

**Economic and Social Council**Distr.: General
6 July 2017

Original: English

Economic Commission for Europe**Inland Transport Committee****World Forum for Harmonization of Vehicle Regulations****Working Party on Brakes and Running Gear****Eighty-fourth session**

Geneva, 19-22 September 2017

Item 7(f) of the provisional agenda

Tyres: Regulation No. 109**Proposal for amendments to Regulation No. 109 (Uniform provisions concerning the approval for the production of retreaded pneumatic tyres for commercial vehicles and their trailers)****Submitted by the expert from France***

The text reproduced below was prepared by the expert from France, introducing an amendment to the Regulation No. 109. The modifications to the existing text of the Regulation are marked in bold for new or strikethrough for deleted characters.

* In accordance with the programme of work of the Inland Transport Committee for 2016–2017 (ECE/TRANS/254, para. 159 and ECE/TRANS/2016/28/Add.1, cluster 3.1), 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.

GE.17-11277(E)



* 1 7 1 1 2 7 7 *

Please recycle



I. Proposal

Paragraph 1., amend to read:

"1. Scope

This Regulation covers the production of retreaded pneumatic tyres* designed primarily for vehicles of category M₂, M₃, N, O₃ and O₄^{1 2}. However, it does not apply to the production of:

-....

* For the purpose of this Regulation "tyres" means "pneumatic tyres".

Paragraph 2.1., amend to read:

"2.1. **Range of retreaded pneumatic tyres** means a range of retreaded pneumatic tyres as quoted in paragraph 4.1.4."

Insert a new paragraph 2.2. to read:

"2.2. **"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."

Insert a new paragraph 2.3. to read:

"2.3. **"Tyre Manufacturer"** means the person or body who was responsible to the TAA having granted the original new type approval and for ensuring the conformity of production under the applicable regulation for new tyres."

Insert a new paragraph 2.4. to read:

"2.4. **"Material manufacturer / material supplier"** means the person or body who provides to the retreader the replacement or repair materials."

Insert a new paragraph 2.5. to read:

"2.5. **"Brand name/trademark"** means the identification of the brand or trademark as defined by the retreader and marked on the sidewall(s) of the tyre. The brand name/trademark may be the same as that of the retreader."

Insert a new paragraph 2.6. to read:

"2.6. **"Trade description/commercial name"** means an identification of a range of tyres as given by the retreader. It may coincide with the brand name/trademark."

Former paragraph 2.2., amend to read:

~~2.2.~~ 2.7. **"Structure"** of a pneumatic-tyre means the technical characteristics of the tyre's carcass. The following structures are distinguished in particular:

2.7.1. **"Diagonal"** or **"Bias ply"** describes a pneumatic-tyre structure in which the ply cords extend to the beads and are laid at alternate angles substantially less than 90° to the centreline of the tread.

2.7.2. "*Bias belted*" describes a ~~pneumatic~~-tyre structure of diagonal (bias ply) type in which the carcass is stabilised by a belt, comprising two or more layers of substantially inextensible cord material laid at alternate angles close to those of the carcass.

2.7.3. "*Radial*" describes a ~~pneumatic~~-tyre structure in which the ply cords extend to the beads and are laid substantially at 90° to the centerline of the tread, the carcass being stabilised by an essentially inextensible circumferential belt."

Re-number (former) paragraphs 2.3. into (new) 2.8.

Former paragraph 2.4., amend to read :

~~2.4.~~ **2.9.** "*Bead*" means the part of a ~~pneumatic~~-tyre which is of such shape and structure as to fit the rim and hold the tyre on it. "

Former paragraph 2.5., amend to read :

~~2.5.~~ **2.10.** "*Cord*" means the strands forming the fabric of the plies in the ~~pneumatic~~-tyre. "

Re-number (former) paragraphs 2.6. to 2.10 into (new) 2.11. to 2.15.

Former paragraphs 2.11., 2.12. and 2.13. amend to read :

~~2.11.~~ **2.16.** "*Carcass*" means that structural part of a ~~pneumatic~~-tyre other than the tread and outermost, "rubber" of the sidewalls which, when inflated, supports the load.

