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22 December 1992

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

Addendum 29: Regulation No. 30

Revision 1

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

UNITED NATIONS

Regulation No. 30

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

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Regulation No. 30

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

1. SCOPE

This Regulation covers new pneumatic tyres for private (passenger) cars and their trailers. It does not apply to tyres designed for speeds exceeding 240 km/h.

2. DEFINITIONS

For the purposes of this Regulation,

2.1. "Type of pneumatic tyre" means a category of pneumatic tyres which do not differ in such essential respects as:

2.1.1. Trade name or mark;

2.1.2. Tyre-size designation;

2.1.3. Category of use (ordinary (road-type) or snow tyre or for temporary use);

2.1.4. Structure (diagonal (bias-ply), bias-belted, radial-ply);

2.1.5. Speed category symbol;

2.1.6. Load-capacity index;

2.1.7. Tyre cross-section;

2.2. "Snow tyre" means a tyre whose tread pattern and whose structure are primarily designed to ensure in mud and fresh or melting snow a performance better than that of an ordinary (road-type) tyre. The tread pattern of a snow tyre generally consists of groove (rib) and/or solid-block elements more widely spaced than on an ordinary (road-type) tyre;

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

2.3.1. "Diagonal" or "bias-ply" describes a pneumatic-tyre structure in which the ply cords extend to the beads and are laid at alternate angles of substantially less than 90° to the centre line of the tread;

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

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

2.3.4. "Reinforced" describes a pneumatic-tyre structure in which the carcass is more resistant than that of the corresponding standard tyre;

2.3.5. "Temporary use spare tyre" means a tyre different from a tyre intended to be fitted to any vehicle for normal driving conditions but intended only for temporary use under restricted driving conditions;

2.3.6. "T-type temporary use spare tyre" means a type of temporary use spare tyre designed for use at inflation pressures higher than those established for standard and reinforced tyres;

2.4. "Bead" means the part of a pneumatic tyre which is of such shape and structure as to fit the rim and hold the tyre on it; 1/

2.5. "Cord" means the strands forming the fabric of the plies in the pneumatic tyre; 1/

2.6. "Ply" means a layer of rubber-coated parallel cords; 1/

2.7. "Carcass" means that part of a pneumatic tyre other than the tread and the rubber side walls which, when inflated, bears the load; 1/

2.8. "Tread" means that part of a pneumatic tyre which comes into contact with the ground; 1/

2.9. "Side wall" means the part of a pneumatic tyre between the tread and the bead; 1/

2.10. "Lower area of tyre" means the area included between the point of maximum section width of the tyre and the area designed to be covered by the edge of the rim; 1/

1/ See explanatory figure.

2.11. "Tread groove" means the space between two adjacent ribs or blocks in the tread pattern; 1/

2.12. "Section width" means the linear distance between the outsides of the side walls of an inflated pneumatic tyre, excluding elevations due to labelling (marking), decoration or protective bands or ribs; 1/

2.13. "Overall width" means the linear distance between the outsides of the side walls of an inflated pneumatic tyre, including labelling (marking), decoration and protective bands or ribs; 1/

2.14. "Section height" means a distance equal to half the difference between the outer diameter of the tyre and the nominal rim diameter; 1/

2.15. "Nominal aspect ratio (Ra)" means the centuple of the number obtained by dividing the number expressing the section height in mm by the number expressing the nominal section width in mm;

2.16. "Outer diameter" means the overall diameter of an inflated new pneumatic tyre; 1/

2.17. "Tyre-size designation" is

2.17.1. a designation showing:

2.17.1.1. the nominal section width. This width must be expressed in mm, except in the case of the types of tyre for which the size designation is shown in the first column of the tables in annex 5 to this Regulation;

2.17.1.2. the nominal aspect ratio except in the case of certain types of tyre, for which the size designation is shown in the first column of the tables in annex 5 to this Regulation;

2.17.1.3. a conventional number denoting the nominal diameter of the rim and corresponding to its diameter expressed either in inches (numbers below 100) or in mm (numbers above 100). Numbers corresponding to both types of measurement may be used together in the designation;

2.17.1.4. the letter "T" in front of the nominal section width in case of T-type temporary use spare tyres;

2.18. "Nominal rim diameter" means the diameter of the rim on which a tyre is designed to be mounted;

2.19. "Rim" means the support for a tyre-and-tube assembly, or for a tubeless tyre, on which the tyre beads are seated; 1/

2.20. "Theoretical rim" means the notional rim whose width would be equal to x times the nominal section width of a tyre. The value of x shall be specified by the manufacturer of that tyre;

2.21. "Measuring rim" means the rim on which a tyre is required to be fitted for size measurements;

2.22. "Test rim" means the rim on which a tyre is required to be fitted for testing;

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

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

2.25. "Ply separation" means the parting of adjacent plies;

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

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

2.28. "Load-capacity index" means a figure associated with the maximum load a tyre can support. A list of these indices and of the corresponding maximum loads is given in annex 4 to this Regulation.

