National Law Enforcement and Corrections Technology Center

A Program of the National Institute of Justice

BULLETIN

October 2001

A Comprehensive Evaluation of 2001 Patrol Vehicle Tires

In July 2001, the National Law Enforcement and Corrections Technology Center (NLECTC) of the National Institute of Justice conducted the fourth comprehensive evaluation of patrol vehicle tires.[1] This NLECTC bulletin is a synopsis of the results from that evaluation; a detailed report is also available that contains statistical analysis of the test data. Page 5 of this bulletin contains information on how to obtain the report.

The major manufacturers of police tires were asked to participate and submit samples of tires for evaluation. Four companies donated tires for testing. The four tire brands tested were the Firestone Firehawk PV41, General XP–2000 V4, BF Goodrich Touring T/A VR4, and Goodyear Eagle RS–A. In addition to the four "police" tires, an additional "nonpolice," or regular passenger car, tire was evaluated. This was done in response to the many inquiries received by NLECTC from law enforcement agencies regarding the appropriateness of installing regular passenger car tires not specifically designed for typical law enforcement operational use on police vehicles. Many agencies face budgetary restrictions or other influences in the procurement process (e.g., requirements to give local vendors priority in the procurement of goods and services) that may require them to consider purchasing these types of tires. This nonpolice tire was selected at random from a local tire supplier where the tests were performed. The manufacturer of this tire does not market or make any claim that this tire is appropriate for use on a police vehicle. For this reason, the tire is not identified by name in this report. It is referred to as Brand X. The data presented for the Brand X tire is for comparison purposes only and should be used only to draw generalized conclusions about the performance of tires typically designed for passenger car applications when compared to tires specifically designed and engineered for use on police vehicles. The technical descriptions of these tires may be found on page 8.

Each brand was subjected to eight tests to measure its performance in wet and dry road conditions and determine its tread wear characteristics. The tires were tested on a 2001 Ford Police Interceptor and a 2001 Chevrolet Impala. These two cars were used as test vehicles because they will represent the vast majority of police cars in service use by law enforcement agencies during the next 2 years.

Because driving conditions in different parts of the country vary widely, no specific "winners" or "losers" were identified. It is important that your department place the appropriate weights on those portions of the test data most representative of the conditions that you may encounter. A sample distribution of category weights is shown in table 1.

Table 1 **Tests and sample category weights**

Test	Sample category weight*
Static circle test (dry)	15
Static circle test (wet)	5
Serpentine test (dry)	20
Serpentine test (wet)	5
Stopping distance (dry)	15
Stopping distance (wet)	5
High-speed handling	30
Tire wear measurement	5
Total	**100**

*This table presents an example only. It is important that you assign weights to these categories according to your agency's needs.

[1] The tests were conducted by Independent Testing & Consulting, Inc.

In addition, it is important to note that the most suitable tire for an agency's needs may depend on the make and model of the patrol vehicle on which the tires will be used—the best tire for use on the rear-wheel-drive Ford Police Interceptor may be different from the best tire for the front-wheel-drive Chevrolet Impala, as these vehicles have different handling and performance characteristics, which influence overall tire performance.

The test results may be used in two ways. First, they may be used as is to determine the tires that best meet the needs of your department. In this case, you should emphasize some portions of the evaluation to reflect the needs of your department. Second, the overall test results may be used to adjust the manufacturer's bid price for these tire brands. In each test category, the absolute difference between a tire and the best scoring tire is divided by the best tire's score, resulting in a "deviation factor." This factor is then multiplied by a category weight, such as those listed in table 1, to produce a weighted category score. The total of these weighted scores for a particular tire is then used to adjust the tire's bid price.

Static Circle Test

Dry Pavement Surface

Objective: Determine the road-holding performance characteristics of the test tires in a steady-state turning situation on a dry pavement surface. The course used has a flat polished concrete surface on which a circle measuring 628.3 feet in circumference has been marked. The driver is allowed 2 laps to accelerate and stabilize the vehicle at the highest speed possible while remaining within the marked lane. Once the vehicle is stabilized, the following 5 laps are timed. The vehicle is then turned around and this process (2 warm-up laps, 5 timed laps) is repeated in the opposite direction around the circle to account for any minor differences in the vehicle's suspension design or setup that may favor turning in a particular direction. The average of the 10 timed laps is used to determine the final score for this portion of the evaluation, which is expressed in lateral G's attained. Lateral G's are the measurement of the resistance of lateral movement before the tire loses adhesion and the vehicle begins to slip. Deficiencies in tire adhesion or the tendency of the tire to slip under hard, steady-state cornering maneuvers, will result in slower speeds, longer lap times, and a relatively lower overall score on this portion of the evaluation.

