§ 178.37 Specification 3AA and 3AAX seamless steel cylinders.

* * * * *

(j) *Flattening test.* A flattening test must be performed on one cylinder taken at random out of each lot of 200 or less, by placing the cylinder between wedge shaped knife edges having a 60 ° included angle, rounded to ½-inch radius. The longitudinal axis of the cylinder must be at a 90-degree angle to knife edges during the test. For lots of 30 or less, flattening tests are authorized to be made on a ring at least 8 inches long cut from each cylinder and subjected to the same heat treatment as the finished cylinder. Cylinders may be subjected to a bend test in lieu of the flattening test. Two bend test specimens must be taken in accordance with ISO 9809–1 or ASTM E 290–97a (IBR, *see* § 171.7 of this subchapter), and must be subjected to the bend test specified therein.

* * * * *

(l) *Acceptable results for physical, flattening and bend tests.* An acceptable result for physical and flattening tests is elongation of at least 20 percent for 2 inches of gauge length or at least 10 percent in other cases. Flattening is required, without cracking, to 6 times the wall thickness of the cylinder. An acceptable result for the alternative bend test is no crack when the cylinder is bent inward around the mandrel until the interior edges are not further apart than the diameter of the mandrel.

* * * * *

49. In § 178.71, paragraphs (c) and (o)(6) are revised to read as follows:

§ 178.71 Specifications for UN pressure receptacles.

* * * * *

(c) Following the final heat treatment, all cylinders, except those selected for batch testing must be subjected to a proof pressure or a hydraulic volumetric expansion test.

* * * * *

(o) * * *

(6) The test pressure in bar, preceded by the letters "PH" and followed by the letters "BAR".

* * * * *

50. In § 178.320, in paragraph (a), the definition of "Cargo tank wall" is revised to read as follows:

§ 178.320 General requirements applicable to all DOT specification cargo tank motor vehicles.

(a) * * *

Cargo tank wall means those parts of the cargo tank that make up the primary lading retention structure, including shell, bulkheads, and fittings and, when closed, yield the minimum volume of the completed cargo tank motor vehicle.

* * * * *

51. In § 178.345–1, paragraph (i)(2) is revised to read as follows:

§ 178.345–1 General requirements.

* * * * *

(i) * * *

(2) The strength of the connecting structure joining multiple cargo tanks in a cargo tank motor vehicle must meet the structural design requirements in § 178.345–3. Any void within the connecting structure must be equipped with a drain located on the bottom centerline that is accessible and kept open at all times. For carbon steel, self-supporting cargo tanks, the drain configuration may consist of a single drain of at least 1.0 inch diameter, or two or more drains of at least 0.5 inch diameter, 6.0 inches apart, one of which is located as close to the bottom centerline as practicable. Vapors trapped in a void within the connecting structure must be allowed to escape to the atmosphere either through the drain or a separate vent.

* * * * *

52. In § 178.347–1, paragraphs (c) and (d) introductory text are revised to read as follows:

§ 178.347–1 General requirements.

* * * * *

(c) Any cargo tank motor vehicle built to this specification with a MAWP greater than 35 psig or any cargo tank motor vehicle built to this specification designed to be loaded by vacuum must be constructed and certified in accordance with Section VIII of the ASME Code (IBR, *see* § 171.7 of this subchapter). The external design pressure for a cargo tank loaded by vacuum must be at least 15 psi.

(d) Any cargo tank motor vehicle built to this specification with a MAWP of 35 psig or less or any cargo tank motor vehicle built to this specification designed to withstand full vacuum but not equipped to be loaded by vacuum must be constructed in accordance with Section VIII of the ASME Code.

* * * * *

53. In § 178.347–4, paragraph (b) is revised to read as follows:

§ 178.347–4 Pressure relief.

* * * * *

(b) *Type and construction.* Vacuum relief devices are not required for cargo tank motor vehicles that are designed to be loaded by vacuum in accordance with § 178.347–1(c) or built to withstand full vacuum in accordance with § 178.347–1(d).

