

17 February 2023

Agreement

Concerning the Adoption of Harmonized Technical United Nations Regulations for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these United Nations Regulations*

(Revision 3, including the amendments which entered into force on 14 September 2017)

Addendum 108 – UN Regulation No. 109

Revision 1 - Amendment 5

Supplement 11 to the original version of the Regulation – Date of entry into force:
3 January 2023

Uniform provisions concerning the approval for the production of retreaded pneumatic tyres for commercial vehicles and their trailers

This document is meant purely as documentation tool. The authentic and legal binding text is:
ECE/TRANS/WP.29/2022/7/Rev.1.



UNITED NATIONS

* Former titles of the Agreement:

Agreement concerning the Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts, done at Geneva on 20 March 1958 (original version);
Agreement concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these Prescriptions, done at Geneva on 5 October 1995 (Revision 2).



Paragraph 2.7.3., amend to read:

"2.7.3. "Radial" or "radial-ply" describes a tyre structure in which the ply cords extend to the beads and are laid substantially at 90° to the centreline of the tread, the carcass being stabilized by an essentially inextensible circumferential belt;"

Paragraph 2.8.2., amend to read:

"2.8.2. "Special use tyre" is a tyre intended for mixed use, both on and off road and/or at restricted speed. These tyres are primarily designed to initiate and maintain the vehicle in motion in off-road conditions."

Insert a new paragraph 2.8.4., to read:

"2.8.4. "Traction tyre" means a tyre in class C2 or C3 bearing the inscription TRACTION and intended to be fitted primarily to the drive axle(s) of a vehicle to maximize force transmission in various circumstances."

Paragraphs 2.26.-2.26.2., amend to read:

"2.26. "Tyre-size designation" means, except in the case of types of tyre for which the tyre-size designation is shown in the first column of the tables in Annex 5 to this Regulation, a designation showing:

2.26.1. The nominal section width (S1).

2.26.2. The nominal aspect ratio or, depending on the tyre design type, the nominal outer diameter expressed in mm;"

Insert new paragraphs 2.26.3. to 2.26.3.2., to read:

"2.26.3. An indication of the structure placed in front of the rim diameter marking as follows:

2.26.3.1. on diagonal (bias-ply) tyres, a dash "-" or the letter "D";

2.26.3.2. on radial-ply tyres, the letter "R";"

Former paragraph 2.26.3., renumber as 2.26.4.

Former paragraph 2.26.3.1., renumber as 2.26.4.1.

Former paragraph 2.26.4., renumber as 2.26.5.

Paragraph 2.52., amend to read:

"2.52. "Standard Reference Test Tyre" or "SRTT" means a tyre that is produced, controlled and stored in accordance with the standards of ASTM International:

(a) F2872 – 16 for the size 225/75R16C and referred to as "SRTT16C",

(b) F2871 – 16 for the size 245/70R19.5 and referred to as "SRTT19.5",

(c) F2870 – 16 for the size 315/70R22.5 and referred to as "SRTT22.5",

(d) F2493 – 20 for the size P225/60R16 and referred to as "SRTT16"."

Paragraph 2.54., amend to read:

"2.54. "Snow grip index ("SG")" means the snow grip performance of a candidate tyre relative to the performance of the applicable SRTT."

Insert new paragraphs 2.58. to 2.60., to read:

"2.58. "Professional off-road tyre" is a special use tyre primarily used for service in severe off-road conditions."

"2.59. "Tread depth" means the depth of the principal grooves."

"2.59.1. "Principal grooves" means the wide circumferential grooves positioned in the central zone of the tyre tread, which, in the case of passenger and light truck (commercial) tyres, have the treadwear indicators located in the base."

"2.60. "Void to fill ratio" means the ratio between the area of voids in a reference surface and the area of this reference surface calculated from the mould drawing."

Paragraph 3.2.13., amend to read:

"3.2.13. The inscription "MPT" (or alternatively "ML" or "ET") and/or "POR" if the tyre is classified in the category of use "special".

ET means Extra Tread, ML stands for Mining and Logging, MPT means Multi-Purpose Truck and POR means Professional Off-Road."

Insert a new paragraph 3.2.18., to read:

"3.2.18. The inscription "TRACTION" if the tyre is classified as traction;¹⁰"

Add a new footnote 10 to read:

¹⁰Minimum height of marking: refer to dimension C in Annex 3 of this Regulation."

Paragraph 3.5., amend to read:

"3.5. The markings referred to in paragraph 3.2. and the approval mark prescribed in paragraphs 3.4. and 5.8. shall be clearly legible and indelible. They shall be raised above or sunk below the tyre surface or shall be permanently marked on to the tyre."

Insert a new paragraph 3.5.1. to read:

"3.5.1. [Reserved]"

Insert a new paragraph 3.5.2. to read:

"3.5.2. In the case that the date of manufacture is not moulded, it shall be applied not later than 24 hours after the tyre is removed from the mould."

