

Research and Special Programs Administration

49 CFR Parts 171, 172, 173, 175

[Docket No HM-173; Amdt. Nos. 171-65, 172-73, 173-15, 175-22]

Requirements for Transportation of Wet Electric Storage Batteries

AGENCY: Materials Transportation Bureau (MTB), Research and Special Programs Administration, DOT.

ACTION: Final rule.

SUMMARY: This amendment is intended to simplify, clarify and otherwise improve those requirements of the Hazardous Materials Regulations that pertain to the transportation of wet electric storage batteries ("wet cell batteries"). Specifically, it entails (1) a revision of requirements applicable to the air transport of wheelchairs equipped with wet cell batteries, in order to enhance air transport safety and facilitate the travel of handicapped persons who use wheelchairs; (2) new test criteria which effectively define the term "nonspillable" as applied to wet cell batteries; and, (3) new shipping names to distinguish between acid and alkaline corrosive battery fluids in order to aid emergency response efforts and to make the shipping descriptions consistent with international shipping descriptions.

EFFECTIVE DATE: August 6, 1982.

FOR FURTHER INFORMATION CONTACT: Edward T. Mazzullo, Standards Division, Office of Hazardous Materials Regulation, Materials Transportation Bureau, Department of Transportation, 400 Seventh Street, SW., Washington, D.C. 20590, (202) 426-2075.

SUPPLEMENTARY INFORMATION: On February 28, 1980, the MTB published a notice (Docket HM-173; Notice 80-4) in the Federal Register (45 FR 13153) which announced two public meetings and requested public comment concerning the need for revising those Hazardous Materials Regulations (HMR) which are applicable to the transportation of wet electric storage batteries. Of particular concern was the development of standards for the safe transport on

passenger-carrying aircraft of wheelchairs equipped with wet cell batteries. Based on written comments received by MTB, public input received at the two informal meetings (one on April 3, 1980, in Washington, D.C., and the other on April 16, 1980, in Denver, Colorado) in response to Notice 80-4, and on MTB's own rulemaking initiative, a notice of proposed rulemaking was published on June 4, 1981 (46 FR 29968; Notice 81-4). Interested persons should refer to Notice 81-4 for additional background information.

Twenty commenters responded to Notice 81-4. Based on the comments received the proposals contained therein are being incorporated, with certain changes, as final amendments to the HMR. The majority of comments addressed general support of the proposals, particularly those proposals related to the air transport of wheelchairs equipped with wet cell batteries. Other significant comments and the actions taken thereon are discussed by subject area in the following paragraphs.

I. Air Transport of Wheelchairs Equipped With Wet Electric Storage Batteries (§§ 173.250, 175.305)

Most commenters strongly supported the proposed provisions for handling wheelchairs equipped with wet cell batteries. Several changes were suggested by commenters. One commenter suggested that the provisions for transporting wheelchairs on passenger-carrying aircraft should be located in § 175.305 (title Self-propelled vehicles) rather than in § 175.10 (titled Exceptions). MTB agrees with this comment and the new provisions are added as paragraph (b) of § 175.305. In response to another comment, MTB has added a cross-reference to the § 172.101 Hazardous Materials Table as follows: *Wheelchair, battery-equipped. See Battery, electric storage, wet, with wheelchair.*

In response to several commenters' suggestions, editorial changes have been made to § 175.305(b) in order to clearly distinguish between requirements applicable to nonspillable batteries (§ 175.305(b)(1)) and those applicable to batteries "other than nonspillable" (§ 175.305(b)(2) and (3)) and to clarify that the provisions of subparagraphs (1), (2), and (3) of § 175.305(b) are mutually exclusive.

One commenter suggested that the packaging prescribed for nonspillable batteries (§ 175.305(b)(1)) be amended to require use of absorbent materials. Nonspillable batteries have been shipped safely for many years in the absence of such a requirement.

Therefore, the suggestion has not been adopted in this final rule.