Methodology: Following a 2-lap warmup, each test vehicle equipped with the make and model of tire to be evaluated makes a minimum of 5 timed laps around the static circle course. The vehicle is then turned around and the process (2 warm-up laps, 5 timed laps) is repeated in the opposite direction around the circle. The final score for each brand of tire on this portion of the evaluation is the average of the 10 timed laps

Table 2 **Results of the static circle test, dry pavement surface conditions**

Car: 2001 Chevrolet Impala
Tire Size: P225/60R–16

	Elapsed time (seconds)	Average speed (mph)	Lateral G's**	Percent difference*
BF Goodrich Touring T/A VR4	12.725	33.67	0.757	1.13%
Firestone Firehawk PV41	12.743	33.62	0.755	1.27%
General XP–2000 V4	12.589	34.03	0.774	0.05%
Goodyear Eagle RS–A	12.583	34.05	0.774	0.00%
Brand X	12.871	33.28	0.740	2.29%

Car: 2001 Ford Police Interceptor
Tire Size: P225/60R–16

BF Goodrich Touring TA VR4	12.922	33.16	0.735	1.56%
Firestone Firehawk PV41	12.879	33.26	0.739	1.22%
General XP–2000 V4	12.724	33.67	0.757	0.00%
Goodyear Eagle RS–A	12.843	33.36	0.743	0.94%
Brand X	13.270	32.28	0.696	4.29%

* The percent difference is obtained by subtracting the elapsed time of the tire of interest from the elapsed time of the best scoring tire (lowest score is best) and dividing that number by the elapsed time of the best scoring tire.
** Lateral G's are calculated by multiplying pi (3.14159) times the diameter of the test circle (200 ft) and then dividing by the lap time. This quotient is squared and then divided by the radius of the circle (100 ft). The resulting quotient is then divided by 1 G (32.2 ft/sec).

and is expressed as lateral G's attained. Table 2 shows the results from the dry pavement portion of the test.

Wet Pavement Surface

Objective: Determine the road-holding performance characteristics of the test tires in a steady-state turning situation on a wet pavement surface having a constant $^{3}/_{8}$-inch to $^{1}/_{2}$-inch of water depth. The course used has a flat polished concrete surface on which a circle measuring 628.3 feet in circumference has been marked. The driver is allowed 2 laps to accelerate and stabilize the vehicle at the highest speed possible while remaining within the marked lane. Once the vehicle is stabilized, the following 5 laps are timed. The vehicle is then turned around and this process (2 warm-up laps, 5 timed laps) is repeated in the opposite direction around the circle to account for any minor differences in the vehicle's suspension design or setup that may favor turning in a particular direction. The average of the 10 timed laps is used to determine the final score for this portion of the evaluation, which is expressed in lateral G's attained. Lateral G's are the measurement of the resistance of lateral movement before the tire loses adhesion and the vehicle begins to slip. Deficiencies in tire adhesion, or the tendency of the tire to slip under hard, steady-state cornering maneuvers, will result in slower speeds, longer lap times, and a relatively lower overall score on this portion of the evaluation.

Methodology: Following a 2-lap warmup, each test vehicle equipped with the make and model of tire to be evaluated makes a minimum of 5 timed laps around the static circle course. The vehicle is then turned around and the process (2 warm-up laps, 5 timed laps) is repeated in the opposite direction around the circle. The final score for each brand of tire on this portion of the evaluation is the average of the 10 timed laps and is expressed as lateral G's attained. Table 3 shows the results from the wet pavement portion of the test.

