

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 3 of the provisional agenda

Listing, classification and packing

Clarification of the objects to which the provisions in special provisions SP361 and SP372 apply

Transmitted by the expert from China

Introduction

1. Supercapacitors, with large charge/discharge capacity, long life cycle, ultra-low working temperature and high energy recuperation efficiency, are widely used in military, manufacturing and other fields. Thus, the transportation demand for capacitors keeps growing. As a common item used in many consumer goods and industrial equipment, supercapacitors are transported in a variety of situations, either in monomer form or in module form or installed in equipment to dealers or retail stores, and even directly to consumers.
2. Special provisions (SP) 361 and 372 list several situations where electric double layer capacitors or asymmetric capacitors can be transported without subject to the Model Regulations. However, experts from China found that disharmonization of classification on capacitor modules has arisen from the ambiguities in the texts of the two special provisions.
3. Situations listed in SP361 for the exemption from UN 3499 include:
 - (a) Capacitors with energy storage capacity of 0.3 Wh or less;
 - (b) Capacitors meeting all conditions from (a) to (e) of the special provision and containing an electrolyte not meeting the classification criteria of any class or division of dangerous goods, including when installed in equipment;
 - (c) Capacitors meeting all conditions from (a) to (e) of the special provision but containing an electrolyte meeting the classification criteria of any class or division of dangerous goods, with an energy storage capacity of 10 Wh or less, that are capable of withstanding a 1.2 metre drop test unpackaged on an unyielding surface without loss of content;
 - (d) Capacitors meeting all conditions from (a) to (e) of the special provision but containing an electrolyte meeting the classification criteria of any class or division of dangerous goods, installed in equipment which 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.

4. And, exemption situations listed in SP372 include:
 - (i) Capacitors with energy storage capacity of 0.3 Wh or less;
 - (ii) Capacitors meeting all conditions from (a) to (d) of the special provision and 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;
 - (iii) Capacitors meeting all conditions from (a) to (d) of the special provision but containing an electrolyte meeting the classification criteria of any class or division of dangerous goods, with an energy storage capacity of 20Wh or less, that are capable of withstanding a 1.2 metre drop test unpackaged on an unyielding surface without loss of content, including when configured in a module;
 - (iv) Capacitors meeting all conditions from (a) to (d) of the special provision but containing an electrolyte meeting the classification criteria of any class or division of dangerous goods, installed in equipment which 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.
5. Here rises a question that, except for those paragraphs specially pointed out "including when configured in a module", how we should understand a module in classification? Should a module be exempted as long as all of its component capacitors meet the exemption conditions above? Or, should a module in that case be understood as a large capacitor that should meet the requirements on its own to be exempted?
6. Some relevant parties believe that, since some paragraphs in SP372 have made clear that certain capacitors can be exempted when they are configured in modules, all modules consist of exempted capacitors should also be exempted similarly. However, some others believe the fact that relevant paragraphs in SP372 specifically mentioned "including when configured in a module" indicates modules consist of exempted capacitors described in other paragraphs should be subject to the Regulations unless the module meets the exemption requirements on its own.
7. This divergence in understanding leads to disharmonization of classification on, for example, a capacitor module with a total energy storage capacity of 160 Wh that consists of several electric double layer capacitors described in the situations of SP361 (see para. 3 above). The former classifies the module as "Not Restricted", while the latter classifies it as UN 3499.

Proposal

8. Thus, the experts from China invite the Sub-Committee to clarify whether a module should be classified when all its component capacitors are not subject to the regulations according to provisions in SP361 or SP372.
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