLY DEVELOPED TEST CRITERIA.

Inf 26: Table of Lithium Batteries

Division	Hazard description: cells or batteries that, when subjected to the test protocol of <i>Manual of Tests and Criteria</i> , subsections 38.3.5 and 38.3.6 present the following hazards:	UN Numbers for cells and batteries	UN numbers for cells and batteries transported in or with an equipment
94A	Thermal runaway propagation and fire	4000, 4008	4016, 4024
94B	Thermal runaway propagation, no fire, but gas explosion hazard	4001,4009	4017, 4025
94C	Thermal runaway propagation but no fire and no gas explosion hazard	4002, 4010	4018, 4026
94D	No thermal runaway propagation but fire	4003, 4011	4019, 4027
94E	No thermal runaway propagation, no fire but a gas volume hazard, and a temperature hazard	4004, 4012	4020, 4028
94F	No thermal runaway propagation, no fire, no temperature hazard, but a gas volume hazard	4005, 4013	4021, 4029
94G	No thermal runaway propagation, no fire and no gas volume hazard, but temperature hazard	4006, 4014	4022, 4030
94H	No thermal runaway propagation, no fire, no gas volume hazard, and no temperature hazard.	4007, 4015	4023, 4031
94X *	No testing information available	3090, 3480	3091, 3481
<i>I added the color coding to make it easier to recognize that as the letters ascend, the safer the battery/cell is considered.</i>			

