

# هيئة التقييس لدول مجلس التعاون لدول الخليج العربية GCC STANDARDIZATION ORGANIZATION (GSO)

مشروع مواصفة نهائي  
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إعداد اللجنة الفنية الفرعية الخليجية رقم TC 02/SC 01

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**GSO 02 /01/FDS/ 645:2017**

إطارات المركبات التجارية الجزء الأول: المسميات والتميز والبيانات الايضاحية  
والابعاد والاحمال وضغوط النفخ

**Tyres for Commercial Vehicles Part 1: Nomenclature, Designation,  
Marking, Dimensions, Load Capacities and Inflation Pressures**

ICS: 43.020

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## تقديم

هيئة التقييس لدول مجلس التعاون لدول الخليج العربية هيئة إقليمية تضم في عضويتها أجهزة التقييس الوطنية في الدول الأعضاء ، ومن مهام الهيئة إعداد المواصفات القياسية واللوائح الفنية الخليجية بواسطة لجان فنية متخصصة.

قرر المجلس الفني لهيئة التقييس لدول مجلس التعاون لدول الخليج العربية في اجتماعه رقم ( ) الذي عقد بتاريخ...../...../..... هـ ،الموافق ...../...../..... م اعتماد تحديث المواصفة القياسية الخليجية رقم GSO 645:2017 " إطارات المركبات التجارية الجزء الأول: المسميات والتميز والبيانات الايضاحية والابعاد والاحمال وضغوط النفخ " التي تم دراستها و إعدادها ضمن برنامج عمل اللجنة الفنية الفرعية الخليجية رقم TC 02/SC01 " اللجنة الفنية الفرعية الخليجية لمواصفات المركبات والإطارات " المدرجة في خطة دولة الكويت . على أن تلغي المواصفة القياسية الخليجية رقم GSO 645:2005 و تحل محلها .

## Tyres for Commercial Vehicles Tyres Part 1: Nomenclature, Designation, Marking, Dimensions, Load Capacities and Inflation Pressures

### 1- SCOPE AND FIELD OF APPLICATION

This standard is concerned with new tyres for commercial vehicles (Light Trucks, Heavy Trucks, Buses and trailers). This standard is not applicable for tyre types identified by speed category less than 80 km/h. It is also not applicable to motorcycle, road equipment or agricultural equipment tyres.

### 2- COMPLEMENTARY REFERENCES

- 2.1 GSO 51/2017 "Passenger Car Tyres - Part 1: Nomenclature, Designation, Marking, Dimensions, Load Capacity and Inflation Pressure".
- 2.2 GSO 646/2017 "Tyres for Commercial Vehicles, Part 2: Testing Methods"
- 2.3 GSO 647/2017 "Tyres for Commercial Vehicles Tyres, Part 3: General Requirements".

### 3- DEFINITIONS

- 3.1 **Pneumatic tyre**  
Circular shaped tyre made of an elastic material and enforced with steel strand and/or fabric and reinforced with suitable fibers or cords and designed to be mounted on the rim.
- 3.2 **Type of pneumatic tyre**  
A category of pneumatic tyres which do not differ in such essential respects as:
  - (a) The manufacturer's name;
  - (b) Tyre-size designation;
  - (c) Category of use (normal tyre, snow tyre, special use tyre);
  - (d) Structure (diagonal (bias-ply, radial);
  - (e) Speed category symbol;
  - (f) Load-capacity indexes;
  - (g) Tyre cross-section.
- 3.3 **Manufacturer**  
It refers to the person or body who is responsible to the Type Approval Authority (TAA) for all aspects of the type-approval and for ensuring the conformity of production.
- 3.4 **Brand name/trademark**

It is the identification of the brand or trademark as defined by the tyre manufacturer and marked on the sidewall(s) of the tyre. The brand name/trademark may be the same as that of the manufacturer".

