DRAFT UGANDA STANDARD

DUS EAS 358

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Pneumatic tyres for passenger cars — Specification

Reference number
DUS EAS 358: 2004

Compliance with this standard does not, of itself confer immunity from legal obligations

A Uganda Standard does not purport to include all necessary provisions of a contract. Users are responsible for its correct application

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National foreword

Uganda National Bureau of Standards (UNBS) is a parastatal under the Ministry of Trade, Industry and Cooperatives established under Cap 327, of the Laws of Uganda, as amended. UNBS is mandated to co-ordinate the elaboration of standards and is

(a) a member of International Organisation for Standardisation (ISO) and

(b) a contact point for the WHO/FAO Codex Alimentarius Commission on Food Standards, and

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The work of preparing Uganda Standards is carried out through Technical Committees. A Technical Committee is established to deliberate on standards in a given field or area and consists of representatives of consumers, traders, academicians, manufacturers, government and other stakeholders.

Draft Uganda Standards adopted by the Technical Committee are widely circulated to stakeholders and the general public for comments. The committee reviews the comments before recommending the draft standards for approval and declaration as Uganda Standards by the National Standards Council.

This Draft Uganda Standard, DUS EAS 358: 2004*, Pneumatic tyres for passenger cars — Specification,* is identical with and has been reproduced from an East African Standard, EAS 358: 2004*, Pneumatic tyres for passenger cars — Specification,* and is being proposed for adoption as a Uganda Standard.

This standard cancels and replaces US 513:2004, *Specification for new pneumatic tyres — Passenger cars.*

This Uganda Standard, DUS EAS 358: 2004, has been developed by the Transport and communication standards Technical Committee (UNBS/TC 8).

Wherever the words, “East African Standard" appear, they should be replaced by "Uganda Standard."

EAS 358:2004

ICS 83.160.10

HS 4011.20
HS 4011.20.10 (radial)
HS 4011.20.90 (other)

EAST AFRICAN STANDARD

Pneumatic tyres for passenger cars — Specification

EAST AFRICAN COMMUNITY

First Edition 2004

Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in East Africa. It is envisaged that through harmonized standardization, trade barriers which are encountered when goods and services are exchanged within the Community will be removed.

In order to achieve this objective, the Partner States in the Community through their National Bureaux of Standards, have established an East African Standards Committee.

The committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

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Introduction

This East African Standardhas been prepared in order to give the necessary specifications and requirements for test of pneumatic tyres. It provides important information to be observed for improvement of motor vehicle safety in the country.

In reporting the results of a test made in accordance with this Tanzania Standard, if the final value observed or calculated is to be rounded off unless otherwise explained, it shall be done in accordance with EAS 124 (see clause 2).

In the preparation of this East African Standard, assistance was derived from:

BS AU 50-1.1.1b:1996, *Tyres and wheels — Car tyres — Specification for metric series tyres;* published by the British Standards Institution.

IS 10914-30:1991, *Automotive vehicles — Pneumatic tyres — Diagonal ply — Specification — passenger car tyres;* published by the Bureau of Indian Standards.

Some company standards from our regional industries.

Contents

Pneumatic tyres for passenger cars — Specification

1 Scope

This East African Standard specifies tyre dimensions designation and marking requirements; and load ratings. It also gives laboratory test requirements for bead unseating resistance, strength, endurance and high-speed performance for tyres primarily intended for passengers.

2 References

This East African Standard makes reference to the following documents:

EAS 124, *Rounding off numerical values*

EAS 53*, Tyre reconditioning — Specification*

3 Application

This East African Standard applies to new pneumatic tyres for use on passenger cars. It does not apply to any tyre which has been reconditioned; or to any tyre which has been altered so as to render impossible its use, or its repair for use, as motor vehicle equipment.

4 Terminology

For the purpose of this East African Standard, the definitions given in EAS 53 and the following, shall apply:

4.1
carcass
The tyres structure, except tread and sidewall rubber.

4.2
chunking
The breaking away of pieces of the tread or sidewall.

4.3
cracking
The parting with the tread, sidewall or innerliner of the tyre extending to cord material.

4.4
CT
A pneumatic tyre with inverted flange tyre and rim system in which the rim is designed with rim flanges pointed radically inward and the tyre is designed to fit on the underside of the rim in a manner that enclosed the rim flanges inside the air cavity of the tyre.

4.5
groove
The space between two adjacent tread ribs.

4.6
nnerliner
The layer(s) forming the inside surface of a tubeless tyre that contains the inflating medium within the tyre.

4.7
innerliner separation
The parting of the innerliner form the cord material in the carcass.

4.8
load rating
(Index) the maximum load of a tyre rated to carry for a given inflation pressure.

4.9
ply rating
An index of casing strength, and does not necessarily represent the number of cord plies in a tyre. With modern cords such as rayon, nylon and even steel cords, which are much stronger than the cotton or canvas cords which were originally used; the ply rating indicated on the tyre in usually higher than the actual number of plies used in tyre construction.

4.10
maximum permissible inflation pressure
The maximum cold inflation pressure to which a tyre may be inflated. It does not include any pressure build-up due to tyre usage.

4.11
maximum load rating
The load rating at the maximum inflation pressure for that tyre.

4.12
open splice
Any parting at any junction of the tread, sidewall, or innerliner that extends to cord material.

4.13
overall width
The linear distance between the exteriors of the sidewalls of an inflated tyre, including elevations due to labeling, decorations or protective bands or ribs.

4.14
rim
The metal support for a tyre or a tyre and tube assembly upon which the tyre beads are seated.

4.15
test rim
With reference to a tyre to be tested, any rim that is listed as appropriate for use with that tyre in any standard tyre-and-rim matching information.

4.16
tread rib
A tread section running circumferentially around a tyre.

5 Tyre designation

5.1 Size and construction

Each tyre shall have one size designation in metric, except that equivalent inch size designations may be used.

The characteristics shall be indicated as follows.

Nominal Section Width	/	Nominal aspect ratio	Tyre construction code	Nominal rim code

5.1.1 Nominal section width

The nominal section width of the tyre shall be indicated in millimetres, ending either in 0 or 5, so that in any one series of tyres with the same nominal aspect ratio, the values shall all end with 0 or end with 5. An equivalent marking in inch is permitted.

For sizes mounted on 5° tapered (code-designated) rims, the nominal section width shall end with 5.

5.1.2 Nominal aspect ratio

The nominal aspect ratio shall be expressed as a percentage and shall be a multiple of 5.

5.1.3 Type construction code

The tyre construction code shall be as follows:

B for bias-belted construction
D for diagonal construction
R for radial ply construction

NOTE Radial tyre designated for some existing vehicle with maximum speed capabilities in excess of 210 km/ h or 240 km/h may be designated and marked differently. See Annex C.

In the case of tyres designed for vehicles having a maximum speed capability in excess of 240 km/h, the code letters "*ZR*" may be indicated in the dimensional and constructional characteristics for radial ply tryes in pace of the tyre construction code "*R*".