The Air Line Pilots Association (ALPA), representing the interests of 33,000 pilots employed by domestic air carriers, contended that the proposed amendment did not reflect the capability of newly developed nonspillable lead acid batteries which are now available from at least one manufacturer. ALPA offered an alternative amendment which would limit transport on passenger-carrying aircraft to those wheelchairs equipped with nonspillable batteries. Another commenter, a battery manufacturer, stated that there are a number of nonspillable batteries available which are capable of powering wheelchairs. MTB is aware that certain manufacturers of nonspillable batteries are now marketing, or intend to market in the near future, nonspillable batteries suitable for use in wheelchairs. A number of wheelchair users have already equipped their wheelchairs with nonspillable batteries. MTB recommends the use of nonspillable batteries in wheelchairs, were practicable. However, to date MTB has not been presented with conclusive evidence to show that nonspillable batteries are equivalent to the more commonly used "spillable" lead acid batteries in terms of initial cost, useful life, amperage or availability. Further, past shipping experience does not provide sufficient justification for requiring the use of nonspillable batteries. Such a requirement would impose a burden of inconvenience and cost upon wheelchair users who travel by air and, therefore, has not been adopted.

One commenter recommended the use of plastic caps as a solution to the problem of spillage from wet cell batteries. The subject of spill-resistant caps was briefly addressed in Notice 81-4. Such caps may be either vented or non-vented and replace the fill caps in lead acid batteries. A typical lead acid battery equipped with non-vented caps normally will not leak if tipped over. However, such caps must be removed (and replaced with vented caps) before the battery can be used. Vented replacement caps (spring or gravity-loaded) allow normal functioning of the battery in an upright position but impede the flow of battery fluid when the battery is upset. Information available to MTB indicates that vented caps are not "leakproof" in that they can leak battery fluid when subjected to pressure changes or vibrations. Further, the caps cannot be fitted to all wet cell batteries due to variations in the size of fill openings or, as with the increasingly

popular maintenance-free batteries, due to the absence of fill openings. It does not appear feasible, for the aforementioned reasons, to prescribe the use of the spill-resistant caps as a regulatory requirement. However, in those instances where they can be employed, their use is recommended.

Provisions for removing batteries from wheelchairs, as proposed in § 175.10(b)(3), were criticized by two commenters. Comments submitted by the Air Transport Association's Restricted Articles Board (ATA), a group representing U.S. air carriers, alleged that the proposal was ambiguous as to whether the passenger or air carrier was to perform the packaging. ATA indicated that air carriers do not package any hazardous materials for or on behalf of a shipper or passenger, and will not in this instance either. ATA further indicated that DOT has an obligation to ensure that full and adequate notice of applicable requirements to be given to the wheelchair user population. A second commenter alleged that a passenger will not properly package a battery and the air carrier will reluctantly accept it.

MTB's proposal (and final rule) envisions packaging by either the passenger or air carrier personnel. It is believed that some air carriers will provide a packaging service for their disabled passengers, whereas others may accept batteries removed from wheelchairs for transport only if the passenger provides a satisfactory packaging. With regard to air carriers being unwilling to package a battery on behalf of a passenger, MTB notes that a number of air carriers have developed procedures for handling wheelchairs which encompass the partial or complete packaging of batteries.

With regard to notifying the wheelchair user population, MTB notes that in addition to many individual inquiries, approximately 30 organizations representing the interests of disabled persons have contacted MTB requesting information concerning this rulemaking. MTB has maintained a mailing list during the course of this rulemaking action to inform these groups and individuals. It is anticipated that individual airlines will develop or revise their individual policies and procedures for handling battery-equipped wheelchairs and disseminate this information to their passengers. As an aid to dissemination of information concerning the new requirements, FAA is considering publication of an advisory circular for the benefit of both passengers and carriers, containing recommended procedures for achieving

safe transport and compliance with requirements. As information regarding regulatory requirements and carriers' policies and procedures are made known to wheelchair users who travel by air, there is little reason to believe that inadequately packaged batteries will be tendered for transport. Considering the interests of air carriers regarding safety, there is even less reason to believe that air carriers would accept batteries which obviously do not comply with packaging requirements.