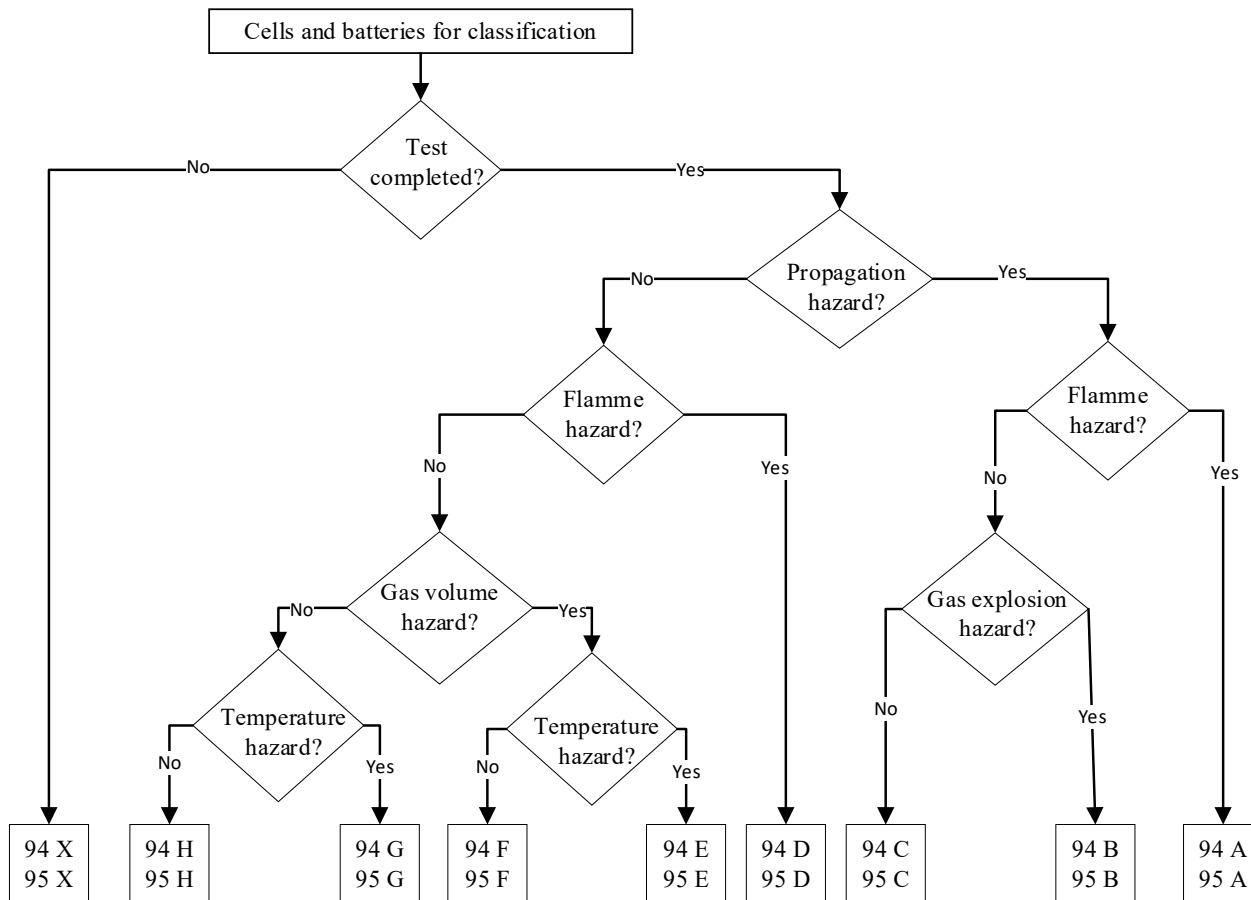
Inf 26: Table of Sodium Batteries

Division	Hazard description: cells or batteries that, when subjected to the test protocol of the <i>Manual of Tests and Criteria</i> subsections 38.3.5 and 38.3.6 present the following hazards:	UN Numbers for cells and batteries	UN numbers for Cells and batteries transported in or with an equipment
95A	Thermal runaway propagation and fire	4100	4108
95B	Thermal Runaway propagation, no fire, but gas explosion hazard	4101	4109
95C	Thermal runaway propagation but no fire and no gas explosion hazard	4102	4110
95D	No thermal runaway propagation but fire	4103	4111
95E	No thermal runaway propagation, no fire but gas volume hazard, and a temperature hazard	4104	4112
95F	No thermal runaway propagation, no fire, no temperature hazard, but a gas volume hazard	4105	4113
95G	No thermal runaway propagation, no fire and no gas volume hazard, but temperature hazard	4106	4114
95H	No thermal runaway propagation, no fire, no gas volume hazard, and no temperature hazard	4107	4115
95X *	No testing information available	3551	3552
I added the color coding to make it easier to recognize that as the letters ascend, the safer the battery/cell is considered.			

Another way to look at it is shown below.

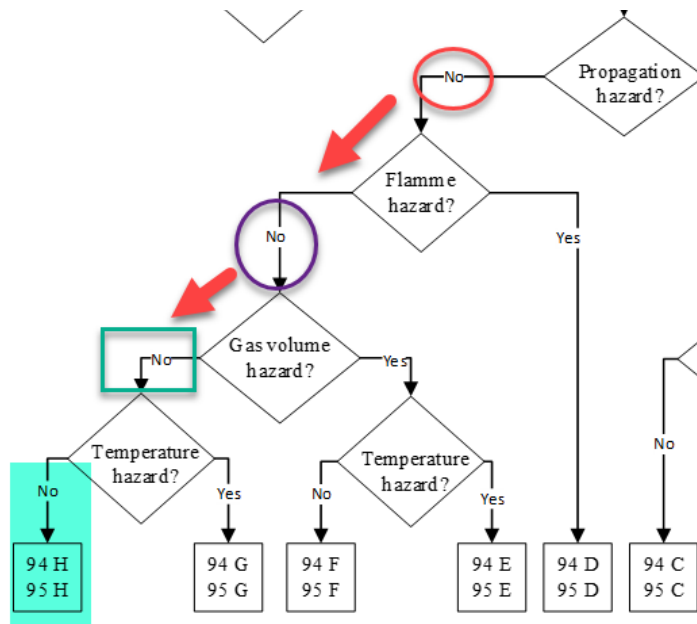
Hazard Division	Hazard Category	UN Number	Proper Shipping Name
9.4	A-H	4000-4007	LITHIUM ION CELL
9.4	A-H	4008-4015	LITHIUM METAL CELL
9.4	H	4016	LITHIUM-ION BUTTON CELL
9.4	H	4017	LITHIUM METAL BUTTON CELL
9.4	C-H	4018-4023	LITHIUM ION CELL REDUCED SOC
9.4	X	4024	LITHIUM CELLS AND BATTERIES FOR DISPOSAL
9.4	A-H	4025-4032	LITHIUM ION BATTERY
9.4	A-H	4033-4040	LITHIUM METAL BATTERY
9.4	A-H	4041-4048	LITHIUM BATTERY CONSISTING OF LITHIUM ION AND LITHIUM METAL CELLS
9.4	C-H	4049-4054	LITHIUM-ION BATTERY REDUCED SOC
9.4	A-H	4055-4062	ARTICLE WITH INTEGRATED LITHIUM ION CELL
9.4	A-H	4063-4070	ARTICLE WITH INTEGRATED LITHIUM METAL CELL
9.4	A-H	4071-4078	ARTICLE CONTAINING LITHIUM ION BATTERY (non-integral)
9.4	A-H	4079-4086	ARTICLE CONTAINING LITHIUM METAL BATTERY (non-integral)
9.4	A-H	4088-4095	ARTICLE WITH INTEGRATED LITHIUM ION BATTERY
9.4	A-H	4096-4103	ARTICLE WITH INTEGRATED LITHIUM METAL BATTERY
9.4	A-B	4120-4121	LITHIUM-ION SOLID STATE BATTERY

