



**WORKING PAPER**

**DANGEROUS GOODS PANEL (DGP)  
WORKING GROUP MEETING (DGP-WG/24)**

**Montreal, 21 to 25 October 2024**

- Agenda Item 1: Harmonizing ICAO dangerous goods provisions with UN Recommendations on the Transport of Dangerous Goods (REC-A-DGS-2027)**  
**1.2: Develop proposals, if necessary, for amendments to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) for incorporation in the 2027-2028 Edition**

**PROPOSED AMENDMENT TO SPECIAL PROVISION A214 TO INCLUDE NICKEL METAL HYDRIDE BATTERIES**

(Presented by B. Firkins)

**SUMMARY**

This working paper relates to an identified concern raised via the automotive industry. Ultimately, it is considered that Special Provision 388 of the UN Model Regulations ought to be amended first.

Action by the DGP-WG is in paragraph 2.

**1. INTRODUCTION**

1.1 The International Air Transport Association (IATA) has been advised that a vehicle manufacturer is actively planning the manufacture of vehicles to be powered by nickel-metal hydride (NiMH) batteries.

1.2 Special Provision A214 is silent with regard to NiMH batteries. It was suggested that this may present problems with acceptance of vehicles classified under UN 3171 — **Battery powered vehicles**. This special provision is drawn from the UN Model Regulations and Special Provision 388.

1.3 The current biennium for the 24<sup>th</sup> edition of the Model Regulations ends in December 2024. Formal papers were to be submitted by 30 August 2024. Given the rapid pace of the global movement towards net zero carbon emissions, and the continuing implementation of alternative sources of motoring power; the preference was to have the matter considered during the current biennium (for potential implementation in 2027), rather than in the next biennium, which would take effect from 2029.

1.4 The attachment to this paper contains the proposal as presently drafted and submitted to the 65<sup>th</sup> session of the UN SCETDG and the proposed amendments to SP 388.

**2. ACTION BY THE DGP-WG**

2.1 The DGP-WG is invited to review the attached paper and provide comments and feedback. If necessary, an informal paper will be developed, in conjunction with the Secretary, to modify the current proposal.

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**APPENDIX**

**WORKING DOCUMENT SUBMITTED TO THE SUB-COMMITTEE OF EXPERTS ON THE  
TRANSPORT OF DANGEROUS GOODS FOR CONSIDERATION AT ITS SIXTY-FIFTH  
SESSION: PROPOSED AMENDMENT TO SPECIAL PROVISION 388 TO INCLUDE NICKEL  
METAL HYDRIDE BATTERIES**





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## Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals

### Sub-Committee of Experts on the Transport of Dangerous Goods

#### Sixty-fifth session

Geneva, 28 November-3 December 2024

Item 4 (f) of the provisional agenda

Electric storage systems: miscellaneous

## Amendment to Special Provision 388 to include Nickel Metal Hydride Batteries

Transmitted by the International Air Transport Association (IATA)\*

### I. Introduction

1. Part of the text of special provision 388 refers to the classification of hybrid vehicles and vehicles powered by batteries only; and how those vehicles should be classified.
2. Reference is made to a number of different battery types; without specifically referencing UN numbers or the proper shipping names of those battery types. These include wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries, all of which may be inferred as having a correlation to batteries that have a UN number.
3. UN 3166 (vehicles, hybrid) refers to Special Provisions 123, 356 and 388
4. UN 3171 (battery powered vehicles OR battery powered equipment) refers to Special Provisions 123 and 388.
5. Special provision 356 refers to metal hydride storage systems. This is interpreted as being metal-hydride systems associated with hydrogen storage; and is not relevant for nickel-metal hydride batteries.
6. Special Provision 388 is silent with respect to nickel-metal hydride batteries.
7. UN 3496 **Batteries, Nickel-metal hydride** has special provision 117 (subject to the regulations only when transported by sea).
8. The absence of nickel-metal hydride batteries in special provision 388 has raised several different views in how the provision should be interpreted. Based on historical operational experience, it is considered very likely that shippers of vehicles containing nickel-metal hydride batteries will experience some carriers refusing to accept their vehicles.

9. It is considered appropriate that risks and hazards from “a battery powered vehicle” be considered in the classification of the vehicle; and a proposed amendment to SP 388 is submitted to the Sub-Committee for consideration.

10. If the Sub-Committee is of the view that vehicles powered by nickel-metal hydride batteries should not be classified under UN 3171, or not restricted during transport; or if it considers that SP 356 should be amended and included with the entry for UN 3171, then the author will consider that feedback for a future paper.

## II. Proposal

4. The Sub-Committee is invited to amend the wording of special provision 388. The changes proposed are as follows (new text is underlined):

388 UN 3166 entries apply to vehicles powered by flammable liquid or flammable gas internal combustion engines or fuel cells.

Vehicles powered by a fuel cell engine must be assigned to the entries UN 3166, Vehicle, fuel cell, flammable gas powered or UN 3166, Vehicle, fuel cell, flammable liquid powered, as appropriate. These entries include hybrid electric vehicles powered by both a fuel cell and an internal combustion engine with wet batteries, nickel-metal hydride batteries, sodium batteries, lithium metal batteries or lithium ion batteries, transported with the battery(ies) installed.

Other vehicles which contain an internal combustion engine must be assigned to the entries UN 3166, Vehicle, flammable gas powered or UN 3166, Vehicle, flammable liquid powered, as appropriate. These entries include hybrid electric vehicles powered by both an internal combustion engine and wet batteries, nickel-metal hydride batteries, sodium batteries, lithium metal batteries or lithium ion batteries, transported with the battery(ies) installed.

If a vehicle is powered by a flammable liquid and a flammable gas internal combustion engine, it must be assigned to UN 3166, Vehicle, flammable gas powered.

Entry UN 3171 only applies to vehicles and equipment powered by wet batteries, nickel-metal hydride batteries, metallic sodium or sodium alloy batteries, transported with these batteries installed.

UN 3556 Vehicle, lithium ion battery powered, UN 3557 Vehicle, lithium metal battery powered and UN 3558 Vehicle, sodium ion battery powered, as applicable, apply to vehicles powered by lithium ion, lithium metal or sodium ion batteries transported with the batteries installed.

For the purpose of this special provision, vehicles are self-propelled apparatus designed to carry one or more persons or goods. Examples of such vehicles are cars, motorcycles, scooters, three- and four-wheeled vehicles or motorcycles, trucks, locomotives, bicycles (pedal cycles with a motor) and other vehicles of this type (e.g. self-balancing vehicles or vehicles not equipped with at least one seating position), wheelchairs, lawn tractors, self-propelled farming and construction equipment, boats and aircraft. When vehicles are transported in a packaging, some parts of the vehicle, other than the battery, may be detached from its frame to fit into the packaging.

Examples of equipment are lawn mowers, cleaning machines or model boats and model aircraft. Equipment powered by lithium metal batteries or lithium ion batteries must be assigned to the entries UN 3091, Lithium metal batteries contained in equipment or UN 3091, Lithium metal batteries packed with equipment or UN 3481, Lithium ion batteries contained in equipment or UN 3481, Lithium ion batteries packed with equipment, as appropriate. Lithium ion batteries or lithium metal batteries installed in a cargo transport unit designed only to provide power external to the cargo transport unit must be assigned to UN 3536, Lithium batteries installed in cargo transport unit.