~~2.12.~~ **2.17.** "*Tread*" means that part of a ~~pneumatic~~-tyre which is designed to come into contact with the ground, protects the carcass against mechanical damage and contributes to ground adhesion.

~~2.13.~~ **2.18.** "*Sidewall*" means the part of a ~~pneumatic~~ tyre between the tread and the area designed to be covered by the rim flange."

Re-number (former) paragraphs 2.14. to 2.15. into (new) 2.19. to 2.20.

Former paragraphs 2.16. and 2.17. amend to read :

~~2.16.~~ **2.21.** "*Section width*" means the linear distance between the outside of the sidewalls of an inflated ~~pneumatic~~-tyre, when fitted to the specified measuring rim, but excluding elevations due to labelling (marking), decoration or protective bands or ribs.

~~2.17.~~ **2.22.** "*Overall width*" means the linear distance between the outside of the sidewalls of an inflated ~~pneumatic~~-tyre, when fitted to the specified measuring rim, and including labelling (marking), decoration or protective bands or ribs."

Re-number (former) paragraphs 2.18. to 2.20. into (new) 2.23. to 2.25.

Former paragraph 2.21., amend to read :

~~2.21.~~ **2.26.** "*Tyre size designation*" means a designation showing:

~~2.21.1.~~ **2.26.1.** The nominal section width. This must be expressed in millimetres, except in cases of tyres for which the size designation is shown in the first column of the tables in annex 5 to this Regulation.

~~2.21.2.~~ **2.26.2.** The nominal aspect ratio except in case of tyres for which the size designation is shown in the first column of the tables in Annex 5 to this Regulation or, depending on the tyre design type, for example, tyres

identified by the tyre to rim fitment configuration symbol "A" (see paragraph ~~2.21.4.~~ **2.26.4.**), the nominal outer diameter expressed in mm.

....."

Re-number former paragraphs 2.21.3. to 2.32 into 2.26.3. to 2.37.

Former paragraph 2.32., amend to read :

~~2.32-2.37.~~ **"Load index"** means a numerical code which indicates the load the tyre can carry at the speed corresponding to the associated speed symbol and when operated in conformity with the service conditions specified by the **original tyre manufacturer or the retreader**. A ~~pneumatic~~ tyre can have more than one load index to indicate its load capacity when used in single or dual (twin) formation, or to indicate an alternative load capacity (Unique point) on which a load variation in accordance with paragraph ~~2.35.~~ **2.40.** and annex 8 to this Regulation is not permitted.

The list of load indices and the corresponding loads are shown in annex 4 to this Regulation."

Re-number former paragraphs 2.33. into 2.38.

Former paragraph 2.34., amend to read :

~~2.34.~~ **2.39.** **"Unique Point"** means an additional service description, marked adjacent to the normal service description, but which must not be used for calculating a load capacity variation as defined in paragraph ~~2.35.~~ **2.39.** and in annex 8 to this Regulation."

Re-number former paragraphs 2.35. to 2.52. into (new) 2.40. to 2.57.

Paragraph 3.2.1., amend to read:

"3.2.1. **The retreader's name or** ~~the brand name or~~ / trademark;"

Insert a new paragraph 3.2.2. to read:

3.2.2. The trade description/commercial name (see paragraph 2.6. of this Regulation). However, the trade description is not required when it coincides with the brand name/trademark."

Re-number former paragraphs 3.2.2. to 3.2.4. into 3.2.3. to 3.2.5.

