

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

مشروع مواصفة نهائي
Final Draft of Standard FDS

إعداد اللجنة الفنية الفرعية الخليجية رقم 01 /TC 02/SC

Prepared by GSO Technical Sub-Committee No. TC 02/SC 01

GSO 02 /01/FDS/ 1052 :2018

إطارات السيارات

الاستخدام المؤقت للعجلات الاحتياطية/ الإطارات وطرق اختبارها

**Motor Vehicles Tyres: Temporary Use Spare Wheels/Tyres and
Their Methods of Test**

ICS: 83.160.10; 83.160.01

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على أن تلغي اللائحة الفنية الخليجية رقم GSO 1052:2000 و تحل محلها.

Motor Vehicles Tyres: Temporary Use Spare Wheels/Tyres and Their Methods of Test

1- SCOPE AND FIELD OF APPLICATION

This standard is concerned with the temporary-use spare wheels and tyres for passenger cars and multipurpose vehicles.

2- COMPLEMENTARY REFERENCES

2.1 GSO 48 "Motor Vehicles - Conformity Certificates".

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

2.3 GSO 52 "Passenger Car Tyres - Part 2: General Requirements".

2.4 GSO 53 "Passenger Car Tyres - Part 3: Methods of Test".

2.5 GSO 645 "Multi-purpose Vehicles, Trucks, Buses and Trailers Tyres – Part: 1: Nomenclature, Designation, Marking, Dimensions, Load Capacity and Inflation Pressure".

2.6 GSO 646 "Multi-purpose Vehicles, Trucks, Buses and Trailers Tyres – Part 2: Method of Test".

2.7 GSO 647 "Multi-purpose Vehicles, Trucks, Buses and Trailers Tyres, Part 3: General Requirements".

3- NOMENCLATURES AND DEFINITIONS

3.1 Wheel: A complete wheel consisting of a rim and a wheel disc.

3.1.1 "*Wheel size designation*". It means a designation comprising at least the nominal rim diameter, the nominal rim width and the rim profile.

3.1.2 "*Wheel offset*" means the distance from the hub abutment face to the centre line of the rim.

3.2 Temporary-use spare wheel: A wheel different from one of the standard wheels on the vehicle type.

3.3 Temporary-use spare tyre: It is a tyre that specifically designed to be different from a normal tyre and intended only for temporary use under restricted driving conditions.

~~3.4 Unit: An assembly of a wheel and tyre.~~

~~3.5 Standard unit: A unit which is capable of being fitted to the vehicle for normal operation.~~

~~3.6 Spare unit: A unit which is intended to be exchanged for a standard unit in case of malfunction of the latter. A "spare unit" may be either of the following:~~

3.4 Standard spare unit: It is an assembly of a wheel and tyre identical in terms of wheel and tyre size designations, wheel offset and tyre structure to that fitted in the same axle position and to the particular model or version of the vehicle for normal operation. It includes the case of a wheel that is produced from a different material, for example, steel instead of aluminium alloy, that may use different wheel fixing nut or bolt designs but which is otherwise identical to the wheel intended for normal operation.

3.5 Temporary-use spare unit: It is an assembly of any wheel and tyre that is not within that defined as a "Standard spare unit" in paragraph 3.4. Temporary-use spare units may be of the following types:

3.5.1 Type 1

It is an assembly in which the tyre is a temporary-use spare tyre as defined in paragraph 3.3.

3.5.2 Type 2

It is an assembly in which the wheel has a different offset from that of the wheel fitted in the same axle position for normal operation of the vehicle.

3.5.3 Type 3

It is an assembly in which the tyre is of a different structure from that fitted in the same axle position for normal operation of the vehicle.

3.5.4 Type 4

It is an assembly in which the tyre is a normal tyre as defined in paragraph 3.5 of GSO51/2017 but where the size designation of the wheel or the tyre or both, differ from those of the wheel or tyre fitted in the same axle position for normal operation of the vehicle.

