

Proposal from the expert of ETRTO

I. STATEMENT OF TECHNICAL RATIONALE AND JUSTIFICATION

A. INTRODUCTION

1. The objective of this proposal is to establish a global technical regulation (gtr) for new radial pneumatic tyres equipping passenger cars and light vehicles up to 4536 kg (10,000 pounds) under the 1998 Global Agreement. The official bases of this harmonized set of requirements are the UN ECE Regulations 30, and 54 and 117, as well as the FMVSS 139 requirements established in the USA under the direction of the National Highway Traffic Safety Administration (NHTSA). Regulations from GSO (Gulf States Organization), India and China, although not officially registered in the compendium of regulations for the tyre gtr, were also analyzed and requirements from them were considered in this gtr insofar as they were not already covered by one of the regulations from UN ECE and USA. In addition, parts of FMVSS 109 were copied "as is" into this gtr, since they are applicable to certain tyres for light vehicles (LT).
2. Many countries throughout the world have already introduced regulations concerning pneumatic tyres. Many of the existing regulations are based on the four primary ones mentioned above from UN ECE and USA. However, many differences in test conditions and regulatory marking requirements require tyre manufacturers to make specific products for specific regions.
3. In this first version of the gtr for tyres, only the requirements for passenger car tyres have been harmonized. Work is ongoing for the harmonization of tyres with the designations LT or C which are primarily fitted on light vehicles.

B. BACKGROUND OF TYRE REGULATIONS

4. Pneumatic tyres for passenger cars and light vehicles are more and more becoming worldwide products, expected to be used anywhere in the world when mounted as original equipment on new vehicles which are themselves commercialised all over the planet. It therefore becomes more and more necessary to harmonize the various requirements from around the world to ensure that tyres will systematically meet the global requirements.
5. Although testing requirements for different regulations used around the world to approve tyres are often substantially similar, slight variations in test procedures oblige tyre manufacturers to test the same object for the same performance characteristic under slightly different conditions, without inducing any overall benefit in the final product.

6. Marking requirements are also variable around the world, and the same tyre may need several different approval marks to be commercialized in a truly worldwide fashion. These local or regional approval markings have tended to increase over the last few years, and it is not unusual to find tyres with six different approval markings moulded into the sidewall. The management of production moulds as a function of which country is destined to receive the tyres produced in them is a major source of delays and costs for the tyre industry, and any harmonization of such markings would be welcome.

C. PROCEDURAL BACKGROUND AND DEVELOPMENT OF THE GLOBAL TECHNICAL REGULATION

7. This gtr was developed by the GRRF informal working group on the tyre gtr (the Tyre gtr working group).
8. The work on this gtr began informally in December of 2004 with a meeting in Paris. As required by the 1998 Global Agreement, a formal proposal for the establishment of a tyre gtr was proposed to the Executive Committee (AC.3) by the technical sponsor, France. At the 140th session of WP.29 on 14 November 2006, the French proposal was approved as a gtr project by AC.3. That proposal is ECE/TRANS/WP.29/2006/139.
9. Subsequent to that approval the informal tyre gtr working group met on numerous occasions to collaborate on the establishment of this gtr. In addition to 3 unofficial meetings held between December 2004 and November 2006, another 10 meetings were scheduled in conjunction with the semi-annual GRRF meetings and a further two interim meetings were held in Brussels in July 2007 and July 2009.
10. In 2009 at the request of the informal working group, a decision was made by AC.3 to prepare the gtr in 2 phases, with the initial phase dedicated to presenting a harmonized set of requirements for passenger car tyres only. Requirements for tyres for light trucks, which carry a C or LT designation, will be harmonized before the end of 2014, but existing requirements, non-harmonized, are included in this version of the gtr. The current document reflects that decision and contains only harmonized requirements for PC tyres, with the LT/C requirements remaining to be harmonized in the continuing work of the informal group.
11. Several test requirements for passenger car tyres were unique to one or the other of the existing regulations and needed no harmonization. These tests were simply included “as is” in the gtr for tyres. In particular, no harmonization was required for:
 - (a) Endurance test
 - (b) Low pressure endurance test
 - (c) Bead unseating test
 - (d) Strength test
 - (e) Rolling sound emission test
 - (f) [Rolling resistance test]
 - (g) Wet grip test
 - (h) Run flat test

12. Other tests or requirements required extensive harmonization during the course of the informal working group’s mandate. These newly harmonized tests or requirements are:
- (a) High speed test
 - (b) Physical dimensions test
 - (c) Required markings
13. The high speed test posed a significant challenge in that the two existing tests were quite different from each other and based on different principles. One was designed to ensure that a tyre would perform adequately at speeds well above a national speed limit, but the test requirements were not related to any speed capacity index indicated on the tyre itself. The other required that a tyre pass a test at its highest rated speed. The harmonization work was based on a determination of which test was more severe for tyres of different speed indices, and using the most severe test.
14. The physical dimensions test was less difficult to harmonize from a technical point of view, because of the elementary simplicity of determining the outside diameter and width of a tyre in its inflated state to ensure interchangeability between tyres marked with the same size designation. A small but not insignificant gain was obtained for the tyre industry by measuring the tyre’s width at four points around the circumference instead of the customary six.
15. The different tests for passenger car tyres are organized into modules consisting of one mandatory module (tyres must comply with all these tests regardless of the region of the world for which they are destined) and two permissive modules whose application is left to the discretion of Contracting Parties applying the gtr (see table below).