2.29. "Speed category" means

2.29.1. In relation to an ordinary (road-type) tyre the category in which a tyre is classified if, in conformity with the requirements specified by the manufacturer for its use, it can be fitted to a car which does not reach a speed higher than the maximum speed prescribed for that category;

2.29.2. In relation to a snow tyre, the speed category in which a snow tyre is classified in terms of the maximum speed at which it can run;

2.29.3. The categories of speed are those indicated in the table below:

Speed-category 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

2.30. "Principal grooves" means the wide grooves situated in the central zone of the tread, which covers approximately three-quarters of the tread's width;

2.31. "Maximum Load Rating" means the maximum mass the tyre is rated to carry;

2.31.1. for speed not exceeding 210 km/h the maximum load rating shall not exceed the value associated with the load capacity index of the tyre;

2.31.2. for speed higher than 210 km/h, but not exceeding 240 km/h, (tyres classified with speed category symbol "V") the maximum load rating shall not exceed the percentage of the value associated with the load capacity index of the tyre, indicated in the table below, with reference to the speed capability of the car to which the tyre is fitted.

Maximum Speed (km/h)	Load (%)
215	98.5
220	97
225	95.5
230	94
235	92.5
240	91

For intermediate maximum speeds linear interpolations of the maximum load rating are allowed.

3. MARKINGS

3.1. Pneumatic tyres submitted for approval shall bear on both side walls in the case of symmetrical tyres and at least on the outer side wall in the case of asymmetrical tyres:

3.1.1. The trade name or mark;

3.1.2. The tyre-size designation as defined in paragraph 2.17. of this Regulation;

3.1.3. An indication of the structure as follows:

3.1.3.1. on diagonal (bias-ply) tyres, no marking or the letter "D" placed in front of the rim diameter marking;

3.1.3.2. on radial-ply tyres, the letter "R" placed in front of the rim-diameter marking, and, optionally, the word "RADIAL";

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

3.1.4. An indication of the tyre's speed category by means of the symbol shown in paragraph 2.29.3. above;

3.1.5. The inscription M+S or M.S or M&S in the case of a snow tyre;

3.1.6. The load-capacity index as defined in paragraph 2.28. of this Regulation;

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

3.1.8. The word "REINFORCED" if the tyre is a reinforced tyre;

3.1.9. The date of manufacture in the form of a group of three digits, the first two showing the week and the last one the year of manufacture. However, this marking which may be placed on one side wall only, shall not be mandatory, on any tyre submitted for approval, until two years after the date of entry into force of this Regulation.

3.2. Tyres shall provide adequate space for the approval mark, as shown in annex 2 to this Regulation.

3.3. Annex 3 to this Regulation gives an example of the arrangement of the tyre markings.

3.4. The markings referred to in paragraph 3.1. and the approval mark prescribed in paragraph 5.4. of this Regulation shall be moulded on to or into the tyres. They shall be clearly legible and situated in the lower area of the tyre on at least one of its side walls, except for the inscription mentioned in paragraph 3.1.1. above.

4. APPLICATION FOR APPROVAL

4.1. The application for approval of a type of pneumatic tyre shall be submitted by the holder of the trade name or mark or by his duly accredited representative. It shall specify:

4.1.1. The tyre-size designation as defined in paragraph 2.17. of this Regulation;

4.1.2. The trade name or mark;

4.1.3. The category of use (ordinary (road-type) or snow-tyre, or for temporary use);

4.1.4. The structure;

4.1.5. The speed category;

4.1.6. The load-capacity index of the tyre;

4.1.7. Whether the tyre is to be used with or without an inner tube;

4.1.8. Whether the tyre is "standard" or "reinforced" or "T-type temporary use spare tyre";

4.1.9. The ply-rating number of diagonal (bias-ply) tyres;

4.1.10. The overall dimensions: overall section width and outer diameter;

4.1.11. The rims on which the tyre can be mounted;

4.1.12. The measuring rim and test rim;

4.1.13. The test pressure where the manufacture requests the application of annex 7, paragraph 1.3. to this Regulation;

4.1.14. The factor x referred to in paragraph 2.20. above.

4.2. The application for approval shall be accompanied by drawings or photographs in triplicate of the side walls and tread of the tyre, and by a dimensioned drawing of the cross-section of the tyre submitted for approval. Two samples of the tyre may also be required.

4.3. The competent authority shall verify the existence of satisfactory arrangements for ensuring effective control of the conformity of production before type approval is granted.

5. APPROVAL

5.1. If the pneumatic tyre submitted for approval in pursuance of this Regulation meets the requirements of paragraph 6 below, approval of that type of tyre shall be granted.

5.2. An approval number shall be assigned to each type approved. Its first two digits (at present 02) shall indicate the series of amendments incorporating the most recent major technical amendments made to the Regulation at the time of issue of the approval. The same Contracting Party shall not assign the same number to another tyre type covered by this Regulation.

5.3. Notice of approval or of extension or refusal or withdrawal of approval or production definitively discontinued of a type of pneumatic tyre pursuant to this Regulation shall be communicated to the Parties to the 1958 Agreement applying this Regulation, by means of a form conforming to the model in annex 1 to this Regulation.

