



# Global Technical Regulation No. 16 (Tyres)

## IWG Tyre GTR Proposal for Amendment No. 2 (phase 2A)



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## Amendment Categories

1. Alignment of the provisions with the most recent developments in UN Regulations
2. Alignment to scope and clarifications
3. New Harmonized Provisions
4. Reference Inflation pressure
5. Measuring Rim (TYREGTR-17-09)
6. Administrative
7. Editorial



# 1. Alignment of the provisions with the most recent developments in UN Regulations

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## Definitions, specifications, markings

- ECE/TRANS/WP.29/2016/51 (R30)* } *Removal of the repetitions of the word 'Pneumatic'*
- ECE/TRANS/WP.29/2016/52 (R54)* } *Modified Definition of "Brand name/trademark", "Manufacturer", "Trade description/commercial name"*
- ECE/TRANS/WP.29/2016/60 (R117)* }
- ECE/TRANS/WP.29/2016/52 (R54)* } *The inscription "M+S", "M.S.", "M&S", "M-S", or "M/S", in characters not less than 4 mm high, if the tyre is a snow tyre or if the tyre is a special use tyre;*  
*Drum Speed in kmph ipo rpm for R54 Endurance test program*  
*High Flotation table update*
- ECE/TRANS/WP.29/2017/105 (R30)* } *The inscription M+S or M.S or M&S if the tyre is classified in the category of use "snow tyre" or if the tyre is classified in the category of use "special use tyre"*
- ECE/TRANS/WP.29/2016/51 (R30)* } *Section Width, Outer Diameter Calculation and Specification*  
*Nominal Rim Diameter code table update*



## 2. Alignment to scope and clarifications

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### Examples

#### Removal from the scope of:

- *Special Tyres (ST) for trailers in highway service;*
- *LT or C tyres with tread-depth of greater than or equal to 14.3 mm (18/32 inch)*

Rationale: “ST” for trailers and LT/C with tread depth .ge. 14.3mm are regulated under FMVSS §571.119 which covers “New pneumatic tires for motor vehicles with a GVWR of more than 4,536kilograms(10,000pounds) and motorcycles.” Therefore out of the GTR scope as defined in 1.1

#### General Clarifications

*Procedure to assess the flat tyre running mode of **passenger** car run flat tyres*



## 3. New Harmonized Provisions

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### Tyre Dimensions

Addition of new harmonized provisions for physical dimensions of LT/C tyres  
(new Section 3.20; old Sections 3.20 & 3.21 to be 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 as per WP.29/GRRF/2018/5 amended by GRRF-86-26,  
subject to approval by GRRF and adoption by WP.29

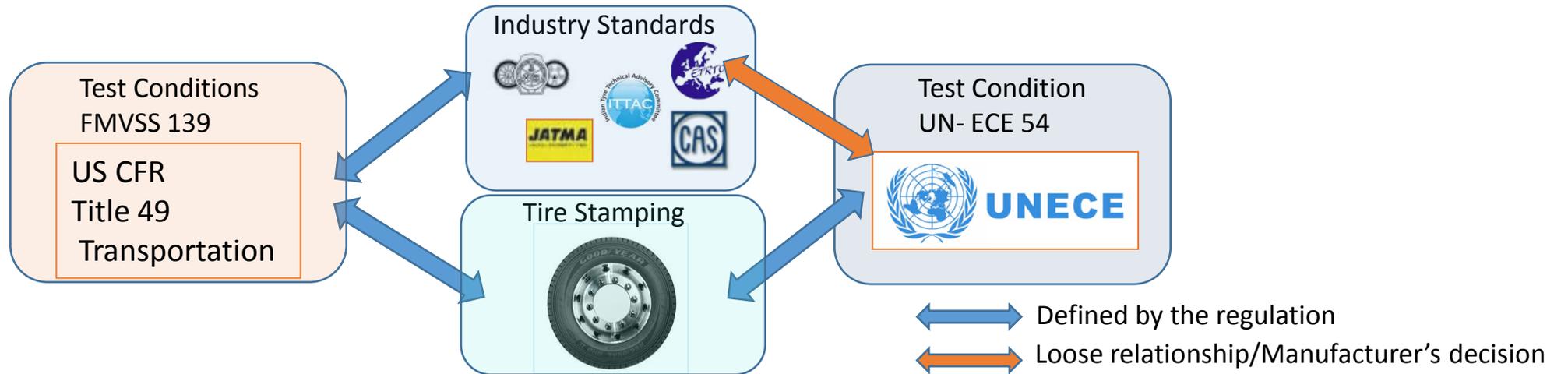
*Physical dimension for sizes listed in annex 6 (Legacy)*



