

## 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

5 December 2014

### Forty-sixth session

Geneva, 1 – 9 December 2014

Item 2 (b) of the provisional agenda

**Recommendations made by the Sub-Committee on its forty-third, forty-fourth and forty-fifth sessions and pending issues: listing, classification and packing**

## Fuels in engines and machinery – result of the lunch time working group

### Submitted by the expert from Belgium

### Introduction

1. A lunch time working group met on Thursday December 4th. The work was based on a discussion paper, taking into account some of the earlier comments received from various experts.
2. The proposal in this paper is a consolidated version of ST/SG/AC.10/C.3/2014/88 and the proposed changes, with amendments to this document indicated in the underlined text. The proposals between square brackets share a common subject, which is the applicability of the provisions of 2.9.4 to lithium batteries present in machinery or vehicles.

### Proposal

3. In 1.1.1.2, insert a new NOTE 3 to read as follows:  
*NOTE 3: 1.1.1.2 a) above is only applicable to the means of transport performing the transport operation.*
4. Amend the proper shipping name of UN 3166 to read as follows:  
UN 3166 ~~ENGINE, INTERNAL COMBUSTION~~ or VEHICLE, FLAMMABLE GAS POWERED or VEHICLE, FLAMMABLE LIQUID POWERED or ~~ENGINE, FUEL CELL, FLAMMABLE GAS POWERED~~ or ~~ENGINE, FUEL CELL, FLAMMABLE LIQUID POWERED~~ or VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or VEHICLE, FUEL CELL, FLAMMABLE LIQUID POWERED
5. Amend SP 312 in chapter 3.3 to read as follows:  
Vehicles ~~or machinery~~ powered by a fuel cell engine shall be consigned under the entries UN 3166 VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or UN 3166 VEHICLE, FUEL CELL, FLAMMABLE LIQUID POWERED, ~~or UN 3166 ENGINE, FUEL CELL, FLAMMABLE GAS POWERED or UN 3166 ENGINE, FUEL CELL, FLAMMABLE LIQUID POWERED~~ as appropriate. These entries include hybrid electric vehicles powered by both a fuel cell and an internal combustion engine with wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries, transported with the battery(ies) installed.

Other vehicles which contain an internal combustion engine shall be consigned under the entries UN 3166 VEHICLE, FLAMMABLE GAS POWERED or UN 3166 VEHICLE, FLAMMABLE LIQUID POWERED, as appropriate. These entries include hybrid electric vehicles powered by both an internal combustion engine and wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries, transported with the batteries installed. Lithium batteries shall meet the requirements of 2.9.4, except when otherwise specified by these Regulations.

[If the addition of this sentence is acceptable for SP 312, it should also be added to SP 240 first paragraph – amend SP 240 first paragraph as follows :

This entry only applies to vehicles powered by wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries and equipment powered by wet batteries or sodium batteries transported with these batteries installed. Lithium batteries shall meet the requirements of 2.9.4, except when otherwise specified by these Regulations.]

6. Delete the reference to SP 363 in column (6) of the dangerous goods list for UN 3475, 1863, 1268, 1223, 1203, 1202.

7. Add a new SP YYY to UN 3166 as follows:

This entry applies to vehicles powered by flammable liquid or gas internal combustion engines or fuel cells.

Hybrid electric vehicles powered by both an internal combustion engine and wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries, transported with the batteries installed shall be consigned under this entry. Vehicles powered by wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries, transported with the batteries installed, shall be consigned under the entry UN 3171 BATTERY-POWERED VEHICLE (see special provision 240).

For the purpose of this special provision, vehicles are self-propelled apparatus designed to carry one or more persons or goods. Examples of such vehicles are cars, motorcycles, trucks, locomotives, scooters, three- and four-wheeled vehicles or motorcycles, lawn tractors, self-propelled farming and construction equipment, boats and aircraft.

Dangerous goods such as batteries, air bags, fire extinguishers, compressed gas accumulators, safety devices and other integral components of the vehicle that are necessary for the operation of the vehicle or for the safety of its operator or passengers, must be securely installed in the vehicle and are not otherwise subject to these Model Regulations.