Serpentine Test

Dry Pavement Surface

Objective: Determine each tire's transient response characteristics and performance on a dry pavement surface. The course used is straight and flat with 550 feet of asphalt and 150 feet of concrete. Pylons are set in a straight line and spaced 100 feet apart. The approach speed is 60 mph, and the driver is required to weave through the pylons while maintaining speed as close to the approach speed as possible. Serious deficiencies in transient response will result in longer elapsed times, slower speeds, and a lower overall score on this portion of the evaluation.

Methodology: Following a 2-mile tire warmup, each test vehicle equipped with the make and model of tire

Table 3 **Results of the static circle test, wet pavement surface conditions**

Car: 2001 Chevrolet Impala
Tire Size: P225/60R–16

	Elapsed time (seconds)	Average speed (mph)	Lateral G's**	Percent difference*
BF Goodrich Touring TA VR4	20.987	20.42	0.279	3.96%
Firestone Firehawk PV41	20.554	20.85	0.290	1.82%
General XP–2000 V4	20.187	21.22	0.301	0.00%
Goodyear Eagle RS–A	20.248	21.16	0.299	0.30%
Brand X	21.948	19.52	0.255	8.72%

Car: 2001 Ford Police Interceptor
Tire Size: P225/60R–16

BF Goodrich Touring TA VR4	21.022	20.38	0.278	3.33%
Firestone Firehawk PV41	20.569	20.83	0.290	1.10%
General XP–2000 V4	20.667	20.72	0.287	1.58%
Goodyear Eagle RS–A	20.345	21.06	0.296	0.00%
Brand X	22.209	19.29	0.249	9.16%

* The percent difference is obtained by subtracting the elapsed time of the tire of interest from the elapsed time of the best scoring tire (lowest score is best) and dividing that number by the elapsed time of the best scoring tire.
** Lateral G's are calculated by multiplying pi (3.14159) times the diameter of the test circle (200 ft) and then dividing by the lap time. This quotient is squared and then divided by the radius of the circle (100 ft). The resulting quotient is then divided by 1 G (32.2 ft/sec).

to be evaluated is driven through the serpentine course a minimum of 15 times. The final score for each tire is the average of the fastest 12 runs. Table 4 presents the results from the dry pavement portion of this test.

Wet Pavement Surface

Objective: Determine each test tire's transient response characteristics and performance on a wet pavement surface. The course used is straight and flat with approximately 420 feet of asphalt. Pylons are set in a straight line and spaced 60 feet apart. The approach speed is 35 mph, and the driver is required to weave through the pylons while maintaining speed as close to the approach speed as possible. Serious deficiencies in transient response during wet pavement maneuvering will result in longer elapsed times, slower speeds, and a lower overall score on this portion of the evaluation.

Methodology: Following a 2-mile tire warmup, each test vehicle equipped with the make and model of tire to be evaluated is driven through the serpentine course a minimum of 15 times. The final score for each tire is the average of the fastest 12 runs. Table 5 shows the results of the test under wet pavement surface conditions.

Stopping Distance

Dry Pavement Surface

Objective: Determine the performance characteristics of the test tires in a simulated "panic" stop of a patrol vehicle on a dry pavement surface. The course used has a straight, flat, granite asphalt surface. A center lane marks where the braking maneuvers are to be done. The approach speed is just over 60 mph. The test vehicle is in the Anti-Lock Brake System (ABS) mode when the driver applies the brakes as close to 60 mph as possible. Both the exact speed at brake application and the distance from brake application to complete stop are electronically recorded. Average deceleration rate is then determined. Deficiencies in tire adhesion will result in longer stopping distances and a relatively lower score on this portion of the evaluation.

Methodology: Following a 1-mile tire warmup, each test vehicle equipped with the make and model of tire to be evaluated makes a minimum of six measured panic stops with the ABS in operation. The final score for each tire on this portion of the evaluation is the average of the six measured stops. Table 6 presents the test results for the dry pavement portion of this test.

