United Nations ECE/TRANS/WP.29/2025/97

Economic and Social Council

Distr.: General
27 August 2025

Original: English

Economic Commission for Europe

Inland Transport Committee

World Forum for Harmonization of Vehicle Regulations

197th session
Geneva, 11–14 November 2025
Item 4.6.5 of the provisional agenda
1958 Agreement:
Consideration of draft amendments to existing UN Regulations submitted by GRPE

Supplement 18 to the 07 series of amendments to UN Regulation No. 83 (Emissions of M1 and N1 vehicles)

Submitted by the Working Party on Pollution and Energy*

The text reproduced below was adopted by the Working Party on Pollution and Energy (GRPE) at its ninety-second session (ECE/TRANS/WP.29/GRSP/92, para. 15). It is based on ECE/TRANS/WP.29/GRPE/2025/8, ECE/TRANS/WP.29/GRPE/2025/9 and GRPE-92-22 as amended by Annex VI of the session 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 2025 sessions.

* In accordance with the programme of work of the Inland Transport Committee for 2025 as outlined in proposed programme budget for 2025 (A/79/6 (Sect. 20), table 20.6), 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.

Paragraph 1.1., amend to read:

"1.1. This Regulation shall apply to vehicles of categories M_1, M_2, N_1 and N_2 with a reference mass not exceeding 2,610 kg.[1)]

At the manufacturer's request, type approval under this Regulation may be granted to M_1, M_2, N_1 and N_2 vehicles with a reference mass not exceeding 2,840 kg and which meet the conditions laid down in this Regulation.

At the manufacturer's request, type approval granted under this Regulation may be extended from vehicles mentioned above to special purpose vehicles of categories M_1, M_2, N_1 and N_2 regardless of their reference mass. The manufacturer shall demonstrate to the Type Approval Authority which granted the type approval that the vehicle in question is a special purpose vehicle.[1)] "

Annex 4A, paragraph 3.2.2., amend to read:

"3.2.2. The exhaust device shall not exhibit any leak likely to reduce the quantity of gas collected, which quantity shall be that emerging from the engine.

If applicable, openings in the exhaust system designed to remove condensate shall be sealed prior to the test. Openings in the exhaust system designed to remove condensate shall be located downstream of the last component of the exhaust after-treatment system which reduces tailpipe emissions (e.g. catalytic converter, particulate trap). The openings shall be documented within the information document set out in Annex 1 to this Regulation."

Annex 4A - Appendix 2, paragraph 1.3.2., amend to read:

"1.3.2. Dilution air conditioning

The dilution air used for the primary dilution of the exhaust in the Constant Volume Sampling (CVS) tunnel shall be passed through a medium capable of reducing particulates in the most penetrating particulate size of the filter material by ≥ 99.95 per cent, or through a filter of at least class H13 of EN 1822:2019. This represents the specification of High Efficiency Particulate Air (HEPA) filters. The dilution air may optionally be charcoal scrubbed before being passed to the HEPA filter. It is recommended that an additional coarse particulate filter is situated before the HEPA filter and after the charcoal scrubber, if used.

At the vehicle manufacturer's request, the dilution air may be sampled according to good engineering practice to determine the tunnel contribution to background particulate mass levels, which can then be subtracted from the values measured in the diluted exhaust."

Annex 4A - Appendix 5, paragraph 2.1.3., amend to read:

"2.1.3. Calibration shall be traceable to a standard calibration method:

(a) By comparison of the response of the PNC under calibration with that of a calibrated aerosol electrometer when simultaneously sampling electrostatically classified calibration particulates; or

(b) By comparison of the response of the PNC under calibration with that of a second PNC which has been directly calibrated by the above method.