# 4. Reference Inflation Pressure

## Regulation ECE R54 and FMVSS Pressure : Test/Stamping/relationship to Load Carrying Capacity

FMVSS -139		ECE-R54
Defined in reference to the Load Range, based on the Inflation Pressure corresponding to the maximum load rating marked on the tire;	<b>Regulatory test pressure</b>	Manufacturer's declaration;
Inflation Pressure associated with the maximum load rating	<b>Sidewall Pressure Marking</b>	Test pressure
Maximum Load Rating to be not less than the lowest of the published standards	<b>Link with Industry standards</b>	THEORETICALLY: No linkage required; IN PRACTICE: Usually equals the inflation pressure prescribed by a standards organization

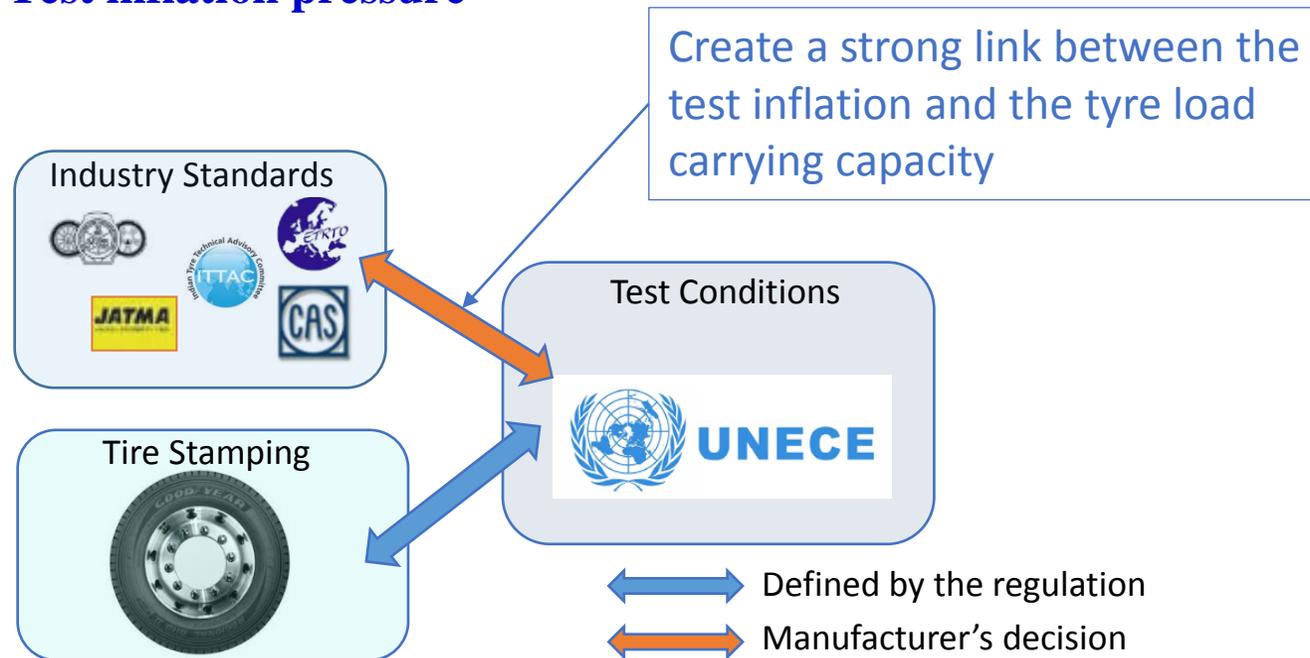


**Tyre Manufacturer is defines and declares the ECE54 test pressure**



## 4. Reference Inflation Pressure

### Industry proposal, ECE R54 Test inflation pressure



#### Proposal:

2.56 *Reference Test Inflation Pressure applicable for LT/C tyres is the minimum cold inflation pressure for the maximum load carrying capacity of the tyre. [for single application]*



## 4. Reference Inflation Pressure

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### Remaining issue: Tire Marking

**Option 1:** keep in the Technical Prescription the two markings and CP's to decide which one(s) they want to implement

**3.0 Requirements**

3.3. Other Sidewall markings

3.3.5. In the case of LT or C type tyres, the maximum load rating and corresponding inflation pressure of the tyre, shown as follows:

*"Max load single \_\_\_kg (\_\_\_lb) at \_\_\_kPa (\_\_\_psi) cold";*

*"Max load dual \_\_\_kg (\_\_\_lb) at \_\_\_kPa (\_\_\_psi) cold".*

*For LT and C type tyres rated for single fitment only, mark as follows:*

*"Max load \_\_\_kg (\_\_\_lb) at \_\_\_kPa (\_\_\_psi) cold".*

3.3.11. In the case of LT or C type tyres, an indication, by the "**PSI**" index, of the inflation pressure to be adopted for the load/speed endurance tests. A table showing the relationship among "PSI" and "kPa" units is listed in Annex 4.