Table 4 **Results of the serpentine test, dry pavement surface conditions**

Car: 2001 Chevrolet Impala
Tire Size: P225/60R–16

	Elapsed time (seconds)	Average speed (mph)	Percent difference*
BF Goodrich Touring T/A VR4	9.119	52.3	1.36%
Firestone Firehawk PV41	9.013	53.0	0.18%
General XP–2000 V4	8.997	53.1	0.00%
Goodyear Eagle RS–A	9.219	51.8	2.47%
Brand X	9.252	51.6	2.83%

Car: 2001 Ford Police Interceptor
Tire Size: P225/60R–16

BF Goodrich Touring T/A VR4	9.381	50.9	3.04%
Firestone Firehawk PV41	9.296	51.3	2.11%
General XP–2000 V4	9.104	52.4	0.00%
Goodyear Eagle RS–A	9.123	52.3	0.21%
Brand X	9.676	49.3	6.28%

* The percent difference is obtained by subtracting the elapsed time of the tire of interest from the elapsed time of the best scoring tire (lowest score is best) and dividing that number by the elapsed time of the best scoring tire.

Wet Pavement Surface

Objective: Determine the performance characteristics of the test tires in a simulated "panic" stop of a patrol vehicle on a wet pavement surface. The course used has a flat, granite, asphalt surface. Pylons are set up to mark where the braking maneuvers are done. The approach speed is just over 60 mph. The test vehicle is in the ABS mode when the driver applies the brakes as close to 60 mph as possible. Both the exact speed at brake application and the distance from brake application to complete stop are electronically recorded. Average deceleration rate is then determined. Deficiencies in tire adhesion will result in longer stopping distances and a relatively lower score on this portion of the evaluation.

Methodology: Following a 1-mile tire warmup, each test vehicle equipped with the make and model of tire to be evaluated makes a minimum of six measured panic stops with the ABS in operation. The final score for

Table 5 **Results of the serpentine test, wet pavement surface conditions**

Car: 2001 Chevrolet Impala
Tire Size: P225/60R–16

	Elapsed time (seconds)	Average speed (mph)	Percent difference*
BF Goodrich Touring T/A VR4	8.849	32.4	5.27%
Firestone Firehawk PV41	8.704	32.9	3.55%
General XP–2000 V4	8.658	33.1	3.00%
Goodyear Eagle RS–A	8.406	34.1	0.00%
Brand X	8.896	32.2	5.83%

Car: 2001 Ford Police Interceptor
Tire Size: P225/60R–16

BF Goodrich Touring T/A VR4	8.779	32.6	0.00%
Firestone Firehawk PV41	9.179	31.2	4.56%
General XP–2000 V4	9.001	31.8	2.53%
Goodyear Eagle RS–A	9.380	30.5	6.85%
Brand X	9.430	30.4	7.42%

* The percent difference is obtained by subtracting the elapsed time of the tire of interest from the elapsed time of the best scoring tire (lowest score is best) and dividing that number by the elapsed time of the best scoring tire.

each tire on this portion of the evaluation is the average of the six measured stops. Table 7 shows the results of the tests performed under wet pavement surface conditions.

High-Speed Handling

Objective: Determine the tire's high-speed pursuit handling characteristics and performance on a 1.43-mile (7,553 feet) road racing type course. The course contains high-speed curves, low-speed corners, and straightaways, and with the exception of traffic, simulates actual pursuit conditions in the field. This evaluation is a test of the manufacturers' success in blending the transient response, cornering, and rapid deceleration characteristics of a tire. Serious deficiencies in any of these critical areas will result in longer lap times and a lower overall score on this portion of the evaluation.

Table 6 **Results of the stopping distance test, dry pavement surface conditions**

Car: 2001 Chevrolet Impala
Tire Size: P225/60R–16

	Average deceleration rate (ft./sec^2)	Stopping distance* (feet)	Percent difference**
BF Goodrich Touring T/A VR4	25.950	149.2	2.06%
Firestone Firehawk PV41	25.051	154.6	5.46%
General XP–2000 V4	26.497	146.1	0.00%
Goodyear Eagle RS–A	26.473	146.3	0.09%
Brand X	25.679	150.8	3.09%

Car: 2001 Ford Police Interceptor
Tire Size: P225/60R–16

BF Goodrich Touring T/A VR4	26.753	144.7	0.66%
Firestone Firehawk PV41	26.652	145.3	1.22%
General XP–2000 V4	26.930	143.8	0.00%
Goodyear Eagle RS–A	26.920	143.8	0.04%
Brand X	26.340	147.0	2.19%

* Calculated stopping distance from 60 mph. Both vehicles are ABS equipped

** The percent difference is obtained by subtracting the average deceleration rate of the tire of interest from the average deceleration rate of the best scoring tire (highest score is best) and dividing that number by the average deceleration rate of the best scoring tire.

