

Safety of Car Tires



هيئة التقييس
لدول مجلس التعاون لدول الخليج العربية
GCC Standardization Organization



The GCC Standardization Organization aims at helping the GCC achieve the objectives set forth in its charter and in the GCC Economic Agreement by unifying the various standardization activities and following up application and compliance of the same in cooperation and coordination with the standardization bodies in the Member States in an endeavor to develop the production and service sectors, foster the Intra-GCC trade, protect the consumer, environment and the public health, and encourage the GCC industries and agricultural production that would enhance the GCC economy , maintain the achievements of the Member States and minimize the technical trade barriers as envisaged by the objectives of the Customs Union.

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Tires are an essential part of cars and other vehicles and they play a key role in ensuring the safety of the passengers. Therefore, tires' damages and burst problems is one of the main causes of traffic accidents, especially on the highway, whether inside or outside the city. Thus, the quality of tires manufacture, storage method, and proper selection according to the vehicle, along with conducting periodic examination and maintenance of the tires ensure safety of the tires.

In order to simplify and clarify the codes engraved on the tires, the GCC Standardization Organization is planning to prepare and publish awareness publications and brochures for the consumers in order to help them make the right choice in terms of the tires they use and to motivate them to achieve the optimal use.

How to choose the appropriate tire:

When you choose a tire for your vehicle, you must take into account some of the factors that have a direct impact on the performance of the tire and that may be related to tire burst incidents, such as: speed, tire load, temperature, conditions of use and conditions of the road.

At manufacture, the tires are classified according to the maximum speed they can handle and this information is encoded in the codes engraved on the tires:

Make sure to choose tires with high speed. Such tires will have one of these letters engraved: S, T, U, H, V, W, Y. This is recommended because the higher the code of speed on the tire, the better the quality of the materials it is manufactured from and thus it can tolerate high temperatures more.

(However, we do not encourage the drivers to speed up, on the contrary, we recommend that you must abide by the speed specified in the traffic system)

- To select a recent production date of the tire.
- To choose the recommended load by the manufacturer.
- To choose the temperature class (A) for being the most suitable for the weather of most of the member states; followed by class (B). Tires that have temperature class (C), are only suitable for cold weather.



Causes of Tire Damages:

First: Not Choosing the Appropriate Tire for the Vehicle:

Choosing the appropriate tire for the vehicle is a very important issue and simply depends on the correct reading and understanding the data recorded in the car manual and the data recorded on the tire's wall and to know their meanings.

Tires must be chosen according to the following:

- 1- Size

It is expressed by four symbols which are:

- The nominal width of the tire with its value in millimeters terminated with zero (0) or number five (5)

- The percentage of the height to the width
- The installation... And it is symbolized by the symbols R, B, D
- The nominal diameter of the wheel rim

2- The Load Coefficient:

It is a number indicating the maximum load that the tire can bear at the speed referred to through speed codes according to the following schedule:

Holder frame KG	Load factor	Holder frame KG	Load factor	Holder frame KG	Load factor	Holder frame KG	Load factor	Holder frame KG	Load factor
190	59	345	71	630	92	1150	113	2120	134
195	51	355	72	650	93	1180	114	2180	135
200	52	365	73	670	94	1215	115	2240	136
206	53	375	74	690	95	1250	116	2300	137
212	54	387	75	710	96	1285	117	2360	138
218	55	400	76	730	97	1320	118	2430	139
224	56	412	78	750	98	1360	119	2500	140
230	57	425	79	775	99	1400	120	2575	141
236	58	437	80	800	100	1450	121	2650	142
243	59	450	81	825	101	1500	122	2725	143
250	60	462	82	850	102	1550	123	2800	144
257	61	475	83	855	103	1600	124	2900	145
265	62	487	84	875	104	1650	125	3000	146
272	63	500	85	900	105	1700	126	3075	147
280	64	515	86	925	106	1750	127	3150	148
290	65	530	87	950	107	1800	128	3250	149
300	66	545	88	975	108	1850	129	3350	150
307	67	560	89	1000	109	1900	130	3450	151
315	68	580	90	1030	110	1950	131	3550	152
325	69	600	91	1060	111	2000	132		
335	70	615		1120	112	2060	133		

It is recommended to choose the load coefficient specified by the manufacturer of the vehicle in the warranty book that is attached with the vehicle.

3- The Speed Code

It is a symbol which indicates the maximum speed that the tire can bear in normal circumstances; this code is engraved in letters.

The following table shows the maximum speed and the corresponding code.