Passenger Car Tyres		
	Test Name	Paragraphs
Mandatory Module	Marking and treadwear indicators	3.2. and 3.3. and 3.4.
	Physical dimensions	3.5.
	High speed test	3.11.
	Endurance test	3.9.
	Low pressure test	3.10.
	Wet grip test	3.12.
	Run Flat test	3.13.
Module 1	Strength test	3.6.
	Bead unseating test	3.7.
Module 2	Rolling sound emissions	3.8.

16. In this initial version of the gtr for tyres, which only contains harmonized requirements for passenger car tyres, the module concept does not apply to LT/C tyres (see table below).

LT/C Tyres	
Test Name	Paragraphs
Marking and treadwear indicators	3.2. and 3.3. and 3.4.
Physical dimensions	3.20. and 3.21.
High speed test	3.16. and 3.19.
Endurance test	3.16. and 3.17.
Low pressure test	3.18.
Wet grip test	3.12.
Run Flat test	None
Strength test	3.14.
Bead unseating test	3.15.

17. In the case of required markings, it was possible to eliminate some markings that had become unnecessary over the years, such as the word Radial. Also, a significant change was made in the way the Tyre Identification Number (TIN) will be used in combination with other markings such as type approval numbers, but this will depend on the way individual Contracting Parties implement the gtr.
18. The Tyre Identification Number (TIN) format is based on NHTSA’s plan to change the currently assigned 2 digit plant codes to 3 digits. A symbol, the number “1” for example, will be reserved to precede all current 2-digit codes, and be used exclusively for existing plant codes. The “1” would only be used as the prefix for existing 2-digit codes, and not be used as the leading digit for any new 3-digit codes. It is expected that US NHTSA will continue to assign global plant codes and the necessary information to obtain such a code is contained with the gtr.
19. As a way to harmonize approval markings (whether type approval or self-certification markings) a proposal was made to use a new symbol (the letter G was proposed) combined with the TIN and identification of the different modules for which the requirements were met for the tyre. This proposal elicited much debate, including discussions in WP.29 meetings, both because of its potential application to other gtr's (lighting and glazing materials have problems similar to those of tyres in terms of regulatory approval markings for global markets) and because of the difficulty to implement an approval marking requirement in a gtr. In the final decision taken by the informal working group, the marking proposal with the new symbol was not adopted because it was unclear how to implement it in a gtr, which must be adopted into local or regional legislation to become effective. Thus this gtr contains no provision for a global approval mark, which must be left to the discretion of regional or local authorities when they adopt the gtr.

D. TECHNICAL AND ECONOMIC FEASIBILITY

20. The tyre gtr has been developed by drawing on the experience of many stakeholders, including regulatory authorities, type approval authorities, tyre and vehicle manufacturers and technical consultants. The gtr has been built upon the experience of many organizations and individuals with expertise in the area of tyres for passenger cars and light vehicles.
21. The tyre gtr has been designed to reproduce or improve upon existing regulations, but never to diminish those requirements, and the requirements are based completely on approaches which exist in different Contracting Parties' existing regulations.
22. Since this gtr is based on existing requirements and some harmonized tests, no economic or technical feasibility study was undertaken as it was deemed unnecessary. It is recommended that Contracting Parties to the 1998 Agreement consider the technical and economic feasibility of the tyre gtr when they adopt this regulation into their national requirements.

E. ANTICIPATED BENEFITS

23. The principal economic benefit of this regulation will be a reduction in the variety of tests for the same or substantially similar requirements.
24. Depending on how different Contracting Parties implement this gtr, there may be benefits due to the way the certification markings are treated. If individual markings for different countries are replaced by a global mark, tyre mould design and fabrication can be rationalized to some extent, with concomitant gains in production costs.
25. There will be no reduction in current safety levels, and depending on existing regional regulations there may be marginal safety benefits in those specific regions with the adoption of this gtr.

F. POTENTIAL COST EFFECTIVENESS

26. The overall cost effectiveness of the gtr for tyres has not been calculated. It seems likely, especially for Contracting Parties to the UN ECE 1958 Agreement, and depending on how it is implemented by different Contracting Parties, that initially the gtr will cost more to apply than the current UN ECE regulations for regional tyres (regional tyres are those destined to be commercialised in a single region, such as Europe, rather than worldwide). This is due to the simple fact that there are more tests in the gtr than in the UN ECE regulations alone. However, those costs should diminish over time as the need for more and more truly worldwide tyres manifests itself.
27. Since no significant safety gains are anticipated, it is not possible to calculate a cost effectiveness based on a reduction in number of accidents.