17 January 2020

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 82 – UN Regulation No. 83

Revision 4 - Amendment 13

Supplement 13 to the 06 series of amendments – Date of entry into force: 11 January 2020

Uniform provisions concerning the approval of vehicles with regard to the emission of pollutants according to engine fuel requirements

This document is meant purely as documentation tool. The authentic and legal binding text is: ECE/TRANS/WP.29/2019/42.

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).

Appendix 5

Paragraph 2., amend to read:

"2. The manufacturer shall compile all the information needed to comply with the requirements of paragraph 9. and Appendices 3, 4 and 5 of this Regulation. The Type Approval Authority may also take information from surveillance programmes into consideration."

Appendix 6

Paragraph 9.4., amend to read:

"9.4. The instructions shall specify that use of, and refilling of, a required reagent of the correct specifications is mandatory for the vehicle to comply with its certificate of conformity."

Annex 1

Paragraph 3.2.12.2.6.2., amend to read:

"3.2.12.2.6.2. Type and design of particulate trap: ……."

Annex 5

Paragraph 3.1., amend to read:

"3.1. The sampling probe shall be inserted into the exhaust pipe to a depth of at least 300 mm or into the pipe connecting the exhaust with the sampling bag and as close as possible to the exhaust."

Annex 7

Paragraph 4.2.1., amend to read:

"4.2.1. Variable-volume enclosure

The variable-volume enclosure expands and contracts in response to the temperature change of the air mass in the enclosure. Two potential means of accommodating the internal volume changes are movable panel(s), or a bellows design, in which an impermeable bag or bags inside the enclosure expand(s) and contracts(s) in response to internal pressure changes by exchanging air from outside the enclosure. Any design for volume accommodation shall maintain the integrity of the enclosure as specified in Appendix 1 to this annex over the specified temperature range.

Any method of volume accommodation shall limit the differential between the enclosure internal pressure and the barometric pressure to a maximum value of ±5 hPa.

The enclosure shall be capable of latching to a fixed volume. A variable volume enclosure shall be capable of accommodating a +7 per cent change from its "nominal volume" (see paragraph 2.1.1. of Appendix 1 to this annex,), taking into account temperature and barometric pressure variation during testing. "

Paragraph 4.6.2., amend to read:

"4.6.2. The accuracy of the pressure recording system shall be within ± 0.3 kPa and the pressure shall have resolution of 0.025 kPa. "

Delete paragraphs 4.9. and 4.9.1.

Paragraph 5.1.3.3., amend to read:

"5.1.3.3. The canister is connected to a fuel tank, possibly an external one, filled with reference fuel, to 40 per cent capacity of the fuel tank(s)."

Paragraph 6.1., amend to read:

"6.1. Calculation of evaporative test results

6.1.1. The evaporative emission tests described in paragraph 5. of this annex allow the hydrocarbon emissions from the diurnal and hot soak phases to be calculated. Evaporative losses from each of these phases is calculated using the initial and final hydrocarbon concentrations, temperatures and pressures in the enclosure, together with the net enclosure volume. The formula below is used:

$$M_{HC} = k.V.10^{-4}\left(\frac{C_{HC,f}\cdot P_f}{T_f} - \frac{C_{HC,i}\cdot P_i}{T_i}\right) + M_{HC,out} - M_{HC,i}$$

Where:

M_{HC} = hydrocarbon mass in grams,

$M_{HC,out}$ = mass of hydrocarbon exiting the enclosure, in the case of fixed volume enclosures for diurnal emission testing (grams),

$M_{HC,i}$ = mass of hydrocarbon entering the enclosure, in the case of fixed volume enclosures for diurnal emission testing (grams),

C_{HC} = measured hydrocarbon concentration in the enclosure (ppm volume in C1 equivalent),

V = net enclosure volume in cubic metres corrected for the volume of the vehicle, with the windows and the luggage compartment open. If the volume of the vehicle is not determined a volume of 1.42 m3 is subtracted,

T = ambient chamber temperature, in K,

P = barometric pressure in kPa,

H/C = hydrogen to carbon ratio,

k = 1.2 • (12 + H/C);

Where:

i = is the initial reading,

f = is the final reading,

H/C = is taken to be 2.33 for diurnal test losses,

H/C = is taken to be 2.20 for hot soak losses.