Paragraph 4.1.5.3.1.1., first sentence, amend to read:

"4.1.5.3.1.1. For tyres retreaded by using either pre-cured or mould cure tread material with a tread pattern covered by paragraph 6.4.4.1. the list shall clearly identify the tyres in order to make the relevant link with the list(s) quoted in paragraph 6.4.4.1. b)."

Insert a new paragraph 4.1.5.3.1.3., to read:

"4.1.5.3.1.3. For tyres retreaded by using mould cure tread material covered by paragraph 6.4.4.3. the list shall clearly identify the tyres in order to make the relevant link with the list(s) quoted in paragraph 6.4.4.3. b)."

Paragraph 5.4., amend to read:

"5.4. Before granting approval the authority must be satisfied that retreaded tyres conform to this Regulation and that the tests have been successfully carried out:

- (a) On at least five and not necessarily more than 20 samples of retreaded tyres representative of the range of tyres produced by the retreading production unit when prescribed according to paragraphs 6.5. and 6.6.1. and;
- (b) On at least one sample of retreaded tyres, of each pattern covered by paragraph 6.4.4.3., representative of the range of tyres produced by the retreading production unit when prescribed according to paragraph 6.6.2.* In case of paragraphs 6.4.4.1. and 6.4.4.2., the Type Approval Authority might request a test of compliance for the retreaded tyre. Testing of sampled sizes may be confined to a worst case selection*, at the discretion of the Type Approval Authority or designated Technical Service."

Paragraphs 6.4.4.1 and 6.4.4.2., amend to read:

- "6.4.4.1. For tyres retreaded by using pre-cured tread material(s) or an identical tread pattern design in a mould cure product with a tread pattern not covered by paragraph 6.4.4.2. having to fulfil the requirements of paragraph 7.2.* the retreader shall ensure that the material manufacturer(s) or the material supplier(s) of the pre-cured tread(s) provides to the Type Approval Authority (TAA) and the Technical Service issuing the approval according to this Regulation and optionally to the retreader:
- (a) A copy of the test report(s) as in Annex 10, Appendix 2 and/or 3 of the representative tyre size(s) (see definition in paragraph 2.) demonstrating compliance of the pre-cured tread(s) to the requirements of paragraph 7.2.
 - (b) The list(s) of tyre sizes to which it can be applied for the retreading process and validated by the same designated Technical Service and TAA which issued the test report(s) requested in paragraph 6.4.4.1. (a). The list(s) shall include at least the tyres defined in paragraph 4.1.5.3.1.1.
 - (c) A copy of the measures taken to ensure the conformity of production. These measures shall include test results demonstrating that the minimum levels of the snow performances required in paragraph 7.2.1 will be maintained and demonstrating periodically the compliance with the requirement defined in paragraph 9.2.3. or 9.4.3.
- 6.4.4.2. For tyres retreaded by using either mould cure or pre-cured tread material(s) with the same major features including tread pattern(s) as a new tyre type approved according to UN Regulation No. 117 having fulfilled the requirements about minimum snow performance in severe snow conditions, the retreader shall ensure that the manufacturer of the new tyre type provides to the Type Approval Authority (and the Technical Service) issuing the approval according to this UN Regulation and optionally to the retreader:
- (a) A copy of the UN Regulation No. 117 certificate(s) and a copy of the compliance of the new tyre to the minimum snow performance in severe snow conditions;
 - (b) The list(s) of tyre sizes to which it can be applied for the retreading process and validated by the same designated Technical Service** and/or Type Approval Authority that issued the UN Regulation No. 117 certificate(s). The list(s) shall include at least the tyres defined in paragraph 4.1.5.3.1.2.;
 - (c) The drawing(s) of the tread pattern(s) covered by the UN Regulation No 117 certificate(s) including the major features with respect to the snow performance;
 - (d) A copy of the last report of the Conformity of Production as required in UN Regulation No. 117 and demonstrating periodically the compliance with the requirement defined in paragraph 9.2.4. or 9.4.4."

Insert a new paragraph 6.4.4.3., to read:

- "6.4.4.3. For tyres retreaded by using mould cure tread material(s) and design(s) not covered by paragraphs 6.4.4.1. or 6.4.4.2., having to fulfil the requirements of paragraph 7.2.*, the retreader shall provide to the Type Approval Authority (TAA) and the Technical Service issuing the approval according to this Regulation:
- (a) A copy of the test report(s) as in Annex 10, Appendix 2 and/or 3 of the representative tyre size(s) (see definition in paragraph 2.) demonstrating compliance of the mould cure tread(s) to the requirements of paragraph 7.2.;

- (b) The list(s) of tyre sizes to which it can be applied for the retreading process and validated by the same designated Technical Service and TAA which issued the test report(s) requested in paragraph 6.4.4.3. (a). The list(s) shall include at least the tyres defined in paragraph 4.1.5.3.1.3.;
- (c) A copy of the measures taken to ensure the conformity of production. These measures shall include test results demonstrating that the minimum levels of the snow performances required in paragraph 7.2.1. will be maintained and demonstrating periodically the compliance with the requirement defined in paragraph 9.2.2. or 9.4.2.;
- (d) The drawing(s) of the tread pattern(s) including the major features with respect to the snow performance."

