

PROPOSAL FOR DRAFT AMENDMENTS TO DOCUMENT ECE/TRANS/WP.29/GRB/2010/3
(DRAFT AMENDMENTS TO REGULATION No.117)
AND THE RUSSIAN FEDERATION FEEDBACK ON THE ETRTO DOCUMENT GRB-51-02

Note: This document was created by the expert of the Russian Federation in order to introduce the modifications to the draft 02 series of amendments to the Regulation 117 as proposed in the document ECE/TRANS/WP.29/GRB/2010/3 with additional justification of the recent proposals of the Russian Federation presented in the document GRB-50-07. Such justification also provides the Russian Federation feedback on the ETRTO comments made in the document GRB-51-02. The modifications in the text of the Regulation **are typed in bold**.

A. Paragraph 6.3., Rolling resistance coefficient limits

It is proposed to add a new stage 3 for the rolling resistance coefficient limits by adding a new paragraph 6.3.2., to read:

“6.3.2. The maximum values for stage 3 for the rolling resistance coefficient shall not exceed the following (value in N/kN is equivalent to value in kg/tonne):

Tyre class	Max value (N/kN)
C1	9.0
C2	7.5
C3	5.0
For snow tyres, the limits shall be increased by 1 N/kN.	

This addition will create a new level of the conformity to the requirements on tyre rolling resistance to be named as “R3” with the appropriate amendments of the paragraph 5.4.3 of the draft Regulation. It is proposed to make the new R3 level mandatory for the new tyre types from 1 November 2017. We proceed from the opportunity for manufacturers to use R2 and R3 approval marks in suitable cases beginning from 2012.

Justification:

The proposal is made in order to support the progressive tyre manufacturers, for whom the progressive “R3” mark on the sidewall may be useful. One can see that R1 norms for new tyres of 2012 lays higher than middle market level of old tyres at 2005 (see D.Aimon "Supporting the development of Low energy tyres" , presentation, page 5, IEA, Nov. 2005). Analogous data may be found from "Tires and Passenger Vehicle Fuel Economy. Informing Consumers, Improving Performance", TRB special report 286, Transportation Research Board, Washington, D.C., 2006, www.TRB.org. Also the document STD-01-03 by the European Commission states: "56% of summer tyres in 2004 could meet proposed Phase 1 requirements; 16% could meet proposed phase 2 requirements".

B. Annex 6., Test procedure for measuring rolling resistance

Paragraph 1., item c). at the end add the following new sentence:

"determination of deceleration of the test drum and the tyre assembly in the approximate form $\Delta\omega/\Delta t$ or in the exact form $d\omega/dt = d^2\phi/dt^2$ (where ω is the angular velocity, ϕ is the angle of rotation). If deceleration is obtained as the second derivation of the measured time-distance function, the equivalence of such a way of deceleration obtaining shall be detailed".

Justification:

The ETRTO comment made in the document GRB-51-02 touches the stage of ISO 18164 Amd.1 in ISO/TC31/WG6 development. However the Russian Federation proposal above touches the relation between the second and the first derivations of the time-distance function. The fundamental relationship of differential calculus does not pertain to the Russian experts but to I.Newton and G.Leibnitz. The point is that the deceleration is calculated as $d\omega/dt = d^2\phi/dt^2$ (where ω is the angular velocity, ϕ is the angle of rotation), is more exact than the approximated relation $\Delta\omega/\Delta t$ in the formulae 5.1.5 and 5.2.5 in the Annex 6 of the draft Regulation No.117.

The proposed addition to the item c) in the paragraph 1 of the Annex 6 uses analogous wording for application of equivalent or alternative test methods as in Regulation No.12, paragraph 6.2., Regulation No.17, paragraph 6.9., Regulation No.54, paragraph 4.

As for ISO/TC31/WG6 position with respect to the Russian test method, we should draw up the experts' attention to the fact that such position pertains to three WG6 members only. In this connection the WG6 Convener had brought her official (quote from WG6 doc N253, of 11 January 2010) "apologizes to the WG6 that she did not include the full Working Group in the review of the document STD-03-06 prior to its submission to the GRB Working Group. It is unfortunate that such an ISO/WG6 concern had been brought up. The document had been presented by Mr. Christophe Penant on behalf of WG6".

We have already informed the interested persons that Mr. Penant's private opinion is based on a way of a system of equations solution by using the Excel calculations instead of iteration process for weakly converging functions. Mr. Penant is informed about the effective work of our special computer program, which accommodates high accuracy method ("short method") proposed by the Russian Federation and confirmed by several scientific reports presented to ISO/TC31/WG6 (see WG6 documents N106, N113). This investigation was published in the SAE Paper 2009-01-0072 after the expertise of high qualification specialists.

We would be pleased to provide consultations for our opponents, who might be interested in how to solve the specific simultaneous equations.

In the Russian Federation, the proposed method is established in the national standard GOST R 52102 and successfully used by the tyre plants and institutes. The mathematic part of the method is considered in details and adopted by the Institute of Applied Mathematics of Russian Science Academy.

Therefore we consider that the addition to the item c) in the paragraph 1 of the Annex 6, as proposed, would be applicable.

C. Comment to Annex 6., Test procedure for measuring rolling resistance

Paragraph 3.1., Test speeds

In the document GRB-50-07 we indicated that the vehicle manufactures need the rolling resistance data for the wide speed range, not only for 80 km/h. That was not a request from us but a proposal for the future. The standard SAE J2452 reflects direct vehicle designers interest to the rolling resistance data in wide speed range and, as we know, the European industry submits the data according to this standard when delivers tyres to the US market. Future will require returning to this problem in a global scale. Presently we do not have concerns in this regard.

D. Annex 6., Appendix 1., Test equipment tolerances

Paragraph 5., Instrumentation accuracy

The table does not contain the accuracy for determination of the deceleration. The Russian Federation will provide additional information justifying that the accuracies set in the table are not enough to satisfy the requirements of the Annex 6.
