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1958 Agreement:

Consideration of draft amendments to existing

UN Regulations submitted by GRBP

Proposal for Supplement 3 to the 04 series of amendments to UN Regulation No. 117 (Tyre Rolling Resistance, Rolling Noise and Wet Grip)

Submitted by the Working Party on Noise and Tyres*

The text reproduced below was adopted by the Working Party on Noise and Tyres (GRBP) at its eighty-first session (ECE/TRANS/WP.29/GRBP/79, para. 17). It is based on ECE/TRANS/WP.29/GRBP/2024/23 as amended by GRBP-80-11 and ECE/TRANS/WP.29/GRBP/2025/13, as amended by GRBP-81-09-Rev.1. 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 June 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 applies to new pneumatic tyres* of classes C1, C2 and C3 in new state with regard to their sound emissions, and rolling resistance, and in new and worn state with regard to adhesion performance on wet surfaces (wet adhesion). It also applies to C1 tyres in new state with regards to their abrasion as defined in paragraph 1.3. of this UN Regulation. It does not, however, apply to:"

Paragraph 2.11. and footnote 2, amend to read:

- "2.11. "Reinforced tyre" or "extra load tyre" of class C1 means a tyre designed to carry more load at a higher inflation pressure than the load carried by the corresponding standard version tyre at the standard inflation pressure as specified in ISO 4000-1:2024.²

² Class C1 tyres correspond to "passenger car tyres" in ISO 4000-1:2024."

Paragraph 2.13.1., amend to read:

- "2.13.1. "Tyre for use in severe snow conditions" means a snow tyre or a special use tyre whose tread pattern, tread compound or **construction** is specifically designed to be used in severe snow conditions and that fulfils the requirements of paragraphs 6.5. and 6.5.1. of this Regulation."

Paragraph 2.16.1., amend to read:

- "2.16.1. "Principal grooves" means the wide tread grooves positioned in the central zone of the tyre tread, as defined in Annex 9 to this Regulation."

Add a new paragraph 2.16.2., to read:

- "2.16.2. "Tread groove" means the space between two adjacent ribs and/or blocks in the tread pattern."

Subparagraphs 2.18.(b), (c), (i) and (j), amend to read:

- "2.18. ...
- (b) F2493 – 24 for the size P225/60R16 and referred to as "SRTT16";
 - (c) F3611 – 24 for the size P225/60R16 in worn state and referred to as "moulded SRTT16 worn";
 - ...
 - (i) F3676 – 24 for the size 225/45R17 and referred to as "SRTT17S";
 - (j) F3675 – 24 for the size 225/45R17 and referred to as "SRTT17W".
- "

Paragraph 6.2.1., amend to read:

- "6.2.1. For class C1 tyres, tested in accordance with either procedure given in Annex 5, Part (A), to this Regulation, the tyre shall meet the following requirements:

Stage 1		
Category of use		Wet grip index (G)
Normal tyre		≥ 1.1
Snow tyre		≥ 1.1
	Snow tyre that is classified as tyre for use in severe snow conditions and with a speed category greater than 160 km/h	≥ 1.0
	Snow tyre that is classified as tyre for use in severe snow conditions and with a speed category less than or equal to 160 km/h	≥ 0.9

Stage 1		
Category of use		Wet grip index (G)
Special use tyre		Not defined
	Special use tyre that is classified as tyre for use in severe snow conditions	Not defined

Stage 2					
Category of use			Wet grip index (G)		
Normal tyre			≥ 1.2		
Snow tyre			≥ 1.2		
			Snow tyre that is classified as tyre for use in severe snow conditions	Speed category greater than 160 km/h	≥ 1.1
				Speed category less than or equal to 160 km/h	≥ 1.0
				Ice grip tyres	≥ 1.0
Special use tyre			≥ 1.1		
			Special use tyre that is classified as tyre for use in severe snow conditions	≥ 1.0	

"

Paragraph 6.8., amend to read:

- "6.8. In order to be classified as a "professional off-road tyre", a special use tyre shall have ~~all of~~ the following characteristics:
- (a) For class C1 tyres:
 - (i) A tread depth ≥ 11 mm;
 - (ii) A void-to-fill ratio ≥ 35 per cent;
 - (iii) A maximum speed category less than or equal to 160 km/h (speed category symbol Q).
 - (b) For class C2 tyres, a maximum speed category less than or equal to 160 km/h (speed category symbol Q).
 - (c) For class C3 tyres, a maximum speed category less than or equal to 110 km/h (speed category symbol K)."