For speeds in excess of 300km/h, the tyres shall be marked with the code-letters "*ZR*".

5.1.4 Nominal rim diameter code

For tyres mounted on 5° tapered (code-designated) rims, the code shall be as given in Table 1.

For tyres requiring new concept rims, for safety reasons especially concerning mounting, the code number shall be equal to the nominal rim diameter (D_r) expressed as a whole number of millimetres.

Table 1 — Nominal rim diameter code

Nominal rim diameter code	Nominal rim diameter, D_r mm
10	254
12	305
13	330
14	356
15	381
16	406
17	432
18	457
19	483
20	508

5.2 Service description

The service description shall be indicated as follows:

5.2.1 Load index speed symbol

For the special case of tyres designed for vehicles having a maximum speed capability more than 300 km/h, the indication of the service description is not required. For the maximum speed capability and the load capacity of the tyres, the tyre manufacturer concerned shall be consulted.

5.2.2 Load Index

The maximum tyre load capacity corresponding to the service conditions specified by the tyre manufacturer shall be indicated by a load index taken form Table 2. This indication is understood to be per tyre for a single mounting. Guidelines for load capacities for passenger car tyres are given in Annex B.

5.2.3 Speed symbol

The speed category is assigned to a tyre to denote the maximum speed for which use of the tyre is rated. The speed symbol shall be indicated by a letter taken form Table 3 corresponding to the speed category.

5.2.4 Maximum inflation pressure

Operating cold inflation pressures should be agreed between tyre and vehicle manufacturers taking into account not only the tyre load carrying capacity, but also the operating conditions, the maximum speed, the position of the tyre on the vehicle, service conditions and construction and characteristics of the vehicle.

Unless otherwise specified by the tyre manufacturer, it is recommended to limit the cold inflation pressure of the radial ply tyres in normal application to 350 kPa for all standard load version sizes on code designated rims irrespective of the speed symbol.

Other choices of pressure specifications may be 240, 280, 290, 300, 330, 340 and 390 kPa. The marking shall be followed in parenthesis by the equivalent inflation pressure in psi, rounded to the next higher whole number. The vice versa marking is also permitted.

5.3 Other service characteristics

5.3.1 The word “TUBELESS” shall appear on the tyres that can be used without a tube.

5.3.2 The letter “T” immediately in front of the tyre size designation shall be used to characterize high pressure special temporary use spare tyres.

5.3.3 A tread wear indicator shall be incorporated, that will provide a visual indication that the tyre has worn to a tread depth of 1.6 mm.

5.3.4 The generic name of each cord material used in the plies (both sidewall and tread area) of the tyre shall be marked.

5.3.5 Ply rating or number of plies in the sidewall and the number of plies in the tread area, if different.

5.3.6 Each tyre shall be labelled with the name of the manufacturer, or brand name recognized quality mark/safety mark to show that the tyre conforms to respective national standards. The tyre may also be marked with any other identification assigned to the manufacturer.

5.3.7 Specific indications, if required may be added to indicate

a) the type of vehicle for which the tyre is primarily designed, using the symbol, “P”. This symbol may be used where there may be ambiguity regarding the tyre type. Where this optional marking is used, it should be so positioned that confusion cannot result from its proximity to any other service condition marking;

b) the temporary use of certain spare tyres using indications such as “TEMPORARY USE ONLY”;

c) the bias-belted construction with the words “BIAS- BELTED”;

d) the radial ply construction with the word “RADIAL”;

e) the direction of mounting;

f) the direction of rotation

g) the type of tread pattern and any other characteristics.

Table 2 — Correlation between load index *LI* and tyre load-carrying capacity *TLCC*

LI	TLCC kg	LI	TLCC kg	LI	TLCC kg	LI	TLCC kg
50	190	70	335	90	600	110	1060
51	195	71	345	91	615	111	1090
52	200	72	355	92	630	112	1120
53	206	73	365	93	650	113	1150
54	212	74	375	94	670	114	1180
55	218	75	387	95	690	115	1215
56	224	76	400	96	710	116	1250
57	230	77	412	97	730	117	1285
58	236	78	425	98	750	118	1320
59	243	79	437	99	775	119	1360
60	250	80	450	100	800	120	1400
61	257	81	462	101	825	—	—
62	265	82	475	102	850	—	—
63	272	83	487	103	875	—	—
64	280	84	500	104	900	—	—
65	290	85	515	105	925	—	—
66	300	86	530	106	950	—	—
67	307	87	545	107	975	—	—
68	315	88	560	108	1 000	—	—
69	325	89	580	109	1 030	—	—
The maximum tyre load capacity corresponding to the load index shall apply for speeds up to and including 210 km/h.							
For tyres in the speed category V (between 210 km/h and 240 km/h), the maximum load capacity per tyre shall be reduced to 100 % at 210 km/h, 97 % at 220 km/h, 94 % at 230 km/h and 91 % at 240 km/h, and linear interpolation is permitted.							
In the case of speed categories W and Y, the maximum load capacity per tyre corresponding to the load index shall apply for speeds up to and including 240 km/h for W and 270 km/h for Y.							
For tyres in the speed category W (between 240 km/h and 270 km/h), the maximum load capacity per tyre shall be reduced to 100 % at 240 km/h, 95 % at 250 km/h, 90 % at 260 km/h and 85 % at 270 km/h, and linear interpolation is permitted.							
For tyres in the speed category Y (between 270 km/h and 300 km/h), the maximum load capacity per tyre shall be reduced to 100 % at 270 km/h, 95 % at 280 km/h, 90 % at 290 km/h and 85 % at 300 km/h, and linear interpolation is permitted.							
See 4.2.3 and Table 3 list speed categories and their symbols.							
For speeds of over 300 km/h or ZR-marked tyres (see annex D) or both, consult the tyre manufacturer for the maximum tyre load capacity permitted in relation to the maximum speed allowed for the tyre.							
For vehicles with a design maximum speed capability of up to 60 km/h, the maximum load capacity corresponding to the load index may be exceeded, as shown below. However, an increase in the reference inflation pressure is necessary and should be determined in consultation with the tyre manufacturer. In the absence of such agreement, the following pressure increases are recommended:							
— for 60 km/h, a 10 % load increase with a 10 kPa inflation pressure increase;							
— for 50 km/h, a 15 % load increase with a 20 kPa inflation pressure increase;							
— for 40 km/h, a 25 % load increase with a 30 kPa inflation pressure increase;							
— for 30 km/h, a 35 % load increase with a 40 kPa inflation pressure increase;							
— for 25 km/h, a 42 % load increase with a 50 kPa inflation pressure increase.							

Table 3 — Correlation between speed symbol and speed category

Symbol	Category km/h
J	100
K	110
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 [a]	300
NOTE This list is not exhaustive and other categories and symbols might be added later.	
[a] Radial ply tyres designed for speeds exceeding 300 km/h shall be identified by ZR with the dimensional and constructional characteristics in place of the tyre construction code. Consult the tyre manufacturer for the maximum speed capability.	