* * * * *

PART 180—CONTINUING QUALIFICATION AND MAINTENANCE OF PACKAGINGS

54a. The authority citation for part 180 continues to read as follows:

Authority: 49 U.S.C. 5101–5128; 49 CFR 1.53.

54b. In § 180.417, paragraph (b)(1)(v) is revised to read as follows:

§ 180.417 Reporting and record retention requirements.

* * * * *

(b) * * *

(1) * * *

(v) Minimum thickness of the cargo tank shell and heads when the cargo tank is thickness tested in accordance with § 180.407(d)(5), § 180.407(e)(3), § 180.407(f)(3), or § 180.407(i);

* * * * *

Issued in Washington, DC, on September 22, 2010, under authority delegated in 49 CFR part 106.

Magdy El-Sibaie,

Associate Administrator for Hazardous Materials Safety, Pipeline and Hazardous Materials Safety Administration.

[FR Doc. 2010–24274 Filed 9–28–10; 8:45 am]

BILLING CODE 4910–60–P

DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

49 CFR Part 571

[Docket No. NHTSA–2010–0132]

RIN 2127–AK17

Federal Motor Vehicle Safety Standards; New Pneumatic Tires for Motor Vehicles With a GVWR of More Than 4,536 Kilograms (10,000 Pounds) and Motorcycles

AGENCY: National Highway Traffic Safety Administration (NHTSA), Department of Transportation (DOT).

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: This NPRM proposes to upgrade Federal Motor Vehicle Safety Standard (FMVSS) No. 119, which specifies requirements for new truck tires. We propose to amend FMVSS No. 119 to adopt more stringent endurance test requirements and a new high speed test for several heavy load range tires for vehicles with gross vehicle weight rating (GVWR) of more than 4,536 kilograms (10,000 pounds). We are also proposing that FMVSS No. 119 require that the tire sidewall be labeled with the tire's maximum speed rating.

DATES: You should submit your comments early enough to ensure that the Docket receives them not later than November 29, 2010.

ADDRESSES: You may submit comments (identified by the NHTSA Docket ID Number above) by any of the following methods:

- *Federal eRulemaking Portal:* Go to *http://www.regulations.gov.* Follow the online instructions for submitting comments.
- *Mail:* Docket Management Facility: U.S. Department of Transportation, 1200 New Jersey Avenue, SE., West Building Ground Floor, Room W12–140, Washington, DC 20590–0001.
- *Hand Delivery or Courier:* West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue, SE., between 9 a.m. and 5 p.m. ET, Monday through Friday, except Federal holidays.
- *Fax:* 202–493–2251.

Instructions: For detailed instructions on submitting comments and additional information on the rulemaking process, see the Public Participation heading of the Supplementary Information section of this document. Note that all comments received will be posted without change to *http://www.regulations.gov,* including any personal information provided. Please see the Privacy Act heading below.

Privacy Act: Anyone is able to search the electronic form of all comments received into any of our dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (65 FR 19477–78).

Docket: For access to the docket to read background documents or comments received, go to http://www.regulations.gov or the street address listed above. Follow the online instructions for accessing the dockets.

FOR FURTHER INFORMATION CONTACT: For technical issues, you may call George Soodoo, NHTSA Office of Rulemaking (*Telephone:* 202–366–2720) (*Fax:* 202–493–2739). For legal issues, you may call Steve Wood, NHTSA Office of Chief Counsel (*Telephone:* 202–366–2992) (*Fax:* 202–366–3820). The mailing address for these officials is: National Highway Traffic Safety Administration, U.S. Department of Transportation, 1200 New Jersey Avenue, SE., West Building, Washington, DC 20590.