Former paragraph 3.2.2., amend to read :

~~3.2.2.~~ **3.2.3.** The tyre-size designation as defined in paragraph ~~2.21.~~**2.26.;**"

Former paragraphs 3.2.4.1. to 3.2.5.2., amend to read :

~~3.2.4.1.~~ **3.2.5.1.** An indication of the tyre's nominal load capacity/capacities in the form of the load index/indices prescribed in paragraph ~~2.32.~~ **2.37.;**

~~3.2.4.2.~~ **3.2.5.2.** An indication of the tyre's nominal speed capability in the form of the symbol prescribed in paragraph ~~2.33.~~ **2.38.;**

~~3.2.5.~~ **3.2.6.** If applicable, one alternative service description, the Unique point, comprising:

~~3.2.5.1.~~**3.2.6.1.** An indication of the tyres load capacity/capacities in the form of the load index/indices prescribed in paragraph ~~2.32.~~ **2.37.;**

~~3.2.5.2.~~ **3.2.6.2.** An indication of the speed capability in the form of the symbol prescribed in paragraph ~~2.33.~~**2.38.;**"

Re-number former paragraphs 3.2.6. to 3.2.7. into 3.2.7. to 3.2.8.

Former paragraphs 3.2.8. to 3.2.8.2, amend to read :

~~3.2.8.~~ **3.2.9.** The date of retreading as follows:

- ~~3.2.8.1.~~ **3.2.9.1.** Up to 31 December 1999; either as prescribed in paragraph ~~3.2.8.2.~~ **3.2.9.2.** or in the form of a group of three digits, the first two showing the week number and the third, the year of the decade of manufacture. The date code can cover a period of production from the week indicated by the week number up to and including the week number plus three. For example, the marking "253" could indicate a tyre which was retreaded in weeks 25, 26, 27 or 28 of the year 1993.

The date code may be marked on one sidewall only.

- ~~3.2.8.2.~~ **3.2.9.2.** As from 1 January 2000; in the form of a group of..."

Re-number former paragraphs 3.2.9. to 3.2.13. into 3.2.10. to 3.2.14.

Former paragraphs 3.2.13. and 3.2.14, amend to read :

~~3.2.13.~~ **3.2.14.** ~~No later than two years after the entry into force of this amendment,~~ tyres ~~manufactured~~ **retreaded** using the "bead to bead" process as defined in paragraph ~~2.37.3.~~ **2.42.3.**, or any process in which the sidewall material is renewed, shall have the identification referred to in paragraph ~~2.21.4.2.26.4.~~, placed only immediately after the rim diameter marking referred to in paragraph ~~2.21.3.2.26.3.~~

~~3.2.14.~~ **3.2.15.** The prefix "LT" or the suffix "C" or "LT" following the rim diameter marking referred to in paragraph ~~2.21.3.2.26.3.~~ and, if applicable, after the tyre to rim fitment configuration symbol referred to in paragraph ~~2.21.4.2.26.4.~~ or the suffix "LT" after the service description."

Re-number former paragraphs 3.2.14.1. and 3.2.14.2. into 3.2.15.1. to 3.2.15.2.

Former paragraph 3.2.15., amend to read :

~~3.2.15.~~ **3.2.16.** The suffix "CP" following the rim diameter marking referred to in paragraph ~~2.21.3.~~ **2.26.3.** and, if applicable, after the tyre to rim configuration symbol referred to in paragraph ~~2.21.4.~~ **2.26.4.** This marking is mandatory in the case of tyres fitted on 5° drop centre rims, having a load index in single fitment equal to or less than 121 and specifically designed for the equipment of motor caravans."

Re-number former paragraphs 3.2.16. into 3.2.17.

Paragraph 4.1., amend to read :

"4.1. The application for approval of a retreading production unit shall be submitted by **the retreader** ~~the holder of the trade name or trade mark to be applied to the tyre~~ or by his duly accredited representative. It shall specify:

....."

Paragraph 4.1.3., amend to read :

"4.1.3. The ~~trade names or marks~~ **brand name(s)/trademark(s)** to be applied to the retreaded tyres produced."

Insert a new paragraph 4.1.4. to read:

"4.1.4. **The trade description(s)/commercial name(s) (see paragraph 2.6.) which could be applied to the retreaded tyres produced.**"

Renumber (former) paragraphs 4.1.4. and its subparagraphs into 4.1.5. and its subparagraphs.

