هيئة التقييس لدول مجلس التعاون لدول الخليج العربية
STANDARDIZATION ORGANIZATION FOR G.C.C (GSO)

GSO 52/2007

إطارات سيارات الركوب
الجزء الثاني : المتطلبات العامة
PASSENGER CAR TYRES
PART 2: GENERAL REQUIREMENTS

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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) "Technical Committee of Mechanical standards" has updated the GSO Standard No. : GSO 52/1986 " Passenger Car Tyres - Part 2: General Requirements ". The Draft Standard has been prepared by Kingdom of Saudi Arabia.

This standard has been approved as a Gulf Technical Regulation by GSO Board of Directors in its meeting No.(6), held on 19/5/1428H , (5/6/2007G) . The approved standard will replace and supersede the GSO standard No. 52/1986.

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PASSENGER CAR TYRES
PART 2: GENERAL REQUIREMENTS

1- SCOPE AND FIELD OF APPLICATION

This standard is concerned with the requirements of the new passenger car tyres and inflated with compressed air.

2- COMPLEMENTARY REFERENCES

2.1 GSO 51/2007 "Passenger Car Tyres - Part 1: Nomenclature, Designation, Marking, Dimensions, Load Capacity and Inflation Pressure".

2.2 GSO 53/2007 "Passenger Car Tyres - Part 3: Methods of Test".

2.3 GS 581/1995 "Requirements for Storage of Motor Vehicle Tyres".

2.4 GSO Standard to be approved by the Organization "Motor Vehicles Tyres – Treadwear, Traction and Temperature Resistance Grading".

2.5 GSO Standard to be approved by the Organization "Motor Vehicles Tyres – Methods of Testing of Temperature Resistance Grading".

3- DEFINITIONS

The definitions shall be in accordance with the Gulf Standard mentioned in item 2.1.

4- REQUIREMENTS

The following shall be met by passenger car tyres.

4.1 Appearance

It shall be free from apparent cracks or cuts or any foreign matter in the tread or on either of the sidewalls of the tyre. It shall not be contaminated with mineral oil, and the tread shall be even and no exposed ply cord shall be apparent to the tyre.

4.2 Dimensions, load capacity and inflation pressure

4.2.1 The dimensions, load capacity and inflation pressure shall be in accordance with Gulf Standard mentioned in item 2.1.

4.2.2 The dimension shall be in metric system.

4.2.3 The overall width of the tyre, when fitted to the theoretical rim width, shall not exceed the value 'S' set for its size and construction type by more than the following percentage:

4.2.3.1 For all bias-ply and bias-belted tyres: 7 percent.

4.2.3.2 For all radial tyres: 4 percent.

4.2.3.3 If the tyre has special protective ribs or bands, the figure as increased by the above tolerances may be exceeded by 8 mm.

4.2.3.4 If the tyre is an 'A' metric tyre, the overall width in the bead area shall not exceed the nominal rim width increased by 20 mm.

Note:

1) the theoretical rim width ('r_th') equals:

0.7 times the Nominal Section Width (SN) for tyres with Nominal Aspect Ratio 50 and larger.

0.85 times the Nominal Section Width (SN) for tyres with Nominal Aspect Ratio 45 and smaller.

0.67 times the Nominal Section Width (SN) for 'CT' tyres.

the Nominal Section Width (SN) for 'A' metric tyres.

2) When the tyre is fitted on rim having a Rim Width ('r'), which differs from the theoretical rim width ('r_th') the reference value shall be calculated as: S = SN + 0.4 * (r – r_th).

4.2.4 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 + (2H . a)

D max = d + (2H . b)

where:

d = Nominal Rim Diameter (in mm)

H = 0.01 * Nominal Section Width (SN) * Nominal Aspect Ratio, for 'A' metric H = 0.5 * (Nominal Overall Diameter – Nominal Rim Diameter).

4.2.4.1 The minimum limit for all tyres: a = 97%.

4.2.4.2 The maximum limit for radial tyres: b = 104%.

4.2.4.3 The maximum limit for bias-ply (diagonal) and bias-belted tyres: b = 108%.

4.3 Tensile strength and elongation

The tensile strength of tread rubber shall not be less than 1.2 kg/mm2, and the elongation shall not be less than 300%.

4.4 Ageing

The tensile strength of tread rubber shall not be less than 80% of the tensile strength of the sample before continuous ageing for 96 hrs at (70 ± 1)oC.

4.5 Strength

The breaking energy of each tyre shall not be less than the values specified in Table (1) when tested in accordance with the Gulf Standard mentioned in item 2.2.

TABLE 1

Minimum Breaking Energy Values

Minimum Breaking Strength - Joules (N.m)

Nominal Section Width and Body-Ply Cord Material	**Diagonal (bias-ply) Tyres**			**Radial Tyres**		**Diagonal T-type Temporary Use Tyres**	
	Ply rating			Standard	Reinforced Extra Load	Load Index	
	4	6	8			≤ 75 (387 kg)	≥ 76 (400 kg)
Below 160 mm							
Rayon	113	212	282	113	282	113	186
Other than rayon	220	330	441	221	441	221	295
160 mm and above							
Rayon	186	280	373	186	373	113	186
Other than rayon	294	441	588	295	588	221	295

4.6 Endurance

4.6.1 There shall be no evidence of tread, sidewall, ply, cord, inner liner, belt or bead separation, chunking, open splices, cracking or broken cords after the tyre has been subjected to the endurance test specified in accordance with the Gulf standard mentioned in item 2.2.