Paragraph 12.26., amend to read:

- "12.26. As from the 1 September 2028, Contracting Parties applying this Regulation shall not be obliged to accept type approval issued according to Supplement 2 to the 04 series of amendments to this Regulation, first issued after 31 August 2028, if the track characteristics for measuring wet adhesion of tyre in new state are not established using the following reference tyres:

Tyre class	Reference tyres
C2	SRTT16C
C3	SRTT19.5 siped or SRTT22.5 siped

"

Add new paragraphs 12.27. and 12.28. to read:

- "12.27. Until 6 July 2026, Contracting Parties applying this Regulation may continue to grant type approvals of class C1 tyres according to the 04 series of amendments to this Regulation, based on the test procedures for measuring the wet adhesion of tyres in worn state as described in Annex 9 to this Regulation using wetted frictional properties of the surface specified in Supplement 2 to the 04 series of amendments to this Regulation.
- 12.28. Notwithstanding paragraph 12.27., Contracting Parties applying this Regulation shall continue to grant extensions to existing type approvals of class C1 tyres according to the 04 series of amendments to this Regulation first granted before 7 July 2026, based on the test procedures for measuring the wet adhesion of tyres in worn state as described in Annex 9 to this Regulation using wetted frictional properties of the surface specified in Supplement 2 to the 04 series of amendments to this Regulation unless a new test has to be performed on a different representative tyre."

Annex 3,

Paragraph 1.1., amend to read:

- "1.1. Acoustic measurements
- The sound level meter or the equivalent measuring system, including the windscreen recommended by the manufacturer shall meet or exceed the requirements of Type 1 instruments in accordance with IEC 61672-1:2013.
- The measurements shall be made using the frequency weighting A, and the time weighting F.
- When using a system that includes a periodic monitoring of the A-weighted sound level, a reading should be made at a time interval less than or equal to 30 ms."

Annex 5, part (A), Class C1 tyres,

Paragraphs 3.2.1. and 3.2.2., amend to read:

- "3.2.1. Using the procedure described in paragraph 4.1. of this Annex, perform two braking tests of the reference tyre, each consisting of at least six (6) valid test runs in the same direction on aligned segments of the track. The braking tests shall cover the entire potential braking area, including where the texture depth was measured.

Evaluate the braking tests as described in paragraphs 4.1.6.1. and 4.1.6.2. of this Annex. If the coefficient of variation of one braking test CV_{BFC} is greater than 4 per cent, dismiss the results and repeat the braking tests.

For each braking test, the arithmetic mean $\overline{BFC}_{ave}$ of the average braking force coefficients shall be corrected for effects of temperature as follows:

$$BFC_{ave,corr} = \overline{BFC}_{ave} + a \cdot (\vartheta - \vartheta_0)$$

where

ϑ is the wetted surface temperature in degrees Celsius,

$a = 0.002 \text{ } ^\circ\text{C}^{-1}$ and $\vartheta_0 = 20 \text{ } ^\circ\text{C}$.

For each braking test, the temperature-corrected average braking force coefficient ($BFC_{ave,corr}$) shall be greater than or equal to 0.57 and less than or equal to 0.79.

The arithmetic means of the temperature-corrected average braking force coefficients of the two braking tests shall not differ by more than 10 per cent of the average of the two values:

$$CVal(BFC_{ave,corr}) = 2 \cdot \frac{|BFC_{ave,corr,1} - BFC_{ave,corr,2}|}{BFC_{ave,corr,1} + BFC_{ave,corr,2}} \leq 10 \%$$

- 3.2.2. Using the procedure described in paragraph 4.2. of this Annex, perform in the same area where the average macro texture depth was measured one braking test of the reference tyre, consisting of at least six (6) test runs in the same direction.

Evaluate the braking test as described in paragraphs 4.2.8.1. and 4.2.8.2. of this Annex. If the coefficient of variation CV_μ is greater than 4 per cent, dismiss the results and repeat the braking test.

The arithmetic mean ($\overline{\mu_{\text{peak}}}$) of the measured peak braking force coefficients shall be corrected for effects of temperature as follows:

$$\mu_{\text{peak,corr}} = \overline{\mu_{\text{peak}}} + a \cdot (\vartheta - \vartheta_0)$$

Where

ϑ is the wetted road surface temperature in degrees Celsius

$a = 0.002 \text{ } ^\circ\text{C}^{-1}$ and $\vartheta_0 = 20 \text{ } ^\circ\text{C}$.