- 3.5 Trade description/commercial name  
It is an identification of a range of tyres as given by the tyre manufacturer. It may coincide with the brand name/trademark.
- 3.6 Category of use as:
- 3.6.1 Normal tyre  
It is type of a tyre intended for normal, on-road use.
- 3.6.2 Snow tyre  
It is a type of tyre whose tread pattern, tread compound or structure are primarily intended to achieve better performance in snow conditions than that of a normal tyre with regard to its ability to initiate or maintain vehicle motion.
- 3.6.3 Special use tyre  
It is a type of tyre designed for mixed using both on- and off-road or for other special duty. It is primarily intended to initiate and maintain the vehicle in motion in off-road conditions.
- 3.6.3.1 Professional off-road tyre  
It is a special use tyre primarily used for service in severe off-road conditions.
- ~~3.2.3.4 Use at restricted speed.~~
- 3.7 Structure of a tyre  
It refers to the technical characteristics of the tyre's carcass. A distinction is made between the following structures in particular:
- 3.7.1 Diagonal or "bias-ply"  
It is a pneumatic-tyre structure that has ply cords extend to the beads and are laid at alternate angles substantially less than 90° to the centreline of the tread.
- 3.7.2 Radial  
It is a pneumatic-tyre structure that has ply cords extend to the beads and are laid substantially at 90° to the centerline of the tread, the carcass being stabilized by an essentially inextensible circumferential belt.
- 3.8 Bead  
It is the part of a pneumatic tyre which is of such shape and structure as to fit the rim and to hold the tyre on it.
- 3.9 Cord  
It means the strands forming the fabric of the plies in the pneumatic tyre.
- 3.10 Cord separation

- It is the separation of the cords from their coating.
- 3.11 Ply  
A layer of rubber - coated parallel cords.
- 3.12 Ply separation  
It is the parting of adjacent plies.
- 3.13 Carcass  
It is the part of a pneumatic tyre other than the tread and the rubber sidewalls which, when inflated, bears the load.
- 3.14 Tread  
It is that part of a pneumatic tyre which comes into contact with the ground, protects the carcass against mechanical damage and contributes to ground adhesion.
- 3.15 Tread separation  
It is the pulling away of the tread from the carcass.
- 3.16 Tread groove  
It refers to the space between two adjacent ribs and/or blocks in the tread pattern.
- ~~3.2.7~~ ~~Cross section~~
- 3.17 Chunking  
The breaking away of pieces of rubber from tread.
- 3.18 Sidewall  
It is the part of a pneumatic tyre between the tread and the area designed to be covered by the rim flange.
- 3.19 Lower sidewall  
It refers to the area between the line of maximum section width of the tyre and the area designed to be covered by the rim flange.
- 3.20 Section width (S)  
It is the linear distance between the outsides of the sidewalls of an inflated pneumatic tyre, excluding elevations due to marking, decoration or protective bands or ribs.
- 3.21 Overall width  
It is the linear distance between the outsides of the sidewalls of an inflated pneumatic tyre, including marking, decoration and protective bands or ribs.
- 3.22 Section height (H)  
It is a distance that equals to half the difference between the outer diameter of the tyre and the nominal rim diameter.
- 3.23 Nominal aspect ratio (Ra)

It is one hundred times the number calculated by dividing the section height (H) by the nominal section width ( $S_1$ ). Both dimensions shall be expressed in the same units.

- 3.24 **Outer diameter (D)**  
It refers to the overall diameter of an inflated new pneumatic tyre.
- 3.25 **Rim**  
A metallic support for a tyre, or a tyre and tube assembly upon which the tyre bead is seated.
- 3.26 **Theoretical rim**  
It means a rim with width equals to (x) times the nominal section width of a tyre; the value of (x) shall be specified by the manufacturer of the type.
- 3.27 **Measuring rim**  
The rim on which a tyre shall be fitted for dimensional measurements
- 3.28 **Test rim**  
The rim on which a tyre shall be fitted for strength, speed and endurance tests
- 3.29 **Ply rating (PR)**  
Index of tyre strength, does not necessarily represent the actual number of plies in the tyre. It is used to relate a given size tyre with its load and inflation pressure.
- 3.30 **Maximum load for a tyre**  
Load for each individual tyre from maximum load applied to the tyres installed on a vehicle loaded with the maximum load specified by the manufacturer.
- 3.31 **Load capacity index**  
It is one or two numbers which indicate the load the tyre can carry in single or in single and dual operation at the speed corresponding to the associated speed category and when operated in conformity with the requirements governing utilization specified by the manufacturer.
- 3.32 **Speed symbol**  
A symbol indicating the speed at which the tyre can carry a load corresponding to its load index under the service conditions specified by the tyre manufacturer.
- 3.33 **Void to fill ratio**  
It is the ratio between the area of voids in a reference surface and the area of this reference surface calculated from the mould drawing.
- 3.34 **Tyre class**  
It means one of the following groupings:

