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World Forum for Harmonization of Vehicle Regulations

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**CONSIDERATION OF TECHNICAL REGULATIONS TO BE LISTED IN THE
COMPENDIUM OF CANDIDATES GLOBAL TECHNICAL REGULATIONS**

Japan safety standards on hydrogen and fuel-cell vehicles

Request to list in the Compendium of Candidates Global Technical Regulations safety regulations for road vehicles in Japan regarding hydrogen and fuel-cell vehicles (Attachments 17, 38, 84, 86, 100 and 101 to the Announcement that prescribes details of safety regulations for road vehicles (Ministry of Land, Infrastructure and Transport Announcement No. 619 of July, 15, 2002))

Submitted by the representative of Japan */

The document reproduced below is submitted by Japan to the Executive Committee (AC.3) for consideration. It contains a request to include in the Compendium of Candidates the attachments to Announcement No. 619 of July, 15, 2002.

*/ In accordance with the programme of work of the Inland Transport Committee for 2006-2010 (ECE/TRANS/166/Add.1, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance performance of vehicles. The present document is submitted in conformity with that mandate.

I. Background

1. Fuel cells release in principle only water while generating electricity and thus contribute to the prevention of air pollution. In addition, as they may be produced not only from fossil fuels but also from bio fuels and expected to have high efficiency in generating electricity, they emit less greenhouse gas and thus represent a good solution for the problem of global warming. For these reasons, the Government of Japan has worked on the commercialization and propagation of fuel cells since 2002, while studying ways to ensure safety in their use.

2. A fuel cell is a device that generates electricity with hydrogen as fuel. In the commercialization and propagation of fuel cell vehicles, it is therefore necessary to give particular attention to "the explosibility of hydrogen" and "protection of passengers from high voltage", etc. The Government of Japan established safety standards for vehicles fuelled by hydrogen and fuel cells vehicles in 2005.

3. It should be noted that, among these standards, the part related to hydrogen safety is applicable to motor vehicles fuelled by compressed hydrogen gas (which include not only fuel cell vehicles, but also internal combustion engine vehicles).

II. Description of Regulations

4. The outline of principal technical requirements is as follows:

A. Hydrogen safety

5. Based on such principles as "Have no leaks" and in the event of a leak, "Have no accumulation and no entry of gas into passenger compartment" and "Sense and shut off hydrogen gas", the standards prescribe the air sealing performance of piping, the installation position and performance of detectors that detect leakage of hydrogen.

6. To prevent inflammation, prescribe the limit of concentration of hydrogen not used for electric generation and purged.

7. As a principle for safely releasing gas containing hydrogen, prescribe the releasing direction of hydrogen gas from the fuel container upon fire.

8. Based on a principle of ensuring the same level of safety as gasoline vehicles, prescribe technical requirements for the prevention of leakage of hydrogen gas upon collision (frontal and rear collision and lateral collision).

B. High voltage safety

9. The standards take countermeasures based on such principles as "Prevent human contact with high-voltage parts", "Ensure insulation between high voltage parts and other parts" and "Prevent electroshock even when the insulation is destructed."

- (a) Prescribe the protection of passengers with barriers, enclosures, etc. that prevent passengers from touching high voltage parts.
- (b) Prescribe ensuring insulation resistance to prevent leakage on high voltage parts.
- (c) Prescribe structures that eliminate the difference of potential between conductive barrier, enclosures and the car body to prevent electroshock even when the insulation is destructed.

III. Related documents

10. Attachments 17, 38, 84, 86, 100 and 101 to the Announcement that Prescribes Details of Safety Regulations for Road Vehicles (Ministry of Land, Infrastructure and Transport Announcement No. 619 of July 15, 2002)

- (a) Attachment 17: TECHNICAL STANDARD FOR FUEL LEAKAGE IN COLLISIONS, ETC.
- (b) Attachment 38: MEASUREMENT PROCEDURE FOR PROXIMITY STATIONARY NOISE LEVEL
- (c) Attachment 84: TECHNICAL STANDARD FOR WINDSHIELD WIPING AND WASHING SYSTEMS FOR PASSENGER MOTOR VEHICLES, ETC.
- (d) Attachment 86: TECHNICAL STANDARD FOR DEFROSTING AND DEMISTING SYSTEMS
- (e) Attachment 100: TECHNICAL STANDARD FOR FUEL SYSTEMS OF MOTOR VEHICLES FUELED BY COMPRESSED HYDROGEN GAS
- (f) Attachment 101: TECHNICAL STANDARD FOR PROTECTION OF OCCUPANTS AGAINST HIGH VOLTAGE IN FUEL CELL VEHICLES
