

Tire Identification

Speed Rating System

The speed rating of a tire indicates the speed category (or range of speeds) at which the tire can carry a load under specified service conditions. The speed rating system used today was developed in Europe in response to the need to control the safe performance of tires at standardized speeds. A letter from A to Z symbolizes a tire's certified speed rating, ranging from 5km/h (3mph) to above 300 km/h (186 mph). This rating system, listed on the following page, describes the top speed for which a tire is certified. It does not indicate the total performance capability of a tire.

When this speed rating system was originally developed, the Unlimited V category of over 210 km/h (130 mph) was the top speed rating a tire could achieve.

As manufacturers made more tires that fit not this category, it was necessary to better regulate performance at standardized speeds to ensure safety. The Limited V category of 240 km/h (149 mph) was then created, and the Z speed rating was added as the top speed rating that a tire could achieve. W and Y limited speed symbols have been added as higher speed categories.

Always consult the manufacturer for the maximum speed of Unlimited Z tires. Speed rating is identified as a part of the tire's sizing or service description.

In the latest attempt to standardize tire designations, all ratings except unlimited ZR incorporate the speed symbol and load index as the tire's service description. For example:

205/60R15 91V	
205 =	Section Width in Millimeters
60 =	Aspect Ratio
R =	Radial Construction
15 =	Rim Diameter in Inches
91 =	Load Index
V =	Speed Symbol
	Service Description

“ZR” Rated Tires

When “ZR” appears in the size designation with the service description, the maximum speed is as indicated by the service description.

EXAMPLES:	
Tire Designation	Maximum Speed
P275/40ZR17 93W	270 km/h (168 mph)
P275/40ZR17 93Y	300 km/h (186 mph)

For tires having a maximum speed capability above 240 km/h (149 mph), a “ZR” may appear in the size designation. For tires having a maximum speed capability above 300km/h (186 mph), a “ZR” must appear in the size designation. Consult the tire manufacturer for maximum speed when there is no service description.

Speed Symbols

Speed Symbol	Speed (km/h)	Speed (mph)
A1	5	3
A2	10	6
A3	15	9
A4	20	12
A5	25	16
A6	30	19
A7	35	22
A8	40	25
B	50	31
C	60	37
D	65	40
E	70	43
F	80	50
G	90	56
J	100	62
K	110	68
L	120	75
M	130	81
N	140	87
P	150	94
Q	160	100
R	170	106
S	180	112
T	190	118
U	200	124
H	210	130
V	240	149
W	270	168
Y	300	186
	Above 300	Above 186

ZR
↓

Load Index

The load index is an assigned number ranging from 0 to 270 that corresponds with the load-carrying capacity of a tire. Most passenger car tire load index range from 75 to 105 – although some passenger tires carry more.

Using the example on page 8, tire size 205/60R15 91V, the load index of 91 corresponds to a load-carrying capacity of 615 kg (1356 lbs.) at maximum inflation pressure. The speed symbol of the tire is the second part of the service description. (See the previous section for speed categories.) The service description system is used with all tires except Unlimited Z. For Unlimited Z rated tires, consult the vehicle manufacturer for maximum speed. For proper load-carrying capacity, consult the “High-speed Driving for Passenger Tires” section of this guide.

Please note the load values in the table are derived from European Tire and Rim Technical Organization (ETRTO, European) and correspond to European metric tires. For P-metric tires, the maximum load is derived from Tire and rim Association (T &RA, American) loads formulas and can be found in the data pages or on the tire. Some T&RA load values are rounded to the nearest load index value. This should clarify why sometimes the same load index for European and metric sizes show different maximum load values.

LOAD INDEX AND EQUIVALENT LOADS

Load Index	Load (lbs.)*	Load Index	Load (lbs.)*	Load Index	Load (lbs.)*
74	827	100	1764	126	3748
75	853	101	1819	127	3858
76	882	102	1874	128	3968
77	908	103	1929	129	4079
78	937	104	1984	130	4189
79	963	105	2039	131	4299
80	992	106	2094	132	4409
81	1019	107	2149	133	4541
82	1047	108	2205	134	4674
83	1074	109	2271	135	4806
84	1102	110	2337	136	4938
85	1135	111	2403	137	5071
86	1168	112	2469	138	5203
87	1201	113	2535	139	5357
88	1235	114	2601	140	5512
89	1279	115	2679	141	5677
90	1323	116	2756	142	5842
91	1356	117	2833	143	6008
92	1389	118	2910	144	6173
93	1433	119	2998	145	6393
94	1477	120	3086	146	6614
95	1521	121	3197	147	6779
96	1565	122	3307	148	6944
97	1609	123	3417	149	7165
98	1653	124	3527	150	7385
99	1709	125	3638		