Paragraph 6.4.10., amend to read:

"6.4.10. Upgrading of the service description as given in paragraph 6.4.9. shall be permitted:

- (a) for the first retread of an original, first life tyre;
- (b) for a used casing, if the traceability of the carcasses to be retreaded is guaranteed. The speed symbol or load index used for retreading shall then not exceed the conditions mentioned in the standard form in Annex 9 of UN Regulation No. 54 for these carcasses.
- (c) for a used casing, if the traceability of the carcasses to be retreaded is not guaranteed till the original, first life, tyre, the speed symbol or the load index shall then not be raised above that shown on the used casing.

The retreader shall demonstrate to the approval authority the traceability of retreaded carcasses."

Paragraph 7.2.1., amend to read:

"7.2.1. For Class C2 and C3 tyres, the minimum snow grip index value, as calculated in the procedure described in Annex 10 and compared with the respective Standard Reference Test Tyre (SRTT) shall be as follows:

Class of tyre	Snow grip index (brake on snow method) ^(a)	Snow grip index (spin traction method) ^(b)	Snow grip index (acceleration method) ^(c)
	Ref.s = SRTT16C	Ref.s = SRTT16	Ref.s = SRTT19.5, SRTT22.5
C2	1.02	1.10	No
C3	No	No	1.25

^(a) See paragraph 3 of Annex 10 to this Regulation

^(b) See paragraph 2 of Annex 10 to this Regulation

^(c) See paragraph 4 of Annex 10 to this Regulation"

Paragraph 7.1.4.4., amend to read:

"7.1.4.4. For retreaded C3 radial tyres an additional sidewall protective rubber layer (ASP) may be applied to a maximum of 8 mm greater than the overall width of the same tyre size description permitted by Regulation No. 54 provided that:

- (a) This rubber layer is applied to one sidewall only;
- (b) The sidewall concerned is marked with the wording "ASP" and the wording "OUTSIDE", both markings with a minimal height of 8 mm;
- (c) The maximum allowed speed rating is index J (100 km/h);

- (d) In case of a dual mounting (twinning) only one tyre with ASP is allowed and has to be mounted on the outer wheel position."

Insert new paragraphs 7.3. to 7.5., to read:

- "7.3. In order to be classified as a "traction tyre", a tyre is required to meet the conditions of paragraph 7.3.1. below.
- 7.3.1. The tyre shall have a tread pattern with minimum two circumferential ribs, each containing a minimum of 30 block-like elements, separated by grooves and/or sipe elements the depth of which has to be minimum of one half of the tread depth. The use of an alternative option of a physical test will only apply at a later stage following a further amendment to the Regulation including a reference to an appropriate test methods and limit values.
- 7.4. In order to be classified as a "special use tyre" a tyre shall have a block tread pattern in which the blocks are larger and more widely spaced than for normal tyres and have the following characteristics:
- (a) For C2 tyres: a tread depth ≥ 11 mm and void to fill ratio ≥ 35 per cent;
- (b) For C3 tyres: a tread depth ≥ 16 mm and void to fill ratio ≥ 35 per cent.
- 7.5. In order to be classified as a 'professional off-road tyre', a tyre shall have all of the following characteristics:
- (a) For C2 tyres:
- (i) A tread depth ≥ 11 mm;
- (ii) A void-to-fill ratio ≥ 35 per cent;
- (iii) A maximum speed rating of $\leq Q$.
- (b) For C3 tyres:
- (i) A tread depth ≥ 16 mm;
- (ii) A void-to-fill ratio ≥ 35 per cent;
- (iii) A maximum speed rating of $\leq K$."

Paragraph 9.2.2., amend to read:

- "9.2.2. At least 1 tyre once every two years in order to verify conformity of the performance of the snow tyres for use in severe snow conditions fulfilling paragraph 6.6.2. and covered by paragraph 6.4.4.3."