SUPPLEMENTARY INFORMATION

Table of Contents

I. Background

This NPRM proposes to upgrade Federal Motor Vehicle Safety Standard (FMVSS) No. 119 (49 CFR 571.119) which, prior to the passage of the Transportation Recall Enhancement, Accountability and Documentation (TREAD) Act of 2000, had a wide application to new pneumatic tires for vehicles other than passenger cars. In response to the TREAD Act,[1] a June 26, 2003 final rule upgraded the standard's requirements [2] for tires designed for multipurpose passenger vehicles, trucks and buses with a GVWR of 4,536 kilograms (kg) (10,000 pounds (lb)) or less, and moved those enhanced requirements to a new Federal Motor Vehicle Safety Standard No. 139 for new pneumatic radial tires for light vehicles. Requirements for load range C, D, and E tires used on light trucks and vans formerly set forth in FMVSS No. 119 were thus moved from that standard to FMVSS No. 139.[3] The June 26, 2003 final rule changed the title, scope, purpose and application sections of FMVSS No. 119 to reflect that the standard thereafter applied to only tires for motorcycles and vehicles with a GVWR greater than 4,536 kg (10,000 lb), but made no changes to FMVSS No. 119's performance requirements for those tires.[4]

NHTSA stated in the NPRM developing FMVSS No. 139 that the TREAD Act deadline to complete the tire upgrade by June 2002 did not allow the agency time to study and analyze sufficiently the different issues presented by medium and heavy vehicle tires, and that NHTSA will examine these types of tires after completion of the FMVSS No. 139 rulemaking (67 FR 10050, 10061; March 5, 2002). In today's document, we are proceeding to propose to make more stringent FMVSS No. 119's endurance test, adopt a new high speed test for several load range tires used on heavy vehicles, and require that the tire sidewall be labeled with the tire's maximum speed rating.

The agency is initiating this rulemaking to upgrade radial truck tires that have a load range of F, G, H, J, and L, and that are not for speed-restricted service ("non-speed-restricted service tires"). Tires used for speed-restricted service, known as "speed-restricted service tires," are those with a maximum speed rating of 90 km/h (55 mph) or less. Non-speed-restricted service tires

[1] Section 10 of the TREAD Act stated that the Secretary of Transportation shall conduct a rulemaking to revise and update the tire standards published at 49 CFR 571.109 and 49 CFR 571.119. The Act provided that the Secretary shall complete the rulemaking under this section not later than June 1, 2002. November 1, 2000, Public Law 106–414, 114 Stat. 1800.

[2] 68 FR 38116; June 26, 2003, Docket NHTSA–03–15400; response to petitions for reconsideration, 71 FR 877, January 6, 2006, Docket 2005–23439; technical amendments, 72 FR 49207, August 28, 2007, Docket 2007–29083. *See* also final rule, correcting amendments, 73 FR 72357; November 28, 2008, Docket 2007–29083.

[3] The term "load range" with a letter (C, D, E, etc.) is used to identify the load and inflation limits of tires used on light or heavy trucks, which increase in alphabetical sequence. For example, a load range E tire is able to handle greater loads and higher inflation pressures than a load range D tire.

[4] FMVSS No. 119 has been in effect since the original rule was published in 1973. The original standard applied to tires used on vehicles other than passenger cars, which included pickup trucks, multipurpose passenger vehicles, vans, and heavy vehicles. As a result of the TREAD Act mandate to upgrade FMVSS No. 109 and FMVSS No. 119, the agency revised the applicability of the tire standards to reflect the weight of the vehicle on which the tire is used. Given the increased consumer use to light trucks and vans (LTVs) for passenger transportation purposes over the past 20 years, the agency believed it was important to revise the applicability of the standards. As a result, the new tire standard for light vehicle tires, FMVSS No. 139, which was published in 2003, applies to tires used on vehicles with a gross vehicle weight rating of 4,536 kg (10,000 pounds) or less, and FMVSS No. 119 now applies to tires for vehicles with a gross vehicle weight rating of over 4,536 kg (10,000 pounds). (It is noted that other tires required to comply with No. 119 are new pneumatic light truck tires with tread depth of 18/32 inch or greater, light truck bias-ply tires, bias-ply tires used on vehicles with a GVWR of more than 4,536 kg (10,000 lb), and tires for use on special-use trailer (ST, farm implement and 8–12 rim or lower diameter code). The tires affected by this rulemaking are those used on heavy vehicles with a GVWR of more than 4,536 kg (10,000 lb) that are not for speed-restricted service.)