- 3.34.1 Class C2 tyres: Tyres identified by a load capacity index in single formation lower or equal to 121 and a speed category symbol higher or equal to "N".
- 3.34.2 Class C3 tyres: Tyres identified by:
- (a) A load capacity index in single formation higher or equal to 122; or
  - (b) A load capacity index in single formation lower or equal to 121 and a speed category symbol lower or equal to "M".
- 3.35 Model rim assembly  
It means a test device that:
- (a) includes a rim which conforms to the published dimensions of a commercially available rim.
  - (b) includes an air valve assembly for testing tubeless tyres.
  - (c) an innertube and flap (as required) for testing tube type tyres.
  - (d) undergoes no permanent rim deformation.
  - (e) allows no loss of air through the portion that it comprises of the tyre-rim pressure chamber when a tyre is properly mounted on the assembly and subjected to the requirements of this standard.

#### 4- DIMENSIONS MEASUREMENT

It should be as specified in the Gulf standard GSO 51/2017 mentioned in Item 2.1, or in the publications of at least one of the organizations specified in 6.4 in addition to the following items:

- 4.1 Speed category  
Tyres shall be designated according to the maximum speed using the letters mentioned in Table 1

TABLE 1  
Maximum Speed and Corresponding Symbol for Tyre Designation

Speed-category symbol	Corresponding speed (km/h)
F	80
G	90
J	100
K	110
L	120
M	130
N	140
P	150
Q	160
R	170
S	180
T	190
U	200
H	210

- 4.2 Nominal rim diameter

In addition to the nominal rim diameters mentioned in the gulf standard GSO 51/2017, the following values shall be added to this standard.

TABLE 2  
Nominal Rim Diameter

Nominal rim diameter code ("d" symbol)	Value of the "d" symbol expressed in mm
8	203
9	229
14.5	368
16.5	419
17.5	445
19.5	495
20.5	521
22.5	572
24.5	622

- 4.3 Load capacity index  
The list of these indices and their corresponding loads is given in Table 3.

TABLE 3  
Load Capacity Indices

Load-capacity index	Corresponding maximum mass to be carried (kg)	Load-capacity index	Corresponding maximum mass to be carried (kg)	Load-capacity index	Corresponding maximum mass to be carried (kg)	Load-capacity index	Corresponding maximum mass to be carried (kg)	Load-capacity index	Corresponding maximum mass to be carried (kg)
60	250	90	600	120	1 400	150	3 350	180	8 000
61	257	91	615	121	1 450	151	3 450	181	8 250
62	265	92	630	122	1 500	152	3 550	182	8 500
63	272	93	650	123	1 550	153	3 650	183	8 750
64	280	94	670	124	1 600	154	3 750	184	9 000
65	290	95	690	125	1 650	155	3 875	185	9 250
66	300	96	710	126	1 700	156	4 000	186	9 500
67	307	97	730	127	1 750	157	4 125	187	9 750
68	315	98	750	128	1 800	158	4 250	188	10 000
69	325	99	775	129	1 850	159	4 375	189	10 300
70	335	100	800	130	1 900	160	4 500	190	10 600
71	345	101	825	131	1 950	161	4 625	191	10 900
72	355	102	850	132	2 000	162	4 750	192	11 200
73	365	103	875	133	2 060	163	4 875	193	11 500
74	375	104	900	134	2 120	164	5 000	194	11 800
75	387	105	925	135	2 180	165	5 150	195	12 150
76	400	106	950	136	2 240	166	5 300	196	12 500



77	412	107	975	137	2 300	167	5 450	197	12 850
78	425	108	1 000	138	2 360	168	5 600	198	13 200
79	437	109	1 030	139	2 430	169	5 800	199	13 600
80	450	110	1 060	140	2 500	170	6 000	200	14 000
81	462	111	1 090	141	2 575	171	6 150		
82	475	112	1 120	142	2 650	172	6 300		
83	487	113	1 150	143	2 725	173	6 500		
84	500	114	1 180	144	2 800	174	6 700		
85	515	115	1 215	145	2 900	175	6 900		
86	530	116	1 250	146	3 000	176	7 100		
87	545	117	1 285	147	3 075	177	7 300		
88	560	118	1 320	148	3 150	178	7 500		
89	580	119	1 360	149	3 250	179	7 750		

#### 4.4 Load-capacity variation with speed

Table 4 shows a function of the load-capacity indices and nominal speed category symbols the load variations which a pneumatic tyre can withstand when used at speeds different from that conforming to its nominal speed category symbol.