5.4. There shall be affixed conspicuously to every pneumatic tyre conforming to a type of tyre approved under this Regulation, in the space referred to in paragraph 3.2. above and in addition to the markings prescribed in paragraph 3.1. above, an international approval mark consisting of:

5.4.1. A circle surrounding the letter "E" followed by the distinguishing number of the country which has granted approval; 2/

5.4.2. An approval number.

5.5. The approval mark shall be clearly legible and be indelible.

2/ 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 and Slovak Federal Republic, 9 for Spain, 10 for Yugoslavia, 11 for the United Kingdom, 12 for Austria, 13 for Luxembourg, 14 for Switzerland, 15 (vacant), 16 for Norway, 17 for Finland, 18 for Denmark, 19 for Romania, 20 for Poland, 21 for Portugal and 22 for the Russian Federation. Subsequent numbers will be assigned to other countries in the chronological order in which they ratify or accede to the Agreement concerning the Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts, and the numbers thus assigned shall be communicated by the Secretary-General of the United Nations to the Contracting Parties to the Agreement.

5.6. Annex 2 to this Regulation gives an example of the arrangement of the approval mark.

6. REQUIREMENTS

6.1. Dimensions of tyres

6.1.1. Section width of a tyre

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

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

where:

S is the "section width" expressed in mm and measured on the measuring rim;

S_1 is the "nominal section width" (in mm) as shown on the side wall of the tyre in the designation of the tyre as prescribed;

A is the width (expressed in mm) of the measuring rim, as shown by the manufacturer in the descriptive note; 3/

A_1 is the width (expressed in mm) of the theoretical rim.

A_1 shall be taken to equal S_1 multiplied by the factor x, as specified by the manufacturer, and K shall be taken to equal 0.4.

6.1.1.2. However, for the types of tyres for which the designation is given in the first column of the tables in annex 5 to this Regulation, the section width shall be that given opposite the tyre designation in these tables.

6.1.2. Outer diameter of a tyre

6.1.2.1. The outer diameter of a tyre shall be calculated by the following formula:

$$D = d + 2H$$

where:

D is the outer diameter expressed in mm

3/ When the conventional number is given in inches, the value in mm is obtained by multiplying such number by 25.4.

d is the conventional number defined in paragraph 2.17.1.3. above, expressed in mm, 3/

H is the nominal section height in mm, equal to:
$H = 0.01S_1.Ra$,

S_1 is the nominal section width in mm, and

Ra is the nominal aspect ratio,

all as shown on the side wall of the tyre in the tyre-size designation in conformity with the requirements of paragraph 3.4. above.

6.1.2.2. However, for the types of tyres for which the designation is given in the first column of the tables of annex 5 to this Regulation the outer diameter shall be that given opposite the "size" designation in these tables.

6.1.3. Method of measuring pneumatic tyres

The dimensions of pneumatic tyres shall be measured by the procedure described in annex 6 to this Regulation.

6.1.4. Tyre section-width specifications

6.1.4.1. The overall width of a tyre may be less than the section width determined pursuant to paragraph 6.1.1. above.

6.1.4.2. It may exceed that value by the following percentages:

6.1.4.2.1. in diagonal (bias-ply) tyres: 6%;

6.1.4.2.2. in radial-ply tyres: 4%;

6.1.4.2.3. in addition, if the tyre has a special protective band, the figures as increased by the above tolerance may be exceeded by 8 mm.

6.1.5. Tyre outer-diameter specifications

The outer-diameter of a tyre must not be outside the values Dmin and Dmax obtained from the following formulae:

Dmin = d + (2H . a)
Dmax = d + (2H . b)

where:

6.1.5.1. for sizes listed in annex 5

H = 0.5 (D - d) for references see paragraph 6.1.2.1,

6.1.5.2. for other sizes, not listed in annex 5, "H" and "d" are as defined in paragraph 6.1.2.1,

6.1.5.3. Coefficients "a" and "b" are respectively:

6.1.5.3.1. Coefficient "a" = 0.97

6.1.5.3.2.

Coefficient "b" for ordinary (road type) tyres	Radial	Diagonal and Bias Belted
	1.04	1.08

6.1.5.4. for snow tyres the overall diameter (Dmax) established in conformity with the above may be exceeded by 1%.

6.2. Load/speed performance test

6.2.1. The pneumatic tyre shall undergo a load/speed performance test carried out by the procedure described in annex 7 to this Regulation.

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

6.2.3. The outer diameter of the tyre, measured six hours after the load/speed performance test, must not differ by more than $\pm$ 3.5% from the outer diameter as measured before the test.

6.3. Tread-wear indicators

6.3.1. The pneumatic tyre shall include not less than six transverse rows of wear indicators, approximately equally spaced and situated in the principal grooves of the tread. The tread-wear indicators shall be such that they cannot be confused with the rubber ridges between the ribs or blocks of the tread.

6.3.2. However, in the case of tyres of dimensions appropriate for mounting on rims of a nominal diameter of 12 or less, four rows of tread-wear indicators shall be accepted.

6.3.3. The tread-wear indicators must provide a means of indicating, with a tolerance of $^{+\ 0.40}_{-\ 0.25}$ mm, when the tread grooves are no longer more than 1.6 mm deep.