In the electrometer case, calibration shall be undertaken using at least six standard concentrations spaced as uniformly as possible across the PNC's measurement range. These points will include a nominal zero concentration point produced by attaching HEPA filters of at least class H13 of EN 1822:2019, or equivalent performance, to the inlet of each instrument. With no calibration factor applied to the PNC under calibration, measured concentrations shall be within ± 10 per cent of the standard concentration for each concentration used, with the exception of the zero point, otherwise the PNC under calibration shall be rejected. The gradient from a linear regression of the two data sets shall be calculated and recorded. A calibration factor equal

to the reciprocal of the gradient shall be applied to the PNC under calibration. Linearity of response is calculated as the square of the Pearson product moment correlation coefficient (R^2) of the two data sets and shall be equal to or greater than 0.97. In calculating both the gradient and R^2 the linear regression shall be forced through the origin (zero concentration on both instruments).

In the reference PNC case, calibration shall be undertaken using at least six standard concentrations across the PNC's measurement range. At least three points shall be at concentrations below 1,000 cm^{-3}, the remaining concentrations shall be linearly spaced between 1,000 cm^{-3} and the maximum of the PNC's range in single particulate count mode. These points will include a nominal zero concentration point produced by attaching HEPA filters of at least class H13 of EN 1822:2019, or equivalent performance, to the inlet of each instrument. With no calibration factor applied to the PNC under calibration, measured concentrations shall be within ± 10 per cent of the standard concentration for each concentration, with the exception of the zero point, otherwise the PNC under calibration shall be rejected. The gradient from a linear regression of the two data sets shall be calculated and recorded. A calibration factor equal to the reciprocal of the gradient shall be applied to the PNC under calibration. Linearity of response is calculated as the square of the Pearson product moment correlation coefficient (R^2) of the two data sets and shall be equal to or greater than 0.97. In calculating both the gradient and R^2 the linear regression shall be forced through the origin (zero concentration on both instruments)."

Annex 4A - Appendix 5, paragraph 2.3.1., amend to read:

"2.3.1. Prior to each test, the particulate counter shall report a measured concentration of less than 0.5 particulates cm^{-3} when a HEPA filter of at least class H13 of EN 1822:2019, or equivalent performance, is attached to the inlet of the entire particulate sampling system (VPR and PNC)."

Annex 4A - Appendix 5, paragraph 2.3.3., amend to read:

"2.3.3. Each day, following the application of a HEPA filter of at least class H13 of EN 1822:2019, or equivalent performance, to the inlet of the particulate counter, the particulate counter shall report a concentration of ≤ 0.2 cm^{-3}. Upon removal of this filter, the particulate counter shall show an increase in measured concentration to at least 100 particulates cm^{-3} when challenged with ambient air and a return to ≤ 0.2 cm^{-3} on replacement of the HEPA filter."

Annex 7 - paragraph 5.1.1., amend to read:

"5.1.1. The vehicle is mechanically prepared before the test as follows:

(a) The exhaust system of the vehicle shall not exhibit any leaks. Openings in the exhaust system designed to remove condensate as described in paragraph 3.2.2. of Annex 4a shall be sealed prior to the test;

(b) The vehicle may be steam-cleaned before the test;

(c) In the case of use of the gasoline canister load option (paragraph 5.1.5. of this annex) the fuel tank of the vehicle shall be equipped with a temperature sensor to enable the temperature to be measured at the mid-point of the fuel in the fuel tank when filled to 40 per cent of its capacity;

(d) Additional fittings, adapters of devices may be fitted to the fuel system in order to allow a complete draining of the fuel tank. For this purpose it is not necessary to modify the shell of the tank;

(e) The manufacturer may propose a test method in order to take into account the loss of hydrocarbons by evaporation coming only from the fuel system of the vehicle. "

Annex 8, paragraph 5.2.6., amend to read:

"5.2.6. The time between dynamometer warming and the start of the emission test shall be no longer than 10 minutes if the dynamometer bearings are not independently heated. If the dynamometer bearings are independently heated, the emission test shall begin no longer than 20 minutes after dynamometer warming.

If frictional losses of the dynamometer can be stabilized without warming the dynamometer, the test can start following the dynamometer manufacturer's recommendations. The manufacturer shall provide documentation on the validation of the systems upon request of the responsible authority."