4.6.2 The tyre pressure measured immediately after the test shall not be less than the initial pressure measured before the test.

4.7 High speed performance

4.7.1 There shall be no evidence of tread, side wall, ply, cord, inner liner, belt or bead separation, chunking, open splices, cracking or broken cords after the tyre has been subjected to the high speed endurance test specified in accordance with the Gulf standard mentioned in item 2.2.

4.7.2 The tyre pressure measured immediately after the test shall not be less than the initial pressure measured before the test.

4.8 Bead unseating resistance [tubeless tyres]

The force required to unseat the tyre bead at the point of contact shall not be less than the following values when tested in accordance with the Gulf standard mentioned in item 2.2.

Nominal section width, SN (mm)	Force (N)
SN < 160	6800
160 ≤ SN < 205	9100
SN ≥ 205	11350

For Diagonal T-type Temporary Use Tyres

Tyre Load Index, LI	Force (N)
75 (387 kg) and below	6800
76 (400 kg) ≤ LI ≤ 92 (630 kg)	9100
LI > 92 (630 kg)	11350

4.9 Treadwear Indicators.

4.9.1 Each tyre shall have at least six traverse rows of treadwear indicators, equally spaced around the circumference of the tyre and situated in the principal grooves of the tread.

4.9.2 Tyres designed for mounting on rims of nominal rim diameter code 12 or less, not less than four traverse rows of treadwear indicators is acceptable.

4.10 Speed Symbol

4.10.1 The speed symbol shall be marked on the tyre, and it shall be as indicated in Gulf standard mentioned in item 2.1.

4.10.2 The speed symbol marked on the tyre shall be 'S' or higher, except in case of 'Temporary Use' spare tyres where it shall be M or higher.

4.11 Temperature rating

4.11.1 Each tyre shall be graded for temperature resistance grade in accordance with the Gulf mentioned in item 2.4.

4.11.2 The temperature rating of passenger car tyres shall be "A" or "B".

4.11.3 The temperature resistance performance shall be obtained when testing the tyres in accordance with the Gulf standard mentioned in item 2.5.

5- MARKING

The marking of the tyre shall be in accordance with Gulf Standard mentioned in item 2.1.

6- TRANSPORTATION AND STORAGE

6.1 Tyres shall be transported in such a way so as to protect it from damage and shall be stored away from sunshine, rain and moisture, oil or grease, and heat or any apparatus which may cause electrical sparkings.

6.2 The storage of tyres shall be in accordance with the Gulf standard mentioned in item 2.3.

7. SAMPLING

Four (4) tyres with identical characteristics, e.g. size designation and service description or maximum load rating and speed capability, shall comprise a test sample:

a) One tyre shall be used for the measurement of bead unseating resistance [for tubeless tyres] then of strength and then used for tensile strength and elongation test and for ageing test.

b) A second tyre shall be used for the endurance test.

c) A third tyre shall be used for the high speed performance.

d) A fourth tyre shall be used for the temperature rating.

Each test sample shall conform to the requirements specified in 8.1 and 8.2.

8 - TESTS

The following tests shall be carried out on samples taken in accordance with item 7.

a. Visual inspection.

b. Measurement of dimensions.

c. Tensile strength and elongation

d. Ageing

e. Strength.

f. Endurance

g. High speed performance.

h. Bead unseating resistance [for tubeless tyres].

i. Temperature rating.

9- METHODS OF INSPECTION AND TESTING

Tests shall be carried out in accordance with Gulf Standards mentioned in item 2.2 and item 2.5.

10- CRITERIA OF TECHNICAL CONFORMITY

10.1 Two months at least before dispatching the consignment of any type of tyres, the manufacturer shall send to the Standardization Organization for G.C.C. (GSO) in English and/or Arabic languages, certifying that this type of tyres meets the requirements of Gulf standard for tyres. The certificate shall include the following:

10.1.1 Designation of dimensions, construction, nominal tyre rim diameter and service description.

10.1.2 Tube type or tubeless.

10.1.3 The production period which shall not be more than one full year.

10.1.4 Trade name, trade mark, brand name or manufacturer's name.

10.1.5 Country of production.

10.1.6 A guarantee valid for at least one year.

10.1.7 Temperature rating

10.2 The results of tests carried out shall be supplied to GSO.

10.3 The tyres shall be exported within twelve (12) months from the date of production indicated on the tyre.

10.4 The approved conformity certificate shall be valid only for one year from the date of approval.

10.5 In case of GSO acceptance of the certificate mentioned in item 10.1, the type of tyres shall be considered acceptable.

10.6 In case the certificate is not accepted (because information is incomplete or subject to question), the information may be completed. If not completed or if necessary, substantiated tests, as required by GSO shall be carried out on tyre samples.