**Option 2:** Harmonize the markings



## 5. Measuring Rim

### Definition and Specification

- 2.41. *"Measuring rim" means an actual rim of specified width as defined by one of the standards organizations as specified in Annex 7, on which the tyre is fitted for measuring the physical dimensions;* } A unique Rim width
- 3.5.3. *The theoretical section width shall be calculated by the following formula:  
 $S = S1 + K(A-A1)$ , ...  
A is the width (expressed in mm) of the *measuring rim*, as declared by the manufacturer;* } Any Rim width
- 3.11. *High speed performance test for passenger car tyres*  
3.11.4.1. *Mount a new tyre on the test rim specified by the manufacturer as the "measuring rim and test rim".* } Any Rim Width
- 3.22. *Tyre rolling resistance test*  
3.22.3.2. *Measuring rim (see Annex 9)  
The tyre shall be mounted on a steel or light alloy *measuring rim*, as follows:  
(a) For Class C1 tyres, the width of the rim shall be as defined in ISO 4000-1:2010;  
(b) For Class C2 and C3 tyres, the width of the rim shall be as defined in ISO 4209 1:2001.  
In cases where the width is not defined in the above mentioned ISO Standards, the rim width as defined by one of the standards organizations as specified in Annex 7 may be used."* } A unique Rim width

Inconsistent usage of the term 'Measuring rim'



## 5. Measuring Rim

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### Reference

- Rim widths are defined in the GTR No. 16 in reference to:
  - **Standards organizations**  
eg 2.41. *"Measuring rim" means an actual rim of specified width as defined by one of the standards organizations as specified in Annex 7, on which the tyre is fitted for measuring the physical dimensions;*
  - **ISO**  
eg 3.22.3.2. *The tyre shall be mounted on a steel or light alloy measuring rim, as follows:*
    - (a) *For Class C1 tyres, the width of the rim shall be as defined in ISO 4000-1:2010;*
    - (b) *For Class C2 and C3 tyres, the width of the rim shall be as defined in ISO 4209 1:2001.*
  - **Annex 9 of Tyre GTR**  
*Measuring rim width:*
    - Class C1 tyres*
    - The measuring rim width Rm is equal to the product of the nominal section width SN and the coefficient K2:*
    - Rm = K2 • SN*



