



# Battery Powered Wheelchair and Mobility Aid (Type 4-po) 14-37(5(e)1r35(

With the evolution of battery technology and through new innovations, lithium ion batteries have become the battery of choice for powering mobility aids as they store more energy than many other battery types of a similar size and mass. Lithium batteries are safe to use, however if not treated with care or if abused, they can overheat and in extreme circumstances can catch fire. This poses many challenges as the regulators attempt to keep pace with ever changing designs and consumer demands.

The purpose of this document is to provide guidance for complying with the provisions applicable to the transport by air of battery-powered wheelchairs and other mobility aids when carried by passengers as set out in the DGR. Specifically, the document provides information on:

- Definitions;
- Limitations and Classification;
- Operator Approval;
- Training;
- Handling;
- Frequently Asked Questions

## Definitions

**Air Carrier** means an air transport undertaking with a valid operating licence.

**Airline** see **Operator**

**Battery manager** is an electronic device incorporated in the battery circuit to protect the battery and/or cells from events such as over-charge, over-discharge, over-current, over-temperature and cell imbalance.

**Note:**

*The battery management function may be integrated into the battery or distributed over the control and drive system.*

**Disabled person or person with reduced mobility** means any person whose mobility when using transport is reduced due to any physical disability (sensory or locomotor, permanent or temporary), intellectual disability or impairment, or any other cause se 14(di)6(sab)3(i)5(l)5(i)5((en)3(t)6(,)1

## Figure 1 - Example of Lithium Ion Batteries

**Note:**

*The watt-hour (Wh) rating is a measure by which lithium ion batteries are regulated. Lithium ion batteries are required to be marked with the Watt-hour (Wh) rating.*

*The Watt-hour rating of a lithium ion battery can also be calculated from the capacity in ampere-hours (Ah) and nominal voltage (V):*

$$Ah \times V = Wh$$

*If only the milliampere-hours (mAh) are marked on the battery,*

**WCBD** mobility aid with non-spillable batteries.

**WCBW** - mobility aid with wet cell batteries.

**WCLB** mobility aid with lithium ion batteries.

**Wheelchair system** is the electrical and electronic traction control system for a wheelchair including the battery, its manager, the motor speed controller, the user interface and all wiring and safety devices.

### Limitations and Classification (DGR 2.3.2)

Battery-powered wheelchairs and mobility aids are classified in the following 3 categories:

#### 1. Wheelchairs/Mobility Aids with Non-Spillable Wet Batteries or Batteries which Comply with Special Provision A123 or A199

Examples of batteries complying with special provision A123 and A199 are: alkali-manganese, zinc-carbon, nickel-cadmium and nickel-metal hydride batteries.

Non-spillable wet cell batteries must comply with special provision A67:

**A67:** Wet cell batteries can be considered as non-spillable provided that they are capable of withstanding the vibration and pressure differential tests given below, without leakage of battery fluid.

**Vibration test:** The battery is rigidly clamped to the platform of a vibration machine and a simple harmonic motion having an amplitude of 0.8 mm (1.6 mm maximum total excursion) is applied. The frequency is varied at the rate of 1 Hz/min between the limits of 10 Hz to 55 Hz. The entire range of frequencies and return is traversed in  $95 \pm 5$  minutes for each mounting position (direction of vibration) of the battery. The battery must be tested in three

Any battery removed from the mobility aid and any spare batteries must be carried in the passenger cabin. The removed or spare batteries must be protected from damage (e.g. by placing each battery in a protective pouch).

### **Operator Approval (DGR 2.3)**

**The approval of the operator is required** Prior to travel, the user of the mobility aid, travel agent, tour operator or other 3<sup>rd</sup> party booking website should seek approval from the operator at least 48 hours in advance, or as soon as possible, for the mobility aid to be carried on a booked flight. The operator is required to have a documented approval process which needs to

too big to fit in the aircraft. Having the dimensions in advance will provide the operator an opportunity to offer an alternative routing or flights to accommodate passengers travelling with larger mobility aids.

**Does the mobility aid have any removable or adjustable parts (such as a custom seat cushion, joy stick or headrest)?**

In the event the mobility aid as presented for travel will not fit in the aircraft cargo compartment, are there any removable or adjustable parts that will help to reduce the height/width of the mobility aid? Reducing the size may help operators to safely accommodate the mobility aid. Smaller removable parts should be placed in a suitable container or bag and stowed in the cabin with the passenger.

**Is the battery specifically designed to be removed for transport?**

The dangerous goods transport regulations require the battery to be removed for carriage where the battery is specifically designed to be removed for transport. This typically applies where the battery is not protected by the design of the mobility aid and the manufacturer of the device intends that the battery must be removed for the device to be folded, or otherwise prepared for transport.

If the answer to this question is yes, the passenger should be prepared to provide instructions on how to remove the battery prior to loading.

**Note:**



the movement of baggage, mail and cargo. Accordingly, any battery-powered mobility aid must