6.3.4. The height of tread-wear indicators is determined by measuring the difference between the depth, from the tread's surface, to the top of the tread-wear indicator and to the bottom of the tread groove close to the slope at the base of the tread-wear indicator.

7. MODIFICATIONS OF THE TYPE OF PNEUMATIC TYRE AND EXTENSION OF APPROVAL

7.1. Every modification of the type of pneumatic tyre shall be notified to the administrative department which approved the type of pneumatic tyre. The department may then either:

7.1.1. Consider that the modifications made are unlikely to have an appreciable adverse effect and that in any case, the pneumatic tyre still complies with the requirements; or

7.1.2. Require a further test report from the technical service responsible for conducting the tests.

7.2. A modification of the tread pattern of the tyre shall not be considered to necessitate a repetition of the tests prescribed in paragraph 6 of this Regulation.

7.3. Confirmation or refusal of approval, specifying the alterations, shall be communicated by the procedure specified in paragraph 5.3. above to the Parties to the Agreement which apply this Regulation.

7.4. The competent authority issuing the extension of approval shall assign a series number for such an extension and inform thereof the other Parties to the 1958 Agreement applying this Regulation by means of a communication form conforming to the model in annex 1 to this Regulation.

8. CONFORMITY OF PRODUCTION

8.1. Every tyre bearing an approval mark as prescribed under this Regulation shall be so manufactured as to conform to the tyre type approved, by meeting the requirements set forth in paragraph 6 above.

8.2. In order to verify that the requirements of paragraph 8.1. are met, suitable controls of the production shall be carried out. In this case suitable controls means checking the dimensions of the product as well as the existence of procedures for the effective control of the quality of products.

8.3. The holder of the approval shall in particular:

8.3.1. Have access to control equipment necessary for checking the conformity to each approved type,

8.3.2. Ensure that data of test results are recorded and that annexed documents shall remain available for a period to be determined in accordance with the administrative service,

8.3.3. Analyse the results of each type of test, in order to verify and ensure the stability of the product characteristics, making allowance for variation of an industrial production.

8.4. The competent authority which has granted type-approval may at any time verify the conformity control methods applicable to each production unit.

8.5. The normal frequency of inspections authorized by the competent authority shall be at least every two years. Where negative results are recorded during one of these inspections, the competent authority shall ensure that all necessary steps are taken to re-establish the conformity of production as rapidly as possible.

9. PENALTIES FOR NON-CONFORMITY OF PRODUCTION

9.1. The approval granted in respect of a type of pneumatic tyre pursuant to this Regulation may be withdrawn if the requirements laid down in paragraph 8.1. above are not complied with or if the tyres taken from the series have failed to pass the tests prescribed in that paragraph.

9.2. If a Contracting Party to the Agreement applying this Regulation withdraws an approval it has previously granted, it shall forthwith so notify the other Contracting Parties applying this Regulation by means of a communication form conforming to the model in annex 1 to this Regulation.

10. PRODUCTION DEFINITIVELY DISCONTINUED

If the holder of an approval completely ceases to manufacture a type of pneumatic tyre approved in accordance with this Regulation, he shall so inform the authority which granted the approval. Upon receiving the relevant communication that authority shall inform thereof the other Parties to the 1958 Agreement applying this Regulation by means of a communication form conforming to the model in annex 1 to this Regulation.

11. TRANSITIONAL PROVISIONS

11.1. Three years after the date of entry into force of these amendments, all Contracting Parties applying this Regulation shall apply paragraphs 6.1.1.1. and 6.1.2.1. for the dimensional requirements of the 60 series and 70 series of radial tyres.

11.2. Approvals for the 60 and 70 series of radial tyres already granted according to the dimensional requirements given in table IV and table V of annex 5 shall remain valid.

12. NAMES AND ADDRESSES OF TECHNICAL SERVICES RESPONSIBLE FOR CONDUCTING APPROVAL TESTS AND OF ADMINISTRATIVE DEPARTMENTS

