REGULATION NO. 108

UNIFORM PROVISIONS CONCERNING THE APPROVAL FOR THE PRODUCTION OF RETREADED PNEUMATIC TYRES FOR MOTOR VEHICLES AND THEIR TRAILERS

1. SCOPE

This regulation covers the production of retreaded tyres designed primarily for vehicles of Category M1, N1, O1 and O2. (1) (2) However, it does not apply to the production of:

1.1. Retreaded tyres with a speed capability below 120 km/h or above 300 km/h.

1.2. Tyres originally produced without speed symbols and load indices.

1.3. Tyres originally produced without type approval and without either an "E" or "e" mark.

1.4. Tyres designed for the equipment of cars produced prior to 1939.

1.5. Tyres designed exclusively for competition or off road use and marked accordingly.

1.6. Tyres designated as "T" type temporary use spares.

2. DEFINITIONS

See also Figure in Annex 8 For the purpose of this Regulation:

2.1. "Range of retreaded pneumatic tyres" means a range of retreaded pneumatic tyres as quoted in Paragraph 4.1.4.

2.2. "Structure" of a pneumatic-tyre means the technical characteristics of the tyre's carcass. The following structures are distinguished in particular:

2.2.1. "Diagonal" or "Bias ply" describes a pneumatic-tyre structure in which the ply cords extend to the beads and are laid at alternate angles substantially less than 90° to the centreline of the tread.

2.2.2. "Bias belted" describes a pneumatic-tyre structure of diagonal (bias-ply) type in which the carcass is stabilised by a belt, comprising two or more layers of substantially inextensible cord material laid at alternate angles close to those of the carcass.

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.

2.3. "Category of Use"

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(1) As defined in Annex 7 to the Consolidated Resolution on the Construction of Vehicles R.E.3 (document TRANS/WP.29/78/Rev.1 as last amended by Amend.4).

(2) This Regulation defines requirements for tyres as a component. It does not limit their installation on any categories of vehicles.

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

2.3.2. "*Snow tyre*" means a tyre whose tread pattern, tread compound or structure, are primarily designed to achieve in snow conditions a performance better than that of a normal tyre with regard to its ability to initiate or maintain vehicle motion.

2.3.2.1. "*Snow tyre for use in severe snow conditions*" means a snow tyre whose tread pattern, tread compound or structure is specifically designed to be used in severe snow conditions and that fulfils the requirements of paragraph 7.2. of this Regulation

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.

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

2.3.4. Temporary use spare tyre is a tyre different from that intended to be fitted to any vehicle for normal driving conditions but intended only for temporary use under restricted driving conditions.

2.3.5. "T" type temporary use spare tyre is a type of temporary use spare tyre designed for use at inflation pressures higher than those established for standard and reinforced tyres.

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;

2.4. "Bead" means the part of a pneumatic-tyre which is of such shape and structure as to fitthe rim and hold the tyre on it.

2.5. "Cord" means the strands forming the fabric of the plies in the pneumatic-tyre.

2.6. "Ply" means a layer of "rubber" coated parallel cords.

2.7. "Belt" applies to a radial ply or bias belted tyre and means a layer or layers of material or materials underneath the tread, laid substantially in the direction of the centre line ofthe tread to restrict the carcass in a circumferential direction.

2.8. "Breaker" applies to a diagonal ply tyre and means an intermediate ply between the carcass and tread.

2.9. "Chafer" means material in the bead area to protect the carcass against chafing or abrasion by the wheel rim.

2.10. "Carcass" means that structural part of a pneumatic-tyre other than the tread and outermost "rubber" of the sidewalls which, when inflated, supports the load.

2.11. "Tread" means that part of a pneumatic-tyre which is designed to come into contact with the ground, protects the carcass against mechanical damage and contributes to ground adhesion.

2.12. "Sidewall" means the part of a pneumatic tyre between the tread and the area designedto be covered by the rim flange.

2.13. "Lower area of tyre" means the area included between the line of maximum section width of the tyre and the area designed to be covered by the edge of the rim.

2.14. "Tread groove" means the space between the adjacent ribs or blocks in the tread

pattern.

2.15. "Principal grooves" means the wide grooves situated in the central zone of the tread, which cover approximately three-quarters of the breadth of the tread.

2.16. "Section width" means the linear distance between the outside of the sidewalls of an inflated pneumatic-tyre, when fitted to the specified measuring rim, but excluding elevations due to labelling (marking), decoration or protective bands or ribs.

2.17. "Overall width" means the linear distance between the outside of the sidewalls of an inflated pneumatic-tyre, when fitted to the specified measuring rim, and including labelling (marking), decoration or protective bands or ribs.

2.18. "Section height" means a distance equal to half the difference between the outer diameter of the tyre and the nominal rim diameter.

2.19. "Nominal aspect ratio" means one hundred times the number obtained by dividing the number expressing the nominal section height by the number expressing the nominal section width, both dimensions being in the same units.

2.20. "Outer diameter" means the overall diameter of an inflated, newly retreaded tyre.

2.21. "Tyre size designation" means a designation showing:

2.21.1. The nominal section width. This must be expressed in millimetres, except in cases of tyres for which the size designation is shown in the first column of the tables in Annex 5 to this Regulation.

2.21.2. The nominal aspect ratio except in cases of tyres for which the size designation is shown in the first column of the tables in Annex 5 to this Regulation, or, depending on the tyre design type, the nominal outer diameter expressed in mm.

2.21.3. A conventional number "d" (the "d" symbol) denoting the nominal rim diameter of the rim and corresponding to its diameter expressed either by codes (numbers below 100) or in millimetres (numbers above 100). Numbers corresponding to both types of measurements may be used in the designation.

2.21.3.1. The values of the "d" symbols expressed in millimetres are shown below:

Nominal Rim Diameter Code - "d"	Value of the "d" symbol expressed in mm
8	203
9	229
10	254
11	279
12	305
13	330
14	356
15	381
16	406
17	432
18	457
19	483
20	508
21	533

2.21.4. An indication of the tyre to rim fitment configuration when it differs from the standard configuration.

2.22. "Nominal rim diameter (d)" means the diameter of the rim on which a tyre is designed to be mounted.

2.23. "Rim" means the support, either fo r a tyre-and-tube assembly or for a tubeless tyre, on which the tyre beads are seated.

2.23.1. "Tyre to rim fitment configuration" means the type of rim to which the tyre is designed to be fitted. In t he case of non-standard rims this will be identified by a symbol applied to the tyre, for example, "CT", "TR", "TD" or "A".

2.24. "Measuring rim" means the rim specified as a 'measuring rim width' or 'design rim width' for a particular tyre size designation in any edition of one or mo re of the International Tyre Standards.

2.25. "Test rim" means any rim specified as approved or recommended or permitted in one of the International Tyre Standards for a tyre of that size designation and type.

2.26. "International Tyre Standard" means any one of the following standard documents:

(a) The European Tyre and Rim Technical Organisation (ETRTO)(1). 'Standards Manual'

(b) The European Tyre and Rim Technical Organisation (ETRTO) (1): 'Engineering Design Information - obsolete data'

(c) The Tire and Rim Association Inc. (TRA)(2): 'Year Book'

(d) The Japan Automobile Tire Manufacturers Association (JATMA) (3): 'Year Book'

(e) The Tyre and Rim Association of Australia (TRAA)(4): 'Standards Manual'

(f) The Associaçiao Latino Americana de Pneus e Aros (ALAPA) (5) 'Manual de Normas Technicas'

(g) The Scandinavian Tyre and Rim Organisation (STRO)(6): 'Data Book'

2.27. "Chunking" means the breaking away of pieces of rubber from the tread.

2.28. "Cord separation" means the parting of the cords from their rubber coating.

2.29. "Ply separation" means the parting of adjacent plies.

2.30. "Tread separation" means the pulling away of the tread from the carcass.

The tyre standards can be obtained from the following addresses:

(1) ETRTO, 32 Av. Brugmann - Bte 2, B-1060 Brussels, Belgium

(2) TRA, 175 Montrose West Avenue, Suite 150, Copley, Ohio, 44321 USA

(3) ETRTO, 78, Rue Defacqz, B-1060 Brussels, Belgium

(4) TRAA, Suite 1, Hawthorn House, 795 Glenferrie Road, Hawthorn, Victoria, 3122 Australia

(5) ALAPA, Av. Paulista, 2444-12° andar, conj. 124, 01310 Sao Paulo, SP Brazil.

(6) STRO, Älggatan 48 A, Nb, S-216 15 Malmö, Sweden

2.31. "Tread wear indicators" means the projections within the tread grooves designed to give a visual indication of the degree of wear of the tread.