Maximum speed Km / h	120	130	140	150	160	170	180	190	200	210	240	270	300
Speed code	L	M	N	P	Q	R	S	T	U	H	V	W	Y

(However, we do not encourage the drivers to speed up, on the contrary, we recommend that you must abide by the speed specified in the traffic system)

An example of the above:

21565/ R15 H95

- The nominal width of the tire: 215
- The percentage of height to width: 65%
- The Installation: R
- The nominal diameter of the wheel rim: 15 inches
- Load Coefficient: 95 = 690 kg (per tire)
- The speed code: H = 210 km\h

4- Heat Resistance Code:

Heat resistance refers to the tire's ability to get rid of the heat. Tires have been divided into three categories, each category has a maximum temperature to be used in. These codes are represented by the letters A, B, C, where the highest rate of heat tolerance is A, the lowest rate is C.

Note that Gulf technical regulations stipulated that the rate of heat resistance of all tires used in Gulf states should be either A or B. It is recommended to use tires whose rate of heat resistance is class A. Tires of the class B can be used in

moderate temperature regions in the GCC countries.

Tire Sliding Coefficient:

The sliding coefficient indicates the tire's ability to resist rolling when standing still on wet surfaces. It is referred by the letters AA, A, B, & C, the highest sliding coefficient is AA, and the lowest is C. It is recommended to buy tires whose sliding

coefficient is AA, A.

5- Date of Production:

It is recommended to choose a tire with a recent date of production date. The tire's production date will be engraved in four digits, the first and second digits from the left indicated the number of the week, whereas the third and fourth digits indicate the year in Gregorian calendar.

For example, if the production date shown on the tire as 1114, then the number 11 refers to the twenty-fifth week of the year, whereas the number 14 refers to the production year – which is 2014.

- 1- It is advised not to buy tires that have an old production date; it is preferable to buy the tires produced over the last year. It also advised not to buy used tires.



Second: Misuse and Lack of Periodical Checkup on the Tires

Some of misuse and negligence manifestations can be summarized in the following points:

- 2- Not checking tire air pressure once a week and before long journeys. This may lead to drastic damage of the tires. It should be noted that an increased air pressure may result in an increased Tread Wear in the middle of the tire while a decreased pressure may lead to an increased Tread Wear on the sides. Worth noting that tires air pressure should be measured if they are cold.
- 3- Not checking the tires to make sure there are no damages in them at least once a week or more if necessary.
- 4- Not switching tires' positions after using them for a distance of more than 10,000 km; since switching them helps distributing the concentration of Tread Wear.

Barking the vehicle for a long time in the same place without using it, since it may cause protrusions in the tire which may lead to the tire's damage or even bursting while driving the vehicle.

Third: Poor Storage Conditions

It is known that tires use conditions in GCC member states are different from those applied in Europe, Japan and some parts of the United States in terms of temperature, humidity, and dust. As these factors affect the tire's condition during storage, unless it the necessary precautions were taken into consideration.

Tires' storage requirements can be divided into two sections:

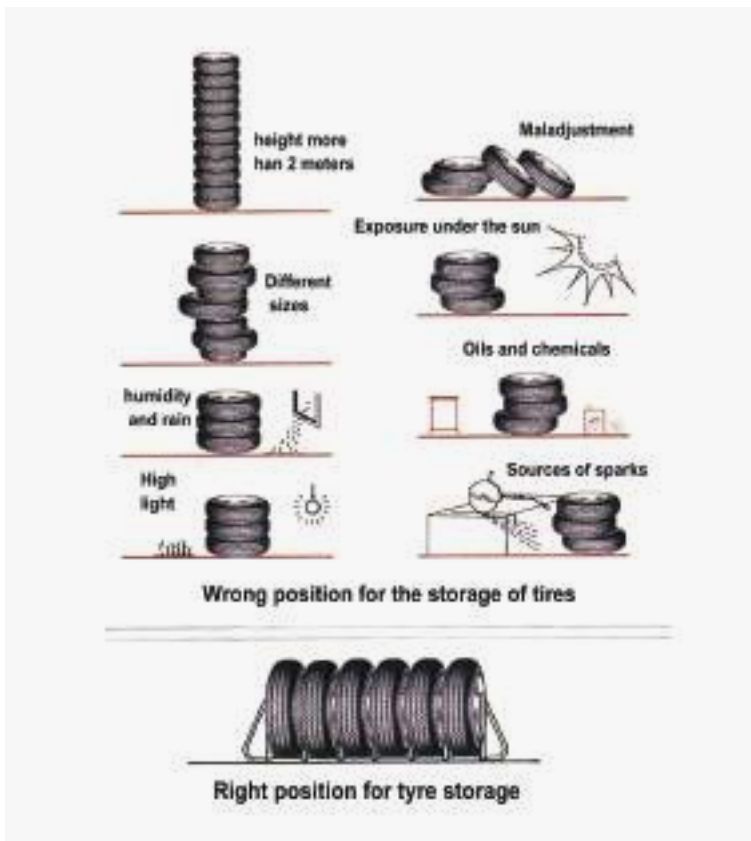
- **A** - Requirements that should be available in the place of storage (the warehouse) or the place of sale, which include:
 - Humidity: Because of its effect on rubber, the place of storage should be dry and does not allow water condensation.
 - Sunlight: The tires should be totally protected from sunlight. Moreover, use of a lighting system that may encompass ultraviolet light should be avoided.
 - Temperature: high temperature is one of the most important elements that affect tires. It reduces the life time of the rubber, so the temperature inside the tire's warehouse should not exceed 35°. For achieving that, heat insulating walls and ceilings should be provided as well as adequate ventilation or air conditioning system if necessary.
 - Chemicals: It should be noted that it is recommended not to store any chemicals in the tires storage area, such as solvents, fuel and lubricating oils and acids.
- **B** - Requirements that should be available during the process of putting tires in storage:

The method of putting tires in storage or in selling area has an effect on the tires condition and the their performance later, so, the following points must be taken into account:

- 1- Tires should not be put under pressure because this may lead to a cut or deformation of the tire.
- 2- Withdrawing priority should be given to the oldest tires in store, so as to minimize the storage period as much as possible.
- 3- In the event of storing tires for a short period (four weeks or less), tires are placed horizontally on each other so as the height of one group will not exceed than two meters. After four weeks, they should be re-arranged so that the lowest tire will be on the top then apply the steps of storage for long periods.

- 4- In the event of prolonged storage (more than four weeks), tires are placed vertically (as shown in the figure) on stands, but its distance from the ground should be at least about 10 cm, preferably to be turned at least every month.

The gulf technical regulations regarding tires stipulate that the period from the date of production to the date of sale to the consumer should not exceed 24 months for the tires of cars, buses, and light trucks, and 30 months for the heavy trucks.



GCC Standardization Organization and Tires

The GCC standardization organization (GSO) participates in the specialized exhibitions and events, and works hard to raise awareness of standardization and consumer awareness in this respect. It publishes and distributes brochures, pamphlets and other awareness publications related to safety of vehicle tires and the best ways to use them.

As the organization has issued several gulf standards and technical regulations of the GCC that determine the requirements and stipulations to be achieved by the tire manufacturer, which include tires of small vehicles and buses, as well as light and heavy trucks.

One of these requirements and stipulations the need for a data explanatory framework describes all the necessary needed data to the consumer, such as size, load factor, the speed code, the heat code in addition to the date of production, as well as the endurance , bead unseating, the loads endurance, the speed, the temperature, and also the necessary tests to ensure the achievement of these requirements.

As the awareness of the organization standardization of the importance of tires in the consumer safety, it has developed a system of the (GCC) conformity certificates of tires are hereby all tire manufacturers who wish to export their tires to the markets of the GCC countries to submit a compliance certificate for each size that is confirming the achievement of their tires to the requirements contained in the Gulf technical regulations of the tires with a report of the results of tests.

The organization shall also request samples from the manufacturer companies especially the companies that apply for the conformity certificates for the first time, and to send those samples to a national laboratory accredited to conduct the necessary tests in accordance with the Gulf technical regulations.



This includes the following tests:

- 1- The visual inspection to make sure of the dimensions of the tire and the absence of any defects in it, as well as to make sure there is a comprehensive demonstration of all the data that include the production date, the speed code, the load factor and others.
- 2- The endurance test (resistance to combustion) to ensure endurance of the tire and its ability to endure shocks that could be exposed to while on the road and out of them.
- 3- The large loads endurance tests in order to make sure the tires ability to endure the large loads such as the weight of the vehicle, the passengers and additional loads, where the tire and the wheel are installed on the axis of rotation and run at a certain speed and then the tire presses on the test wheel by putting different loads on it.
- 4- The high speed endurance test in order to make sure that the tire endures the high speeds that the car can reach up to, where the tire and the wheel are installed on the axis of rotation, then the tire will press on the test wheel by put a certain load then it will be spin at different speeds.
- 5- Bead unseating test of the tires that are used without an internal tire (Tubules) to confirm in this test of non-separation of the tire from the wheel (the wheel rim) during the driving, especially at curves.

Those actions had a good reflection on the safety level and to prevent many of the non-conforming tires from entering the markets of the member countries.

It is required to mention the important and great role assigned to the regulatory bodies and authorities in the member countries that are responsible for both the tires expanding of different outlets or agencies responsible for monitoring the market to ensure the compliance of importers and marketers of tires with those requirements.





Strength Test and Beed unseating equipment