

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

Final Draft Standard

GSO 02/01/FDS/GSO 645:2009

إطارات السيارات متعددة الأغراض والشاحنات والحافلات والمقطورات
الجزء الأول: المسميات والتمييز والبيانات الإيضاحية والأبعاد والأحمال
وضغوط النفخ

**Multi-Purpose Vehicles, Trucks, Buses and
Trailers- Tyres Part 1: Nomenclature,
Designation, Marking, Dimensions, Load
Capacities and Inflation Pressures**

إعداد

اللجنة الفنية الفرعية الخليجية لقطاع مواصفات المركبات والإطارات

هذه الوثيقة مشروع لمواصفة قياسية خليجية تم توزيعها لإبداء الرأي والملاحظات بشأنها،
لذلك فإنها عرضة للتغيير والتبديل، ولا يجوز الرجوع إليها كمواصفة قياسية خليجية إلا بعد
اعتمادها من مجلس إدارة الهيئة.

تقديم

هيئة التقييس لدول مجلس التعاون لدول الخليج العربية هيئة إقليمية تضم في عضويتها الأجهزة الوطنية للمواصفات والمقاييس في دول الخليج العربية، ومن مهام الهيئة إعداد المواصفات القياسية الخليجية بواسطة لجان فنية متخصصة.

وقد قامت هيئة التقييس لدول مجلس التعاون لدول الخليج العربية ضمن برنامج عمل اللجنة الفنية رقم 2-1 " للجنة الفنية الخليجية لقطاع مواصفات المركبات والإطارات " بتحديث المواصفة القياسية الخليجية رقم 645 / 2005م، " إطارات السيارات متعددة الأغراض والشاحنات والحافلات والمقطورات الجزء الأول : المسميات والتميز والبيانات الإيضاحية والأبعاد والأحمال وضغوط النفخ " . وقامت دولة الكويت بإعداد مشروع هذه المواصفة.

وقد اعتمدت هذه المواصفة كلائحة فنية خليجية في اجتماع مجلس إدارة الهيئة رقم () ، الذي عقد بتاريخ / / هـ ، الموافق / / م. على أن تلغي المواصفة رقم (/) وتحل محلها.

Foreword

GCC Standardization Organization (GSO) is a regional Organization which consists of the National Standards Bodies of GCC member States. One of GSO main functions is to issue Gulf Standards /Technical regulations through specialized technical committees (TCs).

GSO through the technical program of committee TC No. 2-1 " The Gulf technical Subcommittee for vehicles and tyres standards " has updated the GSO Standard No. : 645/2005 " Multi-Purpose Vehicles, Trucks, Buses and Trailers-Tyres Part 1: Nomenclature, Designation, Marking, Dimensions, Load Capacities and Inflation Pressures" . The Draft Standard has been prepared by *State of Kuwait*.

This standard has been approved as a Gulf Technical Regulation by GSO Board of Directors in its meeting No.(),held on / / H , / / G. The approved standard will replace and supersede the GSO standard No. (/).

MULTI-PURPOSE VEHICLES, TRUCKS, BUSES AND TRAILERS TYRES PART 1: NOMENCLATURE, DESIGNATION, MARKING, DIMENSIONS, LOAD CAPACITIES AND INFLATION PRESSURES

1. SCOPE AND FIELD OF APPLICATION

This standard is concerned with nomenclature, designation, marking, dimensions, load capacities and inflation pressures of new tyres for multi-purpose vehicles, Light Trucks, Heavy Trucks, Buses and trailers. This standard is not applicable for tyre types identified by speed category less than 80km/h. It is also not applicable to motor cycle, road equipment or agricultural equipment tyres.

2. COMPLEMENTARY REFERENCES

- 2.1 GSO 51-1 "Passenger Car Tyres - Part 1: Nomenclature, Designation, Marking, Dimensions, Load Capacity and Inflation Pressures".
- 2.2 GSO 646-2 "Multi-purpose Vehicles, Trucks, Buses and Trailers, Part 2: Testing Methods".
- 2.3 GSO 647-3 "Multi-purpose Vehicles, Trucks, Buses and Trailers Tyres - Part 3: General Requirements".

3. NOMENCLATURE

In addition to the following definitions, the definitions mentions in GSO standards mention in item 2.1 are applicable.

3.1 **Pneumatic tyre**

Circular shaped tyre made of an elastic material and enforced with steel strand and/or fabric and reinforced with suitable fibres 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:

- 3.2.1 Manufacturer's name or trade mark.
- 3.2.2 Tyre size designation.
- 3.2.3 Field of use as:
 - 3.2.3.1 Normal road-use tyres.
 - 3.2.3.2 Mud and snow tyres (M + S).

3.2.3.3 Special-use tyres (off - the - road, snow ...) (ET).

3.2.3.4 Use at restricted speed.

3.2.4 Structure

3.2.4.1 Diagonal (bias-ply).

3.2.4.2 Radial.

3.2.5 Speed symbol or symbols.

3.2.6 Load capacity index.

3.2.7 Cross section.

3.3 **Measuring rim**

The rim on which a tyre shall be fitted for dimensional measurements.