3.5.5 Type 5

It is an assembly in which a wheel and tyre unit as defined in paragraph 3.54 or 3.56 of GSO51/2017 is fitted to the vehicle for normal, long-term road use, but used in an emergency in a totally deflated condition.

3.6 "Maximum mass". It is the maximum value of the vehicle stated by the manufacturer to be technically permissible (this mass may be higher than the "permissible maximum mass" laid down by the national administration).

3.7 "Maximum axle load". It is the maximum value, as indicated by the manufacturer, of the total vertical force between the contact surfaces of

the tyres or tracks of one axle and the ground and resulting from the part of the vehicle mass supported by that axle; this load may be higher than the "authorized axle load" laid down by the national administration. The sum of the axle loads may be greater than the value corresponding to the total mass of the vehicle.

3.8 "Functional dimensions" dimensions derived from the size designation of the wheel and/or tyre (e.g. diameter, width, aspect ratio) and from the mounting of the unit to the vehicle (e.g. wheel offset).

3.9 "Run-Flat Warning System" describes a system which delivers information to the driver that a tyre is operating in the flat tyre running mode.

4- DESIGNATION

The designation shall be as specified in the standard mentioned in item 2.2.

5- REQUIREMENTS

5.1 Tyres intended for the use as part of temporary-use spare units as defined in paragraph 3.5 shall meet the requirements of the GSO standard mentioned in item 2.3 or 2.7.

5.2 For vehicles having at least four wheels, the load capacity of the temporary-use spare unit shall be at least equal to one half of the highest of the maximum (gross) axle load of the vehicle.

5.3 The design speed of the temporary-use spare unit shall be at least 120 km/h, for types 1, 2 and 3.

5.4 If the vehicle is equipped with a temporary-use spare unit stored in a deflated condition, a device must be provided on the vehicle which permits the tyre to be inflated to the pressure specified for temporary-use within a maximum of 10 minutes.

5.5 Under normal service conditions the braking performance shall be obtained without any wheel locking, deviation of the vehicle from its intended course, abnormal vibration, abnormal wear of the tyre during the test or excessive steering correction.

6- MARKING

6.1 The temporary-use spare unit shall exhibit the following characteristics:

6.1.1 A maximum speed warning symbols shall be permanently displayed as follows:

6.1.1.1 a) A 80 km/h maximum speed warning symbol arranged in accordance with the diagram below shall be permanently displayed on the outer face of the wheel in a prominent position (see Figure 1):

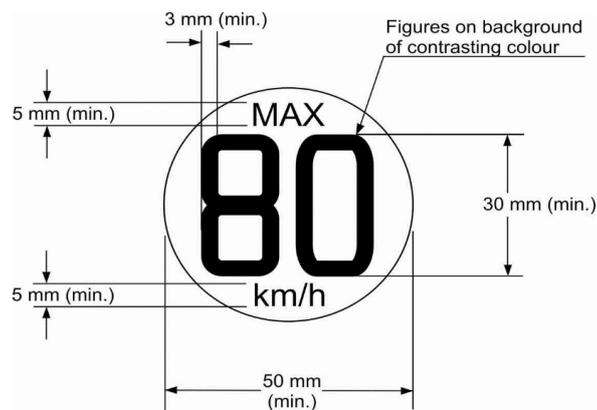


Figure 1: 80 km/h Speed Warning Symbol (Option 1)

b) Alternatively a single warning symbol arranged in accordance with the diagram below, shall be permanently displayed on the outer face of the wheel in a prominent position (see Figure 2).