2.32. "Service description" means the specific combination of the load index and speed symbol of the tyre.

2.33. "Load index" means a n umerical code which indicates the max imum load th e tyre ca n support.

The list of load in dices and the corresponding loads are shown in A nnex 4 to thi s Regulation.

2.34. "Speed symbol" means:

2.34.1. An alphabetical symbol indicating the speed at which the tyre ca n carry the load-give n by the associated load index.

2.34.2. The speed symbols and corresponding speeds are as shown in the table below:

Speed symbol	Corresponding speed (km/h)
L	120
M	130
N	140
P	150
Q	160
R	170
S	180
T	190
U	200
H	210
V	240
W	270
Y	300

2.35. "Maximum load rating" means the maximum mass which the tyre is rated to support.

2.35.1. For speeds not exceeding 210 km/h, the maximum l oad rating shall not exceed the value corresponding to the load index for the tyre.

2.35.2. For speeds greater than 210 km/h but not exceeding 300 km/h, the maximum load rating shall not exceed the percentage of the value associated with the load capacity index of the tyre, given in the table belo w, with reference to the speed capability of the vehicle to which the tyre is to be fitted.

Tyre speed symbol	Maximum speed - km/h	Maximum load rating - %
V	210 215 220 225 230 235 240	100,0 98,5 97,0 95,5 94,0 92,5 91,0
W	240 250 260 270	100 95 90 85
Y	270 280 290 300	100 95 90 85

For intermediate maximum speeds a linear inte rpolation of the maximum l oad rating is permissible.

2.36. "*Retreader*" means the person or body who is responsible to the Type Approval Authority (TAA) for all aspects of the type-approval under this Regulation and for ensuring the conformity of production."

2.36.1 "Retreading production unit" means a site or g roup of locali zed sites where finished retread tyres are produced.

2.36. "Retreading" means the generic term for reconditioning a used tyre by replacing the worn tread with new material. It may also include renovation of the outermost sidewall surface. It covers the following process methods:

2.36.1. "Top capping" - replacement of the tread.

2.36.2. "Re-capping" - replacement of the t read and with the new material extending over part of the sidewall.

2.36.3. "Bead to bead" - repla cement of the tread and renovation of the sidewall including all or part of the lower area of the tyre.

2.38. "Casing" is the worn tyre comprising carcass and remaining tread and sidewall material.

2.39. "Buffing" is the process of removing old material from the casing to prepare the surface for the new material.

2.40. "Repair" is the remedial work carried out to damaged casings within recognized limits.

2.41. "Tread material" is material in a condition suitable for replacing the worn tread. It can be in several forms for example:

2.41.1. "Camel-back" - pre-cut le ngths of material which have been extruded to give the requi red cross section profile and subsequently fitted cold to the prepared casing. The new material must be cured.

2.41.2. "Strip-wound" - a rib bon of tread mat erial which is directly extruded and wound on to th e prepared casing and built up to the required cross sectional contour. The new material must be cured.

2.41.3. "Direct extrusion" - tread material extruded to give the required cross sectional profile and directly extruded on to the prepared casing. The new material must be cured.

2.41.4. "Pre-cured" - a p reviously formed and cured tread applied directly to the pre pared casing. The new material must be bonded to the casing.

2.42. "Sidewall veneer" is material used to cover the sidewalls of the casing thereby allowing the required markings to be formed.

2.43. "Cushion gum" is material used as a bonding layer between new tread and casing and for repairing minor damage.

2.44. "Cement" is an adhesive solution to hold new materials in place prior to the curing process.

2.45. "Cure" is the term used to describe the change in physical properties of the new material which is brought about usually by the application of heat and pressure for a set period of time under controlled conditions.

2.46. "Radial run out" means the variation in radiu s of the tyre measu red around the outer circumference of the tread surface.

2.47. "Imbalance" means a measurement of the variati on in distribution of ma ss around the centre axis of the tyre. It can be measured as either "Static" or "Dynamic" imbalance.

2.48. "*Representative tyre size*" means the tyre size which is submitted to the test described in Annex 9 to this Regulation to assess the performance of a range of tyres produced by the retreading production facility with regard to their performance for use in severe snow conditions. It can be either a retreaded tyre produced with a pre-cured tread or a retreaded tyre with mould cure process.

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

2.50. "*Control tyre*" means a new production tyre that is used to establish the snow grip performance of tyre sizes unable to be fitted to the same vehicle as the standard reference test tyre – see paragraph 3.4.3. of Annex 9 to this Regulation

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

2.52. "*Candidate tyre*" means a tyre, that is submitted to one of the procedures for snow performance testing relative to snow tyre for use in severe snow conditions – see Annex 9 to this Regulation.

2.53. Class C1 tyres: Tyres conforming to UN Regulation No. 30.

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.

3. MARKINGS

3.1. An example of the a rrangement of retreaded tyre markings is shown in Annex 3 to thi s Regulation.

3.2. Retreaded tyres shall display on both sidewalls in the case of symmetrical tyres and at least on the outer sidewall in the case of asymmetrical tyres:

3.2.1. The brand name or trade mark.

3.2.2. The tyre-size designation as defined in Paragraph 2.21.

3.2.3. An indication of the structure as follows:

3.2.3.1. On diagonal (bias-ply) tyres; no indication, or the letter "D" placed in f ront of the rim diameter marking.

3.2.3.2. On radial-ply tyres; the letter "R" placed in front of th e rim-diameter marking and optionally the word "RADIAL".

3.2.3.3. On bias belted tyres; the letter "B" placed in front of the rim diameter marking and in addition the words "BIAS-BELTED".

3.2.4. The service description comprising:

3.2.4.1. An indication of the tyre's nominal load capacity in the form of the load index p rescribed in Paragraph 2.33.

3.2.4.2. An indication of the ty re's nominal speed capability i n the form of the symbol prescribed in Paragraph 2.34.

3.2.5. The word "TUBELESS" if the tyre is designed for use without an inner tube.

3.2.6. The inscription M+S or MS or M.S. or M & S in the case of a snow tyre

3.2.6.1. The "Alpine" symbol (3-peak-mountain with snowflake) shall be added if the snow tyre is classified as "snow tyre for use in severe snow conditions". In addition, in case a pre-cured tread is used for the retreading process, the inscription M+S or MS or M.S. or M & S and the "Alpine" symbol shall be marked, at least once, on both sides of the tread shoulder. In both cases, the "Alpine" symbol ("3-peak-mountain with snowflake") shall conform to the symbol described in Annex 9, Appendix 1.

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.

3.2.7. The date of retreading as follows:

3.2.7.1. Up to December 31, 1999; either as prescribed in Paragraph 3.2.7.2. or in the form of a group of three digits, the first two showing the week number and the third, the year of the decade of m anufacture. The date code can cover a peri od of p roduction from the wee k indicated by the week number up to and including the week number plus three. For example, the marking "253" could indicate a tyre which was retreaded in weeks 25, 26, 27 or 28 of the year 1993.

The date code may be marked on one sidewall only.

3.2.7.2. As from Jan uary 1, 2000 ; in the form of a gro up of four digit s, the first two showi ng the week number and the se cond two showing the year in which the tyre was ret readed. The date code can cover a period of production from the week

indicated by the week number up to and i ncluding the week number plus three. F or example, th e marking "2503" could indicate a tyre which was retreaded in weeks 25, 26, 27 or 28 of the year 2003.

The date code may be marked on one sidewall only.

3.2.8. The term "RETREAD" or "R EMOULD" (after January 1, 19 99 only the word "RET READ" shall be used). At the request of the retreader, the same term in other languages may also be added.

3.2.9. No later tha n two years after the date of entry into force of this amen dment, tyres manufactured using the "b ead to b ead" process as defined in Paragraph 2.37.3, or an y process in which the sidewall material is renewed, shall have the identification referred to in Paragraph 2.21.4 placed only immediately after the rim diamete r marking referred to i n Paragraph 2.21.3.

3.3. Prior to approval tyres shall exhibit a free space sufficiently large to a ccommodate an approval mark as referred to in Paragraph 5.8. and as shown in Annex 2 to this Regulation.

3.4. Following approval, the markings referred to in Paragraph 5.8. and as shown in Annex 2 to this Regulation shall be affixed in the free space referred to in Paragraph 3.3. This marking may be affixed to one sidewall only.

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.

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.

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.

3.6. As far as any of the original manufacturer's specifications are still legible after the tyres have been retreaded, they shall be regarded as specifications of the re treader for the retrea ded tyre. If these original specifications do not apply after retreadi ng they shall be compl etely removed.

3.7. The original "E" or "e" approval mark and number shall be removed.

4. APPLICATION FOR APPROVAL

The following procedures are applicable to the approval of a tyre retreading production unit.