are those with a maximum speed rating above 90 km/h (55 mph). "Maximum speed rating" is the maximum speed, as specified by the manufacturer, at which the tire can carry a load corresponding to its maximum load rating for single usage at the corresponding inflation pressure.[5] We have commenced this rulemaking primarily because we have tentatively determined that the FMVSS No. 119 performance tests developed in 1973 should be updated to reflect the increased operational speeds and duration of truck tires in commercial service. NHTSA has tentatively determined that this NPRM would have a beneficial effect on safety in that it would increase tire durability as tires are held to more stringent standards than currently required.

FMVSS No. 119

FMVSS No. 119 specifies performance and marking requirements for tires for use on motorcycles and on motor vehicles with a GVWR of more than 4,536 kg (10,000 lb). Heavy vehicle tires regulated by FMVSS No. 119 are used in a wide variety of vehicle applications, such as delivery trucks, line haul trucks, transit buses, and logging trucks. FMVSS No. 119 includes a static test for tire strength, and dynamic tests for tire endurance and high-speed performance. The endurance test evaluates resistance to heat buildup when the tire is run at stepped-up loads at or near its rated load nonstop for a total of 47 hours. A high-speed test evaluates resistance to heat buildup when the tire is run at a certain percentage of its maximum load at stepped-up speeds for a specified interval at each speed.[6] FMVSS No. 119's high-speed performance requirement applies only to motorcycle tires and those with a rim diameter code of 14.5 or less (tires made to fit rims of diameter of 14.5 inches or less). Since this size restriction excludes all heavy vehicle tires currently listed in the Tire and Rim Association 2009 Year Book, the endurance test is currently the only dynamic test to which heavy vehicle tires must comply.

Today's NPRM would upgrade FMVSS No. 119 by proposing to adopt a more stringent endurance test, add a new high speed test, and include maximum speed rating labeling requirements for new radial tires used on heavy truck and bus applications, *i.e.,* load range F, G, H, J, and L tires that are not for speed-restricted service, which the agency believes comprise about 98 percent of the truck tires sold in the United States. These load range tires are typically used on heavy trucks for regional haul and long haul operations as well as on motorcoaches, and these load range tires have speed ratings ranging from 55–81 mph. Higher load range tires (*i.e.,* load ranges M and N) are more often used in heavy mixed-use service (on/off-road operations in lower speed applications), such as construction, logging, crane, and rigging operations. However, the agency is also considering requiring non-speed-restricted, load range M radial tires to comply with the upgraded endurance and new high speed test because some of these tires are used in similar applications in which the load range L tires are used. The agency is not proposing to upgrade non-speed-restricted service load range N radial tires since they represent less than 1 percent of the heavy vehicle tire market and are typically used in lower speed operations.

[5] This NPRM would define these terms in FMVSS No. 119 to differentiate the types of service for which tires are used and the requirements in the standard that would apply to the different types of tire.

[6] *See, e.g.,* S6.2 of FMVSS No. 139.

