

Regulation No. 117 (Tyre rolling noise and wet grip adhesion)

Proposal for amendments to ECE/TRANS/WP.29/2010/63

The text reproduced below was prepared by the expert from ETRTO to amend the note 9 page 6 of document ECE/TRANS/WP.29/2010/63 agreed at the last WP29 of June 2010.

Text deleted is shown by ~~strike through~~ and new text in **bold font**

A PROPOSAL

σ_m can be estimated by measuring n times (where $n \geq 5$) the whole procedure described section 4 of Annex 6 to this Regulation, for ~~at least five~~ the **p alignment tyres (where $p \geq 5$)**, assuming that the variances of ~~the p alignment~~ **(where $p \geq 5$)** at least five tyres are homogeneous, as follows:

$$\sigma_m = \sqrt{\frac{1}{n} \cdot \sum_i^n \sigma_{m,i}^2}$$
$$\sigma_m = \sqrt{\frac{1}{p} \cdot \sum_{i=1}^p \sigma_{m,i}^2} \quad \text{(corrected)}$$
$$\sigma_{m,i} = \sqrt{\frac{1}{n-1} \cdot \sum_{j=1}^n \left(Cr_{i,j} - \frac{1}{n} \cdot \sum_{j=1}^n Cr_{i,j} \right)^2}$$

Where:

i = ~~either 1 or 5~~ corresponding to each of the tyres **is the counter from 1 to p for the number of alignment tyres**

j = is the counter from 1 to n for the number of repetitions of each measurement for a given tyre

n = **is the number of repetitions of tyre measurements ($n \geq 3$)**

p = **is the number of alignment tyres ($p \geq 5$).**

B JUSTIFICATION

This formula was extrapolated from ISO 28580, introducing a number of alignment tyres greater or equal to 5. However, there was a confusion between the number n of measurement repetitions (n greater or equal to 3) and the number of tyres (greater or equal to 5). This confusion was made both in the text : "measuring n times (where $n \geq 5$)" and in the first formula, giving the value of "sigma m" from the individual values "sigma m,i" obtained for each alignment tyre. In addition "i" index, for the tyres, was restricted to the values of 1 and 5, not taking into consideration all the 5 or more alignment tyres. To bring a remedy to this and correct the formula giving the value of "sigma m", it is proposed to set "i" as a counter varying from 1 to "p", where "p" is introduced as the number of alignment tyres.
