Proposal for amendments to
ECE/TRANS/WP.29/GRVA/2021/22 and
ECE/TRANS/WP.29/GRVA/2021/23

The following red text is submitted as an amendment for the OICA proposal for Supplement to the original text of UN R152, to UN R152.01 and to UN R152.02.

I. Proposal

Paragraph 2.12., amend to read:

"2.12.   "*Dry road **affording good adhesion***" means a road **with a nominal[2] peak braking coefficient (PBC) of 0.9 and** that would permit a mean fully developed deceleration of at least **9m/s[2] or the designed maximum deceleration of the relevant vehicle**.

Paragraph 2.14., delete:

"2.14.   "*Peak braking coefficient (PBC)*": means the measure of tyre to road surface friction based on the maximum deceleration of a rolling tyre **using The American Society for Testing and Materials (ASTM) E1136 standard reference test tyre. in accordance with ASTM Method E1337-90 at a speed of 40 mph.** "

Renumber Footnote 2 and 3

Insert a new paragraph 2.18., to read:

"**2.18.   "The mean fully developed deceleration (d_m) shall be calculated as the deceleration averaged with respect to distance over the interval v_b to v_e, according to the following formula:**

$$d_m = \frac{v_b^2 - v_e^2}{25.92(s_e - s_b)}$$

Where:

v_o = initial vehicle speed in km/h,

v_b = vehicle speed at 0.8 v_o in km/h,

v_e = vehicle speed at 0.1 v_o in km/h,

s_b = distance travelled between v_o and v_b in metres,

s_e = distance travelled between v_o and v_e in metres.

The speed and distance shall be determined using instrumentation having an accuracy of ±1 per cent at the prescribed speed for the test. The d_m may be determined by other methods than the measurement of speed and distance; in this case, the accuracy of the d_m shall be within ±3 per cent."

Paragraph 5.2.1.4, amend to read:

"5.2.1.4.   Speed reduction by braking demand

In absence of driver's input which would lead to interruption according to paragraph 5.3.2., the AEBS shall be able to achieve a relative impact speed that is less or equal to the maximum relative impact speed as shown in the following table:

(a)   For collisions with unobstructed and constantly travelling or stationary targets;

(b)   On flat, horizontal and dry roads **affording good adhesion**;

(c)   In maximum mass and mass in running order conditions;

(d)   In situations where the vehicle longitudinal centre planes are displaced by not more than 0.2 m;

(e)   In ambient illumination conditions of at least 1000 Lux without blinding of the sensors (e.g. direct blinding sunlight);

(f)   In absence of weather conditions affecting the dynamic performance of the vehicle (e.g. no storm, not below 0°C); and

(g)   When driving straight with no curve, and not turning at an intersection.

It is recognised that …"

Paragraph 5.2.2.4, amend to read:

"5.2.2.4.   Speed reduction by braking demand

In absence of driver's input which would lead to interruption according to paragraph 5.3.2., the AEBS shall be able to achieve an impact speed that is less or equal to the maximum relative impact speed as shown in the following table:

(a)   With unobstructed perpendicularly crossing pedestrians with a lateral speed component of not more than 5 km/h;

(b)   In unambiguous situations (e.g. not multiple pedestrians);

(c)   On flat, horizontal and dry roads **affording good adhesion**;

(d)   In maximum mass and mass in running order conditions;

(e)   In situations where the anticipated impact point is displaced by not more than 0.2 m compared to the vehicle longitudinal centre plane;

(f)   In ambient illumination conditions of at least 2000 Lux without blinding of the sensors (e.g. direct blinding sunlight).

(g)   In absence of weather conditions affecting the dynamic performance of the vehicle (e.g. no storm, not below 0°C) and

(h)   When driving straight with no curve, and not turning at an intersection.

It is recognised that …"

Paragraph 5.2.3.4, amend to read:

"5.2.3.4.   Speed reduction by braking demand

In absence of driver's input which would lead to interruption according to paragraph 5.3.2., the AEBS shall be able to achieve an impact speed that is less or equal to the maximum relative impact speed as shown in the following table:

(a)   With unobstructed perpendicularly crossing pedestrians with a lateral speed component of not more than 5 km/h;

(b)   In unambiguous situations (e.g. not multiple pedestrians);

(c)   On flat, horizontal and dry roads **affording good adhesion**;

(d)   In maximum mass and mass in running order conditions;

(e)   In situations where the anticipated impact point is displaced by not more than 0.2 m compared to the vehicle longitudinal centre plane;

(f)   In ambient illumination conditions of at least 2000 Lux without blinding of the sensors (e.g. direct blinding sunlight).

(g)   In absence of weather conditions affecting the dynamic performance of the vehicle (e.g. no storm, not below 0°C) and

(h)   When driving straight with no curve, and not turning at an intersection.

It is recognised that …"

Paragraph 6.1.1.1., amend to read (including the deletion of the footnote 3)

6.   Test procedure

"6.1.   Test Conditions

6.1.1.   The test shall be performed on a flat, **dry road affording good adhesio*n*** dry concrete or asphalt surface affording good adhesion.

6.1.1.1.   The road test surface shall have a nominal[3] peak braking coefficient (PBC) of 0.9. unless otherwise specified. when measured using either:

6.1.1.2.   The American Society for Testing and Materials (ASTM) E1136 standard reference test tyre. in accordance with ASTM Method E1337-90. at a speed of 40 mph; or

6.1.1.3.   The k test method specified in Appendix 2 to Annex 6 of Regulation No. 13 H.

6.1.1.4.   The test surface has a consistent slope between level and 1 per cent."

II.   Justifications

1. Road surfaces used for testing under the current R13H, R140 (ESC) and R139 (BAS) are managed with PBC. From the perspective of managing test surfaces, it is necessary to include a reference to the ASTM standard/method on road surfaces in the definition of PBC.
2. On the other hand, it is often verified that vehicles can produce a deceleration of 9 m/s^2 or more in approval testing related to ABS, BAS, etc. using such road surfaces.
3. Therefore, for practical purposes, we propose to keep the ASTM road surface provision while setting the road surface such that a deceleration of at least 9 m/s^2 would be produced by the test vehicle, etc.

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[2]   The "nominal" value is understood as being the theoretical target value.

[3]   The distinguishing numbers of the Contracting Parties to the 1958 Agreement are reproduced in Annex 3 to the Consolidated Resolution on the Construction of Vehicles (R.E.3), document ECE/TRANS/WP.29/78/Rev.6, Annex 3 - www.unece.org/trans/main/wp29/wp29wgs/wp29gen/wp29resolutions.html