II. Overview of Endurance Test and High Speed Test Proposals

The proposed upgrade to the endurance test and the proposed adoption of a high speed test are based on the results of NHTSA's heavy truck tire tests, discussed later in the "NHTSA Tire Testing" section of this preamble.

a. Endurance Test

The purpose of the endurance test is to evaluate heavy truck tire performance at highway speeds for a long duration. The endurance test in FMVSS No. 119 applies to truck tires with load ranges F through N that are not for speed-restricted service. The test parameters used for the endurance test in FMVSS No. 119 include test speed, load, inflation pressure, duration, and ambient temperature. This NPRM proposes to upgrade the endurance test by changing some of these parameters to achieve more stringent conditions when testing load range F, G, H, J, and L radial tires that are not for speed-restricted service. Current endurance test parameters for load range N radial tires, load range F, G, H, J, L, M, and N tires that are for speed-restricted service, bias-ply tires, light truck tires (tread depth 18/32 inch or more), and motorcycle tires, would remain unchanged in the standard.

Test Speed

The current test speed for the endurance test in FMVSS No. 119 depends on the load range of the tire. Load range F tires are tested at 64 km/h (40 mph) on the 67-inch diameter test road wheel; load range G tires are tested at 56 km/h (35 mph); and tires with a load range H, J, L, M, or N are tested at 48 km/h (30 mph). NHTSA proposes to raise the test speed for the endurance test to 80 km/h (50 mph) for load range F, G, H, J, and L tires. This represents a 25 percent increase in speed for a load range F tire, a 43 percent increase for a load range G tire, and a 67 percent increase for load range H, J, and L tires that are not for speed-restricted service.

Load

The current test loads for the endurance test in FMVSS No. 119, identical for all the load ranges F through N, are specified as a percentage of the maximum load rating of the tire, and are 66 percent, 84 percent, and 101 percent. The loads are applied in a stepped fashion for durations of 7 hours, 16 hours, and 24 hours, respectively. NHTSA proposes to change the load combination for the endurance test to 85/90/100 percent of the tire's maximum load rating labeled on the tire's sidewall, from the 66/84/101 percent combination currently required.

Inflation Pressure

The current test inflation pressure specified in FMVSS No. 119 is the inflation pressure corresponding to the maximum load rating labeled on the tire's sidewall. NHTSA proposes to set the test inflation pressure at 80 percent of the sidewall-labeled inflation pressure that corresponds to the tire's maximum load rating. This represents a 20 percent decrease from the current endurance test, which requires tires to be fully inflated.

Duration

The current duration for the endurance test in FMVSS No. 119 is 47 hours: 7 hours at 66 percent load, 16 hours at 84 percent load, and 24 hours at 101 percent load. NHTSA proposes to leave FMVSS No. 119's endurance test duration at 47 hours.

Ambient Temperature

The ambient temperature specified for the endurance test in FMVSS No. 119 is 35 °C (95 °F). NHTSA proposes to add an ambient temperature tolerance, and thus proposes an ambient of 35 °C ± 3 °C (95 °F ± 5 °F) for the endurance test.

b. High Speed Test

The high speed test evaluates tire performance at higher speeds for shorter durations. FMVSS No. 119's high speed test currently applies only to motorcycle tires and to tires with rim diameters of 14.5 inches or below, and does not apply to truck tires. The test parameters used for the high speed test in FMVSS No. 119 and in other tire standards include speed, load, inflation pressure, duration, and ambient temperature. This NPRM proposes to adopt a high speed test for load range F, G, H, J, and L tires that are not for speed-restricted service, as these are typically installed on vehicles in regional or long-haul service. The high-speed test would be initiated after a 2-hour break-in at 80 km/h (50 mph) and 85 percent of maximum load rating, with inflation pressure at 90 percent of maximum.

Test Speed

NHTSA proposes to set the test speed for the high-speed test at the tire's maximum speed less 20 km/h (12 mph) for step 1, maximum speed less 10 km/h (6 mph) for step 2, and at maximum speed for the final step. This would be a new approach for testing tires under the Federal motor vehicle safety standards, as motorcycle and passenger car tires are tested to one unvarying set of test speeds. The approach proposed in this NPRM is similar to that used by the United Nations Economic Commission for Europe (ECE) tire Regulations which establish tire test speeds based on the maximum rated speed of the tire, and is along the lines of a suggestion from the Rubber Manufacturers Association (RMA).[7]

Load

NHTSA proposes to set the test load for the high-speed test at 85 percent of the maximum load rating for the tire. The maximum load rating would be based on the tire sidewall marking per single tire use application.

