



ETRTO

The European Tyre and Rim
Technical Organisation

Informal document GRBP-75-22
75th GRBP, February 2022
Agenda item 4.a

ETRTO activities on new definition of radial
structure for passenger car tyres and
comments on document
ECE/TRANS/WP.29/GRBP/2021/9

Background

- ETRTO acknowledged the proposal made by France and the European Commission to amend the definition of radial structure in UN regulation no 30 (ECE/TRANS/WP.29/GRBP/2021/9)
- ETRTO already provided verbal feedbacks during the GRBP 72nd and 73rd sessions

As stated by France in the informal document GRBP-72-22, the regulated performances will and shall be met with the tyres following the two different definitions of the radial structure but, in addition, ETRTO proposed to France to provide the following information to better evaluate the French proposal:

- 1. Impact assessment and risk analysis (example: wide range of tyre sizes, load indices and speed indices).*
- 2. Tyre Performance Integrated Approach (trade-offs in regulated performances).*
- 3. Depending on the impact evaluation of the new definition, the introduction of a new structure could be also be studied.*

11. The expert from France proposed a new definition for the radial structure (GRBP-73-20-Rev.1). The expert from ETRTO made a study reservation. GRBP invited the expert from France to prepare, in cooperation with ETRTO, a new working document for the next session.

ETRTO Comments on New Radial Definition in R30

- ETRTO estimates that the subject is too complex and that the potential impact could be too large to adopt the proposal without a complete assessment.
- ETRTO is proceeding with an internal assessment considering that additional elements need to be investigated:
 - Categorization of tyres with new carcass design in UN R30 (new structure or new type within the radial structure) to ensure the most appropriate market access for these tyres
 - Mixability and interchangeability of tyres with current and new carcass designs and new possibilities opened up in tyre construction permitted by proposed definition of radial structure.

This addresses the OICA request to demonstrate the equivalence of tyres with new carcass design and with current carcass design to avoid potential issues in vehicle handling when replacing radial tyres currently R30 approved with tyres following the proposed new definition.
 - Impact of a change of the definition of radial structure on non-UN regulations (e.g. US and CANADA document GRBP-74-07) and industry standards.

ETRTO-Internal Investigation

- ETRTO concluded that for deciding about the categorization of tyres with new carcass design the most important criteria are the effects of mixed fitments on the same vehicle.
- ETRTO is analysing a list of physical tyre characteristics related to vehicle handling, e.g.
 - Ply steer
 - Residual self aligning torque
 - Self aligning stiffness
 - Cornering stiffness
 - Lateral stiffness
 - Radial stiffness
 - Dynamic rolling circumference



ETRTO-Internal Investigation Time Plan

- A manufacturer conducts measurements of the aforementioned physical characteristics of tyres with a carcass construction exploiting the new definition and reference tyres with a carcass construction in line with the current definition that are produced in the same moulds (target date: end February).
- Results of the measurements will be analysed by ETRTO Members with special consideration of effects on vehicle handling (target date: end May)
- Working Document for amending UN Regulation 30 will be prepared for 76th session of GRBP

Assessment of International Regulations

- Extract of the ongoing study:

Country	Regulation/Standard	Radial Definition
UNECE	<i>UN Reg No. 30</i>	2.9.3. "Radial" or "radial-ply" describes tyre structure in which the ply cords extend to the beads and are laid substantially at 90° to the centre line of the tread, the carcass being stabilized by an essentially inextensible circumferential belt;
UNECE	<i>UN GTR No. 16</i>	2.62. "Radial ply tyre" means a tyre structure in which the ply cords that extend to the beads are laid at substantially 90° to the centreline of the tread, the carcass being restrained by circumferential belts of 2 or more layers of substantially inextensible cord material;
USA	<i>FMVSS 139</i>	"Radial ply tire" means a pneumatic tire in which the ply cords that extend to the beads are laid at substantially 90 degrees to the centerline of the tread.
Canada	<i>MVTSR SOR/2013-198</i>	"radial ply tire" means a tire in which the ply cords that extend to the beads are laid at substantially 90° to the centreline of the tread.
Gulf States	<i>GSO 51/2007</i>	3.24 Radial Tyre A pneumatic tyre structure in which the ply cord (or cords) extend to the bead and are laid substantially at 90° to the centre line of the tread, the carcass being stabilized by an essentially inextensible circumferential belt, Fig. (2c).
Brazil	<i>INMETRO 379/2021</i>	./.
Argentina	<i>IRAM 113319:2002</i>	./.
China	<i>GB/T 6326-2014</i>	3.2.4 Radial tyre A pneumatic tyre with cords of the carcass ply arranged at 90° or approximately 90° to the central line of the tread and the carcass banded by using a belt.
India	<i>IS 15633:2005</i>	3.3.3. Radial - Structure in which the ply cords extend to the beads and are laid substantially at 90° to the centre line of the tread, the carcass being stabilized by an essentially inextensible circumferential belt.

Assessment of International Regulations

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Country	Regulation/Standard	Radial Definition
UNECE	UN Reg No. 30	2.9.3. "Radial" or "radial-ply" describes tyre structure in which the ply cords extend to the beads and are laid substantially at 90° to the centre line of the tread, the carcass being stabilized by an essentially inextensible circumferential belt;
UNECE	UN GTR No. 16	2.62. "Radial ply tyre" means a tyre structure in which the ply cords that extend to the beads are laid at substantially 90° to the centreline of the tread, the carcass being restrained by circumferential belts of 2 or more layers of substantially inextensible cord material;
USA	FMVSS 139	"Radial ply tire" means a pneumatic tire in which the ply cords that extend to the beads are laid at approximately 90 degrees to the centerline of the tread.
Canada	MVTSR SOR/2013-198	"radial ply tire" means a tire in which the ply cords that extend to the beads are laid at approximately 90 degrees to the centreline of the tread.
Gulf States	GSO 51/2007	Radial ply tyre means a pneumatic tyre in which the ply cords that extend to the bead and are laid substantially at 90° to the centre line of the tread, the carcass being stabilized by an essentially inextensible circumferential belt, Fig. (2c).
Brazil	INMETR	
Argentina	IRAM 11	
China	GB/T 6326-2014	3.2.4 Radial tyre A pneumatic tyre with cords of the carcass ply arranged at 90° or approximately 90° to the central line of the tread and the carcass banded by using a belt.
India	IS 15633:2005	3.3.3. Radial - Structure in which the ply cords extend to the beads and are laid substantially at 90° to the centre line of the tread, the carcass being stabilized by an essentially inextensible circumferential belt.

While there are some differences among the definitions of radial tyre, all definitions have in common that the carcass plies are laid at approximately 90° to the centre line.



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THANK YOU