Keep to the Left



The organization of this classification scheme is to move people to the left side of the chart. With the exception of untested batteries in 94 or 95X, as new batteries are manufactured to perform better on the new tests, the letter corresponds to the level of safety. So 94D (for example) is less of a hazard than 94A; 94F is less of a hazard than 94D and 94H is less of a hazard than the others. Take a look at the chart and go through the questions.

- Does your battery have a **propagation hazard** (i.e. thermal runaway)? NO?
- Ok, if it doesn't have a propagation hazard, what about a flame hazard? NO?
- What about a gas volume hazard? NO?
- Then maybe there's a temperature hazard? NO?
- If there are none of those hazards, then you end up in "94H" which is the safest category with the least shipping restrictions. That's the goal – keep producing batteries and cells that are less hazardous resulting in a less hazardous division. 94 or 95 "A" being the most significant hazard, 94 or 95 "H" being the least.



There was talk during the luncheon meeting about whether a parallel system would be maintained where manufacturers could “keep” the old system, or test under the new system. There was some talk about keeping a parallel system. DGTA commented that current shippers and manufacturers know and (mostly) understand the existing system. So why would they (given the current state of restrictions) want to pay for retesting or to test new batteries under this new system? What benefit would they gain?

That wasn’t clear. DGTA suggested that perhaps the “pain” of the current system wasn’t going to be enough to get people to adopt the new one – they already have state-of-charge limitations, they already require UN specification packaging (except when contained in equipment), and they already have cargo-only restrictions. So the question is – what incentive will there be to do all this; absent tightening the already existing rules?

Some of the new divisions correlate to a reduced state of charge, which makes sense. Evidence is (as we understand it from ICAO and others) that a reduction in the state of charge correlates with a reduction in hazard posed by those batteries and cells.

You can look at the proposal for the new packing instructions in INF 28.

<https://unece.org/sites/default/files/2024-06/UN-SCETDG-64-INF28e.pdf>. You can see the correlation with the hazard posed as indicated by the letter code (i.e. packing requirements for 94C versus 94H) – again the safer the battery, the less restrictive the packaging options. For example, packing instruction P943 is for letter codes “A” and “B” (more dangerous). You can see that a package approved under these circumstances needs to be capable of containing a thermal runaway.

Here's a list of the UN numbers as outlined in INF 27 <https://unece.org/sites/default/files/2024-06/UN-SCETDG-64-INF27e.pdf>

Proposed DG List (Lithium and Sodium Batteries)

Note: the new “division” 94X is specifically for untested batteries/cells.

UN No.	Name and description	Class or division	Subsidiary hazard	UN packing group	Special provisions	Limited and excepted quantities		Packagings and IBCs		Portable tanks and bulk containers	
						(7a)	(7b)	(8)	(9)	(10)	(11)
(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
-	3.1.2	2.0	2.0	2.0.1.3	3.3	3.4	3.5	4.1.4	4.1.4	4.2.5 / 4.3.2	4.2.5
3090	LITHIUM METAL BATTERIES (including lithium alloy batteries)	94X			188 230 310 376 377 384 387	0	E0	P903 P908 P909 P910 P911 LP903 LP904 LP905 LP906			
3091	LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT (including lithium alloy batteries)	94X			188 230 310 360 376 377 384 387 390	0	E0	P903 P908 P909 P910 P911 LP903 LP904 LP905 LP906			
3480	LITHIUM ION BATTERIES (including lithium ion polymer batteries)	94X			188 230 310 348 376 377 384 387	0	E0	P903 P908 P909 P910 P911 LP903 LP904 LP905 LP906			

