

**الهيئة السعودية للمواصفات و المقاييس و الجودة**  
**Saudi Standards, Metrology and Quality Org(SASO)**

**DRAFT : FINAL**

**SASO /FDS / UPDATE OF 2857/2014**

**VEHICLE TIRES ROLLING RESISTANCE AND  
WET GRIP REQUIREMENTS**

**ICS :83.160.01**

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## VEHICLE TIRES ROLLING RESISTANCE AND WET GRIP REQUIREMENTS

### 1. SCOPE AND FIELD OF APPLICATION

This technical regulation is concerned with the maximum rolling resistance and minimum wet grip requirements of all new tires, imported, produced or sold in the Kingdom of Saudi Arabia. However, it does not apply for:

- 1.1 Professional off-road tires
- 1.2 Snow tires
- 1.3 Motorcycle tires
- 1.4 Bicycle tires
- 1.5 Vintage tires
- 1.6 Tires with a speed symbol of “B”, “C”, “D”, “E” or “F” in accordance with Saudi standard mentioned in item 2.1, table 4.
- 1.7 Temporary-use spare tire

### 2. COMPLEMENTARY REFERENCES

- 2.1 SASO 445/2007 " Passenger Car Tires – Part 1: Nomenclature, Designation, Marking, Dimensions, Load Capacity and Inflation Pressure ".
- 2.2 SASO 447/2007 " Passenger Car Tires – Part 2: General Requirements ".
- 2.3 SASO 2252/2006 " Motor Vehicles Tires – Tread wear, Traction and Temperature Resistance Grading ".
- 2.4 SASO GSO ISO 28580:2010 " Passenger car, truck and bus tires – Methods of measuring rolling resistance – Single point test and correlation of measurement results ".
- 2.5 SASO GSO ECE 117:2012 " Uniform Provisions Concerning the Approval of Tires with regard to Rolling Sound Emissions and to Adhesion on Wet Surfaces ".
- 2.6 SASO ISO 15222:2012 " Truck and Bus tires - method for measuring relative wet grip performance – Loaded new tires ".
- 2.7 SASO 1136:1996 " Multi-Purpose Vehicles, Trucks, Buses and Trailers Tyres - Part 3: General Requirements ".
- 2.8 SASO 1134 :2005 " Multi-Purpose Vehicles, Trucks, Buses and Trailers Tyres Truck and Bus - Part 1: Nomenclature, Designation Marking, Dimensions, Load Capacities and Inflation Pressures

### 3. DEFINITIONS

For the purposes of this regulation, the definitions given in standards mentioned in items 2.1, 2.4, 2.5, 2.6 and 2.7 and the following apply.

- 3.1 **Rolling Resistance Force (RRF):** The force resisting the motion when a tire rolls on a surface.
- 3.2 **Normal Force (NF):** The force exerted on the body by gravity.

**3.3 Rolling Resistance:** Measure of the force resisting the motion when a tire rolls on a surface.

**3.4 Rolling Resistance Coefficient (RRC):** Unit of the Rolling Resistance, which is calculated by dividing the Rolling Resistance Force (RRF) by the Normal Force (NF) bared by the vehicle.

$$(\text{RRC}) = (\text{RRF}) / (\text{NF})$$

**3.5 Wet Grip:** Measure of the tire's ability to deliver grip, on wet surface conditions

**3.6 Wet Grip Index (G):** Unit of the Wet Grip, which is a function of the tackiness of the rubber compound. It is defined as per the standard mentioned in item 2.5 for C1 tires and the standard mentioned in item 2.6 for C2 and C3 tires.