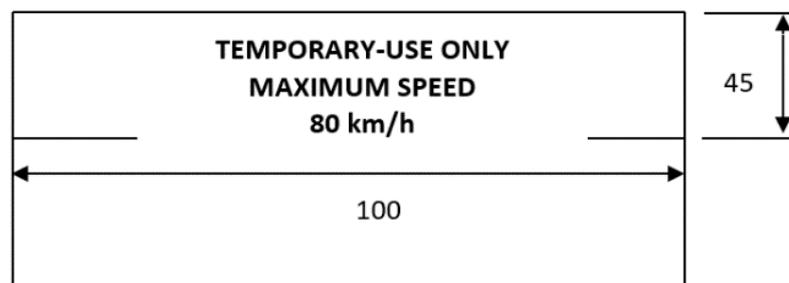


Figure 2: 80 km/h Speed Warning Symbol (Option 2)

c) Upper case letters shall be at least 5 mm high and the numbers "80" and "50" shall be at least 20 mm high with the elements that make up each character of the number at least 3 mm line thickness. Lower case text shall at least have a line height of 5 mm. All text shall be enclosed in a border and be on a background of contrasting color.

d) The requirements of this paragraph shall apply to types 1, 2 and 3 temporary-use spare unit as defined in paragraphs 3.5.1, 3.5.2 and 3.5.3.

6.1.1.2 a) A 120 km/h maximum speed warning symbol arranged in accordance with the diagram below shall be permanently displayed on the outer face of the wheel in a prominent position.

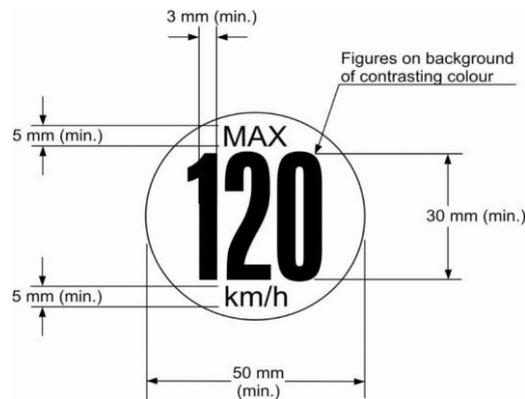


Figure 3: 120 km/h Speed Warning Symbol (Option 1)

b) Alternatively a single warning symbol arranged in accordance with the diagram below, shall be permanently displayed on the outer face of the wheel in a prominent position.

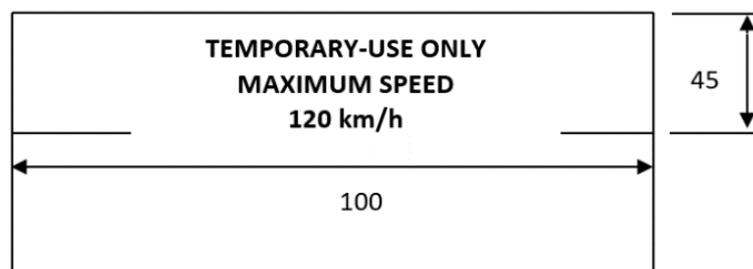


Figure 4: 120 km/h Speed Warning Symbol (Option 2)

c) Upper case letters shall be at least 5 mm high and the numbers "120" and "75" shall be at least 20 mm high with the elements that make up each character of the number at least 3 mm line thickness. Lower case text shall at least have a line height of 5 mm. All text shall be enclosed in a border and be on a background of contrasting color.

d) the requirements of this paragraph shall only apply to a type 4 temporary use spare unit as defined in paragraph 3.5.4, to be supplied for use on an M1 and N1 category vehicle.

6.1.2 Sticker with the following statements in Arabic: "CAUTION! TEMPORARY USE ONLY" MAX. 80 km/h. "REPLACE BY STANDARD UNIT".

6.1.3 When mounted to the vehicle for temporary-use the outward facing surface of the wheel and/or tyre shall exhibit a distinctive color or color pattern which is quite clearly different from the color(s) of the standard units. If it is

possible to attach a wheel cover to the temporary-use spare unit, the distinctive color or color pattern shall not be obscured by this wheel cover.

