

7 February 2024

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)

Addendum 48 – UN Regulation No. 49

Revision 6 - Amendment 9

Supplement 8 to the 06 series of amendments – Date of entry into force: 5 January 2024

Uniform provisions concerning the measures to be taken against the emission of gaseous and particulate pollutants from compression-ignition engines and positive ignition engines for use in vehicles

This document is meant purely as documentation tool. The authentic and legal binding text is: ECE/TRANS/WP.29/2023/59.



UNITED NATIONS

* 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).

Annex 4

Paragraph 8.1.3., amend to read:

"8.1.3. Diluent

$$k_{w,d} = (1 - k_{w3}) \times 1,008 \quad (21)$$

With

$$k_{w3} = \frac{1,608 \times H_d}{1000 + (1,608 \times H_d)} \quad (22)$$

Where:

H_d is the diluent humidity, g water per kg dry air"

Paragraph 8.6.3., amend to read:

"8.6.3. Calculation of the specific emissions

The specific emissions e_{gas} or e_{PM} (g/kWh) shall be calculated for each individual component in the following ways depending on the type of test cycle.

For the WHSC, hot WHTC, or cold WHTC, the following equation shall be applied:

$$e = \frac{m}{W_{\text{act}}} \quad (69)$$

Where:

m is the mass emission of the component, g/test

W_{act} is the actual cycle work as determined according to paragraph 7.8.6., kWh

For the WHTC, the final test result shall be a weighted average from cold start test and hot start test according to the following equation:

$$e = \frac{(0,14 \times m_{\text{cold}}) + (0,86 \times m_{\text{hot}})}{(0,14 \times W_{\text{act,cold}}) + (0,86 \times W_{\text{act,hot}})} \quad (70)$$

Where:

m_{cold} is the mass emission of the component on the cold start test, g/test

m_{hot} is the mass emission of the component on the hot start test, g/test

$W_{\text{act,cold}}$ is the actual cycle work on the cold start test, kWh

$W_{\text{act,hot}}$ is the actual cycle work on the hot start test, kWh

If periodic regeneration in accordance with paragraph 6.6.2. applies, the regeneration adjustment factors $k_{r,u}$ or $k_{r,d}$ shall be multiplied with or be added to, respectively, the specific emissions result e as determined in equations 69 and 70."
