



# **4/5 Update on Changes to UN Model Regulations for Transport of Dangerous Goods and ICAO Technical Instructions**



# UN Sub-Committee of Experts

- 19 proposals/informal papers on lithium batteries at June 2016 Sub-Committee meeting
- Two PRBA proposals were adopted
  - ✓ Containerized lithium batteries; new entry in Model Regulations
  - ✓ Clarification on Special Provision exception and Section IB on PI 965 and PI 968 of IATA Dangerous Goods Regulations
- Rechargeable lithium metal battery proposals
- Modifications to damaged or defective lithium battery regulations
- Changes to lithium battery tests in Section 38.3 of UN Manual of Tests and Criteria
- New definition for “equipment”

# Containerized Lithium ion Batteries

- Containerized lithium ion batteries moving under approvals from competent authority
- New entry to appear in 2019 Model Regulation
  - “Lithium Batteries Installed in Cargo Transport Unit”
  - New Special Provision provides exception for dangerous goods necessary for operation of container (*e.g.*, fire extinguishing systems and air conditioning systems)



# Definition of “Equipment”

- Equipment means apparatus for which the lithium cells or batteries will provide electrical power for its operation.
- Will appear in Special Provision 188 and lithium battery Packing Instructions (e.g., P903).
- Consistent with ICAO Technical Instructions effective 2017
- Implications:
  - Power banks
  - Power tool chargers with spare batteries
- Unresolved: Power banks with multiple functions

# – Power Banks – Cells, Batteries, or Equipment?



**10000 mAh Ultra-Compact  
High-speed-Charging-Technology  
Power Bank**



**Flashlight**

# “Equipment” / Lithium ion Batteries / Power Banks



U.S. Department  
of Transportation

Pipeline and Hazardous  
Materials Safety  
Administration

1200 New Jersey Avenue  
Washington, D.C. 20590

JUN 23 2016

Mr. Bob McClelland  
Air Dangerous Goods Manager  
UPS Airlines  
55 Glenlake Parkway, NE  
Atlanta, GA 30328-3474

Ref. No.: 16-0018

Dear Mr. McClelland

This responds to your email dated January 21, 2016, requesting clarification of the applicability of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) to power banks or supplemental power units containing lithium ion batteries. Specifically you ask whether for the purposes of the HMR such articles are considered “UN3480, Lithium ion batteries” or “UN3481, Lithium ion batteries contained in equipment.”

The HMR define *Lithium ion cell or battery* as a rechargeable electrochemical cell or battery in which the positive and negative electrodes are both lithium compounds constructed with no metallic lithium in either electrode (see § 171.8). The HMR further define *equipment* as the device or apparatus for which the lithium cells or batteries will provide electrical power for its operation (see § 173.185).

Based on these criteria, power banks or supplemental power units containing lithium ion batteries are best described as “UN3480, Lithium ion batteries.” The battery housed inside a

- The HMR further define *equipment* as “the device or apparatus for which the lithium cells or batteries will provide electrical power for its operation.”
- Equipment definition consistent with IATA Dangerous Goods Regulations effective 2017

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- RECHARGE and PRBA proposal on rechargeable lithium metal polymer batteries
- Lithium battery handling mark
  - ✓ Requirement to have “white background” changed to “contrasting background”
- PRBA proposals on lithium metal button cells and medical devices
- Proposed “Elements of Lithium Battery Test Report”
  - ✓ Effective 2019

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## Proposed “Elements of Lithium Battery Test Report”

- (a) Name of cell or battery manufacturer, as applicable
- (b) Cell or battery manufacturer’s contact information to include phone number, email address or website for more information.
- (c) Name of test laboratory
- (d) A unique test report identification
- (e) Date of test report
- (f) Description of cell or battery (*e.g.*, Li ion or Li metal cell or battery, voltage, net mass, Watt-hour rating, or grams of lithium metal content, cell/battery geometry, model numbers and design types)
- (g) List of tests conducted and results (*i.e.*, pass/fail)
- (h) Reference to assembled battery testing requirements, if applicable (*i.e.*, 38.3.3(f) and 38.3.3(g))
- (i) UN Manual revision date used
- (j) Test report to be signed with name and status of signatory.”