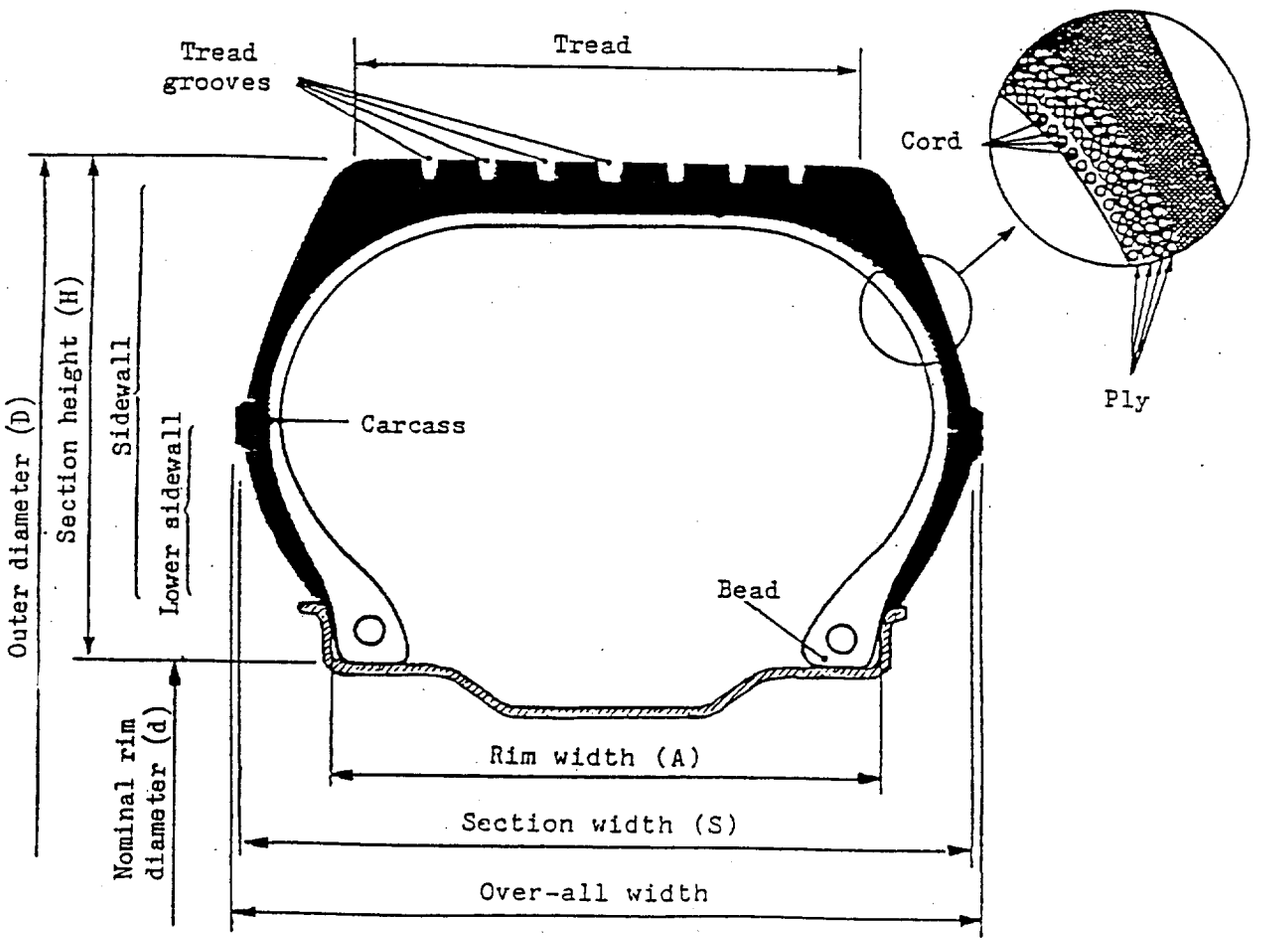
12.1. The Parties to the 1958 Agreement which apply this Regulation shall communicate to the United Nations Secretariat the names and addresses of the technical services responsible for conducting approval tests and of the administrative departments which grant approval and to which forms certifying approval, or extension, or refusal or withdrawal of approval or production definitively discontinued, issued in other countries, are to be sent.

12.2. The Parties to the Agreement which apply this Regulation may designate laboratories of tyre manufacturers as approved, test laboratories.

12.3. Where a Party to the Agreement applies paragraph 12.2. above, it may, if it so desires, be represented at the tests by one or more persons of its choice.

Explanatory figure

(see paragraph 2 of the Regulation)



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 DEFINITIVELY DISCONTINUED

of a type of pneumatic tyre for motor vehicles
pursuant to Regulation No. 30

Approval No. ... Extension No. ...

---

1. Manufacturer's name or trade mark on the tyre .....

2. Tyre type designation by the manufacturer .....

3. Manufacturer's name and address .....

.....

4. If applicable, name and address of manufacturer's representative ...

.....

5. Summarized description: .....

5.1. Tyre size designation: .....

5.2. Category of use: normal/snow/temporary use 2/

5.3. Structure: diagonal/bias-belted/radial 2/

5.4. Speed category symbol: .....

5.5. Load-capacity index: .....

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

.....

7. Date of report issued by that service .....

8. Number of report issued by that service .....

9. Reason(s) of extension (if applicable) .....

10. Any remarks: .....

11. Approval granted/extended/refused/withdrawn 2/

12. Place .....

13. Date .....

14. Signature .....

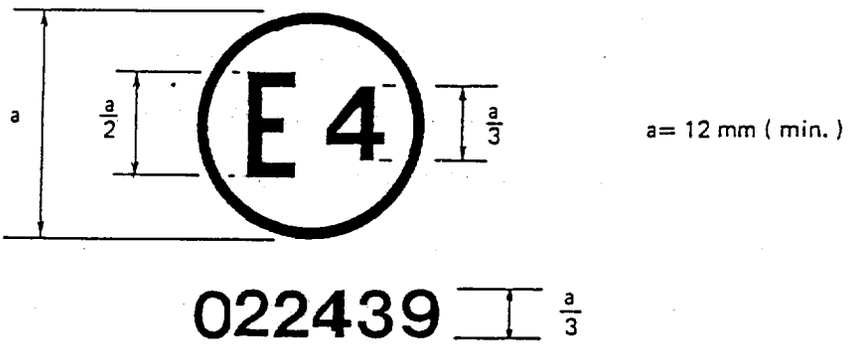
15. Annexed to this communication is a list of documents in the approval file deposited at the Administrative services having delivered the approval and which can be obtained upon request.

