Submitted by the IWG on EPPR

Informal document **GRPE-72-13**
72nd GRPE, 11-15 January 2016,
agenda item 9(a)

Proposal for amendments to ECE/TRANS/WP.29/GRPE/2016/2 (proposed UN gtr on test types III and IV)

The text below was prepared by the EPPR IWG, in order to finalise the proposed gtr (ECE/TRANS/WP.29/GRPE/2016/2) which still contained some open issues (square brackets) and some editorial errors. Modifications to ECE/TRANS/WP.29/GRPE/2016/2 are marked in bold for new or strikethrough for deleted characters.

I. Proposal

1. **Section I: Remove the square brackets at the beginning and the end of this section**

2. **Section I, Point 19 is amended to read:**

19. The EPPR IWG discussed possible solutions how three-wheeled vehicles could be included in the scope of the UN gtr given the fact that S.R.1 contains recommended classification criteria for category 3 vehicles that might require an update for technical progress. Finally it was agreed to put "category 3" vehicles in paragraph 2. of the UN gtr, to reference S.R.1 in a footnote and to state the following with respect to the classification of a three-wheeled vehicle:

"With regard to a three-wheeled vehicle of category 3-4 or 3-5, Contracting Parties agree that at a minimum the following criteria should be taken into account for vehicle classification:

(a) In their straight-ahead condition, motor vehicles having two wheels which are placed on the same straight line and equipped with one sidecar; or

(b) Motor vehicles having a saddle-type seat, a handle-bar type steering system and three wheels, on which the side of the driver's seat is of open structure; or

~~(c) Motor vehicles complying with the following criteria:~~

~~(i) Three wheels; and~~

~~(ii) In which the arrangement of the wheels is symmetric with respect to the longitudinal centreline of the vehicle; and~~

~~(iii) The distance between the lines passing through the centres of the ground contact sections of the outermost wheels on the axle on the same line is less than 460 mm; and~~

~~(iv) Constructed to turn with part or all of the wheels and vehicle body inclined."~~

3. **Section I, point 5 (Requirements): Insert new item 25 after item 24, to read:**

'25. With respect to the family definition of category B permeation testing of the fuel storage and delivery system, it is assumed that in principle ~~same~~ similar family criteria apply than for category C SHED testing although this evaporative test procedure of category B only assesses part of the whole vehicle in terms of evaporative emissions and therefore only assesses part of the possible sources from which hydrocarbons can escape into the atmosphere without being combusted. The fuel storage and delivery system refers to the assembly of all possible components that help to store and transport petrol up to and including the point where the petrol enters the air/fuel mixing and atomising device positioned in the intake airflow. Any gaseous fuel storage and supply system component does not make part of the scope of the evaporative emission assessment in category B permeation testing. Where the design of this storage and supply system includes a system for petrol vapour storage and control, the family classification criteria 2.1.1.to 2.1.3. apply. However, if the vehicle is not fitted with the system/components mentioned in Table A6/1 of Section II, such criteria need not be considered for family definition for the vehicle.

4. **Section I, point 5 (Requirements), former items 25 till 31: renumber as items 26 till 32**

5. **Section I, Point 8 is amended to read:**

8. At the 72th GRPE session in January 2016, a formal proposal of this new UN gtr was tabled for adoption**. Subsequently the proposal was submitted to the June 2016 session of WP.29 for adoption** by the Executive Committee for the 1998 Agreement (AC.3).

6. Section II, Point 2 is amended to read:

‘2.Scope and application

Two- and three-wheeled vehicles of category 3[3] equipped with a ~~PI engine~~ **propulsion unit** in accordance with Table 1.

7. Section II, the ‘note’ under Table 1 is amended to read:

* Type IV test is not applicable for a vehicle in the scope of this UN gtr that is designed primarily for permanent running on LPG or NG / bio-methane or hydrogen, having a petrol system, with a petrol fuel tank capacity not exceeding two litres in the case of ~~two- and three-wheeled vehicles of category 3~~ **two-wheeled motorcycles and motorcycles with sidecar** and not exceeding three litres in the case of ~~3-2 and 3-5 category~~ **three-wheeled** vehicles, intended for emergency purposes or starting only.