6 Marking

Each tyre shall conform to each of the following marking requirements:

a) the designation of the size and construction as in 5.1;

b) the designation of service condition characteristics as in 5.2;

c) the designation of other service characteristics as in 5.3.

The location of the marking of the load and speed characteristics shall be distinct, but near the marking of the size and construction. In no cases shall the information be positioned on the tyre so that it is obstructed by the flange or any rim designated for use with that tyre.

6.1 Example 1

A tyre having

a) a size contraction of:

   i) nominal section width 165 mm;
   ii) nominal aspect ratio 80;
   iii) radial ply construction R ;
   iv) nominal rim diameter code 15.

b) service description of;

   i) load index *LI* 87, corresponding to a tyre load-carrying capacity of 545 kg. – speed symbol *H*, corresponding to a speed category of 210 km/h.

c) other service characteristics:

   i) *TUBELESS*: tyre to be used without a tube; shall be marked as follows:

      165/80 R 15 87 H
      TUBELESS

NOTE See Annex D for other existing size markings.

6.2 Example 2

A tyre marked 225/45 *ZR* 16 has the following characteristics:

a) nominal section width 225 mm;

b) nominal aspect ratio 45;

c) radial ply construction tyre designed for operations at speeds in excess of 240 km/h (code letters "*ZR*");

d) nominal rim diameter code corresponding to 406 mm (code 16).

NOTE See Annex C for special cases of radial tyres designed for speeds in excess of 210 km/h.

7 Tyre dimensions

Except for the cases in 7.1.1 and 7.1.2, the formula derived values for tyre dimensions are to be rounded off to the nearest millimeter. For rounding off, see EAS 124.

NOTE Dimensions are expressed in millimetres.

7.1 Calculation of "design tyre" dimensions

7.1.1 Theoretical rim width, R_{th}

The theoretical rim width, R_{th} is equal to the product of the nominal section width, S_N, and the rim/section ratio, *K,*

$$R_{th} = K_1 S_N$$

For tyres mounted on 5° rims (code – designated) with nominal rim diameter expressed by a two figure code,

K_1 = 0.7 for tyres having nominal aspect ratio (*H/S*) from 50 to 95 inclusive;

K_1 = 0.85 for tyres having nominal aspect ratio (*H/S*) from 30 to 45 inclusive;

7.1.2 Measuring rim width, R_m

The measuring rim width, R_m, is equal to the product of the nominal section width, S_N and the rim/section width ration coefficient, K_2:

$$R_m = K_2 S_N$$

Rounded to the nearest standardized rim.

For tyres mounted on 5° drop-centre rims with a nominal diameter expressed by a two-figure code;

K_2 = 0.7 for nominal aspect ratios (*H/S*) 95 to 75 inclusive;

K_2 = 0.75 nominal aspect ratios (*H/S*) 70 to 60 inclusive;

K_2 = 0.8 or nominal aspect ratios (*H/S*) 55 to 50;

K_2 = 0.85 for nominal aspect ratio (*H/S*) 45;

K_2 = 0.9 for nominal aspect ratios (*H/S*) 40 to 30 inclusive.

7.1.3 Design tyre section width, *S*

The design tyre section width, *S* is the nominal section width, S_N, transferred from the theoretical rim, R_{th} to the measuring rim, R_m.

$$S = S_N + 0.4 (R_m – R_{th})$$

where R_m and R_{th} are expressed in millimetres.

7.1.4 *Design tyre section height, H*

The design section height, *H*, is equal to the product of the nominal section width, S_N, and the nominal aspect ratio, *H/S* divided by 100:

$$H = \frac{S_N H/S}{100}$$

NOTE *H/S* = nominal aspect ratio.

7.1.5 Design tyre overall diameter, D_o

The design tyre overall diameter, D_o is the sum of the nominal rim diameter, D_r, plus twice the design tyre section height, *H*.

$$D_o = D_r + 2H$$

For those tyres using a nominal rim diameter code, the corresponding value of D_r given in Table 1 is to be used.

7.1.6 Guidelines

Guidelines for "tyre design dimensions" for the metric series of passenger car tyres mounted on 5° rims (code-designated) are given in Annex A. Table 5 presents a guide relating to the determination of the appropriate rim widths for a given tyre.

7.2 Calculation of "maximum overall (grown) tyre dimension in service" for tyres mounted on their measuring rims

This calculation is for use by vehicle manufacturers in designing for tyre clearance.

These dimensions are to be calculated with the coefficients (see Table 4) appropriate to the design tyre section width and the design tyre section height.

7.2.1 Maximum overall (grown) width in service, W_{max}.

The maximum overall (grown) width in service, W_{max} is equal to the greater of the following values:

a) the product of the design tyre section width *S* and the appropriate coefficient *a* (see Table 4);

$$W_{max} = S_a$$

b) the addition of 8 mm to the design tyre section width, *S*:

$$W_{max} = S + 8$$

Table 4 — Coefficients for calculation of the tyre dimensions

Structure	Tyre construction code	Nominal aspect ratio *H/S*	Coefficients			
			a	***b***	***c***	***d***
Diagonal	*D*	All	1.1	1.08	-	-
Bias-belted	*B*				-	-
Radial ply	*R*	≤ 65	1.04	1.04	0.96	0.97
		70	1.04			
		≥ 75	1.06			

NOTE The maximum overall section width may be exceeded by the thickness of a special protective rib on one sidewall.

7.2.2 Maximum overall (grown) diameter in service, $D_{o\,max}$, is equal to the nominal rim diameter, D_r, plus twice the product of the design tyre section height H, and the appropriate coefficient b, (see Table 4).

$$D_{o\,max} = D_r + 2Hb$$

7.3 Calculation of minimum tyre dimensions for radial ply tyres mounted on their measuring rims

7.3.1 Minimum tyre section width, S_{min}

The minimum tyre section width, S_{min}, is equal to the product of the design tyre section width, S, and the coefficient c (see Table 4).

$$S_{min} = S_c$$

7.3.2 Minimum tyre overall diameter, $D_{o\,min}$

The minimum tyre overall diameter, $D_{o\,min}$, is equal to the nominal rim diameter, D_r, plus twice the product of the design tyre section height, H, and the coefficient d (see Table 4).

$$D_{o\,min} = D_r + 2Hd$$

7.4 Range of approved rims

7.4.1 The range of approved rim widths is calculated as the product of the nominal section width, S_N, and the coefficients shown in Table 5. The values obtained shall be rounded to the nearest standardized rim width.

7.4.2 The maximum overall grown width in service, W_{max} and the minimum tyre section width, S_{min}, will change by 40% of the change in rim width, expressed in millimetres.