UN No.	Name and description	Class or division	Subsidiary hazard	UN packing group	Special provisions	Limited and excepted quantities		Packagings and IBCs		Portable tanks and bulk containers	
						(7a)	(7b)	Packing instruction	Special packing provisions	Instructions	Special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
-	3.1.2	2.0	2.0	2.0.1.3	3.3	3.4	3.5	4.1.4	4.1.4	4.2.5 / 4.3.2	4.2.5
3481	LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)	94X			188 230 310 348 360 376 377 384 387 390	0	E0	P903 P908 P909 P910 P911 LP903 LP904 LP905 LP906			
4000	LITHIUM METAL BATTERIES (including lithium alloy batteries)	94A			188 384 387						
4001	LITHIUM METAL BATTERIES (including lithium alloy batteries)	94B			188 384 387						
4002	LITHIUM METAL BATTERIES (including lithium alloy batteries)	94C			188 384 387						
4003	LITHIUM METAL BATTERIES (including lithium alloy batteries)	94D			188 384 387						
4004	LITHIUM METAL BATTERIES (including lithium alloy batteries)	94E			188 384 387						
4005	LITHIUM METAL BATTERIES (including lithium alloy batteries)	94F			188 384 387			PXXX			
4006	LITHIUM METAL BATTERIES (including lithium alloy batteries)	94G			188 384 387			PXXX			
4007	LITHIUM METAL BATTERIES	94H			188			PXXX			

UN No.	Name and description	Class or division	Subsidiary hazard	UN packing group	Special provisions	Limited and excepted quantities		Packagings and IBCs		Portable tanks and bulk containers	
						(7a)	(7b)	Packing instruction	Special packing provisions	Instructions	Special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
-	3.1.2	2.0	2.0	2.0.1.3	3.3	3.4	3.5	4.1.4	4.1.4	4.2.5 / 4.3.2	4.2.5
	(including lithium alloy batteries)				384 387						
4008	LITHIUM ION BATTERIES (including lithium ion polymer batteries)	94A			188 384 387						
4009	LITHIUM ION BATTERIES (including lithium ion polymer batteries)	94B			188 384 387						
4010	LITHIUM ION BATTERIES (including lithium ion polymer batteries)	94C			188 384 387						
4011	LITHIUM ION BATTERIES (including lithium ion polymer batteries)	94D			188 384 387						
4012	LITHIUM METAL BATTERIES (including lithium alloy batteries)	94E			188 384 387						
4013	LITHIUM ION BATTERIES (including lithium ion polymer batteries)	94F			188 384 387			PXXX			
4014	LITHIUM METAL BATTERIES (including lithium alloy batteries)	94G			188 384 387			PXXX			
4015	LITHIUM ION BATTERIES (including lithium ion polymer batteries)	94H			188 384 387			PXXX			
4016	LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT (including lithium alloy batteries)	94A			188 384 387 390						
4017	LITHIUM METAL BATTERIES	94B			188						

UN No.	Name and description	Class or division	Subsidiary hazard	UN packing group	Special provisions	Limited and excepted quantities		Packagings and IBCs		Portable tanks and bulk containers	
						(7a)	(7b)	Packing instruction	Special packing provisions	Instructions	Special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
-	3.1.2	2.0	2.0	2.0.1.3	3.3	3.4	3.5	4.1.4	4.1.4	4.2.5 / 4.3.2	4.2.5
	CONTAINED IN EQUIPMENT or LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT (including lithium alloy batteries)				384 387 390						
4018	LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT (including lithium alloy batteries)	94C			188 384 387 390						
4019	LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT (including lithium alloy batteries)	94D			188 384 387 390						
4020	LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT (including lithium alloy batteries)	94E			188 384 387 390						
4021	LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT (including lithium alloy batteries)	94F			188 384 387 390			PXXX			
4022	LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT (including lithium alloy batteries)	94G			188 384 387 390			PXXX			
4023	LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT (including lithium alloy batteries)	94H			188 384 387 390			PXXX			

UN No.	Name and description	Class or division	Subsidiary hazard	UN packing group	Special provisions	Limited and excepted quantities		Packagings and IBCs		Portable tanks and bulk containers	
						(7a)	(7b)	Packing instruction	Special packing provisions	Instructions	Special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
-	3.1.2	2.0	2.0	2.0.1.3	3.3	3.4	3.5	4.1.4	4.1.4	4.2.5 / 4.3.2	4.2.5
4024	LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)	94A			188 384 387 390						
4025	LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)	94B			188 384 387 390						
4026	LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)	94C			188 384 387 390						
4027	LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)	94D			188 384 387 390						
4028	LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)	94E			188 384 387 390						
4029	LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)	94F			188 384 387 390			PXXX			