6.1.2. As an alternative to the equation in paragraph 6.1.1. of this Annex, for variable volume enclosures the following equation may be used at the choice of the manufacturer:

$$M_{HC} = k \times V \times \frac{P_i}{T_i}(C_{HCf} - C_{HCi})$$

Where:

M_{HC} = hydrocarbon mass in grams,

C_{HC} = measured hydrocarbon concentration in the enclosure (ppm volume in C_1 equivalent),

V = net enclosure volume in cubic metres corrected for the volume of the vehicle, with the windows and the luggage compartment open. If the volume of the vehicle is not determined a volume of 1.42 m^3 is subtracted;

T_i = initial ambient chamber temperature, in K,

P_i = initial barometric pressure in kPa,

H/C = hydrogen to carbon ratio,

H/C = is taken to be 2.33 for diurnal test losses;

H/C = is taken to be 2.20 for hot soak losses;

k = is $1.2 \times 10^{-4} \times (12 + H/C)$, in $(g \times K/(m^3 \times kPa))$;"

Annex 7, Appendix 1, paragraph 2.4., amend to read:

"2.4. Calculations of evaporative test results

2.4.1. The calculation of net hydrocarbon mass change within the enclosure is used to determine the chamber's hydrocarbon background and leak rate. Initial and final readings of hydrocarbon concentration, temperature and barometric pressure are used in the following formula to calculate the mass change.

$$M_{HC} = k.V.10^{-4}\left(\frac{C_{HC,f}\cdot P_f}{T_f} - \frac{C_{HC,i}\cdot P_i}{T_i}\right) + M_{HC,out} - M_{HC,i}$$

Where:

M_{HC} = hydrocarbon mass in grams,

$M_{HC,out}$ = mass of hydrocarbon exiting the enclosure, in the case of fixed volume enclosures for diurnal emission testing (grams),

$M_{HC,i}$ = mass of hydrocarbon entering the enclosure when a fixed volume enclosure is used for diurnal emissions (grams),

C_{HC} = hydrocarbon concentration in the enclosure (ppm carbon (Note : ppm carbon = ppm propane x 3)),

V = enclosure volume in cubic metres,

T = ambient temperature in the enclosure, (K),

P = barometric pressure, (kPa),

k = 17.6

Where:

i = is the initial reading,

f = is the final reading,

2.4.2. As an alternative to the equation in paragraph 2.4.1. of this Annex, for variable volume enclosures the following equation may be used at the choice of the manufacturer:

$$M_{HC} = k \times V \times \frac{P_i}{T_i}(C_{HCf} - C_{HCi})$$

Where:

M_{HC} = hydrocarbon mass in grams,

C_{HC} = measured hydrocarbon concentration in the enclosure (ppm volume in C_1 equivalent),

V = net enclosure volume in cubic metres,

T_i = initial ambient chamber temperature, in K,

P_i = initial barometric pressure in kPa,

k = is 17.6"

Annex 11

Paragraph 2.2., amend to read:

"2.2. "Vehicle type" means a category of power-driven vehicles which do not differ in essential engine and OBD system characteristics."

Annex 11, Appendix 1, Paragraph 6.5.3.5., amend to read:

"6.5.3.5. The connection interface between the vehicle and the diagnostic tester must be standardised and must meet all the requirements of ISO DIS 15031-3 "Road vehicles – Communication between vehicle and external test equipment for

emissions-related diagnostics – Part 3: Diagnostic connector and related electrical circuits: specification and use", dated 1 November 2001. The installation position must be subject to agreement of the Type Approval Authority such that it is readily accessible by service personnel but protected from tampering by non-qualified personnel."