## 5. Measuring Rim

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### IWG Proposal

- Remove the concept of 'measuring rim' in the sense of rims on which a test is to be performed from GTR and replace it by 'test rim' in line with the ISO definition.
- New definition of test rim: "test rim: rim on which a tyre is fitted for testing"  
in line with ISO: 4223-1 2002 para 8.8
- New definition of “measuring rim width: specified rim width as defined in Annex 9 on which the tyre is fitted for measuring the physical dimensions”
- Introduce for each test of the GTR a paragraph defining the test rim to be used.
- Remove the references to ISO 4000-1 and 4209-1 from the main text of R117 annex 6, 2.2 and GTR 3.21.3.2, since the measuring rim width is given in an annex in the annex (9).
- Update the Annex 9 of the Tyre GTR with the relevant content of ISO 4000-1 and 4209-1 defining the approved rims and the measuring rim widths.

**Proposal brings clarity and coherence to the Tyre GTR text without changing the technical provisions intent**



## 6. Administrative

### 7. Editorial

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#### Examples (administrative)

*3.3.1.2.3.3.1. In the case of LT and C type tyres, the words "Load Range" or "LR" followed by the letter designating the tyre load range "B, C, D, or E". ~~This marking is at the discretion of the Contracting Parties implementing the GTR 16.~~*

Reason: Relevance to the 98 agreements.

Removal of type approval related references

#### Example (Editorial)

*3.15.3.2. Increase the load until the bead unseats or the applicable value specified in paragraph 3.15.1. is reached.*

*3.15.3.3. Repeat the test at least four places equally spaced around the tyre circumference.*

~~*3.15.3.4. Increase the load until the bead unseats or the applicable value specified in paragraph 3.15.1. is reached.*~~

~~*3.15.3.5. Repeat the test at least four places equally spaced around the tyre circumference.*~~



# IWG working Document on Technical Prescriptions

## Colour code:

**Green :** IWG proposal

**Yellow:** IWG work in progress

## Markups by categories

- Scope alignment and clarifications
- Harmonization
- From UN-ECE regulations amendments
- Reference Inflation Pressure
- Rim Clarification
- Administrative
- Editorial

3.13.1.10. Calculate the change in per cent of the deflected section height compared to the deflected section height at the start of the test as  $((Z1 - Z2) / Z1) 100$ .

3.14. Strength test for LT/C tyres

§.14.1. Requirements

When tested according to the procedure described in this section, LT/C tyres shall have an average strength strength as calculated in 3.14.3.1 of not less than the values shown in the table below:

Minimum Breaking Energy (Joule)		
Reference Test Inflation Pressure Range kPa	Nominal Section width (mm)	
	≤295	>295
170-199	Not Applicable	293
200-299	293	361
300-399	361	514
400-499	514	576
500-599	576	Not Applicable

§.14.2. Preparation of tyre

Mount the tyre on a standard test assembly. Mount the tyre on a rim with a width comprised between the minimum and maximum width as per annex 9. The rim contour shall be one of those specified for the fitment of the test tyre. The test tyre shall be mounted on the rim in the correct orientation and shall be inflated to the Reference Test Inflation Pressure.

If the tyre is tubeless, a tube may be inserted to prevent loss of air during the test in the event of puncture.

Condition it at ambient room temperature for at least 3 hours and readjust the inflation pressure if necessary.

R Reference Inflation Pressure  
Refer to the reference test inflation pressure

H Harmonization  
Harmonization of references to reference inflation pressure ip to load range. Only SI units are used.

R Reference Inflation Pressure  
Refer to the reference inflation pressure in place of the SW marking

RC Rim Clarification  
Test rim specification

From UN-ECE regulation amendments  
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**Thank you for your attention**