ATA criticized provisions for rendering packages containing batteries "tilt proof," alleging that neither passengers nor air carriers have the capability of palletizing batteries at airports and that to otherwise secure batteries using restraining straps, brackets or holders would require costly modifications to cargo compartments. The intent of the proposed alternatives is to ensure that batteries are secured, rather than just placed, in cargo compartments and to require an active or positive means of securement, rather than passive means such as by bracing with other freight or baggage. Where securement in the cargo compartment is not possible, palletization offers a practicable alternative. Palletization can be as simple as securing the outside container used to package a battery to a board (by means of clamps, straps, bands, etc.) of dimensions sufficiently larger than the bottom of the outside container. In order to provide for various other means of securement, the language of § 175.305(b)(3)(i) (proposed § 175.10(b)(3)(i)) is revised to require that outside containers " * * * be protected against upset by securing to pallets or by securing them in cargo compartments using appropriate means of securement (other than by bracing with other freight or baggage) such as by use of restraining straps, brackets or holders." This language will give latitude to air carriers for developing appropriate methods for blocking and bracing the outside containers.

In Notice 81-4, it was proposed that new provisions would be added in § 175.33 with regard to notifying the pilot-in-command, orally or in writing, as to the location on aircraft of any wheelchair equipped with wet cell batteries (other than nonspillable batteries). One commenter suggested that notification should be required to be in writing so that there would be no dispute over the adequacy of notification to the pilot and so as not to take away from the focus regarding compatibility in loading of hazardous materials. MTB does not believe that a requirement for written notification is

necessary. Information concerning other hazardous cargo would normally be available well before flight time, giving the aircraft operator adequate time to prepare written notification. With regard to stowing a passenger's wheelchair, the aircraft operator may not have adequate time to prepare written notification in all instances. Further, wheelchairs have been transported for a number of years in the absence of a requirement for written notification without any adverse impact on transportation safety. The rule, as adopted herein, permits either oral or written notification.

Two commenters addressed issues concerning wheelchairs equipped with wet cell batteries which are outside MTB's purview. One commenter requested clarification concerning mandatory aspects of HMR provisions, in light of certain proposed rules of the Civil Aeronautics Board (CAB) which are intended to prohibit unlawful discrimination against disabled travelers and implement section 504 of the Rehabilitation Act of 1973. Another commenter requested that MTB address the subject of carrier liability for damage to, or loss of, wheelchairs. Both matters appear to fall within the purview of the CAB. Therefore, MTB suggests the commenters address their concerns to the Bureau of Consumer Protection, Civil Aeronautics Board, Washington, D.C. 20428.

II. Defining "Nonspillable" Batteries (§ 173.260(d), 175.10)

Comments addressed to the new provisions for defining "nonspillable" as that term applies to wet cell batteries were generally supportive of the proposal. Three commenters suggested changes to the proposal. One commenter stated that the language of the proposed tests did not necessarily require testing of a battery with its fill or vent openings upside down, since a battery may have openings on a different face of the battery than its terminals. MTB agrees with this comment and has revised the language of the vibration and pressure differential tests to clarify that a battery is to be tested with fill openings and vents, if any, inverted.

One commenter suggested that the pressure differential test can be circumvented unless the sequence of test positions is specified. The commenter, a battery manufacturer alleged that most nickel cadmium aircraft batteries, which would otherwise pass the test, would spill battery fluid if tested first in an inverted position and then on their side. MTB agrees that leakage is possible under the

§ 172.101 Hazardous Materials Table.