8. Amend SP 240 by deleting the words “Examples of such vehicles are electrically-powered cars, motorcycles, scooters, three- and four-wheeled vehicles or motorcycles, e bikes, wheel-chairs, lawn tractors, boats and aircraft.” and replacing them with “Examples of such vehicles are electrically-powered cars, motorcycles, scooters, three- and four-wheeled vehicles or motorcycles, scooters, trucks, locomotives, bicycles (pedal cycles with an electric motor), and other vehicles of this type (e.g. self-balancing vehicles or vehicles not equipped with at least one seating position), wheel chairs, lawn tractors, self-propelled farming and construction equipment, boats and aircraft.”
9. Insert a new P005 in 4.1.4.1 to read as follows:

P005	PACKING INSTRUCTION	P005
<p>This Packing Instruction applies to UN XXXX, UN YYYY and UN ZZZZ.</p> <p>If <b>the</b> engine or machinery is constructed and designed so that the means of containment containing the dangerous goods affords adequate protection, an outer packaging is not required.</p> <p><b>Dangerous</b> goods in engines or machinery shall otherwise be packed in outer packagings constructed of suitable material, and of adequate strength and design in relation to the packaging capacity and its intended use, and meeting the applicable requirements of <b>4.1.1.1</b>, or they shall be fixed in such a way that they will not become loose during normal conditions of transport, <u>e.g. in cradles or crates or other handling devices</u>.</p> <p>In <b>addition</b>, the manner in which means of containment are contained within the engine or machinery, shall be such that under normal conditions of transport, damage to the means of containment containing the dangerous goods is <u>prevented</u>; and in the event of damage to <u>the</u> means of containment containing liquid dangerous goods, no leakage of the dangerous goods from the engine or machinery is possible (a leakproof liner may be used to satisfy this requirement).</p> <p>Means of containment containing dangerous goods shall be so installed, secured or cushioned as to prevent their breakage or leakage and so as to control their movement within the engine or machinery during normal conditions of transport. Cushioning material shall not react dangerously with the content of the means of containment. Any leakage of the contents shall not substantially impair the protective properties of the cushioning material.</p> <p>Additional requirements:</p> <p><u>Other dangerous goods (e.g. batteries, fire extinguishers, compressed gas accumulators or safety devices) required for the functioning or safe operation of the engine or machinery must be securely mounted in the engine or machine.</u></p>		

10. Insert three new UN numbers XXXX, YYYY and ZZZZ in the dangerous goods list to read as follows:

UN No.	Name and description	Class	Subsidiary risk	Packing group	Special provisions	Limited and excepted		Packaging		Portable tanks and bulk containers	
						Quantities	Packing instructions	Special packing provisions	Instructions	Special provisions	
(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
XXXX	ENGINE, INTERNAL COMBUSTION, <u>FLAMMABLE</u> <u>LIQUID</u> <u>POWERED</u> or ENGINE, FUEL CELL, FLAMMABLE LIQUID POWERED or MACHINERY, INTERNAL COMBUSTION,	3			363	0	E0	P005			

UN No.	Name and description	Class	Subsidiary risk	Packing group	Special provisions	Limited and excepted		Portable tanks and bulk containers		
						Quantities	Packaging	Packing instructions	Special packing provisions	Instructions
	FLAMMABLE LIQUID POWERED or MACHINERY, FUEL CELL, FLAMMABLE LIQUID POWERED									
YYYY	ENGINE, INTERNAL COMBUSTION, FLAMMABLE GAS POWERED or ENGINE, FUEL CELL, FLAMMABLE GAS POWERED or MACHINERY, INTERNAL COMBUSTION, FLAMMABLE GAS POWERED or MACHINERY, FUEL CELL, FLAMMABLE GAS POWERED	2.1			363 0 E0 P005					
ZZZZ	ENGINE, INTERNAL COMBUSTION or MACHINERY, INTERNAL COMBUSTION	9			363 0 E0 P005					

*Consequential amendments to chapter 2:*

Amend 2.9.2 as follows:

~~3166 ENGINE, INTERNAL COMBUSTION or~~  
3166 VEHICLE, FLAMMABLE GAS POWERED or  
3166 VEHICLE, FLAMMABLE LIQUID POWERED or  
~~3166 ENGINE, FUEL CELL, FLAMMABLE GAS POWERED or~~  
~~3166 ENGINE, FUEL CELL, FLAMMABLE LIQUID POWERED or~~  
3166 VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or  
3166 VEHICLE, FUEL CELL, FLAMMABLE LIQUID POWERED or  
ZZZZ ENGINE, INTERNAL COMBUSTION or  
ZZZZ MACHINERY, INTERNAL COMBUSTION or

11. Modify SP 363 to read as follows:

**SP 363**

(a) This entry applies to engines or machinery, powered by fuels classified as dangerous goods via internal combustion systems or fuel cells (e.g. combustion engines, generators, compressors, turbines, heating units, etc.), except those which are assigned under UN 3166 or UN 3363.

(b) Engines or machinery which are empty of liquid or gaseous fuels and which do not contain other dangerous goods. are not subject to these Model Regulations.

