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Small Vehicles Powered by Lithium Batteries – Cargo Provisions

This guidance is in response to questions raised by shippers, freight forwarders and operators regarding the classification of small vehicles that are powered by lithium ion batteries when shipped as cargo, specifically whether the classification should be UN 3171, **Battery-powered vehicle**, or UN 3481, **Lithium ion batteries contained in equipment**.

Some examples of these small lithium battery-powered vehicles are: airwheel, solowheel, hoverboard, e-bikes and diver propulsion vehicle.



Special provision A214, which is assigned against UN 3171, **Battery-powered vehicle** identifies the considerations on the classification of "vehicles" powered by internal combustion engines, fuel cells and batteries and also "equipment" powered by lithium batteries. The current wording of Special Provision A214 in the 62nd edition of the DGR is as follows:

A214 (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, 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, 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**.*

UN 3171 only applies to vehicles powered by wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries and equipment powered by wet batteries or sodium batteries transported with these 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. This includes vehicles transported in a packaging. In this case some parts of the vehicle 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**.

For the purposes of this guidance document, the relevant text is "For the purpose of this special provision, vehicles are self-propelled apparatus designed to carry one or more persons or goods."

Classification

As these small lithium battery-powered vehicles meet the definition of "vehicles" as set out in Special Provision A214, and as they are powered by a lithium ion battery, the correct classification for these small vehicles is UN 3171, **Battery-powered vehicle**. Therefore, they must be packed in accordance with Packing instruction 952.

There are several important considerations with respect to the use of UN 3171 for these small vehicles, as follows:

1. the lithium cells and batteries must be of a type that have successfully passed the applicable tests in subsection 38.3 of the *UN Manual of Tests and Criteria*;
2. the assignment to UN 3171 does not provide for any exception from the full application of the Regulations, i.e. there is no exception for vehicles that contain lithium ion batteries with a Watt-hour rating not exceeding 100 Wh;
3. the net quantity required on the Shipper's Declaration for UN 3171 is the net weight of the complete vehicle. There is no limit on the weight of a lithium ion battery in a vehicle or in a package and there is no net quantity difference between passenger aircraft and Cargo Aircraft Only;
4. if the lithium battery is removed from the vehicle and packed separate from the vehicle in the same outer packaging, then as per Packing Instruction 952, the classification becomes UN 3481, **Lithium ion batteries packed with equipment** and Packing Instruction 966 applies, or UN 3091, **Lithium metal batteries packed with equipment** and Packing Instruction 969 applies.

Recommendations

In locations where these devices are readily available and being consigned as cargo, operators should engage with freight forwarders and their ground service provider to clarify the classification of these small vehicles and the additional considerations that apply. Forwarders should be encouraged to reach out to shippers of these products to ensure that the shippers are made aware of the classification requirement as UN 3171.

You can contact the IATA Dangerous Goods Support team if you have questions or concerns that may not have been addressed in this document at: dangood@iata.org.