Inflation Pressure

NHTSA proposes that the high-speed test inflation pressure be set at 90 percent of the sidewall-labeled inflation pressure that corresponds to the tire's maximum load rating.

Duration

NHTSA proposes a 90-minute duration for FMVSS No. 119's high-speed test, consisting of three 30-minute speed steps at the proposed test speeds.

Ambient Temperature

NHTSA proposes an ambient temperature range of 35 °C ± 3 °C (95 °F ± 5 °F) for the FMVSS No. 119 high speed test upgrade.

[7] *See* Docket No. NHTSA 2002–13707–0016.1, RMA Perspective on the FMVSS 119 Revisions and Updates Mandated by the TREAD Act.

III. NHTSA Tire Testing

a. Test Program

After passage of the TREAD Act, NHTSA began testing new heavy truck tires to assess the performance of current tires in endurance and high speed tests, and how load, inflation pressure, speed and duration affect tire performance. We tested more than 430 new heavy truck tires with load ranges G through N that were designed for commercial vehicle applications. The tires selected included a mixture of tire brands, models and sizes.

Testing was performed in two phases. In Phase I, new load range G tires were tested for durability ("endurance") and robustness at speed ("high speed"). Since the purpose of Phase I testing was to assess the current level of performance for truck tires, the test matrix for this phase included both destructive (extended duration) and non-destructive tests. The purpose of Phase II testing was to generate data with which specific proposals could be developed for an NPRM to upgrade FMVSS No. 119. In Phase II, the test conditions were further refined from Phase I, and the group of tires tested was expanded to include load ranges H, J, L and N. Additional testing was also conducted for tires with load ranges F, J, and L, and speed ratings less than 75 mph.

All of the tires tested were commercially available at the time of testing. For both Phases I and II, NHTSA developed test matrices that included the performance parameters of speed, load, inflation pressure, and test duration. The test matrices were developed with a series of test conditions that increased in severity for tire performance. The ambient temperature used in the testing for both Phase I and Phase II was 35 °C ± 3 °C (95 °F ± 5 °F). All tires were conditioned at the ambient temperature of 35 °C ± 3 °C (95 °F ± 5 °F) for 3 hours prior to testing. Testing was conducted on a 67-inch diameter curved test road wheel.[8]

Phase I Testing

In Phase I, NHTSA conducted testing on 180 new, size 11R22.5, load range G, heavy truck tires with a rib-type tread.[9] The 11R22.5 tire size was chosen due to its use in on-road applications for heavy vehicles: tire size 11R22.5 represents approximately 24 percent and 22 percent of the original equipment and replacement tire markets, respectively. We tested tires from brands Hankook, Dayton, Bridgestone, and General, all with tire size 11R22.5, load range G, and rib-type treads. Based on suggestions [10] from the Rubber Manufacturers Association (RMA), the Tire Industry Association (TIA), and the Tread Rubber/Tire Repair Materials Manufacturers Group (TRMG), we tested only rib-type tires, typically used on steer axle and trailer axle positions, to focus on a single tread type. Tires were tested to determine levels of endurance and high-speed performance under a variety of test conditions.

Phase I Endurance Test:

For the endurance test, we selected 120 new load range G tires from Hankook, Dayton, Bridgestone and General. The Phase I endurance test matrix consisted of 10 groups of varied test conditions, or "Test Methods," [11] as shown below in Table 1, "Phase I Endurance Test Matrix." Other than in Test Methods 1 and 1A, three samples of each tire brand were tested for each Test Method (TM) in the matrix. Test Method 1 used one sample of each tire brand, and Test Method 1A used two samples of each tire brand.

Each TM consisted of a combination of the selected tire load, inflation pressure, test speed, and a specified duration at each load condition. Testing was performed so that each TM varied in severity by changing the load, inflation pressure or speed.

