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## Economic Commission for Europe

### Inland Transport Committee

### World Forum for Harmonization of Vehicle Regulations

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Item 14.3 of the provisional agenda

**Consideration and vote by AC.3 of draft gtrs and/or  
draft amendments to established gtrs - Proposal for**

**Amendment 1 to global technical regulation No. 16 (Tyres)**

## **Technical Report on the development of Amendment 1 to global technical regulation (UN GTR) No. 16**

### **Submitted by the Working Party on Brakes and Running Gear \***

The text reproduced below was adopted by the Working Party on Brakes and Running Gear (GRRF) at its eighty-first session (ECE/TRANS/WP.29/GRRF/81, para. 30). It is based on ECE/TRANS/WP.29/GRRF/2016/3 as amended by para. 30 of the report. It is submitted to the World Forum for Harmonization of Vehicle Regulations (WP.29) and to the Administrative Committee AC.3 for consideration

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\* 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.

## A. Background

1. UN Global Technical Regulation (UN GTR) No. 16 on tyres was established in the Global Registry on 13 November 2014. The informal working group on the Tyre GTR was challenged by reaching harmonization of technical provisions making those acceptable both for tyre approval and self-certification compliance assessment systems.
2. Meanwhile, in parallel to development of UN GTR No. 16, Regulation No. 117, which is a base for UN GTR No. 16, had been amended several times by inclusion of the provisions to tyre wet grip performance, rolling resistance and qualification for use at severe snow conditions for all tyre classes included in its scope. The other base Regulations Nos. 30 and 54 were also subjects to certain amendments, and the relevant provisions of UN GTR No. 16 became needed to be aligned.
3. As harmonization of the newly introduced provisions of Regulation No. 117 was not feasible in a reasonable time frame, the decision for draft UN GTR on tyres was not to consider those provisions for inclusion in the text of GTR at the time of its development.
4. As the aforesaid new provisions of Regulation No. 117, as well as those of Regulations Nos. 30 and 54 represent the state-of-the art level and are important for assessment of performance of tyres on the markets worldwide, at the 79th GRRF session the decision was made to prepare a draft amendment keeping in line the UN GTR on tyres with the latest regulatory developments (ECE/TRANS/WP.29/GRRF/79, para. 27).
5. The European Tyre and Rim Technical Organisation (ETRTO) agreed to prepare a draft Amendment No. 1 to UN GTR No. 16 considered as Phase 1b of the development of the UN GTR on tyres. The government of the Russian Federation assumed the duties of the technical sponsor for that development.
6. The Executive Committee of the 1958 Agreement (AC.3) at its forty-fourth session adopted ECE/TRANS/WP.29/2015/70 tabled by the Russian Federation to request authorization to start work on developing the Amendment No. 1 to UN GTR No. 16.

## B. Organization of process

7. The proposal for Amendment No. 1 to UN GTR No. 16 including the approved changes in the relevant Federal Motor Vehicle Safety Standards (FMVSS) and supplements/corrigenda of Regulations was drafted by the experts from ETRTO with the intention to make the proposed text neutral with regard to the compliance assessment schemes.
8. The draft document was reviewed by the interested experts at the informal meeting held on 25-26 June 2015 in the Palais des Nations in Geneva in conjunction with the 166th WP.29 session. The representatives from the Contracting Parties to the 1998 Agreement from Canada, European Commission (EC), Egypt, Hungary, Portugal, Russian Federation, Spain, United Kingdom and United States of America, the representatives from industry: ETRTO, Japan Auto Parts Industries Association (JAPIA), Indian Tyre Technical Advisory Committee (ITTAC) and the Rubber Manufacturers Association (RMA) and the representative from the UNECE secretariat participated to this meeting.
9. Basing on the meeting deliverables the revision of the draft text had been prepared and discussed again at the informal meeting of the interested experts on 14 September 2015 prior to the eightieth GRRF session with the aim to clarify the remaining unresolved issues.

10. The adjusted draft Amendment No. 1 to UN GTR No. 16 reflecting the meeting deliverables together with the items requesting the GRRF guidance were presented at the 80th GRRF session.