Methodology: Following 2 warmup laps, each test vehicle equipped with the make and model of tire to be evaluated is driven over the course by 3 drivers for at least 15 timed laps. The final score for each tire will be the average of the fastest 4 laps by each of the drivers, for a total of 12 laps. Table 8 presents the results of this test.

For a copy of the full tire testing report, call the National Law Enforcement and Corrections Technology Center at 800–248–2742 or e-mail asknlectc@nlectc.org. The center also publishes an annual report on police patrol vehicle testing. Copies may be obtained through the same telephone number and e-mail address.

Table 7 **Results of the stopping distance test, wet pavement surface conditions**

Car: 2001 Chevrolet Impala
Tire Size: P225/60R–16

	Average deceleration rate (ft./sec^2)	Stopping distance* (feet)	Percent difference**
BF Goodrich Touring T/A VR4	23.021	168.2	5.62%
Firestone Firehawk PV41	22.063	175.5	9.55%
General XP–2000 V4	22.857	169.4	6.30%
Goodyear Eagle RS–A	24.393	158.7	0.00%
Brand X	21.536	179.8	11.71%

Car: 2001 Ford Police Interceptor
Tire Size: P225/60R–16

BF Goodrich Touring T/A VR4	21.898	176.8	14.45%
Firestone Firehawk PV41	23.700	163.4	7.41%
General XP–2000 V4	23.440	165.2	8.43%
Goodyear Eagle RS–A	25.598	151.3	0.00%
Brand X	21.043	184.0	17.79%

* Calculated stopping distance from 60 mph. Both vehicles are ABS equipped

** The percent difference is obtained by subtracting the average deceleration rate of the tire of interest from the average deceleration rate of the best scoring tire (highest score is best) and dividing that number by the average deceleration rate of the best scoring tire.

Tire Wear Measurement

Objective: Determine each tire's wear characteristics when subjected to the entire performance evaluation. Tread depth measurements are taken of the new right front tire of each test set of each brand, model, and size of tire tested. (New, for the purpose of this evaluation, means after a specific break-in routine, but before any testing.) The right front tire was chosen for these measurements because it typically exhibits the most wear in the test situations used in this evaluation. Tread depth measurements are taken for a second time prior to the final test phase, which is high-speed handling evaluation. Finally, measurements are taken for a third time at the conclusion of the high-speed handling evaluation, which completes the testing.

Table 8 **Results of the high-speed handing test**

Car: 2001 Chevrolet Impala
Tire Size: P225/60R–16

	Average lap time (seconds)	Average speed (mph)	Percent difference*
BF Goodrich Touring T/A VR4	87.296	59.0	0.30%
Firestone Firehawk PV41	87.037	59.2	0.00%
General XP–2000 V4	87.917	58.6	1.01%
Goodyear Eagle RS–A	87.767	58.7	0.84%
Brand X	88.193	58.4	1.33%

Car: 2001 Ford Police Interceptor
Tire Size: P225/60R–16

BF Goodrich Touring T/A VR4	86.461	59.6	0.40%
Firestone Firehawk PV41	87.268	59.0	1.33%
General XP–2000 V4	87.494	58.9	1.60%
Goodyear Eagle RS–A	86.120	59.8	0.00%
Brand X	87.701	58.7	1.84%

* The percent difference is obtained by subtracting the average lap time of the tire of interest from the average lap time of the best scoring tire (lowest score is best) and dividing that number by the average lap time of the best scoring tire.

Methodology: Following a specific tire break-in routine, but before any testing is done, tread depth measurements are taken of the new right front tire of each brand, model, and size of tires tested. The measurements are taken in four places across the tread of the tire, from outside to inside, and in four areas around the circumference of the tire, 90 degrees apart, for a total of at least 16 measurements per right front tire. These same right front tires are once again measured prior to the high-speed handling, and for a third time at the conclusion of the high-speed handling, which is the final test phase, to determine the total amount of tread depth lost during the entire test procedure. The average tread depth total is the average of all of the individual tread depths measured on a given tire. The final score for each tire will be the average tread depth of the right front tire that was worn away during the testing process. Table 9 presents the overall tire wear results.