UN No.	Name and description	Class or division	Subsidiary hazard	UN packing group	Special provisions	Limited and excepted quantities		Packagings and IBCs		Portable tanks and bulk containers	
						(7a)	(7b)	Packing instruction	Special packing provisions	Instructions	Special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
-	3.1.2	2.0	2.0	2.0.1.3	3.3	3.4	3.5	4.1.4	4.1.4	4.2.5 / 4.3.2	4.2.5
4030	LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)	94G			188 384 387 390			PXXX			
4031	LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)	94H			188 390			PXXX			
3551	SODIUM ION BATTERIES with organic electrolyte	95X			188 230 310 348 376 377 384 400 401	0	E0	P903 P908 P909 P910 P911 LP903 LP904 LP905 LP906			
3552	SODIUM ION BATTERIES CONTAINED IN EQUIPMENT or SODIUM ION BATTERIES PACKED WITH EQUIPMENT, with organic electrolyte	95X			188 230 310 348 360 376 377 384 400 401	0	E0	P903 P908 P909 P910 P911 LP903 LP904 LP905 LP906			
4100	SODIUM ION BATTERIES with organic electrolyte	95A			188 230 376 377 384 387						

UN No.	Name and description	Class or division	Subsidiary hazard	UN packing group	Special provisions	Limited and excepted quantities		Packagings and IBCs		Portable tanks and bulk containers	
						(7a)	(7b)	Packing instruction	Special packing provisions	Instructions	Special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
-	3.1.2	2.0	2.0	2.0.1.3	3.3	3.4	3.5	4.1.4	4.1.4	4.2.5 / 4.3.2	4.2.5
					400						
4101	SODIUM ION BATTERIES with organic electrolyte	95B			188 230 376 377 384 387 400						
4102	SODIUM ION BATTERIES with organic electrolyte	95C			188 230 376 377 384 387 400						
4103	SODIUM ION BATTERIES with organic electrolyte	95D			188 230 376 377 384 347 400						
4104	SODIUM ION BATTERIES with organic electrolyte	95E			188 230 376 377 384 387 400						



UN No.	Name and description	Class or division	Subsidiary hazard	UN packing group	Special provisions	Limited and excepted quantities		Packagings and IBCs		Portable tanks and bulk containers	
						(7a)	(7b)	Packing instruction	Special packing provisions	Instructions	Special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
-	3.1.2	2.0	2.0	2.0.1.3	3.3	3.4	3.5	4.1.4	4.1.4	4.2.5 / 4.3.2	4.2.5
4105	SODIUM ION BATTERIES with organic electrolyte	95F			188 230 376 377 384 387 400			PXXY			
4106	SODIUM ION BATTERIES with organic electrolyte	95G			188 230 376 377 384 387 400			PXXX			
4107	SODIUM ION BATTERIES with organic electrolyte	95H			188 230 376 377 384 387 400			PXXX			
4108	SODIUM ION BATTERIES CONTAINED IN EQUIPMENT or SODIUM ION BATTERIES PACKED WITH EQUIPMENT, with organic electrolyte	95A			188 230 376 377 384 387 400						
4109	SODIUM ION BATTERIES CONTAINED IN EQUIPMENT or SODIUM ION BATTERIES PACKED WITH EQUIPMENT, with organic electrolyte	95B			188 230 376 377						

UN No.	Name and description	Class or division	Subsidiary hazard	UN packing group	Special provisions	Limited and excepted quantities		Packagings and IBCs		Portable tanks and bulk containers	
						(7a)	(7b)	Packing instruction	Special packing provisions	Instructions	Special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
-	3.1.2	2.0	2.0	2.0.1.3	3.3	3.4	3.5	4.1.4	4.1.4	4.2.5 / 4.3.2	4.2.5
					384 387 400						
4110	SODIUM ION BATTERIES CONTAINED IN EQUIPMENT or SODIUM ION BATTERIES PACKED WITH EQUIPMENT, with organic electrolyte	95C			188 230 376 377 384 387 400						
4111	SODIUM ION BATTERIES CONTAINED IN EQUIPMENT or SODIUM ION BATTERIES PACKED WITH EQUIPMENT, with organic electrolyte	95D			188 230 384 376 377 387 400						
4112	SODIUM ION BATTERIES CONTAINED IN EQUIPMENT or SODIUM ION BATTERIES PACKED WITH EQUIPMENT, with organic electrolyte	95E			188 230 384 387 376 377 400						
4113	SODIUM ION BATTERIES CONTAINED IN EQUIPMENT or SODIUM ION BATTERIES PACKED WITH EQUIPMENT, with organic electrolyte	95F			188 230 376 377 384 387 400			PXXY			