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- New Special Provision 387 in UN Model Regulations for small “hybrid” lithium batteries comprised of lithium ion and lithium metal cells
  - ✓ Lithium batteries containing both primary lithium metal cells and rechargeable lithium ion cells
  - ✓ Assigned to UN No. 3090 or 3091, as appropriate
  - ✓ When transported in accordance with Special Provision 188:
    - Lithium metal cells  $\leq$  1.5 g
    - Lithium ion cells  $\leq$  10 Wh

# UN Manual of Tests and Criteria

- New authorization to test cell or battery in equipment that is “integral part of the equipment”
- Revise definition of “Disassembly”
  - ✓ Provides option of testing without wire mesh
- New summary charts providing overview of cell and battery testing requirements
- Reduce number of cycles required for batteries, but increases cycling requirement for cells

# Organizations Pushing Lithium Battery Agenda at ICAO

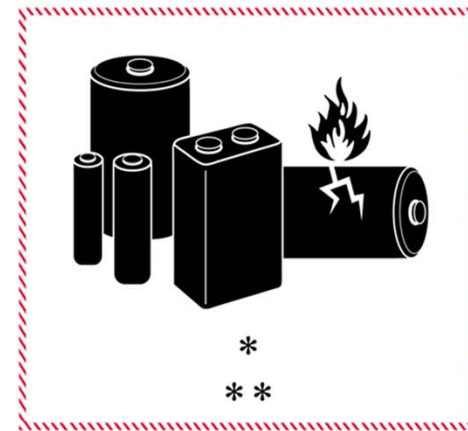
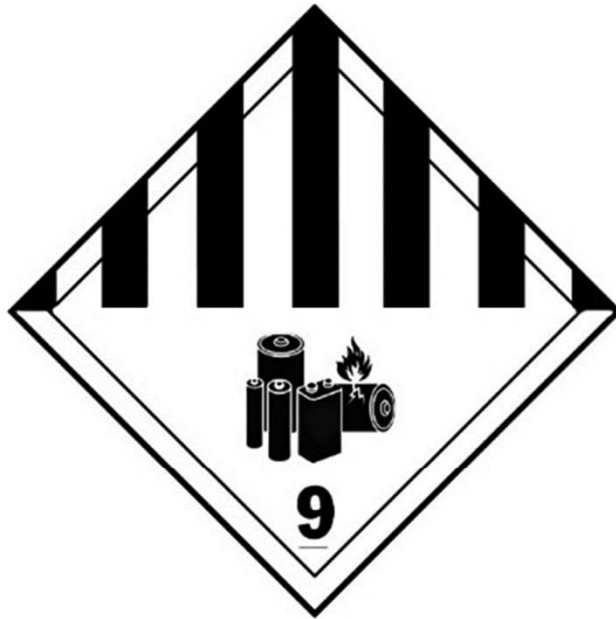
- IFALPA – International Federation of Air Line Pilots Association
  - ✓ Members: 100,000 pilots, over 100 member associations
- EASA – European Aviation Safety Agency
  - ✓ Members: 130+ member states
- ICCAIA – International Coordination Council for Aerospace Industry Association
  - ✓ Members: Six member associations (U.S., Europe, Brazil, Japan, Canada, Russia). **Aircraft manufacturers**, engine manufacturers, ground and space systems manufacturers, avionics and aircraft parts manufacturers
- FAA – U.S. Federal Aviation Administration

# **New Lithium Battery **Air Transport** Dangerous Goods Regulations for 2016 - 2018**

- Shipper may not present for transport more than one package prepared in accordance with Packing Instructions 965 and 968, Section II in any single consignment
  - ✓ Effective April 1, 2016
- Packages and overpacks of Packing Instructions 965 and 968, Section II cells/batteries must be offered to airline separately from cargo which is not subject to regulations and must not be loaded into a unit load device before being offered to the operator.
  - ✓ Effective April 1, 2016
- Elimination of “safety document” for Section II shipments
  - ✓ Effective January 1, 2017

# New Class 9 Label and Lithium Battery Handling Mark

Effective January 1, 2019 – Applies to All Modes of Transport



Lithium battery mark

\* Place for UN number(s)

\*\* Place for telephone number  
for additional information

- Existing lithium battery handling label and Class 9 label may continue to be used until December 31, 2018.
- Package must be of such size that there is adequate space to affix the mark on one side without the mark being folded.

# IATA and Industry Letter on Compliance, Enforcement, and New Lithium Battery Transport Regulations

- IATA, PRBA, RECHARGE, TIACA, Global Shippers' Forum signed letter
- Letter sent to aviation agencies worldwide
  - ✓ Answer to improving safety is strict enforcement of regulations
  - ✓ Significant fines and custodial sentences for non-compliance
  - ✓ Cooperative enforcement initiatives needed between jurisdictions (e.g., Hong Kong, mainland China)
  - ✓ Development of further and increasingly draconian regulation will only penalize legitimate law-abiding manufacturers