Table 9 **Results of the tire wear measurements**

Car: 2001 Chevrolet Impala
Tire Size: P225/60R–16

	After break-in (inch)	Before handling tests (inch)	After handling tests (inch)	Average wear measured* (inch)	Total treadwear** (percent)
BF Goodrich Touring T/A VR4	0.307	0.276	0.249	0.058	18.9%
Firestone Firehawk PV41	0.304	0.248	0.198	0.107	35.1%
General XP–2000 V4	0.309	0.260	0.222	0.087	28.2%
Goodyear Eagle RS–A	0.322	0.279	0.245	0.077	24.0%
Brand X	0.302	0.249	0.199	0.103	34.1%

Car: 2001 Ford Police Interceptor
Tire Size: P225/60R–16

BF Goodrich Touring T/A VR4	0.309	0.278	0.257	0.052	16.7%
Firestone Firehawk PV41	0.308	0.264	0.221	0.087	28.3%
General XP–2000 V4	0.306	0.276	0.220	0.086	28.0%
Goodyear Eagle RS–A	0.321	0.294	0.237	0.085	26.4%
Brand X	0.305	0.266	0.222	0.083	27.2%

* To determine the average wear measured, subtract the "after handling tests" tread depth from the "after break-in" tread depth. The resulting figure is the total amount of tread wear experienced during the entire test sequence. Example: 0.317 inch – 0.262 inch = 0.055 inch.

** To determine "total treadwear" percent, divide the "average wear measured" figure by the "after-break-in" tread depth.

The tire wear measurements shown in this bulletin resulted from extremely severe operating conditions. As such, they may not be an accurate predictor of achievable tire mileage when used in normal police patrol service, and should not be used to extrapolate actual tire life.

This publication is also available for viewing online as text or downloading to your computer via NLECTC's Justice Technology Information Network, or JUSTNET, which can be found on the Internet at www.justnet.org. JUSTNET is your information gateway, via the Internet and its World Wide Web, to NLECTC information, products, and services as well as information on other new technologies and equipment available to the law enforcement, corrections, forensics, and criminal justice communities.

NLECTC would like to thank the Ford Motor Company; the Chevrolet Division of General Motors Corporation; Bridgestone-Firestone, Inc.; General Tire Company; Michelin America Small Tires, a division of Michelin North America (manufacturers of the BF Goodrich tire); and Goodyear Tire and Rubber Company for their cooperation. In addition, NLECTC greatly appreciates the use of the First Coast Technical Center test facility at St. Augustine, Florida, the TRW test facility in Green Cove Springs, Florida, and the Federal Law Enforcement Training Center at Glynco, Georgia.

Police Tire Descriptions

The basic construction material used in all the tires was basically the same. The tires were constructed from nylon, polyester, and steel. The tires tested on both the Ford Police Interceptor and the Chevrolet Impala were the BF Goodrich Touring T/A VR4, the Firestone Firehawk PV41, the General XP–2000 V4, and the Goodyear Eagle RS–A. The tire size tested was P225/60R–16. The following are descriptions of the tires tested:

	BF Goodrich Touring T/A VR4	Firestone Firehawk PV41	General XP–2000 V4	Goodyear Eagle RS–A	Brand X (nonpolice rated tire)
Tire size	P225/60R–16 97V M&S	P225/60R–16 97V M&S	P225/60R–16 98V M&S	P225/60R–16 97V M&S	P225/60R–16 97S M&S
Tread	5 plies – 2 polyester/2 steel/ 1 nylon	6 plies – 2 polyester/2 steel/ 2 nylon	6 plies – 2 steel/2 polyester/ 2 nylon	6 plies – 2 polyester/2 steel/ 2 nylon	4 plies – 2 polyester/ 2 steel
Sidewall	2 plies polyester	2 plies polyester	2 plies polyester	2 plies polyester	2 plies polyester
Maximum load	1,609 lb (730 kg)	1,609 lb (730 kg)	1,653 lb (750 kg)	1,609 lb (730 kg)	1,609 lb (730 kg)
Maximum inflation	44 psi (300 kPa)	44 psi (300 kPa)	44 psi (300 kPa)	44 psi (300 kPa)	35 psi (240 kPa)
U.S. Government mandated ratings	Treadwear 360 Traction A Temperature A	Treadwear 340 Traction A Temperature A	Treadwear 320 Traction A Temperature A	Treadwear 260 Traction A Temperature A	Treadwear 440 Traction A Temperature B

