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Tyres – Regulation No. 54

Proposal for amendments to Regulation No. 54 (Tyres for commercial vehicles and their trailers)

Submitted by the experts from the European Tyre and Rim Technical Organisation*

The text reproduced below was prepared by the experts from the European Tyre and Rim Technical Organisation (ETRTO) amending the tyre dimensional requirements of UN Regulation No. 54. The modifications to the existing text of the Regulation are marked in bold for new or strikethrough for deleted characters.

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* In accordance with the programme of work of the Inland Transport Committee for 2012–2016 (ECE/TRANS/224, para. 94 and ECE/TRANS/2012/12, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

I. Proposal

Paragraph 6.1.1.1., amend to read:

"6.1.1.1.　The section width shall be obtained by means of the following formula:

$S = S_1 + K (A - A_1)$,

Where:

S　　　　is the "section width" **rounded to the nearest millimetre** ~~expressed in millimetres~~ and measured on the measuring rim;

S1　　　is "the nominal section width" in millimetres, as shown on the sidewall of the tyre in the tyre designation as prescribed;

A　　　　is the width of the measuring rim in millimetres, as shown by the manufacturer in the descriptive note; and

A1　　　is the width of the theoretical rim in millimetres.

A1 shall be taken to equal S1 multiplied by the factor x as specified by the manufacturer, and K shall be taken to equal 0.4."

Paragraph 6.1.2.1., amend to read:

"6.1.2.1.　The outer diameter of a tyre shall be obtained by means of the following formula:

$D = d + 2H$

where:

D　　is the outer diameter expressed in millimetres;

d　　is the conventional number defined in paragraph 2.17.1.3. above, expressed in millimetres;

~~S1　　is the nominal section width in millimetres;~~

~~Ra　　is the nominal aspect ratio;~~

H　　is the nominal section height **rounded to the nearest millimetre** ~~in millimetres~~ and is equal to

$H = S_1 \times 0.01\ Ra$**, where**

S1　　is the nominal section width in millimetres;

Ra　　is the nominal aspect ratio;

all as ~~in the tyre designation~~ shown on the sidewall of the tyre **in the tyre-size designation** in conformity with the requirements of paragraph 3.4. above."

Paragraph 6.1.4.2., amend to read:

"6.1.4.2.　It may exceed that value by 4 per cent in case of radial-ply tyres and by 8 per cent in the case of diagonal (bias-ply) tyres. However, for tyres with nominal section width exceeding 305 mm intended for dual mounting (twinning), the value determined pursuant to paragraph 6.1.1. above shall not be exceeded by more than 2 per cent for radial-ply tyres with nominal aspect ratio higher than 60, or 4 per cent for diagonal (bias-ply) tyres. **The respective limits shall be rounded to the nearest millimetre.**"

Paragraph 6.1.5., amend to read:

" 6.1.5.　　　Tyre outer diameter specifications

The outer diameter of a tyre must not be outside the values D_{min} and D_{max} obtained from the following formulae:

$D_{min} = d + 2 \cdot$ **H_{min}** ~~(2H x a)~~

$D_{max} = d + 2 \cdot$ **H_{max}** ~~(2H x b)~~

Where:

$H_{min} = H \cdot a$　　　　**rounded to the nearest mm**

$H_{max} = H \cdot b$　　　　**rounded to the nearest mm**

and"

Paragraph 6.1.5.1., amend to read:

" 6.1.5.1.　　　For sizes listed in Annex 5 and for tyres identified by the "tyre to rim fitment configuration" (see paragraph 3.1.11.) symbol "A", the nominal section height H is equal to:

H = 0.5 (D-d) **, rounded to the nearest mm** - for references see paragraph 6.1.2.1."

Paragraph 6.1.5.3.3., amend to read:

"6.1.5.3.3.　　　For snow tyres the outer diameter **shall not exceed the following value**

$D_{max,snow} = 1.01 \cdot D_{max}$　　　　**rounded to the nearest mm**

where D_{max} is the maximum outer diameter ~~(Dmax)~~ **established in** conformity with the above ~~may be exceeded by 1 per cent~~."

II.　Justification

1.　　　The current rules for calculating the dimensional limits are not consistent among the UN Regulations for tyres and within the Regulations themselves. Hence they lead to uncertainty in the correct calculation. For example, the design section widths in Annex 5 are calculated according to the rules of ISO 4000-1, whereas rounding is not defined in section 6.

2.　　　The current proposal aims at unifying the calculation rules to those used in ISO 4000-1 and all major tyre standards, e.g. ETRTO, Tyre & Rim Association (T&RA), Japan Automobile Tyre Manufacturers Association (JATMA). This will also facilitate the work of the type approval authorities that even today refer often to these standards.