4.1. The application for approval of a retreading production unit shall be submitted by the holder of the trade name o r trade ma rk to be ap plied to the tyre or by hi s duly accredited representative. It shall specify:

4.1.1. An outline of the structure of the company producing the retreaded tyres.

4.1.2. A brief description of the quality management system, which ensures the effective control of the tyre retreading procedures to meet the requirements of this Regulation.

4.1.3. The trade names or marks to be applied to the retreaded tyres produced.

4.1.4. The following information in relation to the range of tyres to be retreaded:

4.1.4.1. The range of tyre sizes;

4.1.4.2. The structure of tyres (diagonal or bias ply, bias-belted or radial);

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

4.1.4.3.1. For snow tyres the list of tyres having to fulfil the requirements of paragraph 7.2.

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)

The following table is as example:

Tyre Size Designation, Load indexes, Speed symbol	*TM1*	*TM2*	*TM3*
185/60 R 14 82 H	TPM1/TPR1, TR1/TL1	-	TPM2/TPR2, TR2/L2
195/65 R 15 91 H	TPM1/TPR1, TR1/TL1	-	-
205/55 R 16 94 V XL	-	TPM3/TPR3, TR3/TL3	TPM4/TPR4, TR4/TL4
235/60 R 17 102 H	-	-	-
255/45 R 18 99 V	-	TPM5/TPR5, TR5/TL5	-

Note:
TM: Identification of the Tread Manufacturer
TPM: Identification of the Tread Pattern by the tread Manufacturer
TPR: Identification of the Tread Pattern by the Retreader
TR: Number of the test report
TL: Reference of the list linked to the test report

4.1.4.3.1.2. For tyres retreaded by using either mould cure or pre-cured tread material with the same major features including tread pattern(s) as a new tyre type and covered by paragraph 6.6.3.2. the list shall clearly identify the tyres in order to make the relevant link with the list(s) quoted in paragraph 6.6.3.2. a).

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).

4.1.4.4. The system of retreading and the method of application of the new ma terials to be used, as defined in Paragraphs 2.37. and 2.41.;

4.1.4.5. The maximum speed symbol of the tyres to be retreaded;

4.1.4.6. The maximum load index of the tyres to be retreaded.

4.1.4.7. The nominated International Tyre Standard to which the range of tyres conform.

4.2. The application for approval shall be accompanied by:

4.2.1. Details of the major features, including the tread pattern, with respect to the effects on the snow grip performance of the range of tyre sizes listed as required by paragraph 4.1.4.3.1. This may be by means of descriptions supplemented by drawings and/or photographs which must be sufficient to allow the type approval authority or technical service to determine whether any subsequent changes to the major features will adversely affect the tyre performance. The effects of changes to minor details of tyre construction on tyre performances will be evident and

determined during checks on conformity of production;

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.

4.3. At the request of the Type Approval Authority, the Retreader shall submit samples of tyres for test or copies of test reports from the technical services, communicated as given in paragraph 12. of this Regulation.

5. APPROVAL

5.1. To retread tyres requires the approval of the retreading production unit by th e responsible authorities in accordance with the requirements of this Regulation. T he responsible authority takes the necessary measures as described in this Regulation in order to ensure that the tyres retre aded in the re spective production unit will meet with the requirements stated in this Regulation. The retread production unit shall be fully responsible for ensuring that the retreaded tyres will meet the require ments of this Regulation and that they w ill perform adequately in normal use.

5.2. In addition t o the normal requirements for the initial assessment of the tyre retre ading production unit, the approval authorit y shall be satisfied that the pro cedures, operation, instructions and specification documentation provided by material suppli ers are in a language readily understood by the tyre retreading production unit operatives

5.3. The approval authority shall ensure that the procedures and operations documentation for each production unit co ntains specifications, appropriate to the rep air materials and processes used, of the limits of rep airable damage or pe netrations to the t yre carcass, whether such damage is existing or i s caused during the p rocesses of pre paration for retreading.

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.

5.5. In the case of each failure being recorded during tests, two fu rther samples of the sam e specification tyre shall be tested. If either or both of these second two samples fail, then a final submission of two samples shall be tested.

If either or both of the final two samples fail, then the application for approval of the retreading production unit shall be rejected.

5.6. If all the requirements of this Regulation are met, t hen approval shall be granted and an approval number shall be assigned to each retreading production unit approved. The first two digits of this number shall indicate the series of amendments incorporating the mo st recent major technical amendments made to th e Regulation at the time o f issue of th e approval. The approval number shall be

preceded by "108R" signifying that the approval applies to a tyre retreaded as prescribed in this Regulation. The same authority shall not assign the same number to another production unit covered by this Regulation.

5.7. Notice of ap proval or of extension, refusa l or withdrawal of a pproval or of production definitely discontinued pursuant to this Reg ulation shall be com municated to the Parties to the 1958 Agreement applying this Regulation, by means of a fo rm conforming to the model in Annex 1 to this Regulation.

5.8. There shall be affixed conspicuously to every retreaded tyre conforming to this Regulation, in the sp ace referred to i n Paragraph 3.3. and in a ddition to the markings prescribed in Paragraph 3.2., an international approval mark consisting of:

5.8.1. A circle surrounding the letter "E" followed by the distinguishing number of the country which granted approval (1); and

5.8.2. An approval number as described in Paragraph 5.6.

5.9. Annex 2 to this Regulation gives an example of the arrangements of the approval mark.

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(1) 1 for Germany, 2 for France, 3 for Italy, 4 for the Netherlands, 5 for Sweden, 6 for Belgium, 7 for Hungary, 8 for the Czech Republic, 9 for Spain, 10 for Yugoslavia, 11 for the United Kingdom, 12 for Austria, 13 for Luxemb ourg, 14 for Switzerland, 15 (vacant), 16 f or Norway, 17 for Finland, 18 f or Denmark, 19 for Romania, 2 0 for Poland, 21 for Portugal, 22 for the Russian Federation, 23 for Gree ce, 24 for Ireland, 25 for Croatia , 26 for Slovenia , 27 for Slovakia, 28 for Belarus, 29 for Estonia, 30 (vacant), 31 for Bosnia and Herzegovina, 32-36 (vacant), 37 fo r Turkey, 38-39 (vacant), 40 for The former Yugoslav Republic of Macedonia, 41 (vacant), 42 for the European Community (Approvals are granted by its Member States using their respective ECE symbol) and 43 for Japan. Subsequent numbers shall be assigned to othe r countries in the chronological order to which they ratify or accede to t he Agreement Concerning the Adopti on 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 R eciprocal Recognition of Approvals Granted on the Basis of these Prescriptions, and the numbe rs thus assigned shall be communicated by the Secretary-General of the United Nations to the Contracting Parties to the Agreement.

6. REQUIREMENTS

6.1. Tyres shall not be accepted for retreading unless they have been type approved and bear either an "E" or "e" m ark, except th at this requirement shall not be mandatory until January 1, 2000 at the latest.

6.1.1. High speed tyres which have only the inscription "ZR" within the tyre size designation and do not bear a service description shall not be retreaded.

6.2. Tyres which have been previously retreaded shall not be accepted for further retreading.

6.3. The age of the casing accepted for retreading shall not exceed 7 years, based on the digits showing the year of manufacture of the original tyre; e.g. the tyre marked with a date code "253" can be accepted for retreading till the end of the year 2000.

6.4. Conditions before retreading:

6.4.1. Tyres shall be clean and dry before inspection.

6.4.2. Before buffing, each tyre shall be thoroughly examined both int ernally and externally to ensure its suitability for retreading.

6.4.3. Tyres where damage is visible which has resulted from overload or underinflation shall not be retreaded.

6.4.4. Tyres showing any of the following damage shall not be accepted for retreading:

6.4.4.1. (a) extensive cracking extending through to the carcass;

(b) carcass penetrations or damage to casings above "H" speed symbol except where these casings are to be downrated to a lower speed symbol;

(c) previous repairs to damage outside specified injury limits - see Paragraph 5.3.,

(d) carcass break up;

(e) appreciable oil or chemical attack;

(f) multiple damage too close together;

(g) damaged or broken bead;

(h) non repairable deterioration of or damage to inner liner;

(i) bead damage other than minor "rubber" only damage;

(j) exposed cords due to tread wear or sidewall scuffing;

(k) non-repairable tread or sidewall material separation from the carcass;

(l) structural damage in the area of the sidewall.

6.4.5. Radial ply tyre carca sses with separation in the belt, other than slight belt edge looseness, shall not be accepted for retreading.

