

22 November 2022

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 107 – UN Regulation No. 108

Amendment 6

Supplement 6 to the original version of the Regulation – Date of entry into force:
8 October 2022

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

This document is meant purely as documentation tool. The authentic and legal binding text is:
ECE/TRANS/WP.29/2022/6.



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 2.2.3., amend to read:

"2.2.3. "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 2.3.1., amend to read:

"2.3.1. "Normal tyre" means a tyre intended for normal on-road use."

Insert a new paragraph 2.3.3., to read:

"2.3.3. "Special use tyre" means a tyre intended for mixed use both on- and off-road or for other special duty. These tyres are primarily designed to initiate and maintain the vehicle in motion in off-road conditions."

Insert a new paragraph 2.3.3.1., to read:

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

Paragraphs 2.3.3. and 2.3.4. (former), renumber as paragraphs 2.3.4. and 2.3.5.

Insert a new paragraph 2.3.6., to read:

"2.3.6. "Reinforced" or "Extra Load" means a pneumatic-tyre structure designed to carry more load at a higher inflation pressure than the load carried by the corresponding standard version tyre at the standard inflation pressure as specified in ISO 4000-1:2010;"

Paragraph 2.49., amend to read:

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

- (a) E1136 – 17 for the size P195/75R14 and referred to as "SRTT14",
- (b) F2493-20 for the size P225/60R16 and referred to as "SRTT16",

Paragraph 2.51., amend to read:

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

Insert a new paragraph 2.54., to read:

"2.54. "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."

Insert a new paragraph 3.2.6.2., to read:

"3.2.6.2. The inscription "ET" and/or "POR" if the tyre is classified in the category of use "Special use. In addition, they may also bear the inscription M+S or M.S or M&S.

ET means Extra Tread and POR means Professional Off Road."

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. The markings shall be situated in the lower area of the tyre on at least one of its sidewalls, except for the inscriptions mentioned in paragraphs 3.2.1. and 3.2.6.1."

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 4.1.4.3., amend to read:

"4.1.4.3. The category of use (normal tyre or snow tyre, or special use tyre, or for temporary use);"

Paragraph 4.1.4.3.1.1., first sentence, amend to read:

"4.1.4.3.1.1. For tyres retreaded by using either pre-cured or mould cure tread material with a tread pattern covered by paragraph 6.6.3.1. the list shall clearly identify the tyres in order to make the relevant link with the list(s) quoted in paragraph 6.6.3.1. b). ..."

Insert a new paragraph 4.1.4.3.1.3., to read:

"4.1.4.3.1.3. For tyres retreaded by using mould cure tread material covered by paragraph 6.6.3.3. the list shall clearly identify the tyres in order to make the relevant link with the list(s) quoted in paragraph 6.6.3.3. b)."

Insert a new paragraph 4.2.2., to read:

"4.2.2. In the case of applications relating to special use tyres, a copy of the mould drawing of the tread pattern shall be supplied in order to allow verification of the void-to-fill ratio."

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 6.7. and 6.8. and;
- (b) On at least one sample of retreaded tyres, of each pattern covered by paragraph 6.6.3.3., representative of the range of tyres produced by the retreading production unit when prescribed according to paragraph 6.8.2.* In case of paragraphs 6.6.3.1. and 6.6.3.2., 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."

Paragraph 6.6.3.1., amend to read:

"6.6.3.1. 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 6.6.3.2. 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 material provides to the Type Approval Authority 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 9, Appendix 2 of the representative tyre size(s) (see definitions in paragraph 2.) demonstrating compliance of the precured 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 Type Approval Authority which issued the test report requested in

paragraph 6.6.3.1.(a) The list(s) shall include at least the tyres defined in paragraph 4.1.4.3.1.1.

- (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 demonstration periodically the compliance with the requirement defined in paragraph 9.2.3 or 9.4.3.
- (d) In case of mould cure product, the material manufacturer(s) or the material supplier(s) shall provide, in addition: the drawing(s) of the tread pattern(s) including the major features with respect to the snow performance to demonstrate the tread is technically identical to the pre-cured version with respect to the snow performance;"

Paragraph 6.6.3.2., amend to read:

"6.6.3.2. 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 Technical Service issuing the approval according to this regulation and optionally to the retreader:

- (a) A copy of the UN Regulation No. 117 certificate(s) and a copy of the appropriate test report(s) issued by a designated Technical Service** demonstrating 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 4.1.4.3.1.2.
- (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 demonstration periodically the compliance with the requirement defined in paragraph 9.2.4. or paragraph 9.4.4."