Table 5 — Approved rim widths for passenger car tyres as a function of nominal aspect ratio

Nominal aspect ratio *H/S*	Coefficients for calculation of approved rim width	
	min	max.
70 ≤ 95	0.65	0.85
50 ≤ 65	0.7	0.9
H/S = 45	0.8	0.95
35 = H/S ≤ 40	0.85	1
H/S = 30	0.9	1

8 Tyre dimension presentation

Tyre dimensions shall be shown in tables. An example for tyres mounted on 5° rims (code-designated) and nominal rim diameter expressed by a two-figure code is given in Table 6.

Table 6 — Example of tyre dimension table

Tyre size designation	Measuring rim code	Design dimensions		Maximum dimensions in service (grown)	
		Section width mm	Overall diameter D_o mm	Overall width W_{max} mm	Overall diameter $D_{o\,max}$ mm

9 Test requirements

9.1 Test sample

The test sample shall constitute:

9.1.1 One tyre for physical dimensions, resistance to bead unseating, and strength in sequence;

9.1.2 Another tyre for endurance test; and

9.1.3 A third tyre for high-speed performance.

9.2 Physical dimensions measurement

The tyre physical dimensions shall be determined under uniform ambient conditions as follows:

9.2.1 The sample shall be mounted on a recommended test rim for that tyre size designation and inflated to the applicable pressures recommended in Table 7. Then the tyre shall be conditioned at ambient room temperature for a minimum of 24 h and the pressure re-adjusted to the original value.

9.2.2 The section width and overall are callipered at six points approximately equally spaced around the tyre circumference. The average of the measurements as the section width and overall width, respectively is recorded.

9.2.3 The tyre overall diameter is determined by measuring the maximum circumference of the tyre and dividing this dimension by π = 3.1416.

The actual section width and overall width for each tyre measured in accordance with this procedure shall not exceed the section width specified in the submission made by the manufacturer or in any standard tyre and rim matching information; for its size designation and type, by more than 7 %.

Table 7 — Recommended pressures for measurement of tyre dimensions

Tyre	Pressure (kPa)
Standard load version	180
Extra load/reinforced version	230
“Type” temporary-use spare tyre	420

9.3 Tubeless tyre bead unseating resistance

9.3.1 Preparation of tyre-wheel assembly

The tyre is washed, dried at the beads and mounted without lubrication or adhesives on a clean, painted test rim. The tyre is then inflated to the applicable pressure specified in Table 8 at ambient room temperature. The tyre-wheel assembly is mount on a fixture against the tyre side wall as required by the geometry of the fixture.

9.3.2 Test procedure

a) Load is applied through the block to the tyre outer sidewall at the specified distance for the applicable wheel size at a rate of 50 mm per minute, with the load arm substantially parallel to the tyre and rim assembly at the time of engagement.

b) The load is increased until the bead unseats or the applicable specified value is reached (see Table 8). The applied force required to unseat the tyre bead at the point of contact shall be not less than the specified one.

c) The test is repeated at, at least four different places equally spaced around the tyre circumference.

Table 8 — Specified values for bead unseating test

Max. inflation pressure (kPa)	Section width (mm)	Load rating (kg)	Applied force required to unseat the (bead kN) min
Other than 420	S_N < 155 155 ≥ S_N < 205 S_N ≥ 205	- - -	6.7 8.9 11
420	- - -	< 400 400 ≥ *LR* > 650 *LR* ≥ 650	6.7 8.9 11

9.4 Tyre strength

9.4.1 Requirement

Each tyre shall need the requirements for maximum breaking energy specifed in Table 9 when tested according to 9.4.3.

9.4.2 Preparation of tyre

The tyre is mounted on a test rim and inflated to the applicable pressure specified in Table 11. It is then conditioned at room temperature for at least 3 h and the pressure is readjusted to the original value.

9.4.3 Test procedure

A 20 mm diameter cylindrical steel plunger is forced, with a hemispherical end perpendicularly into the tread rib as near to the centre line as possible, avoiding penetration into the tread groove, at the rate of 50 mm per minute.

The force and penetration at five test points equally spaced around the circumference of the tyre are recorded. If the tyre fails to break before the plunger is stopped by reaching the rim, the force is recorded and the values are used in computing the breaking energy for each test point by means of the following formula:

$$W = \frac{F \times P}{2000}$$

where

W = energy in J
F = force in N
P = penetration in mm

The breaking energy for the tyre is determined by computing the average of the five values obtained above.

Table 9 — Minimum breaking energy (Joules) — Tyre strength tests

Table 9.A — For bias ply tryes with designated section width of 155 mm and above. Maximum permissible inflation pressure.

Cord material	220.48 (kPa)	248.04 (kPa)	275.6 (kPa)	240 (kPa)	280 (kPa)	300 (kPa)	340 (kPa)
Rayon	11368.5	1773.8	22737	11368	22737	11368.5	22737
Nylon or polyester	17914	26891	35828	17914	35828	17914	35828

Table 9.B — For bias ply tyres with designated section width below 155 mm. Maximum permissible inflation pressure

Cord material	220.48 (kPa)	248.04 (kPa)	275.6 (kPa)	240 (kPa)	280 (kPa)	300 (kPa)	340 (kPa)
Rayon	6890	12918.75	17225	6890	17225	6890	17225
Nylon or polyester	13435.5	20153.2	26871	13435.5	26871	13435.5	26871

Table 9.C — For radial ply tyres. Maximum permissible inflation pressure

Size designation below 160 mm	**Tyre other than *CT***								**CT tyres**			
	psi			**kPa**					**kPa**			
	32	36	40	240	280	300	340	350	290	330	350	390
	2205	3305	4405	2205	4405	2205	4405	2205	2205	4405	2205	4405
160 mm or above	290	4405	5905	2905	5905	2905	5905	2905	2905	5905	2905	5905

Table 9.D — For tyres with 413.4 kPa maximum permissible inflation pressure and maximum load rating of 399 kg and above

Cord material	Breaking energy (J)
Rayon	186.45
Nylon or polyester	293.8

Table 9.E — For tyres with 413 kPa maximum permissible inflation pressure and 399 kg maximum load rating and below

Code material	Breaking energy (J)
Rayon	1130
Nylon or polyester	220.35

9.5 Tyre endurance

9.5.1 Requirement

When the tyre has been subjected to the laboratory endurance test specified in 9.5.3, using a test rim that undergoes no permanent deformation and allows no loss of air through the potion that it comprises of the tyres rim pressure chamber;

a) there shall be no visual evidence of tread sidewall, ply cord, innerliner or bead separation, chunking, broken cords, cracking or open splices and

b) the tyre pressure at the end of the test shall be not less than the initial pressure specified in Table 11.

9.5.2 Preparation of tyre

The tyre is mount on a test rim and inflated to the pressure specified in Table 11.

The tyre assembly is conditioned to 38 ± 2 °C for at least 3 h then the pressure is readjusted to the initial value immediately before testing.

9.5.3 Test procedure

The tyre–wheel assembly is mount on a test axle and pressed against a flat-faced steel test wheel, with the applicable test load specified in Table 10 for the tyre size, designation type, and max. permissible inflation pressure.