6.5. Preparation:

6.5.1. After buffing, and before the appli cation of new material, each tyre shall b e thoroughly re-examined at least externally to ensure its continued suitability for retreading.

6.5.2. The entire surface to which new material is to be applied shall have been prepared without overheating. The buffed surface texture shall not contain deep buffing lacerations or loose material.

6.5.3. Where precured material is to be u sed the contou rs of the prepa red area shall meet the requirements of the material manufacturer.

6.5.4. Loose cord ends are not permissible.

6.5.5. Casing cords shall not be damaged during the preparation process.

6.5.6. Buffing damage to the belt of radial tyres shall be limited to l ocalised damage to th e outermost layer only.

6.5.7. Buffing damage limits for diagonal ply tyres shall be as follows:

6.5.7.1. For two ply construction, there sh all not be any damage to the carcass except for slight localised buffing damage to the casing joint.

6.5.7.2. For two ply plus breaker construction of tubeless type tyres, there shall not be any damage to the carcass or breaker.

6.5.7.3. For two ply plus breaker construction of tube type tyres, localised damage to the breaker is permissible.

6.5.7.4. For four ply, or more, con struction of tubeless type tyres, there shall not be any damage to the carcass or breaker.

6.5.7.5. For four ply, or mo re, construction of tube type tyres, da mage shall be li mited to th e outermost ply in the crown area only.

6.5.8. Exposed steel parts shall be t reated as soon as possible with appropriate material as defined by the manufacturer of that appropriate material.

6.6. Retreading:

6.6.1. The retreader must ensure that either the m anufacturer or the supplier of repair materials, including patches, is responsible for the following:

(a) defining method(s) of ap plication and storage, if reque sted by the retreader, in th e national language of the country in which the materials are to be used;

(b) defining limits of damage for which the materials are designed, if requested by the retreader, in the national language of t he country in which the m aterials are to be used;

(c) ensuring that reinforced patches for tyres, if correctly applied in carcass repai rs, are suitable for the purpose;

(d) ensuring that the p atches are capable of with standing twice the maximum i nflation pressure as given by the tyre manufacturer;

(e) ensuring the suitability of any other repair materials for the service intended.

6.6.2. The retreader shall be responsible for the correct application of the repair material and for ensuring that the repair is free from any defects which may affect the satisfactory service life of the tyre.

6.6.3. The retreader shall ensure that either the manufacturer or the supplier of tread and sidewall material issues specifications concerning the conditions of storage and use of the material in order to guarantee the material's qualities. If requested by the retreader, this information shall be in the national language of the country in which the materials are to be used.

6.6.3.1. For 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;

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* If a tread pattern can be applied by mould cure and pre-cured retread processes,the snow test may be performed with a representative tyre size retreaded with only one of the two possible processes and the snow performance test report can be used for both cases as long as the major features of the tread are technically identical. This will be proven by means of written official permission by the holder of the tread snow performance report.

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.

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.

6.6.4. The retreader must ensure that th e repair material and/or comp ound is documented in a manufacturer's or supplier's certificate. The material compound must be suit able for the intended use of the tyre.

6.6.5. The processed tyre shall be cured as soon as possible after the completion of all repairs and building-up operations and at the latest a ccording to th e material manufacturer's specifications.

6.6.6. The tyre shall be cured for the le ngth of time and at the t emperature and pressure, appropriate to, and specified for, the materials and processing equipment used.

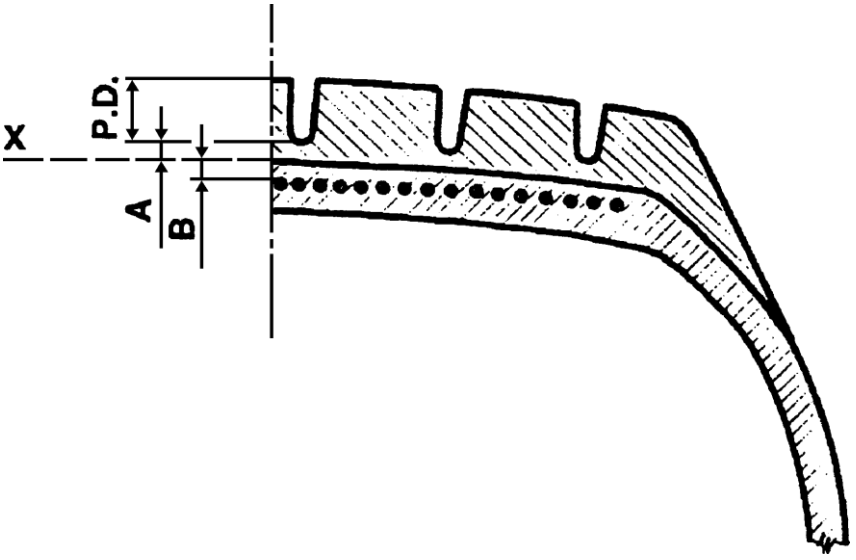
6.6.7. The dimensions of the mould shall be appropriate to the thickness of the new material and the size of the buffed casing. Radial ply tyres, when moulded, shall be cured in radial or radially divided moulds only.

6.6.8. The thickness of origi nal material aft er buffing and the avera ge thickness of any new material under the tread pattern after retreading shall be as given in P aragraphs 6.6.8.1. and 6.6.8.2. The thickness of material at any point either across the breadth of the tread or around the circumference of the tyre shall be controlled in such a way that the provisions of Paragraphs 6.7.5. and 6.7.6. are met.

** Refer to the designated Technical Services listed in the document ECE/TRANS/WP.29/343 in its latest revision.

6.6.8.1. For radial ply and bias belted tyres (mm):

$1.5 \leq (A+B) \leq 5$	(minimum 1.5 mm; maximum 5.0 mm)
$A \geq 1$	(minimum 1.0 mm)
$B \geq 0.5$	(minimum 0.5 mm)



P.D. = Pattern depth
X = Buff line
A = Average thickness of new material under pattern
B = Minimum thickness of original material above belt after buffing

6.6.8.2. For diagonal (Bias-ply) tyres:

The thickness of original material above the breaker shall be ≥ 0.00 mm.

The average thickness of new material above the buffed casing line shall be ≥ 2.00 mm.

The combined thickness of original and new material beneath the base of the grooves of the tread pattern shall be ≥ 2.00 and ≤ 5.00 mm.

6.6.9. The service description of a retreaded tyre shall not show either a higher speed symbol or a higher load index than that of the original, first life, tyre.

6.6.10. The minimum speed capability of a retreaded tyre shall be 120 km/h ("L" speed symbol) and the maximum shall be 300 km/h ("Y" speed symbol).

6.6.11. Tread wear indicators shall be incorporated as follows:

6.6.11.1. The retreaded pneumatic tyre shall i nclude not l ess than six transverse rows of we ar indicators, approximately equi-spaced and situated in the principal grooves of the tread. The tread wear indicators shall be such that they cann ot be confused with the material ridges between the ribs or blocks of the tread.

6.6.11.2. However, in the case of tyres designed for mounting on rims of a nominal diameter of code 12 or less, four rows of tread wear indicators are permissible.

6.6.11.3. The tread wear indicators shall provide a means of indicating, with a tolerance of +0.60/-0.0 mm, when the tread grooves are no longer more than 1.6 mm deep.

6.6.11.4. The height of the tread wear indicators shall be determined by measuring the difference between the depth from the tread surface to the top of the tread wear indicators and the base of the tread grooves, close to the slope at the base of the tread wear indicators.

6.7. Inspection:

6.7.1. After curing, whilst a degree of heat is retained in a tyre, each retreaded tyre shall be examined to ensure that it is free from any apparent defects. During or after retreading the tyre must be inflated to at least 1.5 bar for examination. Where there is any apparent defect in the profile of the tyre (e.g. blister, depression, etc.) the tyre shall be specifically examined to determine the cause of this defect.

6.7.2. Before, during or after retreading the tyre shall be checked at least once for the integrity of its structure by means of a suitable inspection method.

6.7.3. For the purposes of quality control a number of retreaded tyres shall be subjected to destructive and/or non-destructive testing or examination. The quantity of tyres checked and the results shall be recorded.

6.7.4. After retreading, the dimensions of the retreaded tyre, when measured in accordance with Annex 6 to this Regulation, must conform either to dimensions calculated according to the procedures in Paragraph 7 or to Annex 5 to this Regulation.

6.7.5. The radial run out of the retreaded tyre shall not exceed 1.5 mm (+0.4 mm measuring tolerance).

6.7.6. The maximum static imbalance of the retreaded tyre, measured at the rim diameter, shall not exceed 1.5% of the mass of the tyre.