(1) + / E / A / W	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(3A) Identification number	(4) Label(s) required (if not excepted)	(5) Packaging		(6) Maximum net quantity in one package		(7) Water shipments		
					Exceptions (a)	Specific requirements (b)	Passenger carrying aircraft or railcar (a)	Cargo only aircraft (b)	Cargo vessel (a)	Passenger vessel (b)	Other requirements (c)
• • •	Deletions										
• • •	Alkaline battery fluid	Corrosive material.	NA2797	Corrosive	173.244	173.249 173.257 173.258	1 quart	5 gallons	1, 2	1, 2	
	Alkaline battery fluid with empty storage battery.	Corrosive material.	NA2797	Corrosive	None	173.258	Forbidden	5 pints	1, 2	1, 2	
	Battery charger with electrolyte (acid) or alkaline battery fluid.	Corrosive material.	NA2794	Corrosive	None	173.259	Forbidden	5 pints	1, 2	1, 2	
	Battery, electric, storage, wet.	Corrosive material.	NA2794	Corrosive	173.260	173.260	Forbidden	No limit	1, 2	1, 2	
	Battery, electric, storage, wet with automobile, auto parts, engine (or other specifically named mechanical apparatus).	Corrosive material.	NA2794	Corrosive	173.250	173.260	No limit	No limit	1, 2	1, 2	Keep dry.
	Battery, electric storage, wet, with containers of electrolyte (acid) or alkaline battery fluid.	Corrosive material.	NA2794	Corrosive	None	173.258	Forbidden	2 gallons	1, 2	1, 2	
	Battery fluid. See Electrolyte (acid) or Alkaline battery fluid.										
	Electric storage battery, wet. See Battery, electric storage, wet.										
	Electrolyte (acid) or alkaline battery fluid, packed with dry-storage battery.	Corrosive material.	NA2797	Corrosive	None	173.258	Forbidden	5 pints	1, 2	1, 2	
	Electrolyte (acid) or alkaline battery fluid, packed with battery charger radio current supply device, or electronic equipment and actuating device.	Corrosive material.	NA2797	Corrosive	None	173.258	Forbidden	5 pints	1, 2	1, 2	
	Electrolyte (acid) battery fluid (not over 4756 acid) RQ-1000/454.	Corrosive material.	UN2798	Corrosive	173.244	173.257	1 quart	5 gallons	1, 2	1, 2	Glass carboys in hampers not permitted under deck.
• • •	Additions										
• • •	Battery, electric storage, dry (containing potassium hydroxide, dry solid, flake bead, or granular).	Corrosive material.	NA1813	Corrosive	173.244	173.245b	25 pounds	100 pounds	1, 2	1, 2	Keep dry.
	Battery, electric storage, wet, filled with acid.	Corrosive material.	UN2794	Corrosive	173.260	173.260	Forbidden	No limit	1, 2	1, 2	
	Battery, electric storage, wet, filled with acid, with automobile (or specifically named self-propelled vehicle or mechanical apparatus).	Corrosive material.	NA2794	Corrosive	173.250	173.260	No limit	No limit	1, 2	1, 2	Keep dry.
	Battery, electric storage, wet, filled with alkali, with automobile (or specifically named self-propelled vehicle or mechanical apparatus).	Corrosive	NA2797	Corrosive	173.250	173.260	No limit	No limit	1, 2	1, 2	Keep dry.