TABLE 4  
Load Capacity Variation with Speed of Commercial Vehicles Tyres (Radial and Diagonal)

Variation of load capacity (%)										
Speed (km/h)	All load indices				Load indices ≥ 122*		Load indices ≤ 121*			
	Speed category symbol				Speed category symbol		Speed category symbol			
	F	G	J	K	L	M	L	M	N	P**
0	+150	+150	+150	+150	+150	+150	+110	+110	+110	+110
5	+110	+110	+110	+110	+110	+110	+90	+90	+90	+90
10	+80	+80	+80	+80	+80	+80	+75	+75	+75	+75
15	+65	+65	+65	+65	+65	+65	+60	+60	+60	+60
20	+50	+50	+50	+50	+50	+50	+50	+50	+50	+50
25	+35	+35	+35	+35	+35	+35	+42	+42	+42	+42
30	+25	+25	+25	+25	+25	+25	+35	+35	+35	+35
35	+19	+19	+19	+19	+19	+19	+29	+29	+29	+29
40	+15	+15	+15	+15	+15	+15	+25	+25	+25	+25
45	+13	+13	+13	+13	+13	+13	+22	+22	+22	+22
50	+12	+12	+12	+12	+12	+12	+20	+20	+20	+20
55	+11	+11	+11	+11	+11	+11	+17.5	+17.5	+17.5	+17.5
60	+10	+10	+10	+10	+10	+10	+15.0	+15.0	+15.0	+15.0

Variation of load capacity (%)										
Speed (km/h)	All load indices				Load indices $\geq 122^*$		Load indices $\leq 121^*$			
	Speed category symbol				Speed category symbol		Speed category symbol			
65	+7.5	+8.5	+8.5	+8.5	+8.5	+8.5	+13.5	+13.5	+13.5	+13.5
70	+5.0	+7.0	+7.0	+7.0	+7.0	+7.0	+12.5	+12.5	+12.5	+12.5
75	+2.5	+5.5	+5.5	+5.5	+5.5	+5.5	+11.0	+11.0	+11.0	+11.0
80	0	+4.0	+4.0	+4.0	+4.0	+4.0	+10.0	+10.0	+10.0	+10.0
85	-3	+2.0	+3.0	+3.0	+3.0	+3.0	+8.5	+8.5	+8.5	+8.5
90	-6	0	+2.0	+2.0	+2.0	+2.0	+7.5	+7.5	+7.5	+7.5
95	-10	-2.5	+1.0	+1.0	+1.0	+1.0	+6.5	+6.5	+6.5	+6.5
100	-15	-5	0	0	0	0	+5.0	+5.0	+5.0	+5.0
105		-8	-2	0	0	0	+3.75	+3.75	+3.75	+3.75
110		-13	-4	0	0	0	+2.5	+2.5	+2.5	+2.5
115			-7	-3	0	0	+1.25	+1.25	+1.25	+1.25
120			-12	-7	0	0	0	0	0	0
125						0	-2.5	0	0	0
130						0	-5.0	0	0	0
135							-7.5	-2.5	0	0
140							-10	-5	0	0
145								-7.5	-2.5	0
150								-10.0	-5.0	0
155									-7.5	-2.5
160									-10.0	-5.0


\* The load capacity indices refer to a single operation.

\*\* Load variations are not allowed for speeds above 160 km/h. For speed category symbols "Q" and above the speed category corresponding to the speed category symbol (see paragraph 4.1 Table 1) specifies the maximum speed permitted for the tyre.

## 5- MARKING

Pneumatic tyres submitted for approval shall bear on both sidewalls in the case of symmetrical tyres and at least on the outer sidewall in the case of asymmetrical tyres the following information in either Arabic and/or English:

- 5.1 The manufacturer's name or the brand name/trademark.
- 5.2 The trade description/commercial name. The trade description is not required when it coincides with the Brand name/trademark.
- 5.3 The tyre-size designation
- 5.4 An indication of the structure as follows:
  - 5.4.1 The letter "D" or "no indication" on diagonal (bias-ply) tyres.
  - 5.4.2 The letter "R" placed in front of the rim-diameter marking and, optionally, the word "RADIAL" on radial-ply tyres.