6.7.7. Tread wear indicators shall conform to the requirements of Paragraph 6.6.11.

6.8. Performance tests:

6.8.1. Load/speed endurance test:

6.8.1.1 Tyres retreaded to comply with this Regulation shall be capable of meeting the load/speed endurance test as specified in Annex 7 to this Regulation.

6.8.1.2 A retreaded tyre which after undergoing the load/speed endurance test does not exhibit any tread separation, ply separation, cord separation, chunking or broken cords shall be deemed to have passed the test.

6.8.1.3 The outer diameter of the tyre, measured six hours after the load/speed endurance test, must not differ by more than ± 3.5% from the outer diameter as measured before the test.

6.8.2. Snow test

6.8.2.1. Retreated Snow Tyres for use in severe snow conditions to comply with this regulation shall be capable of meeting snow performance test as specified in Annex 9 to this Regulation.

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 ≤ Q.

7. SPECIFICATIONS

7.1. Tyres retreaded to comply with this Regulation shall conform to the following dimensions:

7.1.1. Section Width:

7.1.1.1. The section width shall be calculated by the following formula:

$$S = S_1 + K (A - A_1)$$

where:

S: is the actual section width in millimetres as measured on the test rim;

S_1: is the value of the 'Design Section Width', referred to the measuring rim, as quoted in the International Tyre Standard specified by the retreader for the tyre size in question;

A: is the width of the test rim in millimetres;

A_1: is the width in millimetres of the measuring rim as quoted in the International Tyre Standard specified by the retreader for the tyre size in question.

K: is a factor and shall be taken to equal 0.4.

7.1.2. Outer Diameter:

7.1.2.1. The theoretical outer diameter of a retreaded tyre shall be calculated by the following formula:

$$D = d + 2H$$

where:

D: is the theoretical outer diameter in millimetres;

d: is the conventional number defined in Paragraph 2.21.3., in millimetres;

H: is nominal section height in millimetres and is equal to S_n multiplied by 0.01 Ra where:

S_n: is the nominal section width in millimetres;

Ra: is the nominal aspect ratio

All of the above symbols are as quoted in the tyre size designation as shown on the sidewall of the tyre in conformity with the requirements of Paragraph 3.2.2. and as defined in Paragraph 2.21.

7.1.2.2. However, for tyres whose designation is given in the first column of the tables in

Annex 5 to ECE Regulation No. 30, the outer diameter shall be that given in those tables.

7.1.3. Method of Measuring Retreaded Tyres:

7.1.3.1. The dimensions of retreaded tyres shall be measured in accordance with the procedures given in Annex 6 to this Regulation.

7.1.4. Section Width Specifications:

7.1.4.1. The actual overall width may be less than the section width or width s determined in Paragraph 7.1.

7.1.4.2. The actual overall width may also exceed the value or values determined in Paragraph 7.1. by:

7.1.4.2.1. 4% in the case of radial ply tyres and

7.1.4.2.2. 6% in the case of diagonal (bias-ply) or bias belted tyres.

7.1.4.2.3. In addition, if the tyre has a special protective band, the width may be greater by up to 8 mm above the tolerances given by Paragraphs 7.1.4.2.1. and 7.1.4.2.2.

7.1.5. Outer Diameter Specifications:

7.1.5.1. The actual outer diameter of a retr eaded tyre must not be outsi de the values of D_{min} and D_{max} obtained by the following formulae:

$D_{min} = d + (2H \times a)$

$D_{max} = d + (2H \times b)$

where:

7.1.5.1.1. For sizes not given in the tables in Annex 5 to this Regulation, "H" and "d" are as defined in Paragraph 7.1.2.1.

7.1.5.1.2. For sizes mentioned in Paragraph 7.1.2.2. above:

$$H = 0.5 (D - d)$$

where "D" is the outer diameter and "d" th e Nominal rim diameter quoted in the above-mentioned tables for the size in question.

7.1.5.1.3. The coefficient "a" = 0.97

7.1.5.1.4. The coefficient "b" is:

	Radial tyres	Diagonal (bias-ply) and bias belted tyres
for normal use tyres	1.04	1.08

7.1.5.2. For snow tyres the maximum outer diameter (D_{max}) calculated in Paragraph 7.1.5.1. may be exceeded by not more than 1%.

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.

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

8. MODIFICATIONS TO THE APPROVAL

8.1. Every modification concerning a retreading production unit amending any of the informatio n given by the retre ading production unit in t he Application for Approval, see Paragraph 4, shall be notified to the approval authority which approved the retre ading production unit. That authority may then either:

8.1.1. Consider that the modifications made are unlikely to have an appreciable adverse effect and that in any case the retreading production unit still meets the requirements; or

8.1.2. Require a further investigation of the approval.

8.2. Confirmation of, or refusal of, ap proval, specifying the modifications., shall be communicated by the procedure specified in Paragraph 5.7. to the Parties to the Agreement which apply this Regulation.

9. CONFORMITY OF PRODUCTION

The conformity of production procedures shall comply with those set out in the Agreement, Appendix 2 (E/ECE/324-E/ECE/TRANS/505/Rev.2), with the following requirements.

9.1. The retreading production unit approved according to this Regulation shall conform to the requirements set out in Paragraph 6.

9.2. The holder of the approval shall ensure that, at least the following number of tyres, representative of the range being produced, is checked and tested as prescribed in this Regulation:

9.2.1 0.01 per cent of the total annual production but in any case not less than five and not necessarily more than 20 during each year of production, and spread throughout that year;

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.

9.2.3. At least 1 tyre once every four 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 covered by paragraphs 6.6.3.1. The retreader can use the snow performance periodic test results obtained by the tread manufacturer or tread supplier for this purpose.

9.2.4. At least 1 tyre once every four 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 covered by paragraphs 6.6.3.2. The retreader can use the snow performance periodic test results obtained by the owner of the original UN Regulation No. 117 approval certificate.

9.3. If the requirements of Paragraph 9.2. are carried out by or under the control of the approval authority, the results m ay be use d as part of, or instea d of, those pre scribed in Paragraph 9.4.

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:

9.4.1. 0.01 per cent of the total annual production but in any case not less than five and not necessarily more than 20 during each and every production year;"The tests and checks of Paragraph 9.4. may replace those required in Paragraph 9.2

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.

9.4.3. At least 1 tyre once every four 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 covered by paragraphs 6.6.3.1. The retreader can use the snow performance periodic test results obtained by the tread manufacturer or tread supplier for this purpose.

9.4.4. At least 1 tyre once every four 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 covered by paragraphs 6.6.3.2. The retreader can use the snow performance periodic test results obtained by the owner of the original UN Regulation No. 117 approval certificate.

10. PENALTIES FOR NON-CONFORMITY OF PRODUCTION

10.1. The approval granted in respect of a retreading production unit pursuant to this Regulation may be with drawn if the requi rements of Parag raph 9 are n ot complied with or if the retreading production unit or the retreaded tyres produced by that retreading production unit have failed to meet the requirements prescribed in that paragraph.

10.2. If a Party to the Ag reement which a pplies this Re gulation withdraws an approval it has previously granted, it shall forthwith so notify the ot her Contracting Parties

to the 1 958 Agreement applying this Regulation, by means of a communication form conforming to the model shown in Annex 1 to this Regulation.

11. PRODUCTION DEFINITELY DISCONTINUED

The authority which granted the approval of the retreading production unit shall be informed if operations and manufacture of retreaded tyres app roved within the scope of thi s Regulation cease. On recei pt of this info rmation the authorit y shall com municate this information to the other Parties to the 1958 Agreement applying this Regulation by means of a communication form conforming to the model shown in Annex 1 to this Regulation.

12. NAMES AND ADDRESSES OF TECHNI CAL SERVICES R ESPONSIBLE FOR CONDUCTING APPROVAL TESTS, OF TEST LABO RATORIES, AND OF ADMINISTRATIVE DEPARTMENTS

12.1. The Parties to the 1 958 Agreement which apply this Regulation shall commu nicate to th e United Nations Secretariat the names and addresses of the technical services responsible for conducting approval tests and, where applicable, of the approved test laboratories and of the administrative departments which grant approval and to which forms certifying approval or refusal or withdrawal of approval, issued in other countries, are to be sent.

12.2. The Parties to the 1958 Agreement which apply this Regulation may use laboratories of tyre manufacturers or retreading production units and may d esignate, as approved test laboratories, those which are situated either in the territory of that Party or in the territory of another Party to the 1958 Agreement subject to a preliminary acceptance of this procedure by the competent administrative department of the latter.