Insert a new paragraph 6.6.3.3., to read:

"6.6.3.3. For tyres retreaded by using mould cure tread material(s) and design(s) not covered by paragraphs 6.6.3.1. or 6.6.3.2. in case of mould cure and pre-cured, 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 6.6.3.3. (a). The list(s) shall include at least the tyres defined in paragraph 4.1.4.3.1.3.;
- (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."

Insert a new paragraph 6.9., to read:

"6.9. Tread pattern of a tyre

6.9.1. 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) A tread depth ≥ 11 mm;
(b) A void-to-fill ratio ≥ 35 per cent.

6.9.2. In order to be classified as a "professional off-road tyre", a tyre shall have all of the following characteristics:

- (a) A tread depth ≥ 11 mm;
(b) A void-to-fill ratio ≥ 35 per cent;
(c) A maximum speed rating of $\leq Q$."

Paragraph 7.2., amend to read:

"7.2. In order to be classified as a "snow tyre for use in severe snow conditions", the retreaded tyre to comply with this Regulation shall meet the performance requirements of paragraph 7.2.1. The retreaded tyre size shall meet these requirements based on a test method of Annex 9 by which:

- (a) The mean fully developed deceleration ("mfdd") in a braking test;
(b) Or alternatively an average traction force in a traction test;
(c) Or alternatively the average acceleration in an acceleration test of the candidate tyre is compared to that of a Standard Reference Test Tyre (SRTT).

The relative performance shall be indicated by a snow grip index."

Paragraph 7.2.1., amend to read:

"7.2.1. For Class C1 tyres, the minimum snow grip index value, as calculated in the procedure described in Annex 9 and compared with the SRTT shall be as follows:

Class of tyre	Snow grip index (brake on snow method) ^(a)	Snow grip index (spin traction method) ^(b)
	$Ref.s = C1 - SRTT 14, SRTT16$	$Ref.s = C1 - SRTT 14, SRTT16$
C1	1.07	1.10

^(a) See paragraph 3 of Annex 9 to this Regulation

^(b) See paragraph 2 of Annex 9 to this Regulation"

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 6.8.2. and ~~not~~ covered by paragraph 6.6.3.3."

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 6.6.3.1.(c), 6.6.3.2.(d) and 6.6.3.3.(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 6.6.3.3."

Insert a new paragraph 12.4., to read:

"12.4. Until 1 September 2024, Contracting Parties applying this Regulation may continue to grant type approvals according to the 02 series of amendments to this Regulation, based on snow performance test described in Annex 9 to this Regulation using SRTT14 as reference tyre.^(a)"

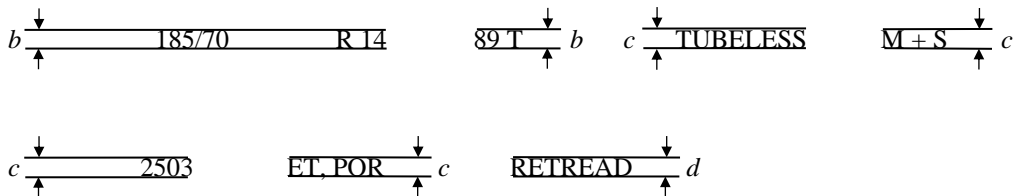
Add a new footnote (a) to read:

"^(a) SRTT14 will be available from the supplier until the end of October 2021."

Annex 3,

Paragraph 1., amend to read:

"1. Example of the markings to be borne by retreaded tyres placed on the market after the entry into force of this Regulation



b : 6 mm (min.)
c : 4 mm (min.)
d : 3 mm (min.)
and from 1998, 4 mm (min.)

These markings define a retreaded tyre:

having a nominal section width of 185;

having a nominal aspect ratio of 70;

of radial-ply structure (R);

having a nominal rim diameter of code 14;

having a service description "89T" indicating a load capacity of 580 kg corresponding to a load index of "89" and a maximum speed capability of 190 km/h corresponding to a speed symbol "T";

for fitting without an inner tube ("TUBELESS");

of snow type (M+S);

retreaded in the weeks 25, 26, 27 or 28 of the year 2003;

of special-use professional off-road (POR) or extra tread (ET) type."