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

2/ Strike out what does not apply.

Annex 2

EXAMPLE OF THE ARRANGEMENT OF THE APPROVAL MARK



The above approval mark affixed to a pneumatic tyre shows that the type of tyre concerned has been approved in the Netherlands (E 4) under approval number 022439.

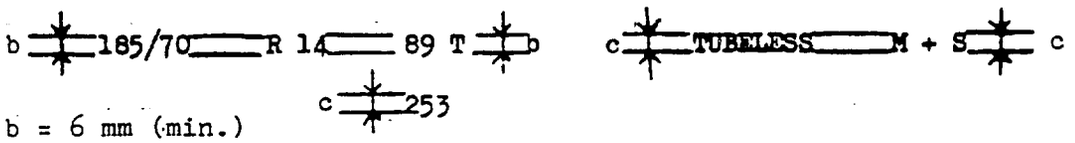
Note: The first two digits of the approval number indicate that the approval was granted in accordance with the requirements of this Regulation as amended by the 02 series of amendments.

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

Annex 3

ARRANGEMENT OF TYRE MARKINGS

Example of the markings to be borne by type of tyres placed on the market after the entry into force of this Regulation



b = 6 mm (min.)
c = 4 mm (min.)

These markings define a pneumatic 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 14;

having a load capacity of 580 kg, corresponding to load index 89 in annex 4 to this Regulation;

of speed category T (maximum speed 190 km/h);

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

of "snow" type (M+S);

manufactured in the twenty-fifth week of the year 1973.

The positioning and order of the markings constituting the tyre designation shall be the following:

(a) the size designation, comprising the nominal section width, the nominal aspect ratio, the type-of-structure symbol (where applicable) and the nominal rim diameter shall be grouped as shown in the above example: 185/70 R 14;

(b) the load index and the speed-category symbol shall be placed together near the size designation. They may either precede or follow it or be placed above or below it;

(c) the symbols "tubeless", "reinforced", and "M+S" may be at a distance from the size-designation.

Annex 4

LOAD-CAPACITY INDICES

Li = Load-capacity index
kg = Corresponding mass of the vehicle which is to be carried.

Li	kg	Li	kg	Li	kg	Li	kg
0	45	30	106	62	265	94	670
1	46.2	31	109	63	272	95	690
2	47.5	32	112	64	280	96	710
3	48.7	33	115	65	290	97	730
4	50	34	118	66	300	98	750
5	51.5	35	121	67	307	99	775
6	53	36	125	68	315	100	800
7	54.5	37	128	69	325	101	825
8	56	38	132	70	335	102	850
9	58	39	136	71	345	103	875
10	60	40	140	72	355	104	900
11	61.5	41	145	73	365	105	925
12	63	42	150	74	375	106	950
13	65	43	155	75	387	107	975
14	67	44	160	76	400	108	1 000
15	69	45	165	77	412	109	1 030
16	71	46	170	78	425	110	1 060
17	73	47	175	79	437	111	1 090
18	75	48	180	80	450	112	1 120
19	77.5	49	185	81	462	113	1 150
20	80	50	190	82	475	114	1 180
21	82.5	51	195	83	487	115	1 215
22	85	52	200	84	500	116	1 250
23	87.5	53	206	85	515	117	1 285
24	90	54	212	86	530	118	1 320
25	92.5	55	218	87	545	119	1 360
26	95	56	224	88	560	120	1 400
27	97.5	57	230	89	580		
28	100	58	236	90	600		
29	103	59	243	91	615		
		60	250	92	630		
		61	257	93	650		

Annex 5

TYRE SIZE DESIGNATION AND DIMENSIONS

Table I. Tyres in Diagonal Construction (European tyres)

Size	Measuring rim width code	Overall diameter 1/ mm	Tyre section width 1/ mm
Super Ballon Series			
4.80-10	3.5	490	128
5.20-10	3.5	508	132
5.20-12	3.5	558	132
5.60-13	4	600	145
5.90-13	4	616	150
6.40-13	4.5	642	163
5.20-14	3.5	612	132
5.60-14	4	626	145
5.90-14	4	642	150
6.40-14	4.5	666	163
5.60-15	4	650	145
5.90-15	4	668	150
6.40-15	4.5	692	163
6.70-15	4.5	710	170
7.10-15	5	724	180
7.60-15	5.5	742	193
8.20-15	6	760	213
Low Section Series			
5.50-12	4	552	142
6.00-12	4.5	574	156
7.00-13	5	644	178
7.00-14	5	668	178
7.50-14	5.5	688	190
8.00-14	6	702	203
6.00-15 L	4.5	650	156
Super Low Section Series 2/			
155-13/6.15-13	4.5	582	157
165-13/6.45-13	4.5	600	167
175-13/6.95-13	5	610	178
155-14/6.15-14	4.5	608	157
165-14/6.45-14	4.5	626	167
175-14/6.95-14	5	638	178
185-14/7.35-14	5.5	654	188
195-14/7.75-14	5.5	670	198
Ultra Low Section			
5.9-10	4	483	148
6.5-13	4.5	586	166
6.9-13	4.5	600	172
7.3-13	5	614	184

1/ Tolerances: see paragraphs 6.1.4 and 6.1.5.