12.3. Where a P arty to the 195 8 Agreement applies Paragraph 12.2., it may, if it desires, be represented at the tests.

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)]

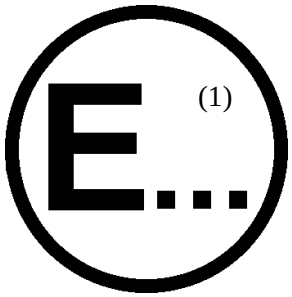
[(a)] SRTT14 will be available from the supplier until the end of October 2021.

Annex I

ANNEX 1

COMMUNICATION

(Maximum format: A4 (210 x 297 mm))



issued by: Name of administration:
.....
.....
.....

Concerning: (2) APPROVAL GRANTED
APPROVAL EXTENDED
APPROVAL REFUSED
APPROVAL WITHDRAWN
PRODUCTION DEFINITELY DISCONTINUED

of a retreading production unit pursuant to Regulation No. 108.

Approval No..... Extension No.

1. Retreader's name or trade mark: .....

2. Name and address of retreading production unit:.....

3. If applicable, name and address of retreader's representative: .....

4. Summarised description as in Paragraphs 4.1.3. and 4.1.4. of this Regulation: .....

5. Technical service and, where applicable, test laboratory approved for purposes of approval or verification of conformity: .....

6. Date of report issued by that service: .....

7. Number of report issued by that service: .....

8. Reason(s) of extension (if applicable):.....

9. Any remarks: .....

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(1) Distinguishing number of the country which has granted/extended/refused/withdrawn an approval (see approval provisions in the Regulation).

(2) Delete that which does not apply.

Annex I

10. Place: .....

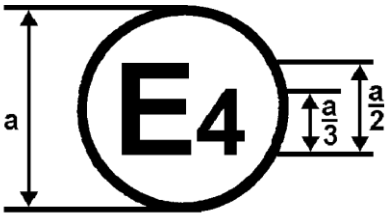
11. Date: .....

12. Signature .....

13. Annexed to t his communication is a list of documents in the approval file deposited at the Approval Authority which has considered this approval and which can be obtained upon request.

ANNEX 2

ARRANGEMENT OF APPROVAL MARK



108 R - 002439 a/3

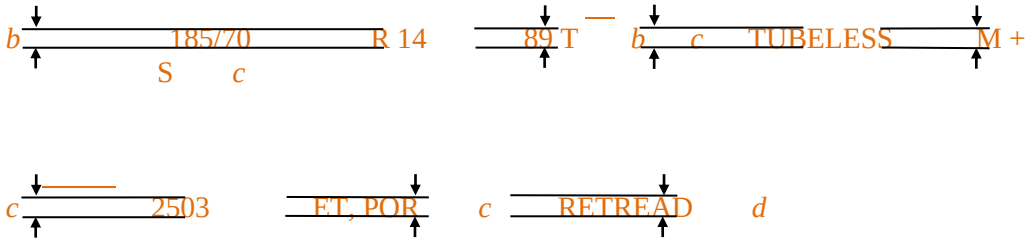
a = 12 mm min

The above approval mark affixed to a retreaded tyre shows that the retreading production unit concerned has been approved in the Neth erlands (E4) under approval number 108R002439, meeting the requirements of this Regulation in its original form (00).

The approval number must be placed close to the circle and either above or below the "E" or left or right of that letter. The digit s of the app roval number must be on the same side of the "E" and face in th e same direction. The use o f Roman numerals as approval numbers should be avoided so as to prevent any confusion with other symbols.

ANNEX 3
ARRANGEMENT OF RETREAD TYRE MARKINGS

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.

2. In the particular case of tyres having a tyre to rim fitment configuration "A", the marking shall be in the form of the following example:

185-560 R 400A where:

185 is the nominal section width in mm 560 is the outer diameter expressed in mm

R is an indication of the structure of the tyre (see Paragraph 3.2.3 of this Regulation).

400 is the nominal diameter of the rim expressed in mm A is the tyre rim fitment configuration.

The marking of the load index, spee d category date of manufacture and oth er markings, shall be as given in the example above.

3. The positioning and order of

(a) the size designation as defined in Paragraph 2.21 of this Regulation shall be grouped as shown in the examples:

185/70 R 14 and 185-560 R 400A;

(b) the service description comprising the load in dex and the speed symbol shall be placed immediately after the tyre size designation as defined in Paragraph 2.21 of this Regulation;

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

(d) the word "RETREAD" may be at a distance from the size designation.

ANNEX 4

LIST OF LOAD INDICES AND CORRESPONDING LOAD CAPACITIES

Load index (LI) and load capacity − kg													
LI	kg	LI	kg	LI	kg	LI	kg	LI	kg	LI	kg	LI	kg
0	45	40	140	80	450	120	1 400	160	4 500	200	14 000	240	45 000
1	46.2	41	145	81	462	121	1 450	161	4 625	201	14 500	241	46 250
2	47.5	42	150	82	475	122	1 500	162	4 750	202	15 000	242	47 500
3	48.7	43	155	83	487	123	1 550	163	4 875	203	15 500	243	48 750
4	50	44	160	84	500	124	1 600	164	5 000	204	16 000	244	50 000
5	51.5	45	165	85	515	125	1 650	165	5 150	205	16 500	245	51 500
6	53	46	170	86	530	126	1 700	166	5 300	206	17 000	246	53 000
7	54.5	47	175	87	545	127	1 750	167	5 450	207	17 500	247	54 500
8	56	48	180	88	560	128	1 800	168	5 600	208	18 000	248	56 000
9	58	49	185	89	580	129	1 850	169	5 800	209	18 500	249	58 000
10	60	50	190	90	600	130	1 900	170	6 000	210	19 000	250	60 000
11	61.5	51	195	91	615	131	1 950	171	6 150	211	19 500	251	61 500
12	63	52	200	92	630	132	2 000	172	6 300	212	20 000	252	63 000
13	65	53	206	93	650	133	2 060	173	6 500	213	20 600	253	65 000
14	67	54	212	94	670	134	2 120	174	6 700	214	21 200	254	67 000
15	69	55	218	95	690	135	2 180	175	6 900	215	21 800	255	69 000
16	71	56	224	96	710	136	2 240	176	7 100	216	22 400	256	71 000
17	73	57	230	97	730	137	2 300	177	7 300	217	23 000	257	73 000
18	75	58	236	98	750	138	2 360	178	7 500	218	23 600	258	75 000
19	77.5	59	243	99	775	139	2 430	179	7 750	219	24 300	259	77 500
20	80	60	250	100	800	140	2 500	180	8 000	220	25 000	260	80 000
21	82.5	61	257	101	825	141	2 575	181	8 250	221	25 750	261	82 500
22	85	62	265	102	850	142	2 650	182	8 500	222	26 500	262	85 000
23	87.5	63	272	103	875	143	2 725	183	8 750	223	27 250	263	87 500
24	90	64	280	104	900	144	2 800	184	9 000	224	28 000	264	90 000
25	92.5	65	290	105	925	145	2 900	185	9 250	225	29 000	265	92 500
26	95	66	300	106	950	146	3 000	186	9 500	226	30 000	266	95 000
27	97.5	67	307	107	975	147	3 075	187	9 750	227	30 750	267	97 500
28	100	68	315	108	1 000	148	3 150	188	10 000	228	31 500	268	100 000
29	103	69	325	109	1 030	149	3 250	189	10 300	229	32 500	269	103 000
30	106	70	335	110	1 060	150	3 350	190	10 600	230	33 500	270	106 000
31	109	71	345	111	1 090	151	3 450	191	10 900	231	34 500	271	109 000
32	112	72	355	112	1 120	152	3 550	192	11 200	232	35 500	272	112 000
33	115	73	365	113	1 150	153	3 650	193	11 500	233	36 500	273	115 000
34	118	74	375	114	1 180	154	3 750	194	11 800	234	37 500	274	118 000
35	121	75	387	115	1 215	155	3 875	195	12 150	235	38 750	275	121 500
36	125	76	400	116	1 250	156	4 000	196	12 500	236	40 000	276	125 000
37	128	77	412	117	1 285	157	4 125	197	12 850	237	41 250	277	128 500
38	132	78	425	118	1 320	158	4 250	198	13 200	238	42 500	278	132 000
39	136	79	437	119	1 360	159	4 375	199	13 600	239	43 750	279	136 000

ANNEX 5

TYRE SIZE DESIGNATION AND DIMENSIONS
(IN ACCORDANCE WITH ECE REGULATION No. 30)

FOR THIS INFORMATION REFER TO ANNEX 5 OF ECE REGULATION NO. 30

ANNEX 6

METHOD OF MEASURING PNEUMATIC TYRES

1. PREPARING THE TYRE

1.1. The tyre shall be mounted on the test rim specified by the retreader and inflated to the pressure of 3 to 3.5 bar.

1.2. The tyre pressure shall be adjusted as follows:

1.2.1. For standard bias belted tyres − to 1.7 bar;

1.2.2. For diagonal (bias ply) tyres − to:

	Pressure (bar) for Speed symbol		
Ply rating	L, M, N	P, Q, R, S	T, U, H, V
4	1.7	2.0	–
6	2.1	2.4	2.6
8	2.5	2.8	3.0

1.2.3. For standard radial tyres − to 1.8 bar;

1.2.4. For reinforced tyres − to 2.3 bar.

2. MEASURING PROCEDURE

2.1. The tyre, mounted on its rim, shall be conditioned at the ambient room temperature for not less than 24 hr, save as otherwise required by Paragraph 6.8.3. of this Regulation.

