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Item 6 (b) of the provisional agenda

Tyres: UN Regulation No. 108 (Retreaded tyres for passenger cars and their trailers)**Proposal for amendment to UN Regulation No. 108****Submitted by the experts from the Bureau International Permanent des Associations de Vendeurs et Rechapeurs de Pneumatiques (BIPAVÉR)***

The text reproduced below has been prepared by the experts from BIPAVÉR in order to align the provisions for retreaded tyres to be tested and marked with the three-peak-mountain snow-flake (3PMSF) symbol with the amendment proposals to UN Regulation No. 117 (ECE/TRANS/WP.29/GRBP/2019/19). The modifications to the existing text of the Regulation are marked in bold for new or strikethrough for deleted characters. For better readability paragraphs including physical/mathematical terms or formulas are deleted and replaced completely.

* In accordance with the programme of work of the Inland Transport Committee for 2018–2019 (ECE/TRANS/274, para. 123 and ECE/TRANS/2018/21/Add.1, Cluster 3), 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.

GE.19-10491(E)



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Please recycle The recycling symbol, consisting of three chasing arrows forming a triangle.



I. Proposal

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:

"2.36.1. Retreading production unit" means a site or group of localized sites where finished retread tyres are produced.

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 ~~E1136-93 (2003)~~ 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 applicant 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 ~~40~~ 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 mean and standard deviation of the mfdd shall be computed and reported. The coefficient of variation CV of a tyre braking test shall be computed as:~~

$$\text{CV (tyre)} = \frac{\text{Std. dev (tyre)}}{\text{Mean (tyre)}}$$

3.4.1.1. For each tyre and each braking test, the arithmetic mean \bar{a} and corrected sample standard deviation σ_a of the mfdd shall be computed and reported.

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

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

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) of two successive tests of the SRTT 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 SRTT to be used in the comparison of the performance of the candidate tyre shall be taken to be:~~

$$\text{(SRTT)} = (R1 + R2)/2$$

~~Where:~~

~~R1 is the mean fully developed deceleration for the first test of the SRTT and R2 is the mean mfdd for the second test of the SRTT.~~

~~In the case of the order of testing R1 – T1 – T2 – R2, the weighted average (wa) of the SRTT to be used in the comparison of the performance of the candidate tyre shall be taken to be:~~

~~wa (SRTT) = 2/3 R1 + 1/3 R2 for comparison with the candidate tyre T1; and:~~

~~wa (SRTT) = 1/3 R1 + 2/3 R2 for comparison with the candidate tyre T2.~~

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:

$$wa_{SRTT} = \frac{1}{2}(\bar{a}_{R1} + \bar{a}_{R2})$$

Where:

\bar{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:

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

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

Paragraph 3.4.1.3., amend to read:

"3.4.1.3. — The snow grip index (SG) in per cent of a candidate tyre shall be computed as:

$$\text{Snow Grip Index (candidate)} = \frac{\text{Mean (candidate)}}{wa_{SRTT}}$$

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

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

"

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 means and standard deviations of successive braking tests of SRTT should be examined. The means of two successive SRTT braking tests shall not differ by more than 5 per cent. The coefficient of variation of any braking test shall be less than 6 per cent. If those conditions are not met, tests shall be performed again after regrooming the test course."~~

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 $CVal_a(SRTT)$ 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

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

The coefficient of validation $CVal_a(SRTT)$ 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."

Annex 9, Appendix 2, amend to read:

“Part 1 – Report

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2. Name and address of the applicant ~~Retreader:~~

.....

4. ~~Manufacturer and b~~ Brand name ~~or~~ and trade description:

.....

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

.....

Part 2 – Test data

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4. Test tyre details **and data:**

4.1. ~~Tyre size designation and service description:~~

4.2. ~~Tyre brand and trade description:~~

4.3. ~~Test tyre data:~~

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

5. Test results: mean fully developed decelerations (~~m/s²~~ **m · s⁻²**) coefficient.

<i>Run number</i>	<i>Specification</i>	<i>SRTT (1st test)</i>	<i>Candidate 1</i>	<i>Candidate 2</i>	<i>SRTT (2nd test)</i>
1					
2					
3					
4					
5					
6					

Mean					
Std Standard deviation					
CV(%) Coefficient of variation	$\leq 6\%$ $CV_a \leq 6\%$				
Coefficient of Validation SRTT	$SRTT \leq 5\%$ $CVal_a(SRTT) \leq 5\%$				
SRTT weighted average					
Snow grip index		1.00			

II. Justification

This amendment to UN Regulation No. 108 aims to ensure that the test procedures for retreaded tyres in respect to the 3PMSF testing is aligned with the amendment proposal to UN Regulation No. 117, as contained in ECE/TRANS/WP.29/GRBP/2019/19. In addition, it corrects a typing error in paragraph 7.2.1. (Annex reference number).