**3.7 C1 tires:** tires intended for vehicles of category M1, N1, O1 and O2<sup>1</sup>

**3.8 C2 tires:** tires intended for vehicles above 3.5 tons of category M2, M3, N2 , N3, O3 and O4<sup>1</sup> with load capacity index in single formation  $\leq 121$  and speed category symbol  $\geq N$

**3.9 C3 tires:** tires intended for vehicles above 3.5 tons of category M2, M3, N2 , N3, O3 and O4<sup>1</sup> with one of the following load capacity indices:

- i) Load capacity index in single formation  $\leq 121$  and speed category symbol  $\leq M$
- ii) Load capacity index in single formation  $\geq 122$

**3.10 New vehicle tires:** Tires intended for new vehicles and that are supplied to the vehicle manufacturer's assembly plant.

**3.11 Professional off-road tires:** Tires that are primarily used for servicing in severe off-road conditions (i.e. unpaved roads, trails, beaches, or rough terrain).

**3.12 Snow tires:** Tires whose tread pattern, tread compound or structure are primarily designed to achieve in snow conditions a performance better than that of a normal tire with regard to its ability to initiate, maintain or stop vehicle motion.

**3.13 Motorcycle tires:** Tires that are fitted on the motorcycles.

**3.14 Bicycle tires:** Tires that are fitted on the bicycles

**3.15 Retread tires:** Old tires that have been recoated with a rubber veneer of tread.

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<sup>1</sup> **M1:** Vehicles used for the carriage of passengers and comprising not more than eight seats in addition to the driver's seat. (Passenger car)

**M2:** Vehicles used for the carriage of passengers, comprising more than eight seats in addition to the driver's seat, and having a maximum mass not exceeding 5 tonnes. (Bus)

**M3:** Vehicles used for the carriage of passengers, comprising more than eight seats in addition to the driver's seat, and having a maximum mass exceeding 5 tonnes. (Bus)

**N:** vehicles having at least four wheels and used for the carriage of goods

**N1:** Vehicles used for the carriage of goods and having a maximum mass not exceeding 3.5 tonnes. (Pick-up Truck)

**N2:** Vehicles used for the carriage of goods and having a maximum mass exceeding 3.5 tonnes but not exceeding 12 tonnes. (Commercial Truck)

**N3:** Vehicles used for the carriage of goods and having a maximum mass exceeding 12 tonnes. (Commercial Truck)

**O1:** Trailers with a maximum weight not exceeding 0.75 tonnes

**O2:** Trailers with a maximum mass exceeding 0.75 tonnes, but not exceeding 3.5 tonnes

**O3:** Trailers with a maximum mass exceeding 3.5 tonnes, but not exceeding 10 tonnes

**O4:** Trailers with a maximum mass exceeding 10 tonnes

- 3.16 Temporary-use spare tires:** Tires designed for use at inflation pressures higher than those established for standard and reinforced tires.
- 3.17 Vintage vehicle tires:** Tires that are fitted on the vintage vehicles (i.e. vehicles registered for the first time before 1 October, 1990).
- 3.18 Tire Class:** Refers to the class of the tire; i.e. C1, C2 or C3.
- 3.19 Tire Type:** A group/family of tires that have the same:
- Tire Manufacturer
  - Tire Class
  - Tire Structure; i.e. Diagonal, Radial, etc.
  - Category of Use; i.e. Normal, Snow, Special, etc.
  - Reinforced or Extra Load (Only for C1 Tires)
  - Tread Pattern

#### **4. MAXIMUM ROLLING RESISTANCE LIMITS**

The following shall be met by all new tires, imported, produced or sold in the Kingdom of Saudi Arabia.

##### **4.1 Phases**

The requirements will be enforced in two separate phases:

**Phase I** extends from 1 November, 2015 until October 31<sup>st</sup>, 2019.

**Phase II** extends from 1 November, 2019 onwards.

##### **4.2 Maximum limits (Table 1)**

**4.2.1** The maximum limit for C1 tires shall be 12.0 N/kN in phase I and 10.5 N/kN in phase II.

**4.2.2** The maximum limit for C2 tires shall be 10.5 N/kN in phase I and 9.0 N/kN in phase II.

**4.2.3** The maximum limit for C3 tires shall be 8.0 N/kN in phase I and 6.5 N/kN in phase II.

**Table 1: Tires Rolling Resistance Requirements**

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