(1) + /E/A/W	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(3A) Identification number	(4) Label(s) required (if not excepted)	(5) Packaging		(6) Maximum net quantity in one package		(7) Water shipments		
					Exceptions (a)	Specific requirements (b)	Passenger carrying aircraft or railcar (a)	Cargo only aircraft (b)	Cargo vessel (a)	Passenger vessel (b)	Other requirements (c)
	Battery, electric storage, wet, with wheelchair.	Corrosive material.		Corrosive	173.250	173.250 175.305	No limit	No limit	1, 2	1, 2	Keep dry.
	Battery, electric storage, wet, nonspillable. See § 173.260(d).										
	Battery, electric storage, wet, filled with alkali.	Corrosive material.	UN2795	Corrosive	173.260	173.260	Forbidden	No limit	1, 2	1, 2	
	Battery fluid, acid	Corrosive material.	UN2796	Corrosive	173.244	173.257	1 quart	5 gallons	1, 2	1, 2	
	Battery fluid, acid, with electronic equipment or actuating device.	Corrosive material.	NA2796	Corrosive	None	173.259	Forbidden	5 pints	1, 2	1, 2	
	Battery fluid, acid, with battery.	Corrosive material.	NA2796	Corrosive	None	173.258	Forbidden	5 pints	1, 2	1, 2	
	Battery fluid, acid, wet, empty, or dry.										
	Battery fluid, alkali	Corrosive material.	UN2797	Corrosive	173.244	173.257	1 quart	5 gallons	1, 2	1, 2	
	Battery fluid, alkali, with electronic equipment or actuating device.	Corrosive material.	NA2797	Corrosive	None	173.259	Forbidden	5 pints	1, 2	1, 2	
	Battery fluid, alkali, with battery.	Corrosive material.	UN2797	Corrosive	None	173.258	Forbidden	5 pints	1, 2	1, 2	
	Battery fluid, alkali, wet, empty or dry.										
	Electrolyte (acid) battery fluid (not over 47% acid) (RQ 1000/454). See Battery fluid, acid.										
	Wheelchair, battery-equipped. See Battery, electric storage, wet, with wheelchair.										

PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS

4. In § 173.250, paragraph (a) is revised, paragraph (b) is redesignated paragraph (d), and new paragraphs (b) and (c) are added, as follows:

§ 173.250 Automobiles, other self-propelled vehicles, engines or other mechanical apparatus.

(a) Except as provided in paragraph (b) of this section, automobiles and other self-propelled vehicles equipped with wet electric storage batteries are excepted from all other requirements of this subchapter when shipped as prescribed in paragraphs (a)(1) or (2) of this section, unless other hazardous materials are transported on the self-propelled vehicles, in which instance the regulations covering these other materials apply.

(1) When batteries are removed from the self-propelled vehicles and loaded in the transport vehicle therewith, the batteries must be so loaded, blocked and braced as to prevent short circuits, spillage of battery fluid or movement within the transport vehicle.

(2) When batteries are installed in self-propelled vehicles they must be completely protected against short circuits and so secured that spillage of battery fluid will not occur under conditions normal to transportation.

(b) For transportation by passenger-carrying aircraft, wheelchairs equipped with wet electric storage batteries must be shipped as prescribed in § 175.305 of this subchapter.

(c) When wet electric storage batteries or batteries packed in containers with battery fluid are shipped as part of carload or truckload shipments of automobile parts or assembly materials, they are subject to no other requirements of this subchapter when the batteries and battery fluid are boxed or crated and so loaded, blocked and braced as to prevent short circuits of the batteries, spillage of battery fluid and movement of the materials in the transport vehicle under conditions normal to transportation. When other hazardous materials are included in the shipments, the regulations covering these other materials apply.

* * * * *

5. In § 173.260, paragraph (d) is revised to read as follows:

§ 173.260 Electric storage batteries, wet.

* * * * *

(d) Nonspillable wet electric storage batteries capable of withstanding the tests prescribed in paragraphs (d) (1) and (2) of this section without leakage of battery fluid are excepted from all other requirements of this subchapter when protected against short circuits and securely packaged so as to withstand conditions normal to transportation.

(1) *Vibration test.* Battery is rigidly clamped to the platform of a vibration machine and a simple harmonic motion having an amplitude of 0.03 inches (0.06 inches maximum total excursion) is applied. The frequency is varied at the rate of one cycle per second per minute between the limits of 10 to 55 cycles per second. The entire range of frequencies and return is traversed in 95± minutes for each mounting position (direction of vibrator) of the battery. The battery must be tested in three mutually perpendicular positions (to include testing with fill openings and vents, if

any, in an inverted position) for equal time periods.

(2) Pressure differential test.

Following the vibration test, the battery is stored for six hours at 75°F. ± 7°F. under an external partial pressure of 2 pounds per square inch absolute. The battery must be tested in three mutually perpendicular positions (to include testing with fill openings and vents, if any, in an inverted position) for at least six hours in each position.

PART 175—CARRIAGE BY AIRCRAFT

6. In § 175.33, paragraph (b) is added to read as follows:

§ 175.33 Notification of pilot-in-command.