2/ The following size designations are accepted:
185-14/7.35-14 or 185-14 or 7.35-14 or 7.35-14/185-14.

Table II. Tyres in Radial Construction (European tyres)

Size	Measuring rim width code	Overall diameter 1/ mm	Tyre section width 1/ mm
5.60 R 13	4	606	145
5.90 R 13	4.5	626	155
6.40 R 13	4.5	640	170
7.00 R 13	5	644	178
7.25 R 13	5	654	184
5.90 R 14	4.5	654	155
5.60 R 15	4	656	145
6.40 R 15	4.5	690	170
6.70 R 15	5	710	180
140 R 12	4	538	138
150 R 12	4	554	150
150 R 13	4	580	149
160 R 13	4.5	596	158
170 R 13	5	608	173
150 R 14	4	606	149
180 R 15	5	676	174

1/ Tolerance: see paragraphs 6.1.4 and 6.1.5.

Table III. Millimetric Series - Radial (European tyres)

Size 2/	Measuring rim width code	Overall diameter 1/ mm	Tyre section width 1/ mm
125 R 10	3.5	459	127
145 R 10	4	492	147
125 R 12	3.5	510	127
135 R 12	4	522	137
145 R 12	4	542	147
155 R 12	4.5	550	157
125 R 13	3.5	536	127
135 R 13	4	548	137
145 R 13	4	566	147
155 R 13	4.5	578	157
165 R 13	4.5	596	167
175 R 13	5	608	178
185 R 13	5.5	624	188
125 R 14	3.5	562	127
135 R 14	4	574	137
145 R 14	4	590	147
155 R 14	4.5	604	157
165 R 14	4.5	622	167
175 R 14	5	634	178
185 R 14	5.5	650	188
195 R 14	5.5	666	198
205 R 14	6	686	208
215 R 14	6	700	218
225 R 14	6.5	714	228
125 R 15	3.5	588	127
135 R 15	4	600	137
145 R 15	4	616	147
155 R 15	4.5	630	157
165 R 15	4.5	646	167
175 R 15	5	660	178
185 R 15	5.5	674	188
195 R 15	5.5	690	198
205 R 15	6	710	208
215 R 15	6	724	218
225 R 15	6.5	738	228
235 R 15	6.5	752	238
175 R 16	5	686	178
185 R 16	5.5	698	188
205 R 16	6	736	208

1/ Tolerance: see paragraphs 6.1.4 and 6.1.5.

2/ On certain tyres the rim diameter can be expressed in mm
10" = 255 12" = 305 13" = 330 14" = 355
15" = 380 16" = 405 (example: 125 R 255).

Table IV. 70 Series - Radial* (European tyres)

Size	Measuring rim width code	Overall diameter 1/ mm	Tyre section width 1/ mm
145/70 R 10	3.5	462	139
155/70 R 10	3.5	474	146
165/70 R 10	4.5	494	165
145/70 R 12	4	512	144
155/70 R 12	4	524	151
165/70 R 12	4.5	544	165
175/70 R 12	5	552	176
145/70 R 13	4	538	144
155/70 R 13	4	550	151
165/70 R 13	4.5	568	165
175/70 R 13	5	580	176
185/70 R 13	5	598	186
195/70 R 13	5.5	608	197
205/70 R 13	5.5	625	204
145/70 R 14	4	564	144
155/70 R 14	4	576	151
165/70 R 14	4.5	592	165
175/70 R 14	5	606	176
185/70 R 14	5	624	186
195/70 R 14	5.5	636	197
205/70 R 14	5.5	652	206
215/70 R 14	6	665	217
225/70 R 14	6	677	225
235/70 R 14	6.5	694	239
245/70 R 14	6.5	705	243
145/70 R 15	4	590	144
155/70 R 15	4	602	151
165/70 R 15	4.5	618	165
175/70 R 15	5	632	176
185/70 R 15	5	648	186
195/70 R 15	5.5	656	197
205/70 R 15	5.5	669	202
215/70 R 15	6	682	213
225/70 R 15	6	696	220
235/70 R 15	6.5	712	234
245/70 R 15	6.5	720	239

*/ Dimensional data applicable to some tyres in existence. For new approvals, dimensions calculated according to paragraphs 6.1.1.1 and 6.1.2.1 of this Regulation shall apply. See transitional provisions, paragraph 11.

1/ Tolerance: see paragraphs 6.1.4 and 6.1.5.