- 6.2 If the vehicle is equipped with a temporary use spare unit, the owner's manual of the vehicle shall contain at least the following information:
- 6.2.1 An instruction to drive with caution and at no more than the permitted maximum speed of 80 km/h when a type 1, 2 or 3 temporary-use spare unit is fitted, and to reinstall a standard unit as soon as possible. It shall be made clear that this instruction also applies to a type 5 temporary-use spare unit being used in the flat tyre running mode.
- 6.2.2 An instruction to drive with caution and at no more than the permitted maximum speed of 120 km/h, when a type 4 spare unit is fitted, and to reinstall a standard unit as soon as possible.
- 6.2.3 A statement that operation of the vehicle is not permitted with more than one temporary-use spare unit fitted at the same time. This requirement shall only apply to a type 1, 2 and 3 temporary-use spare units.
- 6.2.4 A clear indication of the inflation pressure specified by the vehicle manufacturer for the tyre of the temporary-use spare unit.
- 6.2.5 For vehicles equipped with a temporary-use spare unit stored in a deflated condition, a description of the procedure for inflating the tyre to the pressure specified for temporary-use by means of the device referred to in paragraph 5.4. above.
- 6.2.6 A statement of the risk resulting from non-compliance with the restrictions on the use of a temporary-use spare unit including, as appropriate, a statement relating to use restricted to a specific axle.

7- DIMENSIONS, LOAD CAPACITY AND INFLATION PRESSURE

Dimensions, load capacity and inflation pressure shall be in accordance with the contained in publications current at the date of manufacture of the tyre or any later date, of at least one of the following organizations:

- 7.1 "ISO Standards".
- 7.2 "The Tyre and Rim Association Inc" T.R.A. in (U.S.A.).
- 7.3 "The European Tyre and Rim Technical Organizations" (ETRTO).
- 7.4 "Japan Automobile Tyre Manufacturers' Association Inc." (JATMA).
- 7.5 "Deutsche Institut for Normung" (DIN).
- 7.6 "British Standards Institution" (BSI).

7.7 "Scandinavian Tyre and Rim Organization" (STRO).

7.8 "The Tyre and Rim Association of Australia".

7.9 "Association Francaise de Normalisation" (AFNOR)

8- TESTING

8.1 Sampling

8.1.1 All tyres and/or wheels in the consignment shall be visually inspected.

8.1.2 For the other tests the consignment shall be divided into groups with the same type (designation and use). A sample of two tyres and/or wheels shall be chosen at random from each group for tests.

8.2 Methods of test

The following tests shall be carried out on the tyres taken in accordance with item 8.1:

8.2.1 All tests mentioned in GSO Standard 53/2017 "Passenger Car Tyres - Part 3: Methods of Test", and GSO 646/2017 "Multi-purpose Vehicles, Trucks, Buses and Trailers Tyres – Part 2: Method of Test".

8.2.2 Braking and Deviations Test

8.2.2.1 Preparation for test

- a) The test track shall be substantially level and have a surface affording good adhesion.
- b) The test shall be performed when there is no wind liable to affect the results.
- c) The vehicle shall be loaded to its maximum mass as defined in paragraph 3.6. The axle loads resulting from the loading condition shall be proportional to the maximum axle loads as defined in paragraph 3.6.
- d) Except in the case of a run-flat tyre, the tyres shall be inflated to the pressures recommended by the vehicle manufacturer for the vehicle type and loading condition. A run-flat tyre shall be tested in the fully deflated condition.
- e) All vehicle openings (doors, windows, bonnet, boot, convertible top, etc.), shall be closed except as required for instrumentation purposes.
- f) The force applied to a brake control shall be equal or less than 500 N.

- g) Road test shall be conducted on more than 3.7 m wide, level clean and dry roadway.
- h) The ambient temperature shall be between 0°C and 38°C, and the maximum wind velocity shall be 5 m/s.
- i) The vehicle shall be aligned in the centre of the roadway at the start of each brake application.
- j) The test shall be carried out with the temporary-use spare unit fitted alternately in place of one front wheel and one rear wheel. However, if use of the temporary-use spare unit is restricted to a specific axle, the test shall be carried out only with the temporary-use spare unit fitted to that axle.
- k) The test shall be carried out using the service braking system from an initial speed of 80 km/h with the engine disconnected.