- 5.5 The speed-category symbol
- 5.5.1 An indication of the tyre's nominal speed category in the form of the symbol prescribed in paragraph 4.1.
- 5.5.2 The inscription M+S or M.S or M&S if the tyre is classified in the category of use "snow tyre".
- 5.6 The load-capacity indices as defined in paragraph 4.3, Table 3.
- 5.7 The word "TUBELESS" if the tyre is designed for use without an inner tube.
- 5.8 The date of manufacture in the form of a group of four digits, the first two showing the week and the last two the year of manufacture. This marking may be restricted to one sidewall only.
- 5.9 In the case of tyres which can be regrooved, the symbol "  " at least 20 mm in diameter, or the word "REGROOVABLE", moulded into or on to each sidewall.
- 5.10 An indication, by the "PSI" index, of the inflation pressure to be adopted for the load/speed endurance tests, as explained in Table 5, Appendix A.
- 5.11 The inscription "MPT" (or alternatively "ML" or "ET") and /or "POR" if the tyre is classified in the category of use "special". In addition, they may also bear the inscription M+S or M.S or M&S.
- ET means Extra Tread, ML stands for Mining and Logging, MPT means Multi-Purpose Truck and POR means Professional Off Road.
- 5.12 The prefix "LT" before the tyre size designation, or the suffix "C" or "LT" after the rim diameter and, if applicable, after the tyre to rim fitment configuration (Metric A Tyre).
- 5.12.1 This marking is optional in the case of tyres fitted on 5° drop centre rims, suitable for single and dual fitment, having a load capacity index in single lower or equal to 121 and destined for the equipment of motor vehicles.
- 5.12.2 This marking is mandatory in the case of tyres fitted on 5° drop centre rims, suitable for single fitment only, having a load capacity index higher or equal to 122 and destined for the equipment of motor vehicles.
- 5.13 The suffix "CP" after the rim diameter and, if applicable, after the tyre to rim fitment configuration. This marking is mandatory in the case of tyres fitted on 5° drop centre rims, having a load capacity index in single lower or equal to 121 and specifically designed for the equipment of motor caravans.

- 5.14 The inscription "FRT" (Free Rolling Tyre) in case of tyres designed for the equipment of trailer axles and axles of motor vehicles other than front steering and drive axles.
- 5.15 Country of production
- 5.16 Tread wear indicator
- 5.17 Appendix B give an example of an arrangement of the tyre marking.

## 6- DIMENSIONS, LOAD CAPACITIES AND INFLATION PRESSURES

### 6.1 Section width

- 6.1.1 The section width shall be obtained by means of the following formula, (which applies to tyres with a metric size designation. For tyres with a code size designation, item 6.3 applies).

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

Where:

- $S$  = is the section width rounded to the nearest millimeter and measured on the measuring rim.
- $S_1$  = is the nominal section width in millimetres, as shown on the sidewall of the tyre in the tyre designation as prescribed.
- $A$  = is the width of the measuring rim in millimetres, as shown by the manufacturer in the descriptive note, and
- $A_1$  = is the width of the theoretical rim in millimetres.
- $A_1$  shall be taken equal to  $S_1$  multiplied by the factor  $x$  as prescribed by the tyre manufacturer and  $K$  shall be taken equal to 0.4.

- 6.1.2 For tyres identified by the "tyre to rim fitment configuration" symbol "A",  $K$  shall be taken to equal 0.6.

### 6.1.3 Tyre section width specifications

- 6.1.3.1 The overall width of a tyre may be less than the section width determined in accordance with item 6.1.1.
- 6.1.3.2 The overall width of a tyre may exceed that value by 4% in case of radial ply tyres and by 8% in case of diagonal (bias-ply) tyres. However, for tyres of a section width exceeding 305 mm intended for dual mounting (twinning), the nominal value shall not be exceeded by more than 2% for radial ply tyres with nominal aspect ratio higher than 60, or 4% for diagonal (bias-ply) tyres. The respective limits shall be rounded to the nearest millimetre (mm).

### 6.2 Outer Diameter of a Tyre

- 6.2.1 The outer diameter of a tyre shall be obtained by means of the following

formula:

$$D = d + 2H$$

where:

D is the outer diameter expressed in millimetres;

d is the conventional number denoting the nominal rim diameter expressed in millimetres;

H is the nominal section height rounded to the nearest millimetre and is equal to

$$H = S1 \cdot 0.01 Ra, \text{ where}$$

S1 is the nominal section width in millimetres;

Ra is the nominal aspect ratio;

All as shown on the sidewall of the tyre-size designation in conformity with the requirements of paragraph 5 above.

