

Submitted by the Chair of the Informal
Working Group (IWG) on TYRE GTR

Informal document **WP.29-180-20**
180th WP.29 10-12 March 2020
Agenda item 14.2.4.

Amendment # 2 to UN GTR No. 16 on Tyres

What is submitted to WP.29/AC.3

- ECE/TRANS/WP.29/2020/41: Proposal for Amendment No. 2 to UN GTR No. 16 (Tyres)
- ECE/TRANS/WP.29/2020/42: Proposal for the Technical Report for Amendment No. 2 to UN GTR No. 16 (Tyres)

Subject of Amendment No. 2 to UN GTR No. 16 as authorized by AC.3

Reference: Authorization ECE/TRANS/WP.29/AC.3/48

- Amendment of the GTR text:
 - Amendment to the GTR 16 scope
 - Addition of new definitions (Section 2)
 - **Harmonization of the Load Range concept in relationship to Inflation Pressure** (Section 2)
 - Alignment of the provisions with the most recent developments in UN Regulations Nos. 30 and 54 (Sections 3.3 and 3.5, Annexes 3 and 6)
 - Harmonization of FMVSS 139 requirements relative to UN Regulation No 54 "PSI" index (Sections 3.7 and 3.8)
 - **Addition of new harmonized provisions for physical dimensions of LT/C tyres** (new Section 3.5.2; old Sections 3.20 & 3.21 deleted)
 - **Addition of new harmonized provisions for high speed test for LT/C tyres** (new Section 3.6.2.2, old Section 3.16 modified with endurance test only renumbered 3.9, old Section 3.19 deleted)

Part I: Statement on Technical Rationale and Justification - Updated

- New Executive Summary
- New paragraphs 2bis, 3bis, 22bis (substituting 23bis), 28ter (old 28ter moved to 28quinquis), 28quater, 28sexies to update the content of the existing Part I
- New paragraphs 49 to 93 – Justification of the content of Amendment No. 2

Part II:

New Harmonized Provisions

a. Physical Dimensions

Addition of new harmonized provisions for physical dimensions of LT/C tyres
(new Section 3.5.2 old Sections 3.20 & 3.21 deleted)

Subdivision in 3 categories:

Physical dimension for metric sizes (excluding all sizes listed in Annex 6)
Most stringent requirements from FMVSS 139/R54 retained

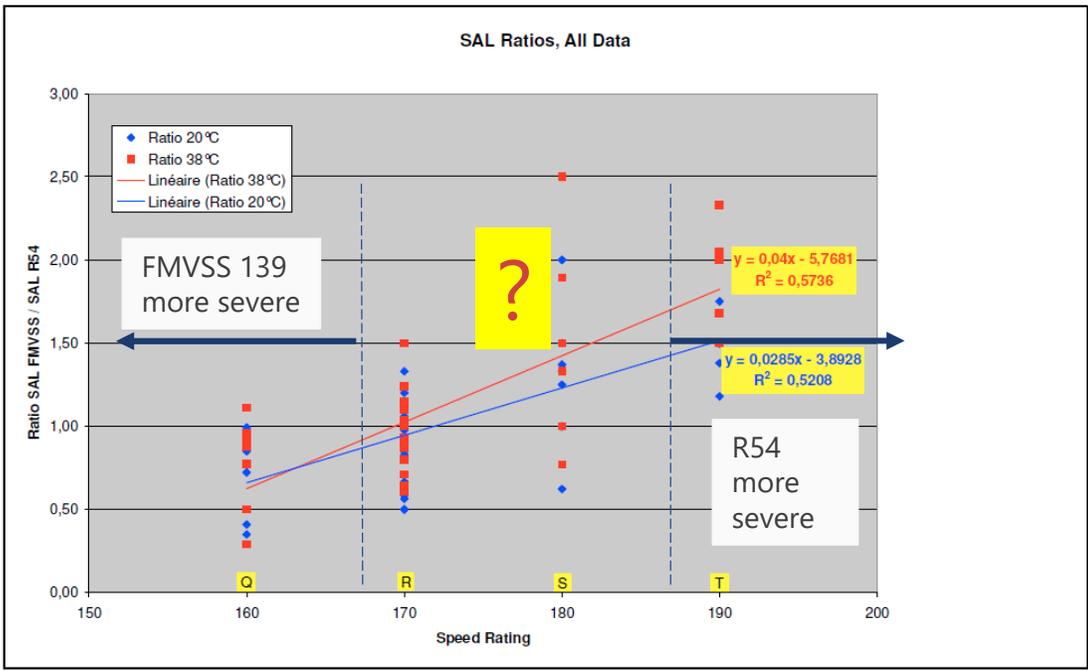
Physical dimension for high flotation sizes (excluding all sizes listed in Annex 6)
Requirements of UN Regulation No. 54 adopted by WP.29/AC.1
at the June 2018 session (ECE/TRANS/WP.29/2018/55)

Physical dimension for sizes listed in Annex 6 (Legacy)

New Harmonized Provisions

b. High Speed Test

Assessment of FMVSS139 High Speed test vs R54 Load/Speed test made by tyre industry:



Since available results did not allow to decide between R54 and FMVSS139 High Speed tests for 'Q' and 'R' Speed Symbols, one of the reasons of the extension of the IWG mandate by 2 years was requested and confirmed in order to give tyre industry the possibility to confirm the initial results on the High Speed harmonised test method.