11. GRRF at its eightieth session endorsed the work done by the experts of ETRTO and the Russian Federation with the help of other interested experts. In order to finalize the text of the draft Amendment No. 1 in due time, the GRRF Chairman invited all GRRF experts to submit their comments on the presented documents to ETRTO by 2 October 2015 with the aim to discuss those comments further at the webconference in the mid-October.

12. The webconference took place on 16 October 2015 with interested experts to review the proposal for working documents including comments from GRRF experts and other ones received after the GRRF 80th session.

13. The results of discussion at the webconference had been included in the working documents on the Amendment No. 1 to UN GTR No. 16 and the final report on Phase 1b on the development of UN GTR No. 16, which further had been finalized by ETRTO and submitted for consideration and their possible adoption at the 81st GRRF session.

14. GRRF at its 81st session adopted the working documents on the Amendment No. 1 to UN GTR No. 16 and the final report on Phase 1b on the development of UN GTR No. 16 subject to consideration by WP.29 and AC.3 at their sessions on March 2016.

## C. Development of the gtr

15. The objective of this proposal is to develop, in the framework of the 1998 Agreement, an amendment to UN GTR No. 16 on tyres aimed at adaptation of UN GTR No. 16 to the technical progress by including the newly developed provisions to wet grip performance, rolling resistance and qualification for use at severe snow conditions both for passenger car (PC) and light truck / commercial (LT/C) tyres, recently adopted within Regulation No. 117. The approved changes in the relevant FMVSS and Regulations Nos. 30 and 54 also had been included.

16. The Amendment No. 1 to UN GTR No. 16 incorporates:

- (a) Amendment of Part I by adding new paragraphs 4-bis, 23-bis, 28-bis and 28-ter;
- (b) Amendment of Part II basing on the following documents:
  - (i) Addition of new definitions (Section 2):

### **Regulation No. 117:**

Supplement 1 to the 02 series of amendments – ECE/TRANS/WP.29/2012/2, as amended by para. 65 of the report of the 156<sup>th</sup> WP.29 session (ECE/TRANS/WP.29/1095);

Supplement 2 to the 02 series of amendments – ECE/TRANS/WP.29/2012/54, as amended by para. 63 of the report of the 158<sup>th</sup> WP.29 session (ECE/TRANS/WP.29/1099);

Supplement 7 to the 02 series of amendments – ECE/TRANS/WP.29/2015/5 adopted during the 165<sup>th</sup> WP.29 session (ECE/TRANS/WP.29/1114);

### **Regulation No. 30:**

Supplement 17 to the 02 series of amendments – ECE/TRANS/WP.29/2012/48 as amended by para. 50 of the report of the 157<sup>th</sup> WP.29 session (ECE/TRANS/WP.29/1097);

**Regulation No. 54:**

Supplement 18 to the original version of the Regulation – ECE/TRANS/WP.29/2012/49 adopted during the 157<sup>th</sup> WP.29 session (ECE/TRANS/WP.29/1097).

- (ii) Marking (Section 3.2):

**Final rule standardizing the Tire Identification Number (TIN)**

Federal Register/Vol. 80, No 70/Monday, April 13, 2015 / Rules and Regulations

- (iii) Other sidewall marking (Section 3.3):

**Regulation No. 117:**

Supplement 2 to the 02 series of amendments – ECE/TRANS/WP.29/2012/54, as amended by para. 63 of the report of the 158<sup>th</sup> WP.29 session (ECE/TRANS/WP.29/1099);

**Regulation No. 54:**

Supplement 18 to the original version of the Regulation – ECE/TRANS/WP.29/2012/49 adopted during the 157<sup>th</sup> WP.29 session (ECE/TRANS/WP.29/1097);

- (iv) Physical dimensions of tires (Section 3.5):

**Regulation No. 30 :**

Supplement 17 to the 02 series of amendments – ECE/TRANS/WP.29/2012/48 as amended by para. 50 of the report of the 157<sup>th</sup> WP.29 session (ECE/TRANS/WP.29/1097);

- (v) Strength test for passenger car tyres (Section 3.6)