(Former) paragraph 4.1.4.4., amend to read :

~~"4.1.4.4.~~ **4.1.5.4.** the system of retreading and the method of application of the new materials to be used, as defined in paragraphs ~~2.37.~~ **2.42.** and ~~2.41.~~ **2.46.;**"

Paragraph 4.2.1., amend to read :

"4.2.1. Details of the major features, including the tread pattern, with respect to the effects on the snow grip performance of the range of tyre sizes listed as required by paragraph ~~4.1.4.3.1.~~ **4.1.5.3.1.**"

Paragraph 5.5., amend to read :

"5.5. In the case of each failure being recorded during tests, two further samples of the same specification tyre shall be tested. If either or both of these second two samples fail, then a final submission of two samples shall be tested. If either **one** or both of the final two samples fail, then the application for approval of the retreading production unit shall be rejected."

Paragraph 6.3.7., amend to read :

"6.3.7. Exposed steel parts shall be treated as soon as possible with appropriate material as defined by the **material** manufacturer of that appropriate material."

Paragraph 6.4.1., amend to read :

"6.4.1. The retreader must ensure that either the **material** manufacturer or the supplier of repair materials, including patches, is responsible for the following:

.....

(d) ensuring that the patches are capable of withstanding twice the maximum inflation pressure as given by the **original** tyre manufacturer;"

Paragraph 6.4.4., amend to read :

"6.4.4. The retreader shall ensure that either the **material** manufacturer or the supplier of tread and sidewall material issues specifications concerning the conditions of storage and use of the material in order to guarantee the material's qualities. If requested by the retreader, this information shall be in the national language of the country in which the materials are to be used.

6.4.4.1. For tyres retreaded by using pre-cured tread material with a tread pattern not covered by paragraph 6.4.4.2. having to fulfil the requirements of paragraph 7.2. * the retreader shall ensure that either the **material** manufacturer or the **material** supplier of the pre-cured tread ~~material~~ provides **either directly to the Type Approval Authority (or Technical Service) or to the retreader:**

(a) A copy of the test report(s) as in Annex 10, Appendix 3 of the representative tyre size(s) (~~2.46~~ **2.51.**) demonstrating compliance of the pre-cured tread to the requirements of paragraph 7.2."

Paragraph 7.1.1.1., amend to read:

"7.1.1.1. The section width shall be calculated by the following formula:

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

where:

S : is the actual section width ~~in millimetres as~~ **rounded to the nearest millimetre and** measured on the test rim;

S₁: is the value of the 'Design Section Width', referred to the measuring rim, as quoted in the International Tyre Standard specified by the retreader for the tyre size in question;

A : is the width of the test rim in millimetres;

A₁: is the width in millimetres of the measuring rim as quoted in the International Tyre Standard specified by the retreader for the tyre size in question;

K : is a factor and shall be taken to equal 0.4.

7.1.1.1.1. In the case of tyres identified by the tyre to rim fitment configuration symbol "A" (see paragraph ~~2.21.4. 2.26.4.1.~~) the factor "K" shall be 0.6."

Paragraph 7.1.2.1., amend to read:

"7.1.2.1. The theoretical outer diameter of a retreaded tyre shall be calculated by the following formula:

$$D = d + 2H$$

where:

D: is the theoretical outer diameter in millimetres;

d: is the conventional number defined in paragraph ~~2.21.3. 2.26.3.~~ in millimetres;

H: is nominal section height **rounded to the nearest millimetre** ~~in millimetres~~ and is equal to S_n multiplied by 0.01 Ra

where:

S_n: is the nominal section width in millimetres;

Ra: is the nominal aspect ratio.

All of the above symbols are as quoted in the tyre size designation as shown on the sidewall of the tyre in conformity with the requirements of paragraph ~~3.2.2. 3.2.3.~~ and as defined in paragraph ~~2.21. 2.26.~~

Paragraph 7.1.2.3., amend to read:

"7.1.2.3. In the case of tyres identified by the tyre to rim fitment configuration symbol "A" (see paragraph ~~2.21.4. 2.26.4.~~), the outer diameter shall be that specified in the tyre size designation shown on the sidewall of the tyre."

