

**Committee of Experts on the Transport of Dangerous Goods
and on the Globally Harmonized System of Classification
and Labelling of Chemicals**

Sub-Committee of Experts on the Transport of Dangerous Goods

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Item 4 (b) of the provisional agenda

Electric storage systems: Lithium-ion capacitors

New proper shipping name for asymmetric capacitors

Revised text of draft provisions for transport of Asymmetric capacitors proposed in ST/SG/AC.10/C3/2012/23

Transmitted by the Expert from Japan

1. Taking into account the discussion made at the plenary on document ST/SG/AC.10/C3/2012/23, the expert of Japan proposes to amend the proposed new entry and associated special provisions AAA for transport of asymmetric capacitors in the document as follows:

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
3XXX	ASYMMETRIC CAPACITOR (with an energy storage capacity greater than 0.3Wh)	9			AAA	0	E0	P003		

AAA This entry applies to asymmetric capacitors with an energy storage capacity greater than 0.3 Wh. Capacitors with an energy storage capacity of 0.3 Wh or less are not subject to these Regulations.

Energy storage capacity means the energy stored in a capacitor, as calculated according to the following equation,

$$Wh = 1/2 C_N (U_R^2 - U_L^2) \times (1/3600),$$

using the nominal capacitance(C_N), rated voltage(U_R) and rated lower limit voltage(U_L).

All asymmetric capacitors to which this entry applies shall meet the following conditions:

- (a) Capacitors or modules shall be protected against short circuit ~~in transport~~;
- (b) Capacitors shall be designed and constructed to safely relieve pressure that may build up in use, through a vent or a weak point in the capacitor casing. Any liquid which is released upon venting shall be contained by the packaging or by equipment in which a capacitor is installed;
- (c) Capacitors shall be marked with the energy storage capacity in Wh; and
- (d) Capacitors containing an electrolyte meeting the classification criteria of any class or division of dangerous goods shall be designed to withstand a 95kPa pressure differential;

Capacitors containing an electrolyte not meeting the classification criteria of any class or division of dangerous goods, including when configured in a module or when installed in equipment, are not subject to other provisions of these Regulations ~~when the capacitors meet the conditions (a) to (d).~~

Capacitors containing an electrolyte meeting the classification criteria of any class or division of dangerous goods, with an energy storage capacity of 20Wh or less, including when configured in a module, are not subject to other provisions of these Regulations when the capacitors ~~meet the conditions (a) to (d) and~~ are capable of withstanding a 1.2 metre drop test unpackaged on an unyielding surface without loss of contents.

Capacitors containing an electrolyte meeting the classification criteria of any class or division of dangerous goods that are not installed in equipment and with an energy storage capacity of more than 20Wh are subject to these Regulations.

Capacitors installed in equipment and containing an electrolyte meeting the classification criteria of any class or division of dangerous goods, are not subject to other provisions of these Regulations provided that ~~the capacitors meet the conditions (a) to (d) and~~ the equipment is packaged in a strong outer packaging constructed of suitable material, and of adequate strength and design, in relation to the packaging's intended use and in such a manner as to prevent accidental functioning of capacitors during transport. Large robust equipment containing capacitors may be offered for transport unpackaged or on pallets when capacitors are afforded equivalent protection by the equipment in which they are contained.

Note: Electric double layer capacitors ~~do not belong to this entry~~ shall be classified under UN3499. [Nickel-Carbon capacitors are subject to these Regulations as UN2795 Batteries, wet, filled with alkali.]”