Paragraph 9.4., amend to read:

- "9.4. The authority which has approved the retreading production unit may at any time verify the conformity control methods applied in each production facility including among others the prescriptions defined in the paragraph 6.4.4.1.(c), 6.4.4.2.(d) and 6.4.4.3.(c). For each production facility, the type Approval Authority shall take samples at random and at least the following number of tyres, representative of the range being produced, shall be checked and tested as prescribed in this Regulation:"

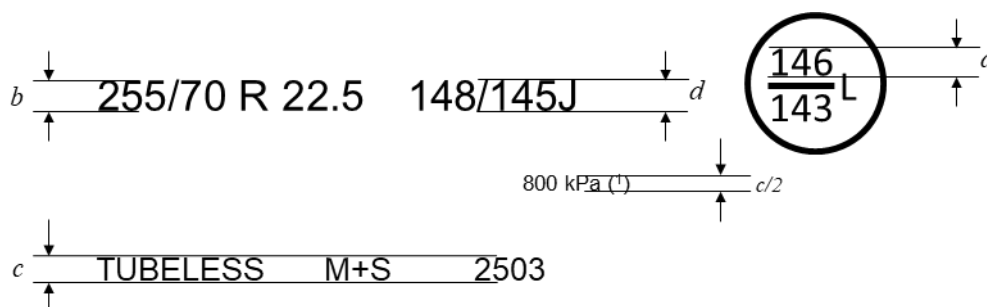
Paragraph 9.4.2., amend to read:

- "9.4.2. At least 1 tyre once every two years in order to verify conformity of the performance of the snow tyres for use in severe snow conditions fulfilling paragraph 6.6.2. and covered by paragraph 6.4.4.3."

Annex 3,

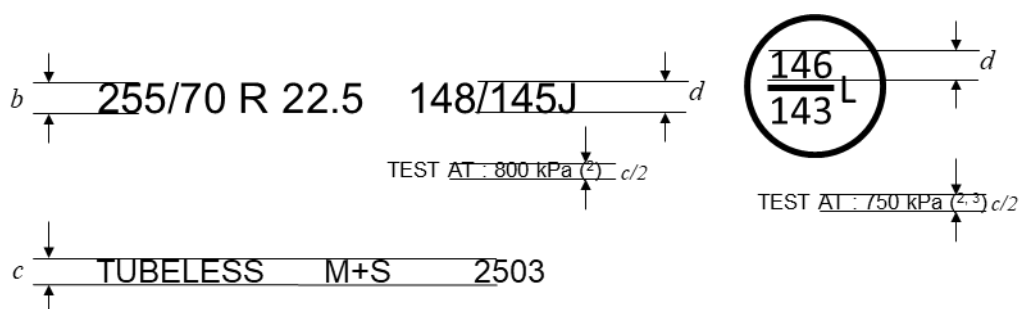
Figure, amend to read:

"Example 1:



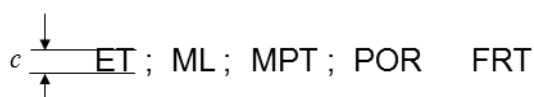
- (1) PSI marking instead of kPa is allowed for tyres first type approved before 1 January 2018. The kPa marking may be preceded by "TEST AT : " or, alternatively, by "TEST INFL : " or the symbol "@".

Example 2:



- (2) "TEST AT : " may be replaced by "TEST INFL : " or the symbol "@" or be omitted.
(3) The indication of a second inflation pressure for the additional service description is optional. If there is no indication, the same test inflation applies to both load/speed combinations.

Dimensional requirements for further markings (4):



- (4) For "ML" and "MPT" being part of the tyre size designation marking the minimum dimension *b* applies."

Paragraph 1., last indent, amend to read:

"...

Requiring to be inflated to 800 kPa for both load/speed endurance tests in Example 1 and 800 kPa for the load/speed endurance test according to the main load/speed combination and 750 kPa for the test according to the additional load/speed combination in Example 2."

Paragraph 3., insert a new subparagraph (f) to read:

- "(f) If there are two indications for the test inflation pressure, they must be placed in such a way that it is clear which pressure indication belongs to which load/speed combination."

Annex 10,

Appendix 2, Part 1, Report, amend to read:

" ...

- 5. Tyre class:
- 6. Category of use:
- 7. Snow grip index SG
- 7.1. Test procedure and SRTT used
- 8. Comments (if any):

..."

Appendix 2, Part 2, Test data, amend to read:

" ...

- 5. Test results: mean fully developed decelerations ($m \cdot s^{-2}$) / traction coefficient⁽³⁾

Run number	Specification	SRTT _(1st test)	Candidate 1	Candidate 2	SRTT _(2nd test)
1					
2					
3					
4					
5					
6					
Mean					
Standard deviation					
Coefficient of variation	$CV_a \leq 6\%$				
Coefficient of Validation	$CVal_a$ (SRTT) $\leq 5\%$	 	 	 	
SRTT weighted average		 	 	 	
Factor f		 	 	 	
Snow grip index		1.00	 	 	

- (1) for C2 tyres, corresponding to the indication of the inflation pressure marked on the sidewall as required by paragraph 3.1. of this Regulation

..."
