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World Forum for Harmonization of Vehicle Regulations

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Item 4.9.4 of the provisional agenda
1958 Agreement:
Consideration of draft amendments to existing
UN Regulations submitted by GRBP

Proposal for Supplement 5 to the original version of UN Regulation No. 108 (Retreaded tyres for passenger cars and their trailers)

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 seventy-first session (ECE/TRANS/WP.29/GRBP/69, para. 15). It is based on ECE/TRANS/WP.29/GRBP/2019/16. 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 2020 sessions.

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[*] In accordance with the programme of work of the Inland Transport Committee for 2020 as outlined in proposed programme budget for 2020 (A/74/6 (part V sect. 20) para 20.37), 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.

Insert a new paragraph 2.36. to read:

"2.36.   "*Retreader*" means the person or body who is responsible to the Type Approval Authority (TAA) for all aspects of the type-approval under this Regulation and for ensuring the conformity of production."

Paragraph 2.36. (former), renumber to 2.36.1.

Paragraph 2.49., amend to read:

"2.49   "*Standard Reference Test Tyre (SRTT)*" means a tyre that is produced, controlled and stored in accordance with the American Society for Testing and Materials (ASTM) standards E1136 – 17 for the size P195/75R14 and referred to as "SRTT14". "

Paragraph 4.3., amend to read:

"4.3.   At the request of the Type Approval Authority, the Retreader shall submit samples of tyres for test or copies of test reports from the technical services, communicated as given in paragraph 12. of this Regulation."

Paragraph 7.2., amend to read:

"7.2.   In order to be classified as a "snow tyre for use in severe snow conditions", the retreaded tyre to comply with this Regulation shall meet the performance requirements of paragraph 7.2.1. The retreaded tyre size shall meet these requirements based on a test method of Annex 9 by which:

(a)   The mean fully developed deceleration ("mfdd") in a braking test;

(b)   Or alternatively an average traction force in a traction test;"

(c)   Or alternatively the average acceleration in an acceleration test of the candidate tyre is compared to that of a Standard Reference Test Tyre (SRTT14).

The relative performance shall be indicated by a snow grip index."

Paragraph 7.2.1., amend to read:

"7.2.1.   For Class C1 tyres, the minimum snow grip index value, as calculated in the procedure described in Annex 9 and compared with the respective Standard Reference Test Tyre SRTT14 shall be as follows:

Class of tyre	*Snow grip index (brake on snow method) (a)*	*Snow grip index (spin traction method) (b)*
C1	*1.07*	*1.10*

Notes:
(a)   See paragraph 3. of Annex 9 to this Regulation
(b)   See paragraph 2. of Annex 9 to this Regulation"

Annex 9

Paragraph 3.4.1.1., amend to read:

"3.4.1.1.   For each tyre and each braking test, the arithmetic mean $\overline{\boldsymbol{a}}$ and corrected sample standard deviation $\boldsymbol{\sigma_a}$ of the mfdd shall be computed and reported.

The coefficient of variation CV_a of a tyre braking test shall be computed as:

$$CV_a = 100\% \cdot \frac{\sigma_a}{\overline{a}}$$

with

$$\sigma_a = \sqrt{\frac{1}{N-1}\sum_{i=1}^{N}(a_i - \bar{a})^2}$$

"

Paragraph 3.4.1.2., amend to read:

"3.4.1.2.   Weighted averages wa_{SRTT} of two successive tests of the SRTT14 shall be computed taking into account the number of candidate tyres in between:

In the case of the order of testing R1 – T – R2, the weighted average of the SRTT14 to be used in the comparison of the performance of the candidate tyre shall be taken to be:

$$wa_{\text{SRTT}} = \tfrac{1}{2}(\overline{a_{R1}} + \overline{a_{R2}})$$

Where:

$\overline{a_{Rn}}$ is the arithmetic mean of the mfdd for the n-th test of the SRTT14.

In the case of the order of testing R1 – T1 – T2 – R2, the weighted averages wa_{SRTT} of the SRTT14 to be used in the comparison of the performance of the candidate tyre shall be taken to be:

$wa_{\text{SRTT}} = \tfrac{2}{3}\overline{a_{R1}} + \tfrac{1}{3}\overline{a_{R2}}$ for comparison with the candidate tyre T1 and

$wa_{\text{SRTT}} = \tfrac{1}{3}\overline{a_{R1}} + \tfrac{2}{3}\overline{a_{R2}}$ for comparison with the candidate tyre T2."

Paragraph 3.4.1.3., amend to read:

"3.4.1.3.   The snow grip index (SG) of a candidate tyre Tn shall be computed as the quotient of the arithmetic mean $\overline{a_{\text{Tn}}}$ of the mfdd of the tyre Tn and the applicable weighted average wa_{SRTT} of the SRTT:

$$SG(\text{Tn}) = \frac{\overline{a_{\text{Tn}}}}{wa_{\text{SRTT}}}$$

"

Paragraph 3.4.2., amend to read:

"3.4.2.   Statistical validations

The sets of repeats of measured or computed mfdd for each tyre should be examined for normality, drift, eventual outliers.

The consistency of the arithmetic means $\bar{a}$ and corrected sample standard deviations σ_a of successive braking tests of SRTT14 should be examined.

In addition and in order to take in account possible test evolution, the coefficient of validation $CVal_a(\text{SRTT})$ is calculated on the basis of the average values of any two consecutive groups of the minimum 6 runs of the Standard Reference Test Tyre according to

$$CVal_a(\text{SRTT}) = 100\% \times \left| \frac{\overline{a_{R2}} - \overline{a_{R1}}}{\overline{a_{R1}}} \right|$$

The coefficient of validation $CVal_a(\text{SRTT})$ shall not differ by more than 5 per cent.

The coefficient of variation CV_a, as defined in paragraph 3.1.1. of this annex, of any braking test shall be less than 6 per cent.

If those conditions are not met, tests shall be performed again after re-grooming the test course."

Appendix 2, amend to read:

"Part 1 – Report

…

2.   Name and address of the Retreader:

…

4.   Brand name and trade description:

…

7.   Snow grip index relative to SRTT according to paragraph 7.2.1.

…

Part 2 – Test data

…….

4.   Test tyre details and data:

	SRTT (1ˢᵗ test)	*Candidate 1*	*Candidate 2*	*SRTT (2ⁿᵈ test)*
Brand name				
Trade Description/ commercial name				
Tyre size designation				
Service description				
Test rim width code				
Reference (test) inflation pressure (kPa)				
Tyre loads F/R (kg)				
Tyre Loads F/R (% of load associated to LI)				
Tyre pressure F/R(kPa)				

5.   Test results: mean fully developed decelerations $(m \cdot s^{-2})$ coefficient.

Run number	*Specification*	*SRTT (1st test)*	*Candidate 1*	*Candidate 2*	*SRTT (2nd test)*
1					
2					
3					
4					
5					
6					
Mean					
Standard deviation					
Coefficient of variation	$CV_a \leq 6\ \%$				
Coefficient of validation	$CVal_a(\mathrm{SRTT}) \leq 5\ \%$				
SRTT weighted average					
Snow grip index		1.00			

"