

**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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Electric storage systems

Transport requirements for ultracapacitors (Electric Double Layer Capacitors)

Transmitted by the Kilo Farad International (kFI)

Response to comments on informal document INF.74

Proposal

The new table entry would read as follows:

(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
XXXX	CAPACITOR, electric double layer (with an energy storage capacity greater than 0.3 Wh)	9			AAA	None	E0	P003			

The accompanying special provision AAA would read:

“AAA This entry applies to Electric Double Layer 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 held by a capacitor, as calculated using the nominal voltage and capacitance. All capacitors to which this entry applies, including capacitors containing an electrolyte that does not meet the criteria for dangerous goods, shall meet the following conditions:

(a) Capacitors not installed in equipment shall be transported in an uncharged state. Capacitors installed in equipment may be transported in an uncharged state or protected against short circuiting;

(b) Each capacitor shall be protected against a potential short circuit hazard in transport as follows:

(i) When a capacitor’s energy storage capacity is less than or equal to 10Wh or when the energy storage capacity of each capacitor in a module is less than or equal to 10Wh , the capacitor or module shall be protected against short circuit or be fitted with a metal strap connecting the terminals; and

(ii) When the energy storage capacity of a capacitor or a capacitor in a module is more than 10Wh, the capacitor or module shall be fitted with a metal strap connecting the terminals;

- (c) Capacitors containing dangerous goods shall be designed to withstand a 95 kPa pressure differential for purposes of air transport;
- (d) 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; and
- (e) Capacitors shall be marked with the energy storage capacity in Wh.

Capacitors containing an electrolyte not meeting the criteria for dangerous goods, including when installed in equipment, are not subject to other provisions of these Regulations.

Other capacitors, which contain an electrolyte meeting the criteria for dangerous goods, with an energy storage capacity of 10 Wh or less are not subject to other provisions of these Regulations when they 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 criteria for dangerous goods that are not installed in equipment and with an electric storage capacity of more than 10 Wh are subject to these Regulations.

Capacitors installed in equipment and containing an electrolyte meeting the criteria for dangerous goods, are not subject to other provisions of these Regulations, provided the equipment is packaged in a strong outer packaging constructed of suitable material 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.

Consequential amendment. In 2.9.2 add a new section as follows:

Electric double layer capacitors

XXXX Capacitor, electric double layer (with an energy storage capacity greater than 0.3 Wh)