The temperature corrected average peak braking force coefficient ($\mu_{\text{peak,corr}}$) shall be greater than or equal to 0.65 and less than or equal to 0.90."

Paragraph 3.3., amend to read:

"3.3.

...

The wetting of the surface shall be performed in such a way that the wind does not affect the outcome of the test.

..."

Paragraph 4.1.6.2.(c), amend to read:

"4.1.6.2.

...

- (c) The temperature-corrected average braking force coefficients ($BFC_{\text{ave,corr}}$, see paragraph 3.2.1. of this Annex) as calculated from the initial and from the final braking tests of the reference tyre within a test cycle shall be greater than or equal to 0.57 and less than or equal to 0.79.

If one or more of the above conditions is not met, the complete test cycle shall be performed again.

For the candidate tyres (T):

The coefficient of variation CV_{BFC} is calculated for each candidate tyre set. If one coefficient of variation is greater than 4 per cent, the data shall be discarded and the braking test repeated for that candidate tyre set. "

Paragraph 4.2.8.2.(c), amend to read:

"4.2.8.2.

...

- (c) The temperature-corrected average peak braking force coefficients ($\mu_{\text{peak,corr}}$, see paragraph 3.2.2. of this Annex) as calculated from the initial and from the final braking test of the reference tyre within a test cycle shall be greater than or equal to 0.65 and less than or equal to 0.90.

If one or more of the above conditions is not met, the complete test cycle shall be performed again.

For the candidate tyre(s) (T_n):

The coefficient of variation of the peak braking force coefficient CV_μ is calculated for each candidate tyre. If one coefficient of variation is greater than 4 per cent, the data shall be discarded and the braking test repeated for this candidate tyre. "

Annex 5, Part (B), Classes C2 and C3 tyres,

Paragraph 1.1.1., amend to read:

1.1.1. "Standard Reference Test Tyre method

This method uses the SRTT16.

Using the procedure described in paragraph 4.2. of part (A) of this Annex, perform in the same area where the average macro texture depth was measured one braking test of the reference tyre, consisting of at least six (6) valid test runs in the same direction.

Evaluate the braking test as described in paragraphs 4.2.8.1. and 4.2.8.2. of part (A) of this Annex. If the coefficient of variation CV_μ is greater than 4 per cent, dismiss the results and repeat the braking test.

The arithmetic mean ($\overline{\mu_{\text{peak}}}$) of the measured peak braking force coefficients shall be corrected for the effects of temperature as follows:

$$\mu_{\text{peak,corr}} = \overline{\mu_{\text{peak}}} + a \cdot (\vartheta - \vartheta_0)$$

where

ϑ is the wetted track surface temperature in degrees Celsius,

$a = 0.002 \text{ } ^\circ\text{C}^{-1}$ and $\vartheta_0 = 20 \text{ } ^\circ\text{C}$.

The temperature corrected average peak braking force coefficient ($\mu_{\text{peak,corr}}$) shall be greater than or equal to 0.65 and less than or equal to 0.90.

The test shall be conducted using the lanes and length of the track to be used for the wet adhesion measurement.

For the trailer method, testing is run in such a way that braking occurs within 10 metres distance of where the surface was characterized. "

Paragraph 1.3., amend to read:

"1.3. The wetting of the surface shall be performed in such a way that the wind does not affect the outcome of the test.

..."

Annex 6, subparagraph 2.2.(a), amend to read:

"2.2. ...

(a) For class C1 tyres, the width of the rim shall be as defined in ISO 4000-1:2024,

..."

Annex 6,

Paragraph 2.4.1., amend to read:

"2.4.1. Reference conditions

The reference ambient temperature, measured at a distance greater than or equal to 0.15 m and less than or equal to 1 m from the tyre sidewall, shall be 25 °C. "

Paragraph 6.2., amend to read:

"6.2. Temperature correction

If measurements at temperatures other than 25 °C are unavoidable (only temperatures greater than or equal to 20 °C and less than or equal to 30 °C are acceptable), then a correction for temperature shall be made using the following equation, with:

F_{r25} is the rolling resistance at 25 °C, in newtons:

$$F_{r25} = F_r [1 + K(t_{amb} - 25)]$$

Where:

F_r is the rolling resistance, in newtons,

t_{amb} is the ambient temperature, in degrees Celsius,

K is equal to:
 0.008 for class C1 tyres
 0.010 for classes C2 and C3 tyres with a load index equal or lower than 121
 0.006 for class C3 tyres with a load index greater than 121"

“

Annex 6 – Appendix 1, paragraph 2.1., amend to read:

"2.1. Width

For passenger car tyre rims (class C1 tyres), the test rim width shall be the same as the measuring rim determined in ISO 4000-1:2024, clause 6.2.2.