The applied test loads ranged from 66 percent of the maximum load rating to 110 percent of the maximum load rating. The loads used are similar to those used in the light vehicle tire research program that was conducted in 2001–2002 to support the upgrade of the endurance test for FMVSS No. 139. The stepped-up load combinations included 85, 90, and 100 percent; 90, 100, and 110 percent; and 100, 110, and 115 percent, which allowed the agency to understand limits of performance for light vehicle tires, including light truck tires with load ranges C, D, and E. For this research on medium and heavy duty truck tires, the agency also wanted

[8] Throughout this preamble, we use test speeds in miles per hour (mph) when presenting the test matrices, the test conditions, and the test results for the baseline tests, as specified in the current FMVSS No. 119. However, for the other tests in both the endurance and high speed test matrices, we selected test speeds in kilometers per hour (km/h) to be consistent with the metrification of the Federal motor vehicle safety standards. Some of the Tables presented in the preamble show speeds in miles per hour only, to facilitate comparison with the baseline test speeds.

[9] In the tire size description, the "11" represents the tire section width in inches, the "R" identifies the tire as a radial tire, and the "22.5" represents the tire rim diameter code, which equates to a rim diameter of 22.5 inches.

[10] *See* Docket No. NHTSA–2002–13707.

[11] Test Method 1A is considered a part of Test Method 1.

to understand the upper limits of performance for these tires when they are tested at normal loading conditions and at loads beyond their maximum load rating. As a result, we included stepped-up loads to 90/100/110 percent of the maximum load rating of the tires, since this represents an overloading condition for a truck tire on the test road-wheel.

Inflation pressures ranged from 80 to 100 percent of the maximum inflation pressure stated on the sidewall of the tires. The current endurance test in FMVSS No. 119 requires that the tire be tested at 100 percent of its maximum inflation pressure, but the agency sought to evaluate truck tires' performance when tested at some level of under-inflation, because that condition is occurring in real-world operation.[12] We chose 80 percent of the maximum inflation pressure as the lowest value for this testing, primarily because the truck industry considers a tire at that level of under-inflation to be significantly under-inflated.

The test speeds ranged from 56 km/h (35 mph) to 120 km/h (75 mph), which we believe represented the typical operating range of speeds for trucks using tires with the specified load ranges. Each tire was conditioned at the ambient test temperature of 35 °C ± 3 °C (95 °F ± 5 °F) for three hours. No break-in procedure was performed on tires tested for endurance performance since none is performed in the existing FMVSS No. 119 endurance test procedure. Table 1, "Phase I Endurance Test Matrix," below shows the test parameters used for the endurance test in Phase I and the structure of the test duration for the three samples in each Test Method. We note that for TMs 2–9, tire sample number 3 was tested for an additional amount of time after the rest of the TM was completed, which is why Table 1 shows an extra line for sample number 3 for these TMs.

[12] *See* Federal Motor Carrier Safety Administration, Final Report, "Commercial Vehicle Tire Condition Sensors," November 2003, at 7.

Table 1 - Phase I Endurance Test Matrix

Test Method #	Sample No.			Load Step	Load (%Max)	Duration (hours)	Speed (mph)	Inflation (%Max)
1	1	-	-	1	66	7	35	100
				2	84	16		
				3	101	24		
				4	110	48		
1A	-	2	3	1	66	7	50	100
				2	84	16		
				3	101	24		
				4	110	48		
2	1	2	3	1	85	7	55	90
				2	90	16		
				3	100	24		
			3	4	100	48		
3	1	2	3	1	90	7	55	90
				2	100	16		
				3	110	24		
			3	4	110	48		
4	1	2	3	1	85	7	63	90
				2	90	16		
				3	100	24		
			3	4	100	48		
5	1	2	3	1	90	7	63	90
				2	100	16		
				3	110	24		
			3	4	110	48		
6	1	2	3	1	85	7	55	80
				2	90	16		
				3	100	24		
			3	4	100	48		