**Regulation No. 30 :**

Supplement 17 to the 02 series of amendments – ECE/TRANS/WP.29/2012/48 as amended by para. 50 of the report of the 157<sup>th</sup> WP.29 session (ECE/TRANS/WP.29/1097);

- (vi) Tyre rolling sound emission test (Section 3.8):

**Regulation No. 117:**

Exemptions added as in the 02 series of amendments;

For the test surface the reference is made to ISO 10844:2014 (Supplement 4 to the 02 series of amendments – ECE/TRANS/WP.29/2013/55);

Supplement 8 to the 02 series of amendments to Regulation No. 117 (Tyre rolling resistance, rolling noise and wet grip) ECE/TRANS/WP.29/2015/65 as amended by para. 66 of the report of the 166<sup>th</sup> WP.29 session (ECE/TRANS/WP.29/1116);

- (vii) Modification of test for adhesion performance on wet surfaces (Section 3.12):

**Regulation No. 117:**

Exemptions added as in the 02 series of amendments;

Supplement 1 to the 02 series of amendments – ECE/TRANS/WP.29/2012/2, as amended by para. 65 of the report of the 156<sup>th</sup> WP.29 session (ECE/TRANS/WP.29/1095);

Supplement 6 to the 02 series of amendments – ECE/TRANS/WP.29/2013/66, as amended by para. 56 of the report of the 162nd WP.29 session (ECE/TRANS/WP.29/1108);

**Special (77<sup>th</sup>) session of GRRF held during the 163<sup>rd</sup> session of WP.29**

ECE/TRANS/WP.29/GRRF/77 approved by para. 28 of the 164th WP.29 session (ECE/TRANS/WP.29/1112)

- (viii) Strength test for LT/C tyres (section 3.14):

The following has been introduced for consistency with para. 3.6.(Strength test for passenger car tyres) and the definition in para. 2.89:

**Regulation No. 30:**

Supplement 17 to the 02 series of amendments – ECE/TRANS/WP.29/2012/48 as amended by para. 50 of the report of the 157<sup>th</sup> WP.29 session (ECE/TRANS/WP.29/1097);

- (ix) Addition of new requirements to rolling resistance (new Section 3.22):

**Regulation No. 117:**

02 series of amendments – ECE/TRANS/WP.29/2010/63, as amended by para. 45 of the report of the 151st WP.29 session (ECE/TRANS/WP.29/1085);

Supplement 1 to the 02 series of amendments – ECE/TRANS/WP.29/2012/6 adopted during the 156th WP.29 session (ECE/TRANS/WP.29/1095);

Supplement 2 to the 02 series of amendments – ECE/TRANS/WP.29/2012/54, ECE/TRANS/WP.29/2012/55 as amended by para. 63 of the report of the 158th WP.29 session (ECE/TRANS/WP.29/1099);

Supplement 3 to the 02 series of amendments – ECE/TRANS/WP.29/2013/7 adopted during the 159th WP.29 session (ECE/TRANS/WP.29/1102);

Supplement 7 to the 02 series of amendments – ECE/TRANS/WP.29/2015/5 adopted during the 165th WP.29 session (ECE/TRANS/WP.29/1114);

- (x) Addition of new requirements for qualification of a tyre to be designated for use in severe snow conditions (new Section 3.23):

**Regulation No. 117:**

Supplement 1 to the 02 series of amendments – ECE/TRANS/WP.29/2012/2, as amended by para. 65 of the report of the 156th WP.29 session (ECE/TRANS/WP.29/1095);

Supplement 2 to the 02 series of amendments – ECE/TRANS/WP.29/2012/54, as amended by para. 63 of the report of the 158th WP.29 session (ECE/TRANS/WP.29/1099);

Supplement 5 to the 02 series of amendments – ECE/TRANS/WP.29/2013/59 adopted during the 161st WP.29 session (ECE/TRANS/WP.29/1106);

Supplement 7 to the 02 series of amendments – ECE/TRANS/WP.29/2015/5 adopted during the 165th WP.29 session (ECE/TRANS/WP.29/1114);

(xi) Modifications of Annexes:

**Annex 7** - Tyre Size Designation and Dimensions was renumbered as Annex 6 following decision in the eightieth session of the GRRF.