*NOTE 1: An engine or machinery is considered to be empty of liquid fuel when the liquid fuel tank has been drained and the engine or machinery cannot be operated due to a lack of fuel. Engine or machinery components such as fuel lines, fuel filters and injectors do not need to be cleaned, drained or purged to be considered empty of liquid fuels. In addition, the liquid fuel tank does not need to be cleaned or purged.*

*NOTE 2: An engine or machinery is considered to be empty of gaseous fuels when the gaseous fuel tanks are empty of liquid (for liquefied gasses), the positive pressure in the tanks does not exceed 2 bar and the fuel shut-off or isolation valve is closed and secured.*

(c) Engines and machinery containing fuels meeting the classification criteria of Class 3, shall be consigned under the entries UN XXXX ENGINE, INTERNAL COMBUSTION, FLAMMABLE LIQUID POWERED or UN XXXX ENGINE, FUEL CELL, FLAMMABLE LIQUID POWERED or UN XXXX MACHINERY, INTERNAL COMBUSTION, FLAMMABLE LIQUID POWERED or UN XXXX MACHINERY, FUEL CELL, FLAMMABLE LIQUID POWERED, as appropriate.

(d) Engines and machinery containing fuels meeting the classification criteria of Division 2.1, shall be consigned under the entries UN YYYY ENGINE, INTERNAL COMBUSTION, FLAMMABLE GAS POWERED or UN YYYY ENGINE, FUEL CELL, FLAMMABLE GAS POWERED or UN YYYY MACHINERY, INTERNAL COMBUSTION, FLAMMABLE GAS POWERED or UN YYYY MACHINERY, FUEL CELL, FLAMMABLE GAS POWERED, as appropriate.

Engines and machinery powered by both a flammable gas and a flammable liquid shall be consigned under the entry UN YYYY, as appropriate.

(e) Engines and machinery containing liquid fuels meeting the classification criteria of 2.9.3 for environmentally hazardous substances and not meeting the classification criteria of any other Class or Division, shall be consigned under the entries UN ZZZZ ENGINE, INTERNAL COMBUSTION or UN ZZZZ MACHINERY, INTERNAL COMBUSTION, as appropriate.

(f) Engines or machinery may contain other dangerous goods than fuels (e.g. batteries, fire extinguishers, compressed gas accumulators or safety devices) required for their functioning or safe operation without being subject to any additional requirements for these other dangerous goods, unless otherwise specified in these Model Regulations.

[However, lithium batteries shall meet the requirements of 2.9.4, except when otherwise specified by these Model Regulations.]

[If the addition of this last sentence is acceptable for SP 363 f), it should also be added to SP 240 as an additional paragraph at the end of SP 240:

Vehicles may contain other dangerous goods than batteries (e.g. fire extinguishers, compressed gas accumulators or safety devices) required for their functioning or

safe operation without being subject to any additional requirements for these other dangerous goods, unless otherwise specified in these Model Regulations.]

(g) The engines or machinery are not subject to any other requirements of these Model Regulations if the following requirements are met:

- i. The engine or machinery, including the means of containment containing dangerous goods, shall be in compliance with the construction requirements specified by the competent authority;
- ii. Any valves or openings (e.g. venting devices) shall be closed during transport;
- iii. The engines or machinery shall be oriented to prevent inadvertent leakage of dangerous goods and secured by means capable of restraining the engines or machinery to prevent any movement during transport which would change the orientation or cause them to be damaged;
- iv. for UN XXXX and UN ZZZZ:

Where the engine or machinery contains more than [60] liters but not more than [450] liters of liquid fuel, the labelling requirements of 5.2.2 shall apply.

Where the engine or machinery contains more than [450] liters but not more than [3000] liters of liquid fuel, it shall be labelled on [two opposing sides] in accordance with 5.2.2.

Where the engine or machinery contains more than [3000] liters of liquid fuel, it shall be placarded on [two opposing sides] in accordance with 5.3.1.1.2;

- v. for UN YYYY:

Where the fuel tank of the engine or machinery has a water capacity of not more than [450] liters, the labelling requirements of 5.2.2 shall apply.

Where the fuel tank of the engine or machinery has a water capacity of more than [450] liters but not more than [1000] liters, it shall be labelled on [two opposing sides] in accordance with 5.2.2.

Where the fuel tank of the engine or machinery has a water capacity of more than [1000] liters, it shall be placarded on [two opposing sides] in accordance with 5.3.1.1.2;

- vi. A transport document in accordance with 5.4 is required, except for UN XXXX and UN ZZZZ, where a transport document is only required when the engine or machinery contains more than [60] liters of liquid fuels

~~For UN YYYY: the fuel tank of the engine or machinery has a water capacity greater than [450] liters.~~

This transport document shall contain the following additional statement "Transport in accordance with Special Provision 363".

[For Air and Sea transport, a transport document in accordance with 5.4 is always required.]

12. Amendment for the transport document – insert a new 5.4.1.5.x:

*“5.4.1.5.x Transport of UN XXXX, UN YYYY and UN ZZZZ*

For transport of UN XXXX, UN YYYY and UN ZZZZ, the transport document shall contain the following additional statement “Transport in accordance with Special Provision 363”.

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