

COMMENTS AND SUGGESTIONS ON THE ETRTO PROPOSAL
FOR DRAFT AMENDMENTS TO REGULATION No. 117
(Working paper No. STD-02-02)

A. Paragraph 2.18.2., Rolling resistance coefficient definition

In practice, the rolling resistance coefficient is not dimensionless. The dimensionless value, for example, 0.012 has a dimensioned equivalent 12.0 N/kN. Further in the paragraph 6.3., the rolling resistance coefficient is set in the dimensioned form.

B. Paragraph 5.4., Approval mark

It is proposed to consider marking or labeling rolling resistance coefficient on tyres with one of the seven grades A, B, C, D, E, F, G as per the Draft Directive of the European Parliament and of the Council on labeling of tyres with respect to fuel efficiency and other essential parameters */ in addition to (or instead of) the “R1” and “R2” marks.

*/ Brussels, 13.11.2008 COM(2008) 779 final 2008/0221 (COD) {SEC(2008) 2860} {SEC(2008) 2861}

Justification:

The United Nations Guidelines for Consumer Protection (09/29/2001, UNCTAD/DITC/CLP/Misc.21) declares that one of the legitimate needs, which the guidelines are intended to meet is an “access of consumers to adequate information to enable them to make informed choices according to individual wishes and needs”. So the consumers must have a right to know what they purchase with respect to the very important energy parameter namely tyre rolling resistance. The Russian Federation is of the opinion that the cited above EC Proposal for a Directive on labeling of tyres with respect to fuel efficiency and other essential parameters with 7 grades (Annexes I, II) is quite useful. As the method of rolling resistance measurement result inter-laboratory alignment is defined now, the correspondent amendment into the Regulation No.117 may be inserted at the present time.

C. Paragraph 6.3., Rolling resistance coefficient limits

Norms of the rolling resistance coefficient of 12 N/kN and 10.5 N/kN for C1 tyres for stages 1 and 2 seem as very moderate for new tyres. The proposal for entry into force of the norms of 10.5 N/kN not early than in 2016 is in conflict with the objective of the document in the consideration.

Justification:

Leading tyre manufacturers presently support the development of Low Energy Tyres (LET) not only by regulating maximum rolling resistance level but by means of:

- progressive removal from the market of the least efficient tyres;
- information of the passenger car users (of commercial vehicle purchasing departments) on the rolling resistance category and power consumption.

Such leading companies already have got in production the passenger car tyres with the rolling resistance coefficient of 8 N/kN and have a ready solution for 6 N/kN.

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

Paragraph 1., Note 2, Add the last sentence to read:

"The measurement of distance-time function and using in data processing second derivation of this function is preferable".

Justification:

With respect to the further development of the rolling resistance reference method, a principle of reference machine definition is very important. The solution of rolling resistance measurement problem is not so simple: during last 16 years no any new test method were developed, therefore Regulation No.117 repeats without any sufficient changes old methods from ISO 8767 (1992) and ISO 9948 (1992), which have shortcomings described in SAE J1270, J2452. It is clear that the methods set in Regulation No.117 are not equivalent, so it is not indifferent, which method reference machine uses.

Basing on comparison of the method qualities really rough ranking should be as follows:

<u>Method</u>	<u>Weighting factor</u>
Deceleration	0.9
Torque	0.8
Force	0.7
Power	0.6

In spite of different level of methods shortcomings, ISO 28580 permits equivalent industrial application all of them in order to save spending on equipment.

During the years 2001-2008 a sufficient development on new method of rolling resistance measurement had been undertaken in the Russian Federation. Being based on fundamental findings in the mechanics and mathematics this method is most perspective for further development and industrial usage. This is a deceleration method in the form of "time-distance" measurement, which has a sufficient potential of development in industrial field. The method completely responds to the requirements for a reference method. This method allows exclusion of necessity of speed determination as a parameter indirectly measured and thereby removing a considerable group of measurement error sources, so technique sensitivity and accuracy are increased. The data processing, test procedure and measurement equipment are simplified following the elimination of speed measurement. The method accuracy depends just on the accuracy of time recording. Convenient and accurate technique of inertia moment determination for the drum, test bench motor and wheel-tyre-hub assembly not requiring their dismounting from supports. It becomes possible to perform rolling resistance measurements with any drum test machine, even with those, which were not originally intended for such purpose. The method provides for convenient and accurate inertia moments measuring of the drum, test bench electric motor, and wheel-tyre assembly and requires simple and low cost equipment.

The method and corresponding equipment were developed, tested and fixed in the form of the Russian national standard (GOST R 52102). This method with suitable hard- and software is applied in practice by three tyre plants and NAMI institute. At present this method is the object of voting of ISO 18164, Amendment 1.

As soon as not progressive power method is presented in the draft amendment to the Regulation No.117 for the reason of saving old equipment, it is logic to let the application of a new perspective method, which is already used by the Russian plants, so the experience for more wide industrial

application would be accumulated. This new method may expand the ability to choose a standard effective method for tyre rolling resistance determination. Adding the proposed sentence to the Note 2 would allow the application of the new method.

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

Paragraph 3.1., Test speeds

The draft requires tyre testing only with one drum speed, which is contrary to ISO 18164. It simplifies the measurements, but restricts vehicle manufacturers' interest. The appearance of the standard SAE J2452 made an essential step towards the vehicle manufacturer's requirements. They need the rolling resistance data for the wide speed range, not only for 80 km/h. It is expedient to continue the work of informal GRB/GRRF group mutually with ISO/TC31/WG6 on this direction in future.

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

Paragraph 4.5.1., Skim test reading loads

Skim test reading loads were specified without any published justifications and seem as very high. In the supposition that the rolling resistance coefficient during skim test reading is equal to that under the full test load, the parasitic losses may be sufficient and lead to underestimation of tyre rolling resistance from 3.5% to 5.0%. The Russian Federation experts have tried to put the attention of ETRTO to this fact. Because any investigations were not opposed to the presented estimation, the experiments with light loaded tyre were started in the Russian Federation. The first experimental results show that rolling resistance coefficient of tyre under skim test reading load is two times higher than that under the full test load, and this effect could give a sufficient error in parasitic losses estimation and corresponding rolling resistance underestimation.

To prevent such a sufficient rolling resistance underestimation, which could be allowed by paragraph 4.5.1., the mutual experiments should be continued. Another way is a restitution of the skim reading test in accordance with ISO 18164, which states that the choice of maintaining load is left to the tester. In the both cases the skim test reading rolling resistance force shall be added to the parasitic losses. Consequently this problem shall be included into consideration of all tyre rolling resistance working groups (ISO, ETRTO, etc.) in the nearest future.

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

Paragraph 5., Instrumentation accuracy

The table does not contain the accuracy for measurement of deceleration.