6.2.2 For tyres identified by the "tyre to rim fitment configuration" symbol "A", the outer diameter shall be that specified in the tyre-size designation as shown on the sidewall of the tyre.

6.2.3 Tyre outer diameter specifications

6.2.3.1 The outer diameter of a tyre must not be outside the values  $D_{min}$  and  $D_{max}$  obtained from the following formulae:

$$D_{min} = d + (2 \cdot H_{min})$$

$$D_{max} = d + (2 \cdot H_{max})$$

where:

$$H_{min} = (H \cdot a) \text{ rounded to the nearest mm}$$

$$H_{max} = (H \cdot b) \text{ rounded to the nearest mm}$$

6.2.3.2 For tyres identified by the "tyre to rim fitment configuration" symbol "A", the nominal section height H is equal to:  $H = 0.5 (D-d)$ , rounded to the nearest mm. (For references see paragraph 6.2.1 above).

6.2.3.3 Coefficients "a" and "b" are respectively:

6.2.3.3.1 Coefficient "a" = 0.97

6.2.3.3.2 Coefficient "b"

Coefficient "b"	Radial	Diagonal
for normal use tyres	1.04	1.07
for special use tyres	1.06	1.09

6.2.3.3.3 For snow tyres the outer diameter shall not exceed the following value:

$$D_{\max, \text{snow}} = 1.01 \cdot D_{\max} \quad \text{rounded to the nearest mm}$$

Where:

$D_{\max}$  is the maximum outer diameter established in conformity with the above.

For tyres of the category of use "snow tyre" the outer diameter ( $D_{\max}$ ) established in conformity with the above may be exceeded by 1%"

6.2.4 The outer diameter of a tyre shall not differ from the value "D" by more than  $\pm 1.5\%$  in the case of tyres used on the road, nor by more than +5% and not less than -2% in the case of tyres for special use such as off-road use.

6.3 For the existing types of tyres whose designation is given in publications mentioned in 6.4, the section width and the outer diameter shall be as mentioned in those publications.

6.4 Dimensions load, capacities and inflation pressures shall be in accordance with what is mentioned in current publications, at the date of manufacture of the tyre or any later date, of at least one of the following organizations:

6.4.1 "The Tyre and Rim Association TRA in USA".

6.4.2 "The European Tyre and Rim Technical Organization ETRTO".

6.4.3 "Japan Automobile Tyre Manufacturers Association JATMA".

6.4.4 "Deutsches Institut Für Normung (DIN)".

6.4.5 "British Standards Institution".

6.4.6 "Scandinavian Tyre and Rim Organization STRO".

6.4.7 "The Tyre and Rim Organization of Australia".

6.4.8 "Association Francaise de Normalisation AFNOR"