During the test, the air surrounding the test area shall be kept at 38 ± 2°C.

The test is then conducted at 80 km/h without pressure adjustment or other interruptions as follows:

The loads for the following periods are specified percentage of the maximum load rating marked on that tyre sidewall.

Table 10 — Percentage of maximum load rating

4h	85 %
6h	90 %
24h	100 %

Immediately after the tyre has run the required time, the inflation pressure is measured. The tyre is then allowed to cool for one hour, deflated, removed from the test rim and inspected for the conditions specified in 9.5.1 (a).

Table 11 — Test inflation pressures

Test type max, inflation pressure	**Tyre other than *CT* kPa**					***CT* tyres kPa**			
	240	**280**	**300**	**340**	**350**	**290**	**330**	**350**	**390**
Bead unseating, tyre strength and tyre endurance	180	220	180	220	180	230	270	230	270
High speed performance	220	260	220	260	220	270	310	270	310

9.6 High-speed performance

9.6.1 Requirements

When the tyre has been subjected to the laboratory high-speed performance test specified in 9.6.3 using a test rim that undergoes no permanent deformation and allows no loss of air through the portion that it comprises of a tyre-rim pressure chamber, the tyre shall meet the requirements set forth in 9.5.1 (a) and (b).

9.6.2 Preparation of tyre

As described in 9.5.2.

9.6.3 Test procedure

The tyre and wheel assembly is mount in accordance with 9.5.3 and pressed against the test wheel with a load of 88 % of the tyre's maximum load rating as marked on the tyre sidewall; then is run for two hours at 80 km/h. The tyre is allowed to cool to 38 ± 2 °C and the pressure is readjusted to the applicable pressure specified in Table 11.

Then without readjusting inflation pressure, the tyre is tested at 120 km/h for 30 minutes, 130 km/h for 30 minutes and 140 km/h for 30 minutes.

Immediately after running the tyre the required time, the inflation pressure is measured and inspected for the conditions specified in 9.5.1 (a).

10 Nonconforming tyres

No tyre that is designed and manufactured for use on passenger cars, that does not conform to the requirements of this standard shall be sold, offered for sale, introduced or delivered for introduction into, or imported into East African Community for any purpose.

Annex A
(normative)

Guideline values for tyres (metric series)

Guidelines for design tyre dimensions (metric series) mounted on 5° rims (code-designated) with nominal rim diameter expressed by a two-figure code are given in tables A.1 to A. 7 as a function of nominal aspect ratio.

Table A.1 – *H/S* of 95 to 75 inclusive (K_1 = 0.7; K_2 = 0.7)

Nominal section width SN mm	Measuring rim width Rm code mm		Section width S	Design tyre dimensions mm Section height, H, at H/S (%) of					Approved rim width codes min. max.	
				95	90	85	80	75		
95	2.5	63,5	94	90	86	81	76	71	2.5	3.0
105	3.0	76	106	100	95	89	84	79	2.5	3.5
115	3.0	76	113	109	104	98	92	86	3.0	4.0
125	3.5	89	126	119	113	106	100	94	3.0	4.0
135	3.5	89	133	128	122	115	108	101	3.5	4.5
145	4.0	101,5	145	138	131	123	116	109	3.5	5.0
155	4.5	114,5	157	147	140	132	124	116	4.0	5.0
165	4.5	114,5	165	157	149	140	132	124	4.0	5.5
175	5.0	127	177	166	158	149	140	131	4.5	6.0
185	5.0	127	184	176	167	157	148	139	4.5	6.0
195	5.5	139,5	196	185	176	166	156	146	5.0	6.5
205	5.5	139,5	203	195	185	174	164	154	5.0	7.0
215	6.0	152,5	216	204	194	183	172	161	5.5	7.0
225	6.0	152,5	223	—	203	191	180	169	6.0	7.5
235	6.5	165	235	—	—	200	188	176	6.0	8.0
245	7.0	178	248	—	—	208	196	184	6.5	8.0
255	7.0	178	255	—	—	—	204	191	6.5	8.5
265	7.5	190,5	267	—	—	—	—	199	7.0	9.0
275	7.5	190,5	274	—	—	—	—	206	7.0	9.0
285	8.0	203	286	—	—	—	—	214	7.5	9.5
295	8.0	203	294	—	—	—	—	221	7.5	10.0
305	8.5	216	306	—	—	—	—	229	8.0	10.0
315	8.5	216	313	—	—	—	—	236	8.0	10.5
Rims outside the approved range in use from previous designs are not approved for new designs.										

Table A.2 — *H/S* of *70 (K_1 = 0.7; K_2 = 0.75)*

Nominal section width S_N	Measuring rim width R_m		Design tyre dimensions mm		Approved rim width codes	
			Section width	Section height		
mm	code	mm	*S*	*H*	min.	max.
95	3.0	76	99	67	2.5	3.0
105	3.0	76	106	74	2.5	3.5
115	3.5	89	118	81	3.0	4.0
125	3.5	89	126	88	3.0	4.0
135	4.0	101,5	138	95	3.5	4.5
145	4.5	114,5	150	102	3.5	5.0
155	4.5	114,5	157	109	4.0	5.0
165	5.0	127	170	116	4.0	5.5
175	5.0	127	177	123	4.5	6.0
185	5.5	139,5	189	130	4.5	6.0
195	6.0	152,5	201	137	5.0	6.5
205	6.0	152,5	209	144	5.0	7.0
215	6.5	165	221	151	5.5	7.0
225	6.5	165	228	158	6.0	7.5
235	7.0	178	240	165	6.0	8.0
245	7.0	178	248	172	6.5	8.0
255	7.5	190,5	260	179	6.5	8.5
265	8.0	203	272	186	7.0	9.0
275	8.0	203	279	193	7.0	9.0
285	8.5	216	292	200	7.5	9.5
Rims outside the approved range which are in use from previous designs are not approved for new designs.						

Table A.3 - H/S of 65 and 60 (K_1 = 0.7; K_2 = 0.75)

Nominal section width *SN*	**Measuring rim width** *Rm*		**Design tyre dimensions** mm			**Approved rim width codes**	
			Section width *S*	**Section height** *H, at H/S (%)* of			
mm	code	mm		65	60	min.	max.
105	3.0	76	106	68	—	3.0	3.5
115	3.5	89	118	75	69	3.0	4.0
125	3.5	89	126	81	75	3.5	4.5
135	4.0	101,5	138	88	81	3.5	5.0
145	4.5	114,5	150	94	87	4.0	5.0
155	4.5	114,5	157	101	93	4.5	5.5
165	5.0	127	170	107	99	4.5	6.0
175	5.0	127	177	114	105	5.0	6.0
185	5.5	139,5	189	120	111	5.0	6.5
195	6.0	152,5	201	127	117	5.5	7.0
205	6.0	152,5	209	133	123	5.5	7.5
215	6.5	165	221	140	129	6.0	7.5
225	6.5	165	228	146	135	6.0	8.0
235	7.0	178	240	153	141	6.5	8.5
245	7.0	178	248	159	147	7.0	8.5
255	7.5	190,5	260	166	153	7.0	9.0
265	8.0	203	272	172	159	7.5	9.5
275	8.0	203	279	179	165	7.5	9.5
285	8.5	216	292	185	171	8.0	10.0
295	8.5	216	299	192	177	8.0	10.5
305	9.0	228,5	311	198	183	8.5	11.0
315	9.5	241,5	323	205	189	8.5	11.0
325	9.5	241,5	331	—	195	9.0	11.5
335	10.0	254	343	—	201	9.0	12.0
345	10.0	254	350	—	207	9.5	12.0
Rims outside the approved range in use from previous designs are not approved for new designs.							