UN No.	Name and description	Class or division	Subsidiary hazard	UN packing group	Special provisions	Limited and excepted quantities		Packagings and IBCs		Portable tanks and bulk containers	
						(7a)	(7b)	Packing instruction	Special packing provisions	Instructions	Special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
-	3.1.2	2.0	2.0	2.0.1.3	3.3	3.4	3.5	4.1.4	4.1.4	4.2.5 / 4.3.2	4.2.5
4114	SODIUM ION BATTERIES CONTAINED IN EQUIPMENT or SODIUM ION BATTERIES PACKED WITH EQUIPMENT, with organic electrolyte	95G			188 230 376 377 384 387 400			PXXY			
4115	SODIUM ION BATTERIES CONTAINED IN EQUIPMENT or SODIUM ION BATTERIES PACKED WITH EQUIPMENT, with organic electrolyte	95H			188 230 376 377 384 387			PXXY			

New Class 9 Labels with Divisions and Categories

UN/SCETDG/64/INF.29

Label model No.	Division or Category	Symbol and symbol colour	Background	Figure in bottom corner (and figure colour)	Specimen labels	Note
Class 9: Miscellaneous dangerous substances and articles, including environmentally hazardous substances						
9A	-	7 vertical stripes in upper half: black; battery group, one broken and emitting flame in lower half: black	White	9 underlined (black)		-
9.4	All divisions	7 vertical stripes in upper half inset white rectangle with battery group, one broken and emitting flame	White	9.4 (Black)		* Place for division label

UN/SCETDG/64/INF.29

<https://unece.org/sites/default/files/2024-06/UN-SCETDG-64-INF29e.pdf>

Separate UN numbers are proposed for reduced state of charge cells and batteries. This provides an incentive to test at a reduced state of charge to achieve a lower hazard division which corresponds with less onerous packing instructions and at the same time provides an easier route for checking and enforcement. So theoretically, a battery classified by a reduced state of charge would have a different division number on the label than one that was classified fully charged.

You can see the new class 9 label in the bottom row – the pictogram is moved up and space is cleared on the lower half to make room for the division and the hazard category (letter) code.

Additional Background Information

<https://unece.org/sites/default/files/2024-06/UN-SCETDG-64-INF30e.pdf>

Within informal documents, INF.27, 28, and 29, the expert from the United Kingdom makes proposals for additions to the Dangerous Goods List, new special provisions and packing instructions, as well as consequential amendments. This paper provides the precedents and reasoning relied upon to form those proposals.

Comments from MDTC INF. 31 – Countervailing points

The MDTC suggests the following measures to increase safety and simplify regulations:

Increase awareness and compliance with safety requirements: The MDTC believes that strategies should be implemented to increase awareness and compliance with existing safety requirements rather than introducing additional regulations. They argue that the primary cause of most lithium battery incidents is non-compliance with current regulations, and therefore, efforts should be focused on improving compliance rather than adding complexity to the regulations.

Incentivize the battery industry to design safer cells and batteries: The MDTC contends that the current proposal does not incentivize manufacturers to design and produce safer cells or batteries. They argue that the testing protocols require manufacturers to push their cells or batteries beyond the effective limits of integrated safety features, without accounting for other mitigation measures such as placement in equipment or packaging. The MDTC suggests that the proposal should consider the use of propagation-resistant materials and technologies in battery design, which would result in safer battery systems.

Simplify hazard classification and testing: The MDTC believes that the proposed hazard-based classification scheme for lithium batteries is overly complicated and will lead to confusion among consigners, carriers, and others in the supply chain. They argue that the current lithium battery regulations are already complex, and the proposed scheme will only increase regulatory complexity and result in more non-compliance incidents. The MDTC suggests that the objective of the work should be to enhance safety and simplify regulatory complexity and burden.

Conclusion

This initiative is a significant step towards incentivizing the production of safer lithium batteries and cells, though it remains a work in progress. While considerable effort has gone into its development, several questions persist, particularly regarding compliance costs.

These costs extend beyond direct financial implications, such as new battery testing protocols and engineering expenses, to indirect costs arising from potential confusion about the new scheme. Comprehensive training will be crucial for full and cost-effective compliance with these proposed regulations.

DGTA plans to attend the upcoming Informal Lithium Battery Working Group meeting in Washington this August. We will keep our members informed about developments related to this initiative, which represents the most substantial proposal in this area to date.