Paragraph 7.1.4.2., amend to read:

"7.1.4.2. It may exceed the value by 5.5 per cent in the case of radial-ply tyres and 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) **listed in column A of the following table, the overall width of**

the tyre may exceed the value determined pursuant to paragraph 7.1.1. above ~~taking into account the tolerances listed in column B shall not be exceeded by more than 3.5 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.**

A	B
radial metric tyres with nominal section width exceeding 305 mm and aspect ratio higher than 60	3.5%
radial tyres listed in Annex 5 with section width exceeding 305 mm	3.5%
diagonal metric tyres with nominal section width exceeding 305 mm	4%
diagonal tyres listed in Annex 5 with section width exceeding 305 mm	4%

Paragraph 7.1.4.3., amend to read:

"7.1.4.3. In the case of tyres identified by the tyre to rim fitment configuration symbol "A" (see paragraph ~~2.21.4. 2.26.4.~~), the overall width of the tyre, in the lower area of the tyre, equals the nominal width of the measuring rim (see paragraph ~~2.24. 2.29.~~), plus 27 mm."

Paragraph 7.1.5.1., amend to read:

"7.1.5.1. The actual outer diameter of a retreaded tyre must not be outside the values of D_{min} and D_{max} obtained by the following formulae:

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

$$D_{\max} = 1.015 \times [d + (2H - b) \cdot 2 \cdot H_{\max}]$$

where

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

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

and:

Paragraph 7.1.5.1.2., amend to read:

"7.1.5.1.2. For sizes referred to in paragraph 7.1.2.2. and for tyres identified by the tyre to rim fitment configuration symbol "A" (see paragraph ~~2.21.4. 2.26.4.~~), the nominal section height "H" is equal to:

$$H = 0.5(D - d), \text{ rounded to the nearest millimetre}$$

where "D" and "d" are as defined in paragraph 7.1.2.1."

Paragraph 12., amend to read:

"12. Names and addresses of technical services responsible for conducting approval tests, of test laboratories, and ~~of administrative departments~~ **approval authorities.**

- 12.1. The **Contracting** Parties to the 1958 Agreement which apply this Regulation shall communicate to the United Nations Secretariat the names and addresses of the technical services responsible for conducting approval tests and, where applicable, of the approved test laboratories and of ~~the administrative departments~~ **Approval Authorities** which grant approval and to which forms certifying approval **or extension of approval** or refusal **of approval** or withdrawal of approval or production definitely discontinued, issued in other countries, are to be sent.
- 12.2. The **Contracting** Parties to the 1958 Agreement which apply this Regulation may ~~use~~ **designate** laboratories of tyre manufacturers or retreading production units ~~and may designate, as approved test laboratories, those which are situated either in the territory of that Party or in the territory of another Party to the 1958 Agreement subject to a preliminary acceptance of this procedure by the competent administrative department of the latter.~~
- 12.3. Where a **Contracting** Party to the 1958 Agreement applies paragraph 12.2. **above**, it may, if it so desires, be represented at the tests **by one or more persons of its choice.**"

Annex 1, amend to read:

"Communication

.....

issued by: Name of ~~administration~~ **Type Approval Authority:**

.....

.....

of a retreading production unit pursuant to Regulation No. 109.

Item 1., amend to read:

1. Retreader's name ~~or trade mark~~ **and address:**

.....

.....

Item 4. amend to read (including a new footnote 3):

4. Summarised description **as defined** in paragraphs 4.1.3. ~~and~~, 4.1.4 **and 4.1.5.** of this Regulation:

4.1. Brand name(s)/trademark(s)³:

4.2. Trade description(s)/ Commercial name(s)³:

4.3. Information in relation to the range of tyres as defined in paragraphs 4.1.5. of this Regulation:.....

³ A list of brand name(s)/trademark(s) or Trade description(s)/ Commercial name(s) may be annexed to this communication."

Annex 3, amend to read

".....

The above example defines a retreaded ~~pneumatic~~ tyre:

- Having a nominal section width of 295;

- Having.....

