

10 August 2018

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## Agreement

### **Concerning the Adoption of Harmonized Technical United Nations Regulations for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these United Nations Regulations\***

(Revision 3, including the amendments which entered into force on 14 September 2017)

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#### **Addendum 133 – UN Regulation No. 134**

#### **Amendment 3**

Supplement 03 to the original version of the Regulation – Date of entry into force: 19 July 2018

#### **Uniform provisions concerning the approval of motor vehicles and their components with regard to the safety-related performance of Hydrogen-Fuelled Vehicles (HFCV)**

This document is meant purely as documentation tool. The authentic and legal binding text is: ECE/TRANS/WP.29/2017/127.



**UNITED NATIONS**

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\* Former titles of the Agreement:

Agreement concerning the Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts, done at Geneva on 20 March 1958 (original version); Agreement concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these Prescriptions, done at Geneva on 5 October 1995 (Revision 2).

*Paragraphs 5.1.1. and 5.1.2., amend to read:*

"5.1.1. Baseline initial burst pressure

Three (3) containers shall be hydraulically pressurized until burst (Annex 3, paragraph 2.1. test procedure). The manufacturer shall supply documentation (measurements and statistical analyses) that establish the midpoint burst pressure of new storage containers,  $BP_0$ .

All containers tested shall have a burst pressure within  $\pm 10$  per cent of  $BP_0$  and greater than or equal to a minimum  $BP_{min}$  of 225 per cent NWP.

In addition, containers having glass-fibre composite as a primary constituent to have a minimum burst pressure greater than 350 per cent NWP."

5.1.2. Baseline initial pressure cycle life.

Three (3) containers shall be hydraulically pressure cycled at the ambient temperature of  $20 (\pm 5) ^\circ\text{C}$  to 125 per cent NWP ( $+2/-0$  MPa) without rupture for 22,000 cycles or until a leak occurs (Annex 3, paragraph 2.2. test procedure). Leakage shall not occur within 11,000 cycles for a 15-year service life."

*Paragraph 9.3.1., amend to read:*

"9.3.1. Every container shall be tested in accordance with paragraph 5.2.1. of this Regulation. The test pressure is  $\geq 150$  per cent of NWP."

*Paragraphs 9.3.2.1. and 9.3.2.2., amend to read:*

"9.3.2.1. Rupture test in batch testing

The test shall be performed according to paragraph 2.1. (hydrostatic pressure rupture test) of Annex 3. The required rupture pressure shall be at least  $BP_{min}$  and the average burst pressure recorded of the last ten tests shall be at or above  $BP_0-10$  per cent.

9.3.2.2. Ambient temperature pressure cycling test in batch testing

The test shall be performed according to paragraph 2.2. (a) to (c) (hydrostatic pressure cycling test) of Annex 3, except that the temperature requirements for the fuelling fluid and the container skin, and the relative humidity requirement, do not apply. The cylinder shall be pressure cycled using hydrostatic pressures  $\geq 125$  per cent of NWP, to 22,000 cycles in case of no leakage or until leakage occurs. For the service life of 15 years, the cylinder shall not leak or rupture within the first 11,000 cycles."

*Annex 3,*

*Paragraph 2.1., amend to read:*

"2.1. Burst test (hydraulic)

The burst test is conducted at the ambient temperature of  $20 (\pm 5) ^\circ\text{C}$  using a non-corrosive fluid."

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