3.4 **Test rim**

The rim on which a tyre shall be fitted for strength, speed and endurance tests.

3.5 **Chunking**

The breaking away of pieces of rubber from tread.

3.6 **Ply**

A layer of rubber - coated parallel cords.

3.7 **Rim**

A metallic support for a tyre, or a tyre and tube assembly upon which the tyre bead is seated.

3.8 **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.

3.9 **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.

3.10 **Load index**

One or two numerical codes 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 tyre manufacturer.

3.11 **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.

4. DESIGNATION

It shall be as specified in the GSO standard mentioned in 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 symbol** 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 symbol | F | G | J | K | L | M | N | P | Q | R | S | T | U | H | V |
|--------------------------|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------|
| Corresponding speed km/h | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 | 210 | More than 210 |

- 4.2 **Nominal rim diameter**

In addition to the nominal diameters indicated in the GSO standard mentioned in 2.1, the following values shall be added to this standard:

| Nominal rim diameter (mm) | Figure to be used as tyre designation (inch) |
|------------------------------|-------------------------------------------------|
| 508 | 20 |
| 533 | 21 |
| 559 | 22 |
| 610 | 24 |
| 635 | 25 |
| 318 | 12.5 |
| 343 | 13.5 |
| 368 | 14.5 |
| 394 | 15.5 |
| 419 | 16.5 |
| 445 | 17.5 |
| 495 | 19.5 |
| 521 | 20.5 |

| | |
|-----|------|
| 572 | 22.5 |
| 622 | 24.5 |
| 660 | 26 |
| 711 | 28 |
| 762 | 30 |

4.3 Load index

In addition to the load indices mentioned in the GSO standard mentioned in 2.1 the following values shall be added to this standard:

| Tyre load (Kg) | Load index |
|----------------|------------|----------------|------------|----------------|------------|----------------|------------|
| 1450 | 121 | 2575 | 141 | 4625 | 161 | 8250 | 181 |
| 1500 | 122 | 2650 | 142 | 4750 | 162 | 8500 | 182 |
| 1550 | 123 | 2725 | 143 | 4875 | 163 | 8750 | 183 |
| 1600 | 124 | 2800 | 144 | 5000 | 164 | 9000 | 184 |
| 1650 | 125 | 2900 | 145 | 5150 | 165 | 9250 | 185 |
| 1700 | 126 | 3000 | 146 | 5300 | 166 | 9500 | 186 |
| 1750 | 127 | 3075 | 147 | 5450 | 167 | 9750 | 187 |
| 1800 | 128 | 3150 | 148 | 5600 | 168 | 10000 | 188 |
| 1850 | 129 | 3250 | 149 | 5800 | 169 | 10300 | 189 |
| 1900 | 130 | 3350 | 150 | 6000 | 170 | 10600 | 190 |
| 1950 | 131 | 3450 | 151 | 6150 | 171 | 10900 | 191 |
| 2000 | 132 | 3550 | 152 | 6300 | 172 | 11200 | 192 |
| 2060 | 133 | 3650 | 153 | 6500 | 173 | 11500 | 193 |
| 2120 | 134 | 3750 | 154 | 6700 | 174 | 11800 | 194 |
| 2180 | 135 | 3850 | 155 | 6900 | 175 | 12150 | 195 |
| 2240 | 136 | 4000 | 156 | 7100 | 176 | 12500 | 196 |
| 2300 | 137 | 4125 | 157 | 7300 | 177 | 12850 | 197 |
| 2360 | 138 | 4250 | 158 | 7500 | 178 | 13200 | 198 |
| 2430 | 139 | 4375 | 159 | 7750 | 179 | 13600 | 199 |
| 2500 | 140 | 4500 | 160 | 8000 | 180 | 14000 | 200 |

5. MARKING

Each tyre shall be legibly and indelibly marked, with characters of a minimum height of 2 mm (for words) and 4 mm (for numbers), with the following information in either Arabic and/or English arranged as follows:

- 5.1 The manufacturer's name or trade mark;
- 5.2 The tyre-size designation
- 5.3 The speed-category symbol (or symbols);
- 5.4 The load indices;
- 5.5 The word "TUBELESS" if the tyre is designed for use without an inner tube;
- 5.6 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.
- 5.7 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;
- 5.8 The suffix "C" and the prefix or suffix "LT" in the tyre size designation marking, or the word "LIGHT TRUCK" on the tyre sidewall, if applicable.
- 5.9 Country of Production
- 5.10 Tread Wear Indicator

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 expressed in millimetres and measured on the measuring rim.

S₁ = 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 specified by the manufacturer.

A₁ = 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 The overall width of a tyre may be less than the section width determined in accordance with item 6.1.1

6.1.3 The section width may exceed 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.

6.2 Tyre outer diameter specifications

6.2.1 The outer diameter of a tyre 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).

$$D = d_1 + 0.02 (S_1 \times Ra)$$

Where:

D is the outer diameter expressed in millimetres.

d_1 is the conventional number denoting the nominal diameter of the rim (in mm).

S_1 is the nominal section width in millimetres.

Ra is the nominal aspect ratio,

6.2.2 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 Fur 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"-

FOR STUDY