- IWG TYRE GTR conclusion:

- Tyres with Speed Symbol S, T and H: Existing UN Reg 54 HS test
 - Final test speeds are based on the speed symbol of the tyre
 - 25°C ambient temperature
- Tyres with Speed Symbol Q and R: test to 160 resp 170 km/h at 35°C ambient temperature*
 - Modified UN Reg 54 test
 - **Test severity is equivalent to existing FMVSS 139 requirement**
 - **Test efficiency (duration – impacting test lab capacity) is significantly improved**
- All tyres with SS < Q: test to 160 km/h (99 mph) at 35°C ambient temperature: existing FMVSS test

*UN Reg 54 with higher temperature is more severe because it uses 35°C instead of 25°C ambient temperature

New Harmonized concepts:

a. Reference Test Inflation Pressure

Proposal by the industry: Create a strong link between the test inflation and the tyre load rating

Proposal to para 2.61: "Reference Test Inflation Pressure" applicable for LT/C tyres means the minimum cold inflation pressure for the maximum load rating of the tyre in single application

b. Measuring Rim

IWG removed the concept of 'measuring rim' in the sense of rims on which a test is to be performed from GTR and replaced it by 'test rim' in line with the ISO definition.

Thus the GTR was made self consistent with regards to the rims to use for testing

c. Replacement of load range by a table referring to a Reference Test Inflation Pressure to define the test conditions coming from FMVSS 139

This proposal brings clarity and coherence without changing the technical provisions intent

Reference Test Inflation Pressure Range (kPa)	Load range for Nominal section width	
	≤ 295mm	> 295mm
170 – 199	Not Applicable	B
200 – 299	B	C
300 – 399	C	D
400 – 499	D	E
500 – 599	E	Not Applicable

New Harmonized concepts:

d. Harmonized marking covering the maximum load rating and corresponding inflation pressure aligned to the reference test inflation pressure

In line with the definition of the Reference Test inflation Pressure, the inflation pressure marked for single application (and dual application if applicable) shall be equal or higher than the Reference Test Inflation Pressure.

e. Clarification of the concept of maximum load rating and load capacity of a tyre

Reference Test Inflation Pressure was introduced to clearly define inflation pressure in relation to the maximum load rating:

2.34. *"Load index" means a numerical code which indicates the maximum load rating. The list of these indices and their corresponding reference loads is given in Annex 2;*

2.40. *"Maximum load rating" means the reference mass corresponding to the load index used to define the load capacity of the tyre;*

2.61. *"Reference Test Inflation Pressure" applicable for LT/C tyres means the minimum cold inflation pressure for the maximum load rating of the tyre in single application;*

f. Introduction of harmonized provisions of the Tread Wear Indicator for LT/C tyres

Tread wear indicator provisions have been introduced for LT/C tyres, in line with the FMVSS 139 requirements

New Harmonized concepts:

g. Introduction of test equipment tolerances specification guidelines

Annex 11 of UN GTR No. 16 was added to provide Contracting Parties with guidance on harmonised tolerances for various values in the technical prescriptions of UN GTR No. 16.

Amendments reflecting Chinese and Indian proposals

A number of proposals made by China and India aimed at harmonization of the provisions of its domestic legislation with those of UN GTR No. 16 were considered and proper amendments in the GTR text were introduced as follows:

- Table added showing the relation between Load Range and Ply Rating
- Number of tread wear indicators
- Strength test: specific requirements for rim diameter codes 13 and below
- China requirements for High-Speed test were considered together with the new provisions for the harmonized High Speed test
- New Annex 11 was introduced as guidelines for the tolerances for test equipment
- Assessment of the required and optional tyre markings
- A new paragraph 1.2.(e) was introduced because some Class C3 tyres with Load Index between 122 and 131 that contain "LT" or "C"

Future works

IWG TYRE GTR identified topics for future TYRE GTR developments:

- Provisions for Extended Mobility Tyres
- Elimination of the Overall diameter measurement for Radial tyres after high speed test
- Provisions for North American All-Season tyres
- Updated Bead Unseating test
- Updated Strength test
- LT/C Endurance test to be harmonized
- Wet Grip for Worn tyres
- New provisions for winter performance

The activities can start when Contracting Parties to 1998 Agreement confirm their interest in further development of UN GTR No 16 with regards to the topics as above and their priorities.

Thank you for your attention!