8.2.2.2

Test procedure

The performance of the vehicle shall be determined by measuring the stopping distance in relation to the prescribed speed of the vehicle and/or by measuring the mean fully developed deceleration during the test. The stopping distance shall not exceed the value listed in Table 1.

TABLE 1
Breaking Performance Reference Test Values

Vehicles category	Temporary-use spare unit type*	Prescribed speed, km/h	Applied force to the foot control, N	Stopping distance, m	Mean fully developed deceleration (dm)**, ms ⁻²
M1	Types 1, 2, 3 and 5	80	500	50.7	5.8
N1	Types 1, 2, 3 and 5	80	700	61.2	5
M1	Type 4	120	500	108	5.8
N1	Type 4	120	700	128.8	5
M1 or N1	Types 1, 2, 3 and 5	80	500 (+0/-50)	46.4	6.43
M1	Type 4	120	500 (+0/-50)	98.4	6.43

* See paragraphs 3.5.1-3.5.5

** $d_m = \frac{v_b^2 - v_e^2}{25.92(s_e - s_b)}$

where:

- v_o = initial vehicle speed at beginning of braking in km/h,
- v_b = vehicle speed at 0.8 v_o in km/h,
- v_e = vehicle speed at 0.1 v_o in km/h,
- s_b = distance travelled between v_o and v_b in metres,
- s_e = distance travelled between v_o and v_e in metres.

~~8.2.2.3~~ Results

~~The stopping distance shall not exceed the value resulting from the following formula:~~

$$\del{S \leq 0.1 V + V^2/150}$$

~~Where:~~

~~S = stopping distance in m.~~

~~V = initial speed km/h.~~

~~Stopping distances reported are to be corrected for initial speed using the following formula, providing that the actual initial speed deviated from the desired initial speed by no more than 3.2 km/h.~~

$$\del{S_c = S_m \times V_d^2/V_a^2}$$

~~Where:~~

~~V_d = desired initial speed km/h.~~

~~V_a = actual initial speed km/h.~~

~~S_m = measured stopping distance m.~~

~~S_c = corrected stopping distance m.~~

~~A vehicle shall be deemed to comply with the stopping distance requirement if one of four stops does not exceed the maximum allowable stopping distance calculated and also with item 5.5.~~

9- CRITERIA OF TECHNICAL CONFORMITY

- 9.1 Tyres and/or wheels accompanied with the vehicles the criteria of technical conformity shall be in accordance with GSO 48 "Motor Vehicles - Conformity Certificates".
- 9.2.1 Two months at least before dispatching the consignment of any type of compact spare tyres and/or wheels, the manufacturer shall send to GSMO in English and/or Arabic languages, certifying that this type of tyres and/or wheels meets the requirements of GS standards for tyres. The certificate shall be in accordance with the standard mentioned in item 2.2, and shall include the following:
- 9.2 Tyres and/or wheels coming separately as replacement parts
- 9.2.1.1 Type including designation, recommended maximum speed load range and service description.
- 9.2.1.2 Manufacturer's name.
- 9.2.1.3 Country of origin.

REFERENCES:

1. ECE No. 64 "A temporary use spare unit, run flat tyres and/or a run flat-system, and/or a tyre pressure monitoring system", Revision 3; 9th November 2010.
2. ECE No. 64 "A temporary use spare unit, run flat tyres and/or a run flat-system, and/or a tyre pressure monitoring system", Revision 1/Amendment 1; 23th May 2012.
3. ECE No. 64 "A temporary use spare unit, run flat tyres and/or a run flat-system, and/or a tyre pressure monitoring system", Revision 1/Amendment 2; 14th February 2013.
4. ECE No. 64 "A temporary use spare unit, run flat tyres and/or a run flat-system, and/or a tyre pressure monitoring system", Revision 1/Amendment 3; 22th February 2017.

FOR STUDY