Table A.4 — *H/S* of 55 and 50 (K_1 = 0.7; K_2 = 0.8)

Nominal section width *SN*	Measuring rim width *Rm*		Design tyre dimensions mm			Approved rim width codes	
			Section width *S*	Section height, H, at H/S (%)of			
mm	code	mm		55	50	min.	max.
125	4.0	101,5	131	69	63	3.5	4.5
135	4.5	114,5	143	74	68	3.5	5.0
145	4.5	114.5	150	80	73	4.0	5.0
155	5.0	127	162	85	78	4.5	5.5
165	5.0	127	170	91	83	4.5	6.0
175	5.5	139,5	182	96	88	5.0	6.0
185	6.0	152,5	194	102	93	5.0	6.5
195	6.0	152,5	201	107	98	5.5	7.0
205	6.5	165	214	113	103	5.5	7.5
215	7.0	178	226	118	108	6.0	7.5
225	7.0	178	233	124	113	6.0	8.0
235	7.5	190,5	245	129	118	6.5	8.5
245	7.5	190,5	253	135	123	7.0	8.5
255	8.0	203	265	140	128	7.0	9.0
265	8.5	216	277	146	133	7.5	9.5
275	8.5	216	284	151	138	7.5	9.5
285	9.0	228,5	297	157	143	8.0	10.0
295	9.5	241,5	309	162	148	8.0	10.5
305	9.5	241,5	316	168	153	8.5	11.0
315	10.0	254	328	173	158	8.5	11.0
325	10.0	254	336	179	163	9.0	11.5
335	10.5	266,5	348	184	168	9.0	12.0
345	11.0	279,5	360	190	173	9.5	12.0
Rims outside the approved range in use from previous designs are not approved for new designs.							

Table A.5 – *H/S* of 45 (K_1 = 0,85; K_2 = 0,85)

Nominal section width S_N	Measuring rim width R_m		Design tyre dimensions mm		Approved rim width codes	
			Section width S	Section height H		
mm	code	mm			min.	max.
155	5.0	127	153	70	5.0	6.0
165	5.5	139,5	165	74	5.0	6.0
175	6.0	152,5	177	79	5.5	6.5
185	6.0	152,5	183	83	6.0	7.0
195	6.5	165	195	88	6.0	7.5
205	7.0	178	207	92	6.5	7.5
215	7.0	178	213	97	7.0	8.0
225	7.5	190,5	225	101	7.0	8.5
235	8.0	203	236	106	7.5	9.0
245	8.0	203	243	110	7.5	9.0
255	8.5	216	255	115	8.0	9.5
265	9.0	228,5	266	119	8.5	10.0
275	9.0	228,5	273	124	8.5	10.5
285	9.5	241,5	285	128	9.0	10.5
295	10.0	254	296	133	9.5	11.0
305	10.0	254	303	137	9.5	11.5
315	10.5	266,5	315	142	10.0	12.0
325	11	279,5	326	146	10.0	12.0
335	11	279,5	333	151	10.5	12.5
345	11.5	292	345	155	11.0	13.0
355	12	305	356	160	11.0	13.5
365	12	305	363	164	11.5	13.5
Rims outside the approved range in use from previous designs are not approved for new designs.						

Table A.6 — *H/S* of 40 and 35 (K_1 = 0,85; K_2 = 0,9)

Nominal section width SN	Measuring rim width R_m		Design tyre dimensions mm			Approved rim width codes	
			Section width *S*	Section height, H, at H/S (%)of			
mm	code	mm		40	35	min.	max.
165	6.0	152,5	170	66	—	5.5	6.5
175	6.0	152,5	177	70	—	6.0	7.0
185	6.5	165	188	74	65	6.0	7.5
195	7.0	178	200	78	68	6.5	7.5
205	7.5	190,5	212	82	72	7.0	8.0
215	7.5	190,5	218	86	75	7.0	8.5
225	8.0	203	230	90	79	7.5	9.0
235	8.5	216	242	94	82	8.0	9.5
245	8.5	216	248	98	86	8.0	9.5
255	9.0	228,5	260	102	89	8.5	10.0
265	9.5	241,5	272	106	93	9.0	10.5
275	9.5	241,5	278	110	96	9.0	11.0
285	10.0	254	290	114	100	9.5	11.0
295	10.5	266,5	301	118	103	10.0	11.5
305	11.0	279,5	313	122	107	10.0	12.0
315	11.0	279,5	320	126	110	10.5	12.5
325	11.5	292	331	130	114	11.0	13.0
335	12.0	305	343	134	117	11.0	13.0
345	12.0	305	350	138	121	11.5	13.5
355	12.5	317,5	361	142	124	12.0	14.0
365	13.0	330	373	146	128	12.0	14.5
375	13.5	343	385	—	131	12.5	15.0
385	13.5	343	391	—	135	13.0	15.0
395	14.0	355,5	403	—	138	13.0	15.5
Rims outside the approved range in use from previous design are not approved for new designs.							

Table A 7 - *H/S* of 30 (K_1 = 0.85; K_2 = 0.9)

Nominal section width SN	Measuring rim width R_m		Design tyre dimensions mm		Approved rim width codes	
			Section width	Section height		
mm	code	mm	*S*	*H*	min.	max.
185	6.5	165	188	56	6.5	7.5
195	7.0	178	200	59	7.0	7.5
205	7.5	190,5	212	62	7.5	8.0
215	7.5	190,5	218	65	7.5	8.5
225	8.0	203	230	68	8.0	9.0
235	8.5	216	242	71	8.5	9.5
245	8.5	216	248	74	8.5	9.5
255	9.0	228,5	260	77	9.0	10.0
265	9.5	241,5	272	80	9.5	10.5
275	9.5	241,5	278	83	9.5	11.0
285	10.0	254	290	86	10.0	11.0
295	10.5	266,5	301	89	10.5	11.5
305	11.0	279,5	313	92	11.0	12.0
315	11.0	279,5	320	95	11.0	12.5
325	11.5	292	331	98	11.5	13.0
335	12.0	305	343	101	12.0	13.0
345	12.0	305	350	104	12.0	13.5
355	12.5	317,5	361	107	12.5	14.0
365	13.0	330	373	110	13.0	14.5
375	13.5	343	385	113	13.5	15.0
385	13.5	343	391	116	13.5	15.0
395	14.0	355,5	403	119	14.0	15.5
Rims outside the approved range in use from previous designs are not approved for new designs.						