2.2. The tyre pressure shall be readjusted to the level specified in Paragraph 1.2. of this annex.

2.3. The overall width shall be measured at six eq ually spaced points around the tyre, taki ng account of the thickness of any protective ribs or bands. The highest reading obtained shall be taken as the overall width.

2.4. The outer diameter shall be calculated from a measurement of the maximum circumfe rence of the inflated tyre.

ANNEX 7

PROCEDURE FOR LOAD/SPEED ENDURANCE TESTS
(IN PRINCIPLE IN ACCORDANCE WITH ANNEX 7 OF REGULATION No. 30)

1. PREPARING THE TYRE

1.1. Mount a retreaded tyre on the test rim specified by the retreader.

1.2. Inflate the tyre to the appropriate pressure as given (in bar) in the table below:

Speed Category	Diagonal (bias-ply) tyres			Radial Tyres		Bias-belted tyres
	Ply-rating			Standard	Reinforc	Standard
	4	6				
L, M, N	2	2	3	2.4	–	–
P, Q, R, S	2	3	3	2.6	3.0	2.6
T, U, H	2	3	3	2.8	3.2	2.8
V	3	3	3	3.0	3.4	–
W and Y				3.2	3.6	

1.3. The retreading production unit may request, giving reasons, the use of a test inflation pressure different from those given in Paragraph 1.2. of this annex. In this case the tyre shall be inflated to the requested pressure.

1.4. Condition the tyre and wheel assembly at test-room temperature for not less than three hours.

1.5. Readjust the tyre pressure to that specified in Paragraph 1.2. or 1.3. of this annex.

2. TEST PROCEDURE

2.1. Mount the tyre and wheel assembly on a test axle and press it against the outer face of a smooth surfaced power driven test drum either 1.70 m ± 1% or 2.00 m ± 1% diameter.

2.2. Apply to the test axle a load equal to 80% of:

2.2.1. The maximum load rating corresponding to the Load Index for tyres with Speed Symbols L to H inclusive,

2.2.2. The maximum load rating associated with a maximum speed (see Paragraph 2.35.2. of this Regulation) of:

– 240 km/h in the case of tyres of Speed Symbol "V",

– 270 km/h in the case of tyres of Speed Symbol "W",

– 300 km/h in the case of Speed Symbol "Y".

2.3. Throughout the test the tyre pressure must not be corrected and the test load must be kept constant.

2.4. During the test the temperature in the test-room must be maintained at between 20° and 30° C unless the tyre manufacturer or retreader agrees to a higher temperature.

2.5. The endurance test programme shall be carried out without interruption and shall be as follows:

2.5.1. Time taken from zero speed to initial test speed: 10 minutes;

2.5.2. Initial test speed: prescribed maximum speed for the tyre concerned, less 40 km/h in the case of a test drum of 1.70 m ± 1% diameter or less 30 km/h in the case of a test drum of 2.00 m ± 1% diameter;

2.5.3. Successive speed increments: 10 km/h up to the maximum test speed;

2.5.4. Duration of test at each speed step except the last: 10 minutes;

2.5.5. Duration of test at last speed step: 20 minutes;

2.5.6. Maximum test speed: prescribed maximum speed for the tyre concerned, less 10 km/h in the case of a test drum of 1.70 m ± 1% diameter or the prescribed maximum speed in the case of a test drum of 2.00 m ± 1% diameter.

2.5.7. However, for tyres suitable for maximum speed of 300 km/h (Speed Symbol "Y"), the duration of the test is 20 minutes at the initial test speed step and 10 minutes at the last speed step.

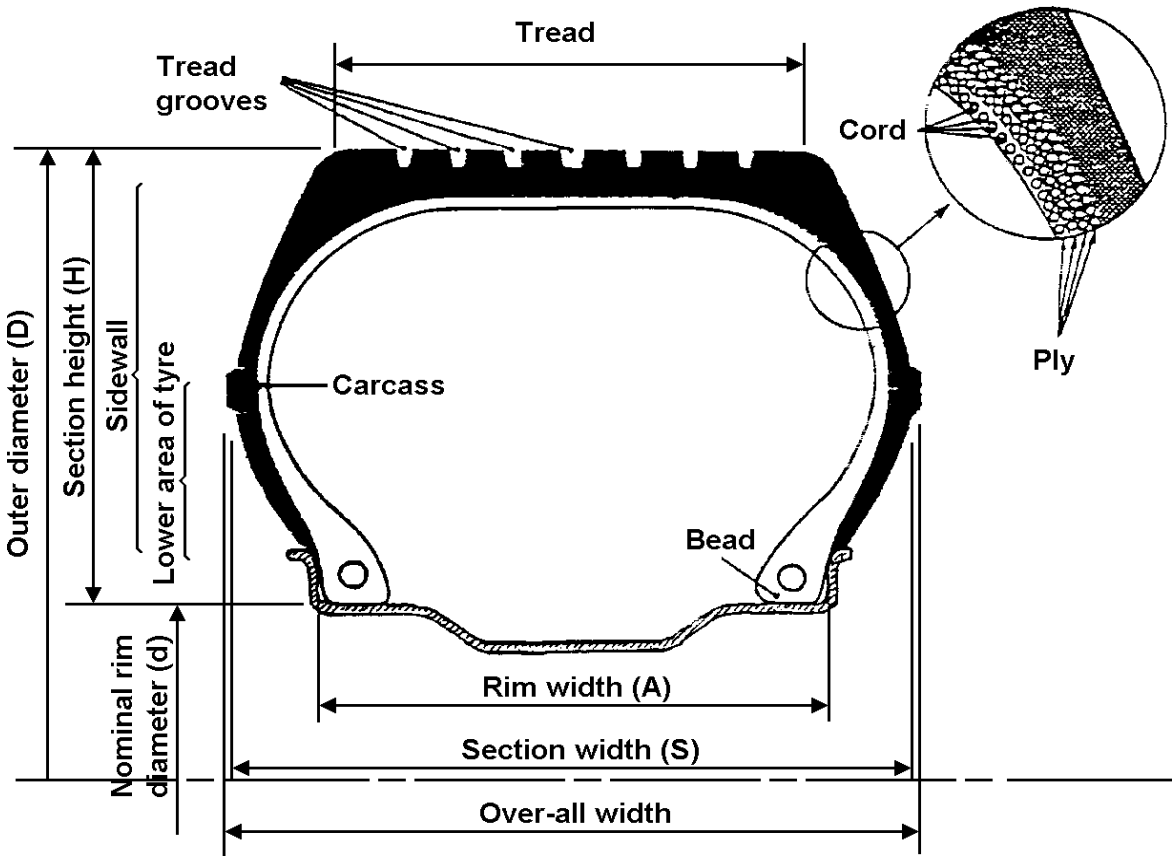
3. EQUIVALENT TEST METHODS

If a method other than that described in Paragraph 2 of this annex is used, its equivalence must be demonstrated.

ANNEX 8

EXPLANATORY FIGURE

See Paragraph 2 of this Regulation



ANNEX 9

PROCEDURES FOR SNOW PERFORMANCE TESTING RELATIVE TO SNOW TYRE FOR USE IN SEVERE SNOW CONDITIONS

1. Specific definitions for snow test when different from existing ones

1.1. "*Test run*" means a single pass of a loaded tyre over a given test surface.

1.2. "*Braking test*" means a series of a specified number of ABS-braking test runs of the same tyre repeated within a short time frame.

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.

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).

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

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

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.

3. Braking on snow method for Class C1 tyres

3.1. General conditions

3.1.1. Test course

The braking tests shall be done on a flat test surface of sufficient length and width, with a maximum 2 per cent gradient, covered with packed snow. The snow surface shall be composed of a hard packed snow base at least 3 cm thick and a surface layer of medium packed and prepared snow about 2 cm thick. The air temperature, measured about one meter above the ground, shall be between -2 °C and -15 °C; the snow temperature, measured at a depth of about one centimeter, shall be between -4 °C and -15 °C. It is recommended to avoid direct sunlight, large

variations of sunlight or humidity, as well as wind. The snow compaction index measured with a CTI penetrometer[1] shall be between 75 and 85.