8. Section II, Point 3.4 is amended to read:

3.4. "~~fuel storage~~ **fuel tank** breathing losses" means hydrocarbon emissions caused by temperature changes in the ~~fuel storage~~ **fuel tank**;

9. Section II, Point 3.5 is amended to read:

3.5. "fuel tank" means a type of energy storage system that stores the ~~[liquid]~~ fuel;

10. Section II, Point 3.7 is amended to read:

3.7. "non-exposed" type of fuel tank ~~and delivery system~~ means that the fuel tank ~~storage and fuel delivery system~~, except the fuel tank cap, are not directly exposed to radiation of sunlight;

11. Section II, Point 7.1.3 is amended to read:

7.1.3. The evaporative emission test procedure laid down in Annex 2 sets out the test method for the determination of the loss of hydrocarbons by permeation from the fuel storage and ~~supply~~ **delivery** system of a vehicle equipped with a propulsion unit type that uses volatile, liquid fuel.

12. Section II, Point 7.2.1 is amended to read:

7.2.1. The vehicle manufacturer shall prove to the approval authority of the Contracting party or its designated agency that the fuel storage and ~~supply~~ **delivery** system are leak-tight in accordance with paragraph 7.2.2.

13. Section II, Point 7.2.3.2 is amended to read:

7.2.3.2. Class B; the test procedure in Annex 2 sets out the permeation test procedures of the fuel storage and ~~supply~~ **delivery** systems.

14. Section II, Table 3 is amended to read:

Table 3

Evaporative emission test class

Test	*Evaporative emissions test class*			*SHED type*
	A	*B*	*C*	
Permeability test of a non-metallic fuel tank as component	□			
Permeation test of the fuel storage and ~~supply~~ **delivery** system		□		
SHED test of the whole vehicle, short diurnal test (fuel temp. change)			□	S_{fv} (1)
SHED test of the whole vehicle, hot soak loss test			□	S_{fv} (1)

(1) Sfv Fixed volume SHED

SHED Sealed Housing for Evaporative Determination

The fixed volume SHED is the minimum requirement. The tests may be carried out in a variable volume SHED.

15. Section II, Point 7.2.5 is amended to read:

7.2.5. Test fuel

The appropriate test fuel, as defined in ~~Annex 2~~ **Table 6-1** of UN gtr No. 2 ~~(type: Petrol E0)~~ ~~and~~ **or** Annex 8. of this UN gtr ~~(types: Petrol E5 and Petrol E10),~~ shall be used, as decided by the Contracting Party."

16. Annex 2, Figure A2/1, the title is amended to read:

Fuel ~~storage~~ tank permeation full and short tests

17. Annex 2, Point 3 is amended to read:

3. Preconditioning fuel soak for the fuel storage and ~~supply~~ **delivery** system permeation test

To precondition the fuel tank in the fuel storage and ~~supply~~ **delivery** system permeation test, the following five steps shall be followed:

18. Annex 2, Point 4 is amended to read:

4. Fuel ~~storage~~ tank permeation test procedure

To run the test, the following steps shall be taken for a fuel tank preconditioned as specified in paragraph 3.

19. Annex 2, Point 5 is amended to read:

5. Fuel ~~storage~~ tank permeation test result calculation

20. Annex 3, Figure A3/1, the title of the figure is amended to read:

"~~Fuel storage tank permeation full and short tests~~ **Flow chart – SHED test procedure**"

21. Annex 3, Point 4.2.2 is amended to read:

4.2.2. Before switching off the engine, the test vehicle is placed on a chassis dynamometer and driven a single time through the applicable ~~[~~Type I~~]~~ test cycle specified:

4.2.2.1. in Annex 5 of UN gtr No 2 as appropriate for the class of vehicle in the scope of UN gtr No 2;

~~[~~4.2.2.2.~~]~~ alternatively to 4.2.2.1 for three-wheeled vehicles in the scope of this UN gtr at the choice of the Contracting Party the applicable Type I test set out in the national regulation of the Contracting Party under the following condition:

~~[~~4.2.2.2.1.~~]~~ **It shall first be ensured that the engine reaches its warm operational condition with a minimum accumulated Type I test time of 780s after start. In case the prescribed Type I test time is less than 780 s, the running shall be continued till at least 780 s is elapsed.**

~~the oil temperature of the engine reaching its warm operational temperature and a total accumulated test type I time of 780s after start; or~~

~~[4.2.2.2.2.] for an air-cooled engine operated on a mixture of petrol and lubrication oil the sparkplug seat temperature having reached its warm operational temperature and a total accumulated test type I time of 780s after start.~~

~~[~~4.2.2.2.~~2~~3~~]~~ By means of exemption, a base two-wheeled motorcycle equipped with a sidecar may be approved based on the type IV evaporative emission test results of the base two-wheeled motorcycle.

