

## Packing Instruction - Wet and Dry Batteries

### ADR PACKING INSTRUCTION P801 AND P801A

#### Applicable UN Numbers to P801:

UN2794 BATTERIES, WET, FILLED WITH ACID, electric storage  
 UN2795 BATTERIES, WET, FILLED WITH ALKALI, electric storage  
 UN3028 BATTERIES, DRY, CONTAINING POTASSIUM HYDROXIDE SOLID, electric storage

#### Applicable UN Numbers to P801a:

UN2794 BATTERIES, WET, FILLED WITH ACID, electric storage  
 UN2795 BATTERIES, WET, FILLED WITH ALKALI, electric storage  
 UN2800 BATTERIES, WET, NON-SPILLABLE, electrical storage  
 UN3028 BATTERIES, DRY, CONTAINING POTASSIUM HYDROXIDE SOLID, electric storage

### APPLICABLE SPECIAL PROVISIONS FOR TRANSPORT

- 295: Batteries need not be individually marked and labelled if the pallet bears the appropriate mark and label
- 598: Not subject to ADR if cases are undamaged, they are secured in such a way that they cannot leak, slip, fall or be damaged e.g. stacking on pallets, they have no traces of acid or alkali on them, they are protected against short circuits

#### What are Wet-cell batteries?

A wet-cell battery is the original type of rechargeable battery. It is commonly found in aviation, electric utilities, energy storage and mobile phone towers. The battery contains a liquid electrolyte such as sulphuric acid. Typical types we come across are lead acid batteries

#### What are Dry-cell batteries?

Dry batteries are sealed, non-vented batteries used in flashlights or small appliances. They contain zinc salts and other solids or may be packed in combination with other metals. These batteries include rechargeable batteries made with nickel metal hydride and nickel cadmium.

#### What is the difference?

The main difference between wet- and dry-cell batteries is whether the electrolyte they use to make electricity is mostly liquid or mostly solid substance.

#### What is 'non-spillable?'

The definition of 'non-spillable' is important. A battery that is sealed is not necessarily non-spillable. It is defined as a battery containing "no free-flowing liquid, and the electrolyte must not flow from a cracked case at 55°C (131°F)".

Most Sealed Lead Acid batteries using Gel or Absorbent Glass Matt (AGM) technology is classed as non-spillable while even a 'sealed' standard lead acid battery with liquid electrolyte is spillable.

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### SEGREGATION OF BATTERIES

#### Mixed Batteries

On site, chemist to separate all the different types of batteries between UN approved, sealable containers and to follow the packing instruction for that battery type.

#### UN 2794, UN2795 – Wet batteries, includes Lead Acids

Batteries can be placed in wooden slatted crates and on pallets. If battery box used, it shall be resistant to the acid in the battery and only loaded to the height of the box.

- Batteries to be protected against short circuits – tape terminals
- Batteries stacked shall be secured in tiers with a separation of non-conductive material (cardboard) placed between tiers
- Battery terminals to not support the weight of other superimposed elements
- Batteries to be packed or secured to prevent inadvertent movement. If cushioning used it must be inert
- Batteries must be kept away from water and must be covered
- Do not mix with any other battery which is liable to react

#### UN 3028 – Dry batteries, including NiCads

- Position multiple batteries or packages of batteries side by side, separated by dividers or in individual inner packaging's
- Remove battery from electronic device if possible. Follow the WEEE protocol
- Pack securely and fill void spaces to prevent shifting or movement in transit
- Place contents in a sturdy outer container

#### UN2800- BATTERIES, WET, NON-SPILLABLE, electrical storage

Non-spillable lead acid batteries (those that use Gel or Absorbent Glass Matt technology) require the same packaging as those filled with acid with the following differences:

- No acid proof liner is required.
- In IATA, the box must be clearly marked 'Non-spillable battery'. but there is no specific requirement other than that it must be, in the words of the IATA, 'plainly and durably marked'. Note that although this is an IATA requirement many sea and ground carriers stipulate it as well.

#### DAMAGED/FAULTY BATTERIES

Carriers will usually require these to be drained of acid and enclosed in an acid proof liner. It is important that enough cushioning material (vermiculite) is used. Place vermiculite in both the inner packaging and the outer packaging.

***If you are unsure on Packing Requirements, please contact one of the company's DGSA's for further guidance.***

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### ISSUE AND REVISION DETAILS

Rev. No	Date	Details of change	Auth.
V1.1	05/06/20	Formatted, change of responsible person.	SS

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