(b) When wheelchairs equipped with wet electric storage batteries, other than nonspillable batteries, are transported under the provisions of § 175.305(b)(2) or (b)(3) of this subchapter, the pilot-in-command shall be notified orally or in writing before take off as to their location in the aircraft.

7. In § 175.78, paragraph (a) is revised to read as follows:

§ 175.78 Stowage compatibility of cargo.

(a) No person may stow a package, or a wet electric storage battery other than a nonspillable battery, containing a corrosive material on an aircraft next to or in a position that will allow contact with a package of flammable solids, oxidizing materials, or organic peroxides.

8. Section 175.79 is revised to read as follows:

§ 175.79 Orientation of cargo.

(a) A package, or a wet electric storage battery other than a nonspillable battery, containing hazardous materials and marked "THIS SIDE UP", "THIS END UP", or with arrows to indicate proper orientation, must be loaded and stored aboard an aircraft in accordance with such markings and secured in a manner that will prevent any movement that would change the orientation of the package or battery.

(b) A package, or a wet electric storage battery other than a nonspillable battery, containing liquid hazardous material and not marked as indicated in paragraph (a) of this section must be loaded and stored with closures up and secured as prescribed in paragraph (a) of this section.

9. In § 175.305, paragraph (b) is added to read as follows:

§ 175.305 Self-propelled vehicles.

(b) Wheelchairs equipped with wet electric storage batteries may be carried in cargo compartments on passenger-carrying aircraft when transported in accordance with the provisions of paragraphs (b)(1), (2) or (3) of this section. Shipments are subject to no other requirements of this subchapter except those requirements in §§ 175.33, 175.78 and 175.79 which are applicable to batteries.

(1) Wheelchairs equipped with batteries of a nonspillable type, as defined in § 175.280(d) of this subchapter, may be transported subject to no other requirements of this subchapter provided the batteries are:

(i) Protected against short circuits, and

(ii) Securely attached to the wheelchair or removed and boxed.

(2) Wheelchairs equipped with batteries other than nonspillable batteries, when carried on aircraft in cargo compartments which can accommodate upright loading and stowage of wheelchair, must be transported as follows:

(i) Batteries must remain installed on wheelchairs, be securely attached to them, and terminals must be protected against short circuits;

(ii) Wheelchairs must be deactivated by removing connections at battery terminals or by otherwise disconnecting the power source, and

(iii) Wheelchairs must be secured upright in cargo compartments.

(3) For carriage on aircraft in cargo compartments which cannot accommodate upright loading or storage of wheelchairs, batteries other than nonspillable batteries may be removed from wheelchairs and carried in strong outside containers, as follows:

(i) Outside containers must be leaktight, impervious to battery fluid, and be protected against upset by securing to pallets or by securing them in cargo compartments using appropriate means of securement (other than by bracing with freight or baggage) such as by use of restraining straps, brackets or holders;

(ii) Batteries must be protected against short circuits, secured upright in the outside containers and surrounded by absorbent material sufficient to absorb their total liquid contents, and

(iii) Outside containers must be marked to indicate proper orientation, be marked "Battery, wet, with wheelchair", and be labeled with CORROSIVE labels (§ 172.442 of this subchapter).

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

Note.—The Materials Transportation Bureau has determined that this document

will not result in a "major rule" under the terms of Executive Order 12291 and DOT procedures (44 FR 11034) nor require an environmental impact statement under the National Environmental Policy Act (49 U.S.C. 4321 et seq.). Based on limited information available concerning size and nature of entities likely to be affected by this amendment, I certify that this amendment will not, as promulgated, have a significant economic impact on a substantial number of small entities. A regulatory evaluation and environmental assessment are available for review in the Docket.

Issued in Washington, D.C., on June 1, 1982.

L. D. Santana,

Director, Materials Transportation Bureau.

(FR Doc. 82-13028 Filed 5-4-82; 8:35 am)

SELLING CODE 4950-50-M