Annex B
(normative)

Load capacity indices for passenger car tyres

Table B.1 gives equivalences, based on overall diameter, for tyres in standard load version. Load-carrying capacity indices are referred to a basic inflation pressure of 240 kPa. Load indices given are preferred values for international use. Sizes given in parentheses are those for tyres equivalent in overall diameter with higher load capacity indices.

Table B.2 gives tyre load capacity indices, grouped by nominal rim diameter and nominal aspect ratio, referred to a basic pressure of 240 kPa for the standard load version, and 280 kPa for the REINFORCED or EXTRA LOAD version.

For future revisions of the values in Table B.2 it is recommended that all values be increased by the same amount.

Table B.3 gives the load capacity indices for T-type temporary spare tyres, with a reference pressure of 420 kPa.

Table B.4 gives the load capacity indices for P-type LIGHT LOAD tyres with a reference pressure of 240 kPa.

Table B.1 — Standard load version equivalences

70 series	65 series	60 series	55 series	50 series	Load index
—	155/65 R 12	165/60 R 12		—	71
145/70 R 12	145/65 R 13	155/60 R 13	—	—	69
155/70 R 12	155/65 R 13	165/60 R 13	175/55 R 13	—	73
165/70 R 12	165/65 R 13	175/60 R 13	185/55 R 13	185/50 R 14	77
175/70 R 12	175/65 R 13	185/60 R 13	195/55 R 13	195/50 R 14	80
—	185/65 R 13	195/60 R 13	—	205/50 R 14	84
—	195/65 R 13	205/60 R 13	—	—	87
—	205/65 R 13	215/60 R 13	—	—	89
—	215/65 R 13	225/60 R 13	—	—	92
155/70 R 13	155/65 R 14	165/60 R 14	175/55 R 14	—	75
165/70 R 13	165/65 R 14	175/60 R 14	185/55 R 14	185/50 R 15	79
175/70 R 13 —	175/65 R 14 —	185/60 R 14 —	195/55 R 14 205/55 R 14	195/50 R 15 205/50 R 15	82 85
185/70 R 13 —	185/65 R 14 —	195/60 R 14 —	— (215/55 R 14)	— (215/50 R 15)	86 (88)
195/70 R 13 —	195/65 R 14 —	205/60 R 14 —	— (225/55 R 14)	— (225/50 R 15)	89 (91)
205/70 R 13 —	205/65 R 14 —	215/60 R 14 —	— (235/55 R 14)	— (235/50 R 15)	91 (93)
215/70 R 13	215/65 R 14	225/60 R 14	—	—	94

Table B.1 (*continued*)

70 series	65 series	60 series	55 series	50 series	Load index
155/70 R 14	155/65 R 15	165/60 R 15	175/55 R 15	—	77
165/70 R 14	165/65 R 15	175/60 R 15	185/55 R 15	185/50R 16	81
175/70 R 14 —	175/65 R 15 —	185/60 R 15 —	195/55 R 15 205/55 R 15	195/50R 16 205/50R 16	84 87
185/70 R 14 —	185/65 R 15 —	195/60 R 15 —	— (215/55 R 15)	— (215/50 R 16)	88 (90)
195/70 R 14 —	195/65 R 15 —	205/60 R 15 —	— (225/55 R 15)	— (225/50 R 16)	91 (92)
205/70 R 14 —	205/65 R 15 —	215/60 R 15 —	— (235/55 R 15)	— (235/50 R 16)	94 (95)
215/70 R 14 —	215/65 R 15 —	225/60 R 15 (235/60 R 15)	— (245/55 R 15)	— (245/50 R 16)	96 (98)
225/70 R 14 —	225/65 R 15 —	— (245/60 R 15)	— (255/55 R 15)	— (255/50 R 16)	99 (100)
—	—	—	205/55 R 16	205/50 R 17	89
185/70 R 15 —	185/65 R 16 —	195/60 R 16 —	— (215/55 R 16)	— (215/50 R 17)	89 (91)
195/70 R 15 —	195/65 R 16 —	205/60 R 16 —	— (225/55 R 16)	— (225/50 R 17)	92 (94)
205/70 R 15 —	205/65 R 16 —	215/60 R 16 —	— (235/55 R 16)	— (235/50 R 17)	95 (96)
215/70 R 15 —	215/65 R 16 —	225/60 R 16 —	— (245/55 R 16)	— (245/50 R 17)	98 (99)
225/70 R 15	225/65 R 16	235/60 R 16	—	—	100
235/70 R 15	235/65 R 16	—	—	—	103

Table B.2 — Load capacity indices

Nominal section	80 series	75 series	70 series	65 series	60 series	55 series	50 series	45 series	40 series	35 series	30 series
Nominal rim-diameter code 10											
145	69		63								
155	73		67								
165			72								
Nominal rim-diameter code 12											
135	68		65								
145	74		69	67							
155	77		73	71	68						
165			77		71						
175			80	78							
Nominal rim-diameter code 13											
125	65										
135	70		68								
145	75		71	69							
155	79		75	73	69						
165	83		79	77	73	70					
175	86		82	80	77	73					
185	90		86	84	80	77		72			
195			89	87	84	80		75			
205			91	89	87			78	74		
215			94	92	89		84	81	77		
225					92		86	84	80		
235					94		89	87	83		
245							91	89	85		
255								92	88		
265								94	90		
275								97	93		
285								99	95		
Nominal rim-diameter code 14											
135			69								
145			73								
155	81		77	75							
165	85		81	79	75	72					
175	88	86	84	82	79	75					
185	91	89	88	86	82	79	77	74			
195	95	92	91	89	86	82	80	77			
205	98	95	94	91	89	85	84	80	76		
215		98	96	94	91	88		83	79		
225		101	99		94	91		86	82		
235			101		96	93		88	84		
245			103		99	96	93	91	87		
255					101	98	95	93	89		
265					103	100	98	96	92		
275					105			98	94		
285								100	96		

Table B.2 (*continued*)