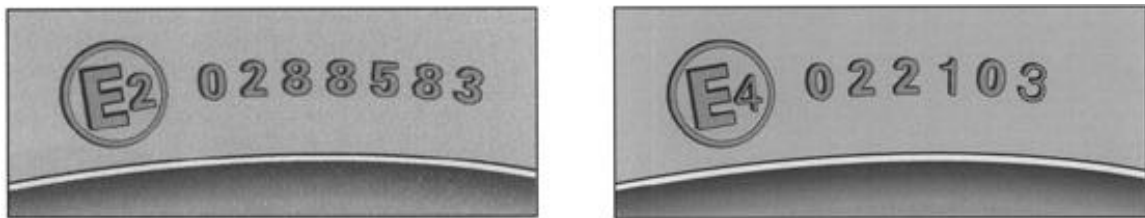
* One pound is equal to .4536 kg.

Special Designations

In addition to the previous sidewall labels and moldings, there are a few more designations that deserve explanation. Like the previous designations, the following have been evolving toward the goal of worldwide standardize tire labeling.

ECE

The Economic Commission of Europe (ECE) develops motor vehicle equipment requirements. ECE approved tires must meet ECE standards for physical dimensions, branding requirements and high-speed endurance regulations. When a tire bears the ECE symbol on its sidewall, it is certified to the load index and speed symbol that appear in its service description for use in Europe.



The letter and number combination encircled at the beginning of the designation represent the country originally receiving approval, such as E2 for France or E4 for the Netherlands. The first two digits of the number sequence indicate the Regulation Amendment Series under which the tire was approved, such as “02” for ECE Reg. 30. The last four or five digits represent the tire size and type.

Not all tires receive the ECE’s approval. In order to be ECE branded, a tire must receive laboratory approval, meet confirmation-testing requirements and have the facility where it was manufactured pass inspection.

TPC Spec

General Motors requires that the tires it fits on certain vehicles meet defined Tire Performance Criteria (TPC). These criteria are tested using performance formulas. When a tire meets the requirements, the TPC specification number is branded on its sidewall.

M + S

When any of the following markings appear on a tire, the tire meets the Rubber Manufacturers Association (RMA) definition of a mud and snow tire: M = S, M/S, or M & S



Severe Snow Marking

When this mark appears on a tire in addition to the M&S marking, the tire meets the Rubber Manufacturers Association definition of a tire designed for use in severe snow conditions.

DOT

DOT signifies that the tire complies with the United States Department of Transportation tire safety standards, and is approved for highway use.

DOT M5H3 459X 065 ◀

The first two letters following DOT designate the tire's manufacturer and plant code. The third and fourth characters denote the tire size. The fifth, sixth, seventh and eighth (optional) characters identify the brand and other significant characteristics of the tire. The ninth and tenth characters denote the week the tire was produced. The final number signifies the year in which the tire was manufactured.

For Michelin brand tires only, DOT markings related to the week and year of production will have an additional symbol for the decade of the 1990's. It will be shown as a triangle (◀) following these last three numbers.

EXAMPLE: 065 ◀

This would designate the 6th week of 1995.

Beginning in year 2000, an additional digit will be added to the serial number to allow the year of production to have two digits.

DOT BEHY TTLX 0800

The ninth & tenth digits still indicates the week of manufacture while 00 indicates year 2000.

Uniform Tire Quality Grade Labeling

UTQGS

The Uniform Tire Quality Grading System (UTQGS) is a tire information system that provides buyers with information on three categories – treadwear, traction and temperature. Each tire manufacturer performs its own tests in these areas, following government-prescribed test procedures. Each manufacturer then assigns grades that are branded on the tire. This is known as Uniform Tire Quality Grade Labeling (UTQGL).