Paragraph 3. c., amend to read:

" (c) The symbols "TUBELESS", "REINFORCED", "M + S" and "ET" and "POR" may be at a distance from the size-designation."

Annex 9,

Paragraph 1.3. amend to read:

"1.3. "Traction test" means a series of a specified number of spin-traction test runs according to ASTM standard:

- (a) F1805-06 in case SRTT14 is used as reference tyre or
 - (b) F1805-20 in case SRTT16 is used as reference tyre
- of the same tyre repeated within a short time frame."

Paragraphs 2., amend to read:

"2. Spin traction method for Class C1 tyres

The test procedure of ASTM standard F1805-06 shall be used to assess snow performance through the traction performance index (TPI) on medium pack snow (The snow compaction index measured with a CTI penetrometer1 shall be between 70 and 80)."

2.1. The test course surface shall be composed of a medium pack snow surface, as characterized in table A2.1 of ASTM standard F1805-06 or ASTM F1805-20, as applicable."

2.2. The tyre load for testing shall be as per option 2 in paragraph 11.9.2. of ASTM standard F1805-06 or ASTM F1805-20, as applicable. When the SRTT16 is used as reference tyre, it shall be tested with a load of 531 kg at an inflation pressure of 240 kPa (cold)."

Insert a new paragraph 2.3. to read:

"2.3. The snow grip index (SG) of a candidate tyre Tn shall be computed as follows:

$$SG(T_n) = f \cdot \frac{TPI}{100}$$

where

- (a) $f = 1.000$ when using SRTT14 as reference tyre per ASTM F1805-06; and
 - (b) $f = 0.987$ when using SRTT16 as reference tyre per ASTM F1805-20;
- and TPI denotes the traction performance index as defined in ASTM F1805-06 or ASTM F1805-20, as applicable."

Insert a new paragraph 3.1.6. to read:

"3.1.6. In order to run this test, the Standard Reference Test Tyres (SRTT) as shown in the following table shall be used:

<i>Class C1 tyres</i>
SRTT14 or SRTT16

"

Paragraph 3.4.1.3., amend to read:

"3.4.1.3. The snow grip index (SG) of a candidate tyre Tn shall be computed from the arithmetic mean $\overline{a_{Tn}}$ of the mfdd of the tyre Tn and the applicable weighted average wa_{SRTT} of the SRTT as shown in the table:

$$SG(T_n) = f \cdot \frac{\overline{a_{Tn}}}{wa_{SRTT}}$$

where f is given in the following table

Tyre class	Reference tyre	Factor
C1	SRTT14	$f = 1.000$
	SRTT16	$f = 0.980$

"

Paragraph 3.4.3.1., amend to read:

"3.4.3.1. The snow grip index of the control tyre C relative to the SRTT (SG1) is given by

$$SG1 = SG(C) = f \cdot \frac{\bar{a}_C}{wa_{SRTT}}$$

where f is given in paragraph 3.4.1.3., and snow grip index of the candidate tyre Tn relative to the control tyre (SG2) is given by

$$SG2 = \frac{\bar{a}_{Tn}}{wa_C}$$

where wa_C is the applicable weighted average of the control tyre, shall be established using the procedure in paragraphs 3.1. to 3.4.2. above.

The snow grip index of the candidate tyre relative to the SRTT SG(Tn) shall be the product of the two resulting snow grip indices that is given by

$$SG(Tn) = SG1 \cdot SG2."$$

Annex 9,

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

"...

5. Tyre class:
6. Category of use:
7. Snow grip index SG."

Annex 9,

Appendix 2, Table 5, 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	$CV_a \leq 6\%$				

<i>Run number</i>	<i>Specification</i>	<i>SRTT_(1st test)</i>	<i>Candidate 1</i>	<i>Candidate 2</i>	<i>SRTT_(2nd test)</i>
Coefficient of Validation	$CVal_v(\text{SRTT}) \leq 5\%$				
SRTT weighted average					
Factor <i>f</i>					
Snow grip index		1.00			

"
