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1958 Agreement:
Consideration of draft amendments to existing UN Regulations submitted by GRSP

Proposal for Supplement 1 to the 02 Series of Amendments to UN Regulation No. 134 (Hydrogen and Fuel Cells Vehicles)

Submitted by the Working Party on Passive Safety*

The text reproduced below was adopted by the Working Party on Passive Safety (GRSP) at its seventy-fifth session (ECE/TRANS/WP.29/GRSP/75, para. 26). It is based on ECE/TRANS/WP.29/GRSP/2024/13 as amended by annex V to the report. It is submitted to the World Forum for Harmonization of Vehicle Regulations (WP.29) and to the Administrative Committee (AC.1) for consideration at their November 2024 sessions.

* In accordance with the programme of work of the Inland Transport Committee for 2024 as outlined in proposed programme budget for 2024 (A/78/6 (Sect. 20), table 20.5), the World Forum will develop, harmonize and update UN Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

Paragraphs 2.3. to 2.4., amend to read:

"2.3. "*Compressed hydrogen storage system (CHSS)"* means a system designed to store compressed hydrogen fuel for a hydrogen-fuelled vehicle and composed of a container, container attachments (if any), and all primary closure devices required to isolate the stored hydrogen from the remainder of the fuel system and the environment.

2.4. "*Container*" (for hydrogen storage) means the pressure-bearing component on the vehicle that stores the primary volume of hydrogen fuel in a single chamber or in multiple permanently interconnected chambers.

Note: The high-pressure fuel lines interconnecting the multiple chambers and /or connecting to the primary closing device(s) are considered as part of the container as long as those parts hold the same pressure level as the chamber(s), and the permanent interconnections between the chambers are ensured. Such fuel lines are tested as integral elements of the container.

Permanent interconnections are any physical solutions to pneumatically connect chambers, e.g. welded or screwed tubing, manifolds, etc. that are designed to not change their initial flow resistance during the entire CHSS service life. Any disassembly of chambers and / or interconnections after manufacturing shall be visually detectable, e.g. by use of seals, and result in permanent removal of the CHSS from service."

Paragraph 5., amend to read:

"5. Part I – Specifications of the Compressed Hydrogen Storage System

This part specifies the requirements for the compressed hydrogen storage system.

(a) The primary closure devices shall include the following functions, which may be combined:

(i) TPRD;

(ii) Check valve; and

(iii) Shut-off valve

(b) The primary closure devices shall be mounted directly on or within each container.

…

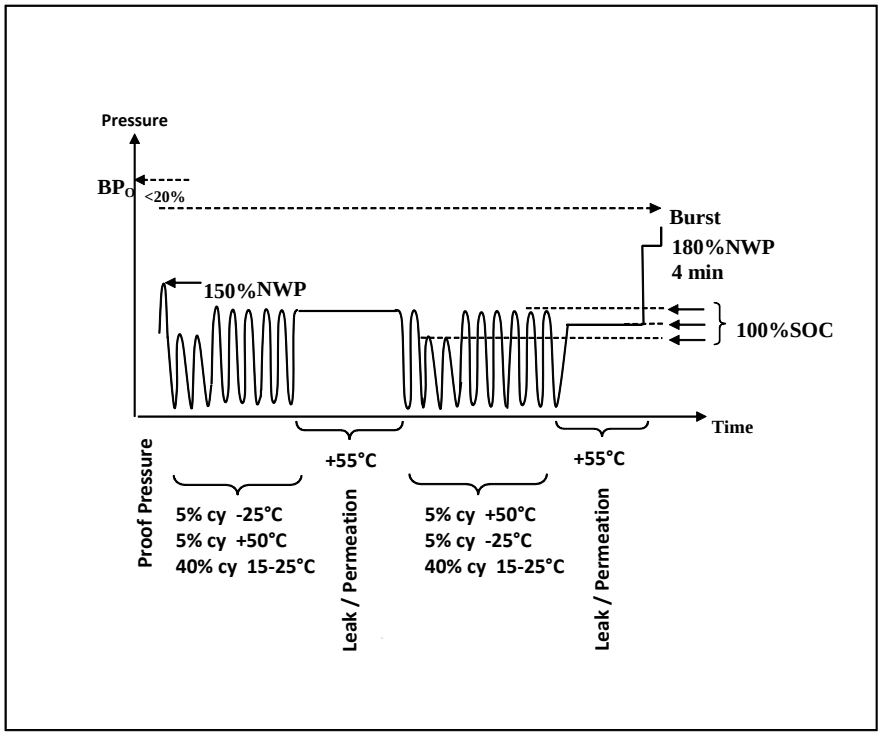
Table 2
Overview of Performance Requirements

Requirement section	*Test article*
5.1. Verification tests for baseline metrics	Container or container plus container attachments, as applicable
5.2. Verification test for performance durability	Container or container plus container attachments as applicable
5.3. Verification test for expected on-road performance	CHSS
5.4. Verification test for service terminating performance in fire	CHSS
5.5. Verification test for closure durability	Primary closure devices

"

Paragraphs 5 Figure 2., amend to read:

"Figure 2
Verification test for expected on-road performance (pneumatic)



"

Paragraph 5.2., amend to read:

"5.2. Verification tests for performance durability (Hydraulic sequential tests)

If all three pressure cycle life measurements made in paragraph 5.1.2. are greater than 11,000 cycles, or if they are all within ± 25 per cent of each other, then only one (1) container is tested in paragraph 5.2. Otherwise, three (3) containers are tested in paragraph 5.2.

Unless otherwise specified, the tests in paragraph 5.2. shall be conducted on the container equipped with its container attachments (if any) that represent the CHSS without the primary closures."

Annex 3, paragraphs 3.3 to 3.4., amend to read:

"3.3. Surface damage test (unpressurized)

The surface damage tests and the chemical exposure tests (Annex 3, paragraph 3.4.) shall be conducted on the surface

…

Otherwise, the tests shall be conducted on the surface of the container attachments as indicated in Figure 2.

Note: In case, the CHSS contains more than one chamber design (e.g. different size or material) the Technical Service shall determine whether to conduct the test on each design or whether to use the worst-case approach, e.g worst case based on chamber material, and/or geometric characteristics differentiation affecting the burst pressure performance.

…

3.4. Chemical exposure and ambient-temperature pressure cycling test

Each of the 5 areas of the unpressurized container

…

Table 3

Pressure cycles and conditions - chemical exposure and ambient temperature pressure cycling test

Purpose	*Number of cycles*	*Target Pressure*	*Temperature*	*Rate*
Chemical exposure and ambient temperature pressure cycling test (paragraph 5.2.4.)	60 per cent the specified number of cycles determined in paragraph 5.1.2.	≥ 125 per cent NWP	Environment: 20 ± 15 °C Hydraulic fluid: 20 ± 15 °C	≤ 10 cycles per minute
	of which the last 10 cycles	≥ 150 per cent NWP		

Note: In case, the CHSS contains more than one chamber design (e.g. different size or material) the Technical Service shall determine whether to conduct the test on each design or whether to use the worst-case approach, e.g worst case based on chamber material, and/or geometric characteristics differentiation affecting the burst pressure performance."