

**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

Twenty-ninth session  
Geneva, 3-12 (a.m.) July 2006  
Item 4(b) of the provisional agenda

**Report From Working Group on Fuel Cells  
July 6, 2006**

The proposal below is based upon the plenary agreement to defer discussion on 2.1 hydrogen gas in metal hydride and 2.1 liquefied gases until later with additional discussions leading to a joint paper submitted by Canada and the USA regarding these two additional topics in time for a decision at the December meeting.

ST/SG/AC.10/C.3/2006/50 was used as the basis of this proposal. Changes from ST/SG/AC.10/C.3/2006/50 are shown as ALL CAPITAL LETTERS or in the case of isolated numbers, as preceded by \*\*\*

- (a) New entries would be added to the Dangerous Goods List in Chapter 3.2 of the Model Regulations and the existing entry for UN 3473 would be amended as follows:

The following new entries would be added:

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
YYYY	FUEL CELL CARTRIDGE; or FUEL CELL CARTRIDGE CONTAINED IN EQUIPMENT; or FUEL CELL CARTRIDGE PACKED WITH EQUIPMENT containing water-reactive substance	4.3			*** 328 3EE	500ml or 500g	P004			
ZZZZ	FUEL CELL CARTRIDGE ; or FUEL CELL CARTRIDGE CONTAINED IN EQUIPMENT; or FUEL CELL CARTRIDGE PACKED WITH EQUIPMENT containing corrosive substance	8			*** 328 3EE	1 L or 1 kg	P004			

The existing entry for UN 3473 would be amended as follows:

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
3473	FUEL CELL CARTRIDGE; or FUEL CELL CARTRIDGE CONTAINED IN EQUIPMENT; or FUEL CELL CARTRIDGE PACKED WITH EQUIPMENT containing flammable liquids	3			*** 328	1 L	P004			

- (b) **SP 328 WOULD BE REVISED, PP88 WOULD BE DELETED FROM PI003 AND A New Special Provision would be added in Chapter 3.3 of the Model Regulations to read:**

**REPLACE SP 328 WITH THE FOLLOWING TEXT**

**SP 328:** This entry applies to fuel cell cartridges including when contained in equipment or packed with equipment. Fuel cell cartridges installed in or integral to a fuel cell system are regarded as contained in equipment. Fuel cell cartridge means **AN ARTICLE** that stores fuel for discharge into the fuel cell through a valve(s) that controls the discharge of fuel into the fuel cell. Fuel cell cartridges shall be designed and constructed to prevent fuel leakage under normal conditions of transport.

Fuel cell cartridge design types **USING LIQUIDS AS FUELS** shall pass an internal pressure test at a pressure of 100 kPa (gauge) **WITHOUT LEAKAGE**.

**EACH FUEL CELL CARTRIDGE DESIGN TYPE SHALL BE SHOWN TO PASS A 1.2 METER DROP TEST ONTO AN UNYIELDING SURFACE IN THE ORIENTATION MOST LIKELY TO RESULT IN FAILURE OF THE CONTAINMENT SYSTEM WITH NO LOSS OF CONTENTS.**

SP 3EE: A fuel cell cartridge may contain an activator provided it is fitted with two independent means of preventing unintended mixing with the fuel during transport.

- (c) Add the following new packing instructions in 4.1.4.1:

<b>P004</b>	<b>PACKING INSTRUCTION</b>	<b>P004</b>
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This instruction applies to fuel cell cartridges, and fuel cell cartridges contained in equipment or packed with equipment.

**The following packagings are authorized provided the general provisions of 4.1.1.1, 4.1.1.2, 4.1.1.3 AND 4.1.1.6, AND 4.1.3 ARE MET:**

- (1) For fuel cell cartridges, packagings conforming to the Packing Group **\*\*\*II** performance level; and
- (2) For fuel cell cartridges contained in equipment or packed with equipment, strong outer packagings. Large robust equipment (**SEE 4.1.3.8**) containing fuel cell cartridges may be transported unpackaged. When fuel cell cartridges are packed with equipment, they shall be packed in inner packagings or placed in the outer packaging with cushioning material or divider(S) so that the fuel cell cartridges are protected against damage that may be caused by the movement or placement of the contents within the outer packaging. **FUEL CELL CARTRIDGES THAT ARE INSTALLED IN EQUIPMENT SHALL BE PROTECTED AGAINST SHORT CIRCUIT AND THE ENTIRE SYSTEM SHALL BE PROTECTED AGAINST INADVERTENT OPERATION.**

- (D) **DELETE PP88 FROM PI003.**
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