....

3. The positioning and order of the markings constituting the tyre designation shall be as follows:

(a) The size designation as defined in paragraph ~~2.21~~ **2.26** of this Regulation shall be grouped as shown in the above examples: 295/80 R 22.5 or 235-700 R 450 A.

(b) The service description comprising the load index (indices) and the speed symbol(s) shall be placed immediately after the tyre size

designation as defined in paragraph ~~2.21~~ **2.26** of this Regulation.

(c) The symbol "TUBELESS" and "M+S" may be at a distance from the size-designation symbol.

(d) The word "RETREAD" may be at a distance from the size-designation symbol.

(e) If paragraph ~~3.2.5~~ **3.2.6** of this Regulation is applied, the additional service description (Unique Point), comprising the load indices and speed symbol, must be shown inside a circle near the nominal service description appearing on the tyre sidewall.

.....

Annex 6, Title, amend to read:

"Method of measuring ~~pneumatic~~ tyres"

Annex 7, amend to read:

1. Preparing the tyre

.....

1.3. Inflate the tyre to the pressure corresponding to the pressure index as specified in paragraph ~~3.2.10~~ **3.2.11** of this Regulation.

1.4. Condition the tyre and wheel assembly at test-room temperature for not less than 3 hours.

.....

3. Load/speed test programme for tyres having a speed capability greater than 150 km/h (speed symbol "Q" and above, plus "H").

.....

3.1.2. Tyres having a load index in single fitment equal to or greater than 122 and having the additional marking "C" or "LT" referred to in paragraph ~~3.2.14~~ **3.2.15** of this Regulation.

Annex 7, Appendix 1, Notes, amend to read:

"Notes:

(1) "Special-use" tyres (see paragraph ~~2.3.2~~ **2.8.2** of this Regulation) shall be tested at a speed equal to 85 per cent of the speed prescribed for equivalent normal tyres.

(2) Tyres having a load index equal to or greater than 122, a speed symbol "N" or "P" and the additional markings "C" or "LT" included in the tyre size designation (referred to in paragraph ~~3.2.14~~ **3.2.15** of this Regulation), shall be tested with the same programme as specified in the above table for tyres having a load index equal to or less than 121."

Annex 10, amend to read:

".....

4. Acceleration method for Class C3 tyres

4.1. According to the definition of C3 tyres reported into paragraph ~~2.52~~-2.57. of this Regulation, the additional classification for the purpose of this test method only applies:

....."

II. Justification

In order to have a Regulation on the retreaded tyres with definitions and provisions structured in the same way of those previously introduced in amendments of "new tyres" Regulations, this amendment:

- (a) Indicates that for the purpose of this Regulation "tyres" means "pneumatic tyres", so all the text has been reviewed.
- (b) Introduces a definition of :
 - "retreader" copy based on that "manufacturer" in the tyres regulations.
 - Brand name", "Trademark", "Trade description" and "Commercial name" as defined in the tyre regulations.
 - Material manufacturer / material supplier
- (c) Takes into account the rounding rules (already approved in the other tyre regulations) for the calculation of width and diameter of the tyres.
- (d) Aligns the title and the provisions of the para. 12 related to the names and addresses of Technical Services, Approved Laboratories and administrative Department with their equivalent in the tyres regulations
- (e) Add some information in the certificate to the attention of the Type Approval Authorities for making easier the relationship between this one and the products.
- (f) In addition, it has been introduced :
 - In para. 6.4.4.1., the possibility for the material manufacturer or supplier of the pre-cured tread pattern to provide directly to the Type Approval Authority (or Technical Service) all the documents needed to demonstrate the retreaded tyres produced with this pre-cured tread pattern fulfil the requirements of paragraph 7.2. in order to be classified as a "snow tyre for use in severe snow conditions".
 - In para. 7.1.4.2. a new table of tolerances with the objective to properly take into account the requirements for size designations in Annex 5 in addition to what already expressed. The maximum overall width has been taken from the international Tyre Standard ETRTO and Tire and Rim Association.