22. Annex 6, Table A6/1 is amended to read:

No.	*Classification criteria description*	*Test type IV*
1.	Vehicle	
1.1.	Category; Note: Two-wheeled motorcycles and two-wheeled motorcycles with sidecars are considered to be of the same family	X
1.2.	Subcategory if applicable and per the classification followed by the Contracting Party; Note: may become applicable after S.R.1 includes subcategories	X
2.	System[1]	
	~~[Note:]Applicability of evaporative emission test class A, B or C, subject to provisions of paragraph 7.2.4.4. of Section II;~~	X
2.1.	Propulsion (not) equipped with evaporative emission control system	X
2.1.1.	Evaporative emission control system type;	X
2.1.2.	Operation principle of evaporative emission control system (active / passive / mechanically or electronically controlled);	X
2.1.3.	Identical basic principle of fuel/air metering (e.g. carburettor / single point injection / multi point injection / engine speed density through MAP/ mass airflow);	X
2.1.4.	Identical material of the fuel tank; Note: material of all metallic fuel tanks are considered to be identical.	X
2.1.5	Liquid fuel hoses are identical and the surface area is lower;	X
2.1.6.	The fuel storage capacity declared by the manufacturer is within a range of +10 / - 50 % of the nominal fuel tank volume If the approval authority determines that, with regard to the fuel storage capacity, the parent vehicle does not fully represent the family, an alternative or additional vehicle may be selected.	X
2.1.7.	The fuel storage relief valve pressure setting is identical or higher;	X
2.1.8.	Identical method of storage of the fuel vapour (i.e. trap form, storage medium, air cleaner (if used for evaporative emission control) etc.);	X
2.1.9.	Identical or higher volume of the carbon canister~~1~~[2];	X
2.1.10.	Identical method of purging of the stored vapour (e.g. air flow, purge volume over the driving cycle);	X
2.1.11.	Identical method of sealing and venting of the fuel metering system;	X

[1] Applicability of evaporative emission test class A, B or C, subject to provisions of item 7.2.4.4 of Section II

~~1~~[2] Or the canister with HC absorbent material or other equivalent.

23. Annex 6, Points 3.1 to 3.2 are amended to read:

‘3.1. In the case of evaporative emission class~~[~~es B and ~~]~~C, the details are given in Table A6/1.

3.2. In the case of evaporative emission class A, the details are given at Nos. 2.1., 2.1.4. and 2.1.6. in Table A6/1.’

24. Annex 7, Point 2.2.8 is amended to read:

2.2.8. Schematic drawing of the fuel ~~storage~~ tank with indication of capacity and material:

25. Annex 7, Point 2.2.21. is amended to read:

2.2.21. Type IV, Fuel storage and ~~supply~~ **delivery** system permeation test (yes / no)

26. Annex 7, Point 2.2.21.1. is amended to read:

2.2.21.1. Result fuel ~~storage~~ tank (mg / m^2/ day):

II. Justification

This document is a consolidation of proposals made within the EPPR IWG, cfr. documents:

- EPPR-13-18e (IND)
- EPPR-13-21e (IMMA)
- EPPR-13-24e (draft minutes meeting 26-27 Nov 2015)
- EPPR-13-09Rev1e (revised final draft gtr)
- EPPR-14-02 (IND + EC)
- EPPR-14-03e (US + CAN)
- EPPR-14-05e (CHN)
- EPPR-14-08e (draft minutes phone-web conference 9 Dec 2015)
- EPPR-14-10e (JPN)
- EPPR-14-12e (EPPR secretariat)
- EPPR-14-13e (IND)
- EPPR-14-15e (IMMA)
- EPPR-14-16e (IMMA)

Justifications and background can be found in each of these documents.

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