Nominal section	80 series	75 series	70 series	65 series	60 series	55 series	50 series	45 series	40 series	35 series	30 series
Nominal rim-diameter code 15											
145			75								
155	83		78	77							
165	87		82	81	77						
175	90		86	84	81	77	75				
185	93		89	88	84	81	79	75			
195	96	94	92	91	88	84	82	78			
205		97	95	94	91	87	85	81	77		
215	101	100	98	96	94	90	88	84	80		
225	105	102	100	99	96	92	91	87	83	79	
235		105	103	100	98	95	93	90	86	81	
245			105	102	100	98	95	92	88	84	
255		110	108	106	102	100	97	95	91	86	
265		112	110		105		99	97	93	89	
275					107	104	101	99	95	91	
285							104	101	98	93	
295							105	104	100	95	
305								106	102	97	
315								108	104	99	
325								110	106	101	
335								112	108	103	
345								114	110	105	
Nominal rim-diameter code 16											
155	85										
175	91										
185				89			81	77			
195				92	89		84	80			
205	100		97	95	92	89	87	83	79		
215	103	101	99	98	95	91	90	86	82		
225		104	102	100	98	94	92	89	85	80	
235	109	106	105	103	100	96	95	91	87	83	
245		109	107			99	98	94	90	86	
255				109	103		100	96	92	88	
265			112				101	98	95	90	
275			114				103	101	97	92	
285								103	99	95	
295								105	101	97	
305								107	103	99	
315								109	105	100	
325								111	107	102	
335								113	109	104	
345								115	111	106	
Nominal rim-diameter code 17											
185								78			
195								81			

Table B.2 (*continued*)

Nominal section	80 series	75 series	70 series	65 series	60 series	55 series	50 series	45 series	40 series	35 series	30 series
205							89	84	80		
215							91	87	83		
225							94	90	86	82	
235						97	96	93	90	84	
245					103		99	95	91	87	
255						102	100	98	94	89	
265					108			100	96	92	87
275					110			102	98	94	89
285								104	100	96	91
295								107	102	98	93
305								109	104	100	95
315								111	106	102	97
325								113	109	104	99
335								115	110	106	101
345								116	112	108	102
355								118		109	104
365								120		111	106
375											108
385											109
Nominal rim-diameter code 18											
185								79			
195								83			
205						91		86	82		
215								89	85		
225								91	88	83	
235					103			94	91	86	
245					104			96	93	88	
255					109			99	95	90	
265								101	97	93	88
275								103	99	95	90
285								105	101	97	93
295								108	103	99	94
305								110	106	101	96
315								112	108	103	98
325								114	110	105	100
335								116	112	107	102
345								118	114	109	104
355								119		111	106
365								121		112	107
375											109
385											110
Nominal rim-diameter code 19											
185								81			
195								84			
205								87	83		

Table B.2 (*continued*)

Nominal section	80 series	75 series	70 series	65 series	60 series	55 series	50 series	45 series	40 series	35 series	30 series
215								90	86		
225								92	89	84	
235								95	92	87	
245								98	94	89	
255								100	96	92	
265								102	98	94	89
275								104	101	96	92
285								107	103	99	94
295								109	105	100	96
305								111	107	102	98
315								113	109	104	100
325								115	111	106	101
335								117	113	108	103
345								119	115	110	105
355								121		112	107
365								122		114	109
375											110
385											112
Nominal rim-diameter code 20											
185								82			
195								85			
205								88	84		
215								91	87		
225								94	90	86	
235								96	93	88	
245								99	95	91	
255								101	97	93	
265								104	100	95	90
275								106	102	98	93
285								108	104	100	95
295								110	106	102	97
305								112	108	104	99
315								114	110	106	101
325								116	112	108	103
335								118	114	110	104
345								120	116	111	106
355								122		113	108
365								123		115	110
375											112
385											113
Load capacity indices for reinforced/extra load versions are determined by adding 4 points to standard load LIs.											

Table B.3 — Load capacity indices for T-type light load tyre with reference pressure 420 kPa

Tyre designation	Load index	Tyre designation	Load index
T 135/60_[a]16	92	T 125/80_[a]15	95
T 105/70_[a]14	84	T 135/80_[a]15	100
T 115/70_[a]14	88	T 115/80_[a]16	92
T 125/70_[a]14	93	T 125/80_[a]16	97
T 135/70_[a]14	97	T 135/80_[a]16	101
T 105/70 _[a]15	85	T 145/80_[a]16	105
T 115/70 1_[a]5	90	T 155/80_[a]16	109
T 125/70 _[a]15	95	T 135/80_[a]17	103
T 135/70_[a]15	99	T 135/80_[a]18	104
T 105/70_[a]16	87	T 125/85_[a]15	97
T 115/70_[a]16	92	T 105/90_[a]12	80
T 125/70_[a]16	96	T 115/90_[a]12	86
T 135/70_[a]16	100	T 125/90_[a]12	90
T 125/70_[a]17	98	T 125/90_[a]15	96
T 135/70_[a]17	102	T 135/90_[a]15	100
T 145/70_[a]17	106	T 125/90_[a]16	98
T 155/70_[a]17	110	T 135/90_[a]16	102
T 125/70_[a]18	99	T 145/90_[a]16	106
T 105/80_[a]13	82	T 155/90_[a]16	110
T 125/80_[a]13	92	T 165/90_[a]17	115
T 135/80_[a]14	97	T 105/95_[a]17	90
[a] D, B or R to be inserted here, depending on the tyre structure.			

Table B.4 — Load capacity indices for P-type LIGHT LOAD (LL) tyre with reference pressure of 240 kPa

Tyre designation	Load index	Tyre designation	Load index
30 SERIES		P245/40R18	90
P335/30R18	95	P255/40R19	91
		P265/40R18	92
35 SERIES		P275/40R17	93
		P275/40R18	94
P245/35R18	80	P285/40R17	95
P275/35R20	89	P295/40R20	101
P285/35R17	88		
P285/35R18	89	**45 SERIES**	
P315/35R17	93		
P335/35R17	97	P225/45R17	84
		P235/45R17	87
40 SERIES		P245/45R16	88
		P245/45R17	89
P205/40R16	75	P255/45R17	92
P225/40R18	83	P265/45R16	92
P245/40R17	86	P295/45R18	101
P245/40R18	88	P305/45R17	102
P245/40R20	90	P315/45R17	104

Annex C
(informative)

Marking of radial tyres designed for vehicle with maximum speeds above 210 km/h

C.1 The code letters "*VR*" may be used within the dimensional and constructional characteristics in place of the tyre construction code for radial ply tyres designed for equipment on some existing vehicles with maximum speeds above 210 km/h.

Example

215 /60 VR 15

This precludes the marking of service description. For the maximum speed capability and the load capacity of the tyres, the tyre manufacturer concerned shall be consulted.

C.2 The code letters "ZR" may be used within the dimensional and constructional characteristics in place of the tyre construction code for radial ply tyres designed to equip some existing vehicles with maximum speeds above 240 km/h.

Example

205/50 ZR 16

This precludes the marking of service description. For the maximum speed capability and the load capacity of the tyres, the tyre manufacturer concerned shall be consulted.

C.3 The code letters "ZR" may be used within the dimensional and constructional characteristics, in place of the tyre construction code (see 5.1.3) and in conjunction with "W" speed symbol and load index to identify tyre performances up to 270 km/h.

Example

195/50 ZR 15 82W

C.4 The code-letters "ZR" may be used in the dimensional and constructional characteristics (see 5.1.3) associated with the speed code Y and the load index to identify tyre performances up to 300 km/h.

Example

195/50 ZR 15 82Y