..."

Annex 7 – Appendix 3, Part 1, item 7, amend to read:

"7. Snow grip index SG."

Annex 8,

Paragraph 2.1.1.3., amend to read:

"2.1.1.3. The surface grip level shall be controlled by measurements with the reference tyre. The average mean fully developed deceleration of the reference tyre shall be greater than or equal to 0.9 m/s² and less than or equal to 1.6 m/s² in each braking test."

Paragraph 2.1.3.1., amend to read:

"2.1.3.1. Standard Reference Test Tyre

For the evaluation of the ice performance of class C1 tyres, the Standard Reference Test Tyre SRTT16 shall be used. The reference tyre shall not be older than 30 months starting from the production week and shall be stored in accordance with ASTM F2493 – 24."

Paragraph 2.1.3.2.1., amend to read:

"2.1.3.2.1. Fit each test tyres on an approved rim pursuant to ISO 4000-1:2024 using conventional mounting methods. Subject to the foregoing, the rim width code shall not differ more than 0.5 from the measuring rim. If a commercialized rim is not available for the test vehicle, it will be acceptable to use a rim whose rim width code differs by 1.0 from the measuring rim width code. Ensure proper bead seating by the use of a suitable lubricant. Excessive use of lubricant should be avoided to prevent slipping of the tyre on the wheel rim."

Annex 9,

Paragraph 2.1.3., amend to read:

"2.1.3. "Groove" means tread groove."

Add a new paragraph 2.3.1.6. to read:

"2.3.1.6. Water depth measurement for external watering

The test track should be watered at least 30 minutes prior to measuring the water depth in order to equalize the surface temperature and water temperature.

The measurement shall be performed without wind interference.

The device shall be capable to measure a water depth range that is larger than the regulatory defined range of 0.5 mm - 1.5 mm.

Three measurements shall be recorded for each measuring point throughout the whole testing area and the average for each measuring point shall be in the range of 0.5 mm - 1.5 mm.

If a contact device (e.g., static pin or dynamic pin) is used, the device shall be dried before each measurement.

If an optical device is used, the measurement shall be performed from the peaks of the pavement.

If an ultrasonic device is used, it shall compensate for air temperature fluctuation."

Paragraph 2.3.2.1., amend to read:

"2.3.2.1. ...

where

ϑ is the wetted surface temperature in degrees Celsius,

$a = 0.002\text{ }^{\circ}\text{C}^{-1}$ and $\vartheta_0 = 20\text{ }^{\circ}\text{C}$.

- For each braking test, the temperature-corrected average Braking Force Coefficient ($BFC_{ave,corr}$) shall be greater than or equal to 0.42 and less than or equal to 0.64.

..."

Paragraph 2.3.2.2., amend to read:

"2.3.2.2. ...

Where

ϑ is the wetted road surface temperature in degrees Celsius

$a = 0.002\text{ }^{\circ}\text{C}^{-1}$ and $\vartheta_0 = 20\text{ }^{\circ}\text{C}$.

The temperature corrected average peak braking force coefficient ($\mu_{peak,corr}$) shall be greater than or equal to 0.50 and less than or equal to 0.75."

Paragraph 2.3.3., amend to read:

"2.3.3. ...

The wetting of the surface shall be performed in such a way that the wind does not affect the outcome of the test."

..."

Paragraph 2.4.1.1.2., amend to read:

"2.4.1.1.2. Validation of results

...

- (c) The temperature-corrected average braking force coefficients ($BFC_{ave,corr}$, see paragraph 2.3.2.1. of this Annex) as calculated from the initial and from the final braking tests of the reference tyre within a test cycle shall be greater than or equal to 0.42 and less than or equal to 0.64.

..."

Paragraph 2.4.2.1.2., amend to read:

"2.4.2.1.2. Validation of results

...

- (c) The temperature-corrected average peak braking force coefficients ($\mu_{\text{peak,corr}}$, see paragraph 2.3.2.2. of this Annex) as calculated from the initial and from the final braking test of the reference tyre within a test cycle shall be greater than or equal to 0.50 and less than or equal to 0.75.

..."