**Annex 6** - Tyre Size Designation and Dimensions

Supplement 20 to the 00 series of amendments to Regulation No. 54 - ECE/TRANS/WP.29/2015/66 adopted during the 166th WP.29 session (ECE/TRANS/WP.29/1116);

**Annex 10** - Tyre standards organizations was renumbered as Annex 7 following decision in the eightieth session of the GRRF.

**Annex 11** - Rolling resistance test equipment tolerances was renumbered as Annex 8 following decision in the eightieth session of the GRRF.

**Annex 8** - Rolling resistance test equipment tolerances

Supplement 1 to the 02 series of amendments to Regulation No. 117 (Tyre rolling resistance, rolling noise and wet grip) ECE/TRANS/WP.29/2012/6 adopted during the 156th WP.29 session (ECE/TRANS/WP.29/1095);

Supplement 2 to the 02 series of amendments to Regulation No. 117 (Tyre rolling resistance, rolling noise and wet grip) ECE/TRANS/WP.29/2012/55 adopted during the 158th WP.29 session (ECE/TRANS/WP.29/1099);

Supplement 7 to the 02 series of amendments to Regulation No. 117 (Tyre rolling resistance, rolling noise and wet grip) ECE/TRANS/WP.29/2015/5 adopted during the 165th WP.29 session (ECE/TRANS/WP.29/1114);

Supplement 8 to the 02 series of amendments to Regulation No. 117 (Tyre rolling resistance, rolling noise and wet grip) ECE/TRANS/WP.29/2015/65 as amended by para. 66 of the report of the 166th WP.29 session (ECE/TRANS/WP.29/1116);

**Annex 12** - Measuring rim width was renumbered as Annex 9 following decision in the eightieth session of the GRRF.

**Annex 9** - Measuring rim width;

02 series of amendments to Regulation No. 117 (Tyre rolling resistance, rolling noise and wet grip) ECE/TRANS/WP.29/2010/63, as amended by para. 45 of the report of the 151st WP.29 session (ECE/TRANS/WP.29/1085);

**Annex 14** - Deceleration method - Measurements and data processing for deceleration value obtaining in differential form  $d\omega/dt$  as Annex 10 following decision in the 80th session of the GRRF.

**Annex 10** - Deceleration method - Measurements and data processing for deceleration value obtaining in differential form  $d\omega/dt$ ;

Supplement 7 to the 02 series of amendments to Regulation No. 117 (Tyre rolling resistance, rolling noise and wet grip) ECE/TRANS/WP.29/2015/5 adopted during the 165th WP.29 session (ECE/TRANS/WP.29/1114);

(xii) Removal of Annexes:

**Annex 6** - Specifications for the rolling sound emissions test site was deleted following decision in the eightieth session of the GRRF.

**Annex 8** - Test report – Rolling sound emissions for tyres was deleted following decision in the eightieth session of the GRRF.

**Annex 9** - Test report - Adhesion on wet surface was deleted following decision in the eightieth session of the GRRF.

## **D. Future work**

17. The future work that remains to be done includes the design of harmonized tests for LT/C tyres (Phase 2 of development of UN GTR No. 16):

- (a) Physical dimensions;
- (b) Markings;
- (c) High speed test;
- (d) Endurance test.

18. The tubeless tyre bead unseating resistance test for passenger car tyres (Section 3.7) shall also be amended in the Phase 2 according to the recommendations of RMA once ASTM F2663-15 is published in National Highway Traffic Safety Administration (NHTSA) regulation.

19. The work on the Amendment No. 2 to UN GTR No. 16 reflecting the Phase 2 of its development can be started after the adoption of the Amendment No. 1.

## **E. Conclusion**

20. Following the adoption of the draft Amendment No. 1 to UN GTR No. 16 at its 81<sup>st</sup> session, GRRF requests AC.3 voting for establishing this Amendment No. 1 (as proposed in ECE/TRANS/WP.29/2016/70) in the Global Registry.

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