3.1.2. Vehicle

The test shall be conducted with a standard production vehicle in good running order and equipped with an ABS system. The vehicle used shall be such that the loads on each wheel are appropriate to the tyres being tested. Several different tyre sizes can be tested on the same vehicle.

3.1.3. Tyres

The tyres should be "broken-in" prior to testing to remove spew, compound nodules or flashes resulting from the moulding process. The tyre surface in contact with snow shall be cleaned before performing a test. Tyres shall be conditioned at the outdoor ambient temperature at least two hours before their mounting for tests. Tyre pressures shall then be adjusted to the values specified for the test. In case a vehicle cannot accommodate both the reference and candidate tyres, a third tyre ("control" tyre) may be used as an intermediate. First test control vs. reference on another vehicle, then test candidate vs. control on the vehicle

3.1.4. Load and pressure

3.1.4.1. For C1 tyres, the vehicle load shall be such that the resulting loads on the tyres are between 60 per cent and 90 per cent of the load corresponding to the tyre load index. The cold inflation pressure shall be 240 kPa.

3.1.5. Instrumentation

The vehicle shall be fitted with calibrated sensors suitable for measurements in winter. There shall be a data acquisition system to store measurements. The accuracy of measurement sensors and systems shall be such that the relative uncertainty of the measured or computed mean fully developed decelerations is less than 1 per cent.

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

Class C1 tyres
SRTT14 or SRTT16

3.2. Testing sequences

3.2.1. For every candidate tyre and the standard reference tyre, ABS-braking test runs shall be repeated a minimum of 6 times. The zones where ABS-braking is fully applied shall not overlap. When a new set of tyres is tested, the runs are performed after shifting aside the vehicle trajectory in order not to brake on the tracks of the previous tyre. When it is no longer possible not to overlap full ABS-braking zones, the test course shall be re-groomed.

Required sequence:

6 repeats SRTT, then shift aside to test next tyre on fresh surface

6 repeats Candidate 1, then shift aside

6 repeats Candidate 2, then shift aside

6 repeats SRTT, then shift aside

[1] See appendix of ASTM standard F1805-06 for details.

3.2.2. Order of testing:

If only one candidate tyre is to be evaluated, the order of testing shall be:

R1 - T - R2

Where:

R1 is the initial test of the SRTT, R2 is the repeat test of the SRTT and

T is the test of the candidate tyre to be evaluated.

A maximum of two candidate tyres may be tested before repeating

the SRTT test, for example:

R1 - T1 - T2 - R2.

3.2.3. The comparative tests of SRTT and candidate tyres shall be repeated on two different days.

3.3. Test procedure

3.3.1. Drive the vehicle at a speed not lower than 28 km/h.

3.3.2. When the measuring zone has been reached, the vehicle gear is set into neutral, the brake pedal is depressed sharply by a constant force sufficient to cause operation of the ABS on all wheels of the vehicle and to result in stable deceleration of the vehicle and held down until the speed is lower than 8 km/h.

3.3.3. The mean fully developed deceleration between 25 km/h and 10 km/h shall be computed from time, distance, speed, or acceleration measurements.

3.4. Data evaluation and presentation of results

3.4.1. Parameters to be reported

3.4.1.1. For each tyre and each braking test, the arithmetic mean $\bar{a}$ and corrected sample standard deviation σ_a of the mfdd shall be computed and reported.

The coefficient of variation CV_a of a tyre braking test shall be computed as:

$$CV_a = 100\% \cdot \frac{\sigma_a}{\bar{a}}$$

with

$$\sigma_a = \sqrt{\frac{1}{N-1}\sum_{i=1}^{N}(a_i - \bar{a})^2}$$

3.4.1.2 Weighted averages wa_{SRTT} of two successive tests of the SRTT14 shall be computed taking into account the number of candidate tyres in between:

In the case of the order of testing R1 – T – R2, the weighted average of the SRTT14 to be used in the comparison of the performance of the candidate tyre shall be taken to be:

$$wa_{\mathrm{SRTT}} = \frac{1}{2}(\overline{a_{R1}} + \overline{a_{R2}})$$

Where:

$\overline{a_{Rn}}$ is the arithmetic mean of the mfdd for the n-th test of the SRTT14.

In the case of the order of testing R1 – T1 – T2 – R2, the weighted averages wa_{SRTT} of the SRTT14 to be used in the comparison of the performance of the candidate tyre shall be taken to be:

$wa_{\mathrm{SRTT}} = \frac{2}{3}\overline{a_{R1}} + \frac{1}{3}\overline{a_{R2}}$ for comparison with the candidate tyre T1 and

$wa_{\mathrm{SRTT}} = \frac{1}{3}\overline{a_{R1}} + \frac{2}{3}\overline{a_{R2}}$ for comparison with the candidate tyre T2.

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

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

where f is given in the following table

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

3.4.2. Statistical validations

The sets of repeats of measured or computed mfdd for each tyre should be examined for normality, drift, eventual outliers.

The consistency of the arithmetic means $\bar{a}$ and corrected sample standard deviations σ_a of successive braking tests of SRTT14 should be examined.

In addition and in order to take in account possible test evolution, the coefficient of validation $CVal_a$(SRTT) is calculated on the basis of the average values of any two consecutive groups of the minimum 6 runs of the Standard Reference Test Tyre according to

$$CVal_a(\mathrm{SRTT}) = 100\% \times \left| \frac{\overline{a_{R2}} - \overline{a_{R1}}}{\overline{a_{R1}}} \right|$$

The coefficient of validation $CVal_a$ (SRTT) shall not differ by more than 5 per cent.

The coefficient of variation CV_a, as defined in paragraph 3.1.1. of this annex, of any braking test shall be less than 6 per cent.

If those conditions are not met, tests shall be performed again after re-grooming the test course.

3.4.3. In the case where the candidate tyres cannot be fitted to the same vehicle as the SRTT, for example, due to tyre size, inability to achieve required loading and so on, comparison shall be made using intermediate tyres, hereinafter referred to as "control tyres", and two different vehicles. One vehicle shall be capable of being fitted with the SRTT and the control tyre and the other vehicle shall be capable of being fitted with the control tyre and the candidate tyre.

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

$$SG1 = SG(\mathrm{C}) = f \cdot \frac{\overline{a_{\mathrm{C}}}}{wa_{\mathrm{SRTT}}}$$

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

$$SG2 = \frac{\overline{a_{\mathrm{Tn}}}}{wa_{\mathrm{C}}}$$

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

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

3.4.3.2. The ambient conditions shall be comparable. All tests shall be completed within the same day.

3.4.3.3. The same set of control tyres shall be used for comparison with the SRTT and with the candidate tyre and shall be fitted in the same wheel positions.

3.4.3.4. Control tyres that have been used for testing shall subsequently be stored under the same conditions as required for the SRTT.

3.4.3.5. The SRTT and control tyres shall be discarded if there is irregular wear or damage or when the performance appears to have been deteriorated.

Annex 9 - Appendix 1

Pictogram definition of "Alpine Symbol"

Minimum 15 mm base and 15 mm height.
(Please note that the drawing above is not to scale.)

Annex 9 - Appendix 2

Test reports and test data for C1 tyres

Part 1 – Report

1. Type Approval Authority or Technical Service:.....
2. Name and address of the Retreader:: .....
3. Test report No.: .....
4. Brand name and trade description:
5. Tyre class: .....
6. Category of use: .....
7. Snow grip index SG.
8. Comments (if any):.....
9. Date: .....
10. Signature: .....
11. Signature of the technical service:
12. Signature of the Type Approval Authority:

Part 2 - Test data

1. Date of test: .....
2. Location of test track: .....

2.1.Test track characteristics:

	At start of tests	*At end of tests*	*Specification*
Weather			
Ambient temperature			-2 °C to -15 °C
Snow temperature			-4 °C to -15 °C
CTI index			75 to 85
Other			

3. Test vehicle (make, model and type, year): .....
4. Test tyre details and data:

	SRTT (1st test)	*Candidate **1***	*Candidate **2***	*SRTT (2nd test)*
Brand name				
Trade Description/ commercial name				
Tyre size designation				
Service description				
Test rim width code				
Reference (test) inflation pressure (kPa)				
Tyre loads F/R (kg)				
Tyre Loads F/R (% of load associated to LI)				
Tyre pressure F/R(kPa)				

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) ≤ 5 %				
SRTT weighted average					
Factor *f*					
Snow grip index		1.00			