Example:

Treadwear 300 Traction AA Temperature A

Treadwear

Treadwear grades typically range from 60 to over 600, in twenty-point increments. It's important to remember that the actual life of any tire is determined by the road surface quality, driving habits, inflation, wheel alignment and rotation it experiences. To receive a treadwear grade, a tire is tested under controlled conditions on a government-prescribed test course that does not necessarily stimulate the actual application from which a given tire is designed to perform. As a result of these test parameters, there is no reliable way to assign miles of wear to treadwear grade points.

Treadwear ratings are determined on a 400-mile government test course covering specified sections of public roads near San Angelo, Texas. A group of not more than four test vehicles travels the course in a convoy so that all tires experience the same conditions. Tread groove depths of the tires being tested are measured after each 800 miles. The same procedure is followed for a set of control, or "course monitoring tires." Upon completion of the 7,200-mile test the rating results of both tests are compared, and the tires being tested are assigned a treadwear rating by the manufacturer.

The best way to use treadwear ratings when selling tires is to compare one rating to another. For instance, a tire with a treadwear grade of 400 might be expected to last twice as long as a tire that has a grade of 200.

Traction

Traction grades indicate the measurement of a tire's ability to stop a car in straight-ahead motion on wet test surface pavement. They do not measure straight-ahead acceleration. It's important to remember that the traction rating tests are performed only for straight-ahead sliding on concrete and asphalt surfaces that have a specified degree of wetting which simulates most road surfaces in a rainstorm. The ratings that result from these tests may not apply to concerning traction or peak values of straight-ahead braking force like those experienced in non-skid braking tests. Traction grades range from AA, A, B, C, with AA being the highest attainable grade.

Traction ratings are established on government maintained skid pads. Twenty measurements are taken with an industry standard control tire on an asphalt surface and averaged. The same number of measurements are made on a concrete surface. Corresponding measurements are then made on the tires being tested. Once the results of the tests are compared, traction ratings based on government prescribed coefficient levels are assigned to the tires that were tested.

Temperature

Temperature grades also range from A to C, with A being the highest. Temperature grades represent a properly maintained tire's ability to dissipate heat under controlled indoor test wheel conditions.

Temperature ratings are determined by running tires on an indoor roadwheel test under specified conditions. Successive 30-minute runs are made in 5mph increments starting at 75 mph and continuing until the tire fails. A tire is graded "C" if it meets the minimum performance required by DOT. Grades of "B" and "A" represent higher levels of performance than the minimum required by DOT.

Max. Load and Max. Inflation

Maximum load and inflation molding (for passenger car tires) indicate the maximum load that can be carried and the maximum pressure needed to support that load.

Example:
Max. Load 990kg (2183 lbs.) at
280 kPa (41 psi) Max. Press

The Alpha-Numeric tire sizing system shows specific load range symbols on the sidewall that indicate how much load the tire is designed to carry at a defined pressure. Most Alpha-Numeric sized tires are Load Range B, meaning that they are restricted to the load that can be carried with a maximum inflation pressure of 32 psi. For greater load-carrying capacity, C, d or E tires can be used provided the wheels could carry the increased load and pressure. Otherwise new wheels are required.

Note: Most load range C, D, and E tires are for light truck applications. These load-carrying capacity designations will appear directly after the side of the tires as in the example below:

Example:
LT235/75R15/C

The load-carrying capacity of P-Metric tires is rated either Standard Load or Extra Load. The load that can be carried with a maximum inflation pressure of 35psi limits standard Load tires. The load that can be carried with a maximum inflation pressure of 41 psi limits extra Load tires. An Extra Load tire (for example P235/75R15XL) will be branded with “Extra Load” as shown in the photo on this page. A Standard Load tire does not bear any special designations.

For European metric tires they are either Standard or Reinforced Load. Standard Load tires are limited by the load that can be carried with a maximum inflation pressure that can be 32 to 36 psi. A reinforced tire (example 175/65R14RF) will be branded with “Reinforced”. Standard Load tires does not bear any special designations.



Note: A standard load tire with a normal inflation pressure of 35psi may be branded with a maximum inflation of 44 or 51 psi, indicating the tire's ability to meet special vehicle performance requirements. It does NOT increase the tire's load capacity. An extra load tire with a normal inflation pressure of 41 psi may be branded with a maximum inflation of 50-psi indicating the tire's ability to meet special vehicle performance requirements. It does not increase the tire's load capacity.