## REFERENCES:

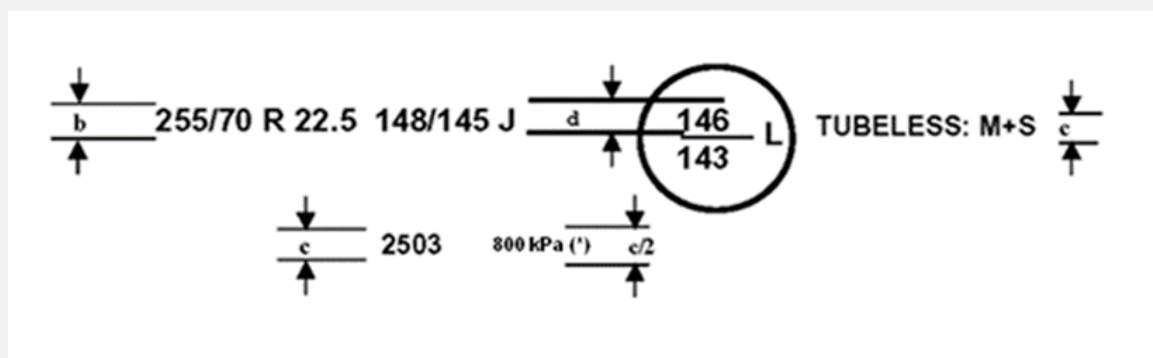
1. ECE No. 54 "Uniform provisions concerning the approval of pneumatic tyres for commercial vehicles and their trailers, Revision 3; 26<sup>th</sup> March 2013.
2. ECE No. 54 "Uniform provisions concerning the approval of pneumatic tyres for commercial vehicles and their trailers, Revision 3/ Amendment 1: 3<sup>rd</sup> February 2015.
3. ECE No. 54 "Uniform provisions concerning the approval of pneumatic tyres for commercial vehicles and their trailers, Revision 3/ Amendment 2; 5<sup>th</sup> February 2016.
4. ECE No. 54 "Uniform provisions concerning the approval of pneumatic tyres for commercial vehicles and their trailers, Revision 3/ Amendment 3; 26<sup>th</sup> March 2013.
5. ECE No. 54 "Uniform provisions concerning the approval of pneumatic tyres for commercial vehicles and their trailers, Revision 3/ Corrigendum 1; 18<sup>th</sup> December 2014.
6. ECE No. 54 "Uniform provisions concerning the approval of pneumatic tyres for commercial vehicles and their trailers, Revision 3/ Corrigendum 2; 25<sup>th</sup> August 2014.
7. FMVSS No. 119 "New pneumatic tires for motor vehicles with a GVWR of more than 4,536 kilograms (10,000 pounds) and motorcycle"; 2008
8. GS 645 "Multi-Purpose Vehicles, Trucks, Buses and Trailers Tyres Part 1"; 2005 & 2009
9. GS 646 "Multi-Purpose Vehicles, Trucks, Buses and Trailers Tyres Part 2"; 1996 & 2009
10. GS 647 "Multi-Purpose Vehicles, Trucks, Buses and Trailers Tyres Part 3"; 1996 & 2009

**APPENDIX A:** Table 5 Relation between the pressure index and the units of pressure

Pressure Index ("PSI")	Bar	kPa
20	1.4	140
25	1.7	170
30	2.1	210
35	2.4	240
40	2.8	280
45	3.1	310
50	3.4	340
55	3.8	380
60	4.1	410
65	4.5	450
70	4.8	480
75	5.2	520
80	5.5	550
85	5.9	590
90	6.2	620
95	6.6	660
100	6.9	690
105	7.2	720
110	7.6	760
115	7.9	790
120	8.3	830
125	8.6	860
130	9.0	900
135	9.3	930
140	9.7	970
145	10.0	1 000
150	10.3	1 030



## APPENDIX B: ARRANGEMENT OF TYRE MARKINGS



	Minimum Heights Markings, (mm)	
	Tyres of nominal rim diameter < 508 mm (Code 20) or of nominal section width ≤ 235 mm (Code 9)	Tyres of nominal rim diameter ≥ 508 mm (Code 20) or of nominal section width > 235 mm (Code 9)
b	6	9
c		4
d		6

(\*) PSI marking instead of kPa is allowed for tyres first type approved before 1 January 2018.

- These markings, given as an example, define a pneumatic tyre:
  - Having a nominal section width of 255;
  - Having a nominal aspect ratio of 70;
  - Of radial-ply structure (R);
  - Having a nominal rim diameter of 572 mm, for which the symbol is 22.5;
  - Having load capacities of 3,150 kg when single and 2,900 kg when twinned (dual), corresponding respectively to the load indices 148 and 145 shown in Table 3 paragraph 4.3.
  - Having a reference speed of 100 km/h corresponding to speed category symbol: J
  - Classified in the category of use Snow: M+S
  - Able to be used additionally at 120 km/h (speed category symbol L) with a load capacity of 3,000 kg when single and 2,725 kg when twinned (dual), corresponding respectively to the load indices 145 and 143 shown in Table 3 paragraph 4.3.
  - Capable of being fitted without inner tube: "TUBELESS"
  - Manufactured during the twenty-fifth week of the year 2003, and
  - Requiring to be inflated to 620 kPa for load/speed endurance tests, for which the PSI symbol is 90.
- 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:

235-700 R 450A

Where:

- 235 is the nominal section width in mm
- 700 is the outer diameter expressed in mm
- R is an indication of the structure of the tyre
- 450 is the nominal diameter of the rim expressed in mm
- A is the tyre to rim fitment configuration

The marking of the load index, speed category symbol, date of manufacture and other markings shall be as given in the example above.

FOR STUDY