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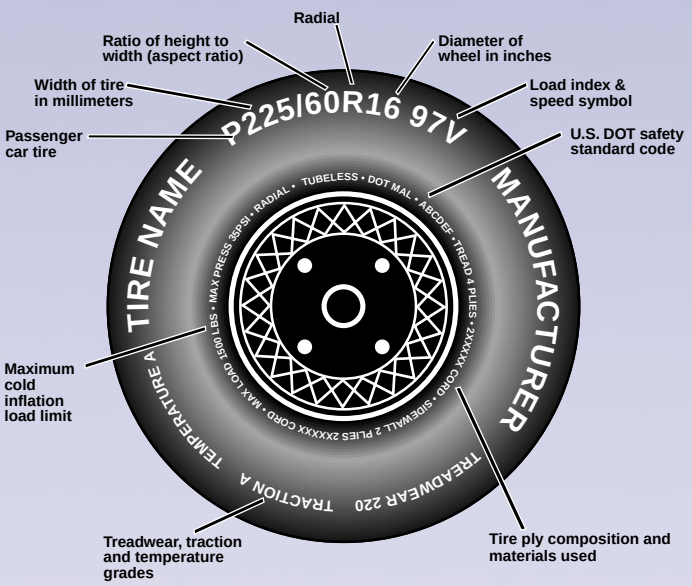
The National Institute of Justice is a component of the Office of Justice Programs, which also includes the Bureau of Justice Assistance, Bureau of Justice Statistics, Office of Juvenile Justice and Delinquency Prevention, and Office for Victims of Crime.

What the Descriptions Mean

TYPICAL PASSENGER TIRE



All tires contain very useful information molded into the sidewall. It shows the name of the tire, its size, whether it is tubeless or tube type, the maximum load and maximum inflation, the important safety warning, and much other information.

Passenger Tires

To assist in interpreting the information presented on page 8, shown here is an artist's rendition of the sidewall of one of the tires evaluated. "P" stands for passenger, "225" represents the width of the tire in millimeters, "60" is the ratio of height to width, "V" is the speed rating, "R" means radial, and "16" is the diameter of the wheel in inches.

Some speed-rated tires carry a Service Description instead of showing the speed symbol in the size designation. The Service Description, 97V in this example, consists of the load index (97) and speed symbol (V).

A "B" in place of the "R" means the tire is belted bias construction. A "D" in place of the "R" means diagonal bias construction.

The maximum load is shown in lb (pounds) and in kg (kilograms), and maximum pressure in psi (pounds per square inch) and in kPa (kilopascals). Kilograms and kilopascals are metric units of measurement.

The letters "DOT" certify compliance with all applicable safety standards established by the U.S. Department of Transportation (DOT).

Adjacent to this is a tire identification or serial number. This serial number is a code with up to 11 digits that are a combination of numbers and letters.

The sidewall also shows the type of cord and number of plies in the sidewall and under the tread. DOT requires tire manufacturers to grade passenger car tires based on three performance factors: treadwear, traction, and temperature resistance.

Treadwear

The treadwear grade is a comparative rating based on the wear rate of the tire when tested under controlled conditions on a specified government test track.

A tire graded 200 would wear twice as long on the government test course under specified test conditions as one graded 100.

It is wrong to link treadwear grades with your projected tire mileage. The relative performance of tires depends upon the actual conditions of their use and may vary due to driving habits, service practices, differences in road characteristics, and climate.

Traction

Traction grades, from highest to lowest, are A, B, and C. They represent the tire's ability to stop on wet pavement as measured under controlled conditions on specified government test surfaces of asphalt and concrete.

Temperature

The temperature grades, from highest to lowest, are A, B, and C. These represent the tire's resistance to the generation of heat when tested under controlled conditions on a specified indoor laboratory test wheel.

Source: Tire Industry Safety Council

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