Table V. 60 Series - Radial* (European tyres)

Size	Measuring rim width code	Overall diameter 1/ mm	Tyre section width 1/ mm
165/60 R 12	5	504	167
165/60 R 13	5	530	167
175/60 R 13	5.5	536	178
185/60 R 13	5.5	548	188
195/60 R 13	6	566	198
205/60 R 13	6	578	208
215/60 R 13	6	594	218
225/60 R 13	6.5	602	230
235/60 R 13	6.5	614	235
165/60 R 14	5	554	167
175/60 R 14	5.5	562	178
185/60 R 14	5.5	574	188
195/60 R 14	6	590	198
205/60 R 14	6	604	208
215/60 R 14	6	610	215
225/60 R 14	6	620	220
235/60 R 14	6.5	630	231
245/60 R 14	6.5	642	237
265/60 R 14	7	670	260
185/60 R 15	5.5	600	188
195/60 R 15	6	616	198
205/60 R 15	6	630	208
215/60 R 15	6	638	216
225/60 R 15	6.5	652	230
235/60 R 15	6.5	664	236
255/60 R 15	7	688	255
205/60 R 16	6	654	208
215/60 R 16	6	662	215
225/60 R 16	6	672	226
235/60 R 16	6.5	684	232

*/ Dimensional data applicable to some tyres in existence. For new approvals, dimensions calculated according to paragraphs 6.1.1.1 and 6.1.2.1 of this Regulation shall apply. See transitional provisions, paragraph 11.

1/ Tolerance: see paragraphs 6.1.4 and 6.1.5.

Table VI: High Flotation Tyres Radial

Size	Measuring rim width code	Overall diameter 1/ mm	Tyre section width 1/ mm
27 x 8.50 R 14	7	674	218
30 x 9.50 R 15	7.5	750	240
31 x 10.50 R 15	8.5	775	268
31 x 11.50 R 15	9	775	290
32 x 11.50 R 15	9	801	290
33 x 12.50 R 15	10	826	318

1/ Tolerance: see paragraphs 6.1.4 and 6.1.5

Annex 6

METHOD OF MEASURING PNEUMATIC TYRES

1.1. Mount the tyre on the measuring rim specified by the manufacturer pursuant to paragraph 4.1.12. of this Regulation and inflate it to a pressure of 3 to 3.5 bar.

1.2. Adjust the pressure as follows:

1.2.1. in standard bias-belted tyres: to 1.7 bar;

1.2.2. in diagonal (bias-ply) tyres: to:

	Pressure (bar)		
Ply-rating	Speed category		
	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. in standard radial tyres: to 1.8 bar;

1.2.4. in reinforced tyres: to 2.3 bar;

1.2.5. in T-tyre temporary use spare tyres: to 4.2. bar.

2. Condition the tyre, mounted on its rim, at the ambient room temperature for not less than 24 hours, save as otherwise prescribed in paragraph 6.2.3. of this Regulation.

3. Readjust the pressure to the level specified in paragraph 1.2. above.

4. Measure the overall width by calliper at six equally-spaced points, taking the thickness of the protective ribs or bands into account. The highest measurement so obtained is taken as the overall width.

5. Determine the outer diameter by measuring the maximum circumference and dividing the figure so obtained by π (3.1416).

Annex 7

PROCEDURE FOR LOAD/SPEED PERFORMANCE TESTS

1. Preparing the tyre

1.1. Mount a new tyre on the test rim specified by the manufacturer pursuant to paragraph 4.1.12. of this Regulation.

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

T-type temporary use spare tyres: to 4.2 bar.

Speed category	Diagonal (bias-ply) tyres			Radial tyres		Bias-belted tyres
	Ply rating			Standard	Reinforced	Standard
	4	6	8			
L, M, N	2.3	2.7	3.0	-	-	-
P, Q, R, S	2.6	3.0	3.3	2.6	3.0	2.6
T, U, H	2.8	3.2	3.5	2.8	3.2	2.8
V	3.0	3.4	3.7	3.0	-	-

1.3. The manufacturer may request, giving reasons, the use of a test-inflation pressure differing from those given under paragraph 1.2. above. In such a case the tyre shall be inflated to that 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. above.

2. Carrying out the test

2.1. Mount the tyre-and-wheel assembly on a test axle and press it against the outer face of a smooth wheel 1.70 m ± 1% or 2 m ± 1% in diameter.

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

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

2.2.2. the maximum load rating associated with a maximum speed of 240 km/h for tyres Speed Symbol "V" (see para. 2.31.2. of this Regulation).

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° or at a higher temperature if the manufacturer agrees.

2.5. Carry the test through, without interruption in conformity with the following particulars:

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

2.5.2. initial test speed: prescribed maximum speed for the type of tyre (see para. 2.29.3 of this Regulation), less 40 km/h in the case of the smooth wheel having 1.70 m ± 1% in diameter or less 30 km/h in the case of the smooth wheel having 2 m ± 1% in diameter;

2.5.3. successive speed increments: 10 km/h;

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 type of tyre, less 10 km/h in the case of the smooth wheel having 1.7 m ± 1% in diameter or equal to the prescribed maximum speed in the case of the smooth wheel having 2 m ± 1% in diameter.

3. Equivalent test methods

If a method other than that described in paragraph 2 above is used, its equivalence must be demonstrated.