7	1	2	3	1	90	7	55	80
				2	100	16		
				3	110	24		
			3	4	110	48		
8	1	2	3	1	85	7	63	80
				2	90	16		
				3	100	24		
			3	4	100	48		
9	1	2	3	1	90	7	63	80
				2	100	16		
				3	110	24		
			3	4	110	48		
10	1	2	3	1	90	7	75	100
				2	100	16		
				3	110	24		
				4	110	48		

The test parameters for the baseline tests (Test Method 1, load step 1–3) represent the current FMVSS No. 119 level for the endurance test. The tires (one sample of each tire brand) were tested at 56 km/h (35 mph), with a load of 66 percent of maximum load rating for 7 hours, 84 percent of maximum load rating for 16 hours, 101 percent of maximum load for 24 hours, and with an inflation pressure of 100 percent of the maximum inflation pressure value labeled on the sidewall. After the end of the 47-hour test, the tires were tested for an additional 48 hours, at a load of 110 percent of maximum load rating, and with the test parameters of speed, inflation pressure, and ambient temperature unchanged. Therefore, the total duration for the baseline endurance tests in Test Method 1 was 95 hours (47 hours per FMVSS No. 119 plus an additional 48 hours).

There were no failures in the baseline tests completed on the first of three samples for each tire brand. We then conducted a second baseline test by increasing the test speed for the remaining two samples to 80 km/h (50 mph) for the entire test, as shown in Test Method 1A. The inflation pressure and load parameters for the second baseline test were the same as in Test Method 1. The test load for the remaining two samples was 110 percent of maximum load rating for the last 48 hours of the test. The objective of the baseline tests in Test Method 1A was to determine how well tires performed under conditions slightly more stringent than the current endurance test in FMVSS No. 119.

As shown in Test Methods 2 through 9 (Table 1, above), test severity was increased by increasing the test speed, increasing the test loads, and reducing the inflation pressure. Road-wheel tests (not to failure) were conducted for 47 hours on two samples. The third sample was tested to 95 hours or until failure, whichever occurred first, with the load for the last 48 hours of the test being the same load applied in the last step for the 47-hour portion of the test.

All tires were inspected for belt separation, tread separation, and any other visual evidence of damage. For Test Method 10, all three tire samples were tested to 95 hours or until failure, whichever occurred first.

Phase I Endurance Test Results:

Of the 120 new tires tested for endurance performance under a variety of test conditions, 24 experienced failures. Of the 24 failures, 15 failed as a result of tread separation, 2 failed as a result of belt separation; 2 failed as a result of shoulder split; and 2 failed as a result of chunking. The remaining 3 failures consisted of other failure types such as tread splitting and sidewall separation. Table 2, "Phase I Endurance Test Results," summarizes the results for the endurance test on the four tire brands tested. Data for individual tests have been placed in the docket (NHTSA–2002–13707).

The Test Methods included in Table 2 are the same test methods for which the test conditions are shown in detail in Table 1. The test results in Table 2 show that the first sample for each of the four tire brands completed 95 hours for the baseline test in Test Method 1. The remaining two tire samples for each brand were tested to Test Method 1A, using the same test parameters, except for the test speed, which was increased from 56 km/h (35 mph) to 80 km/h (50 mph). Also note that for Test Methods 2 through 10, the first two samples of each Test Method were tested to 47 hours, while the third sample was tested to 95 hours. Four test errors occurred, where the test road-wheel stopped due to equipment or mechanical failure. These test errors are noted in Table 2 with an asterisk.

TABLE 2—PHASE I ENDURANCE TEST RESULTS

Test Method No.	Target (hours)			Tire brands (hours completed)											
				Hankook			Dayton			Bridgestone			General		
	Sample No.														
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
1	95	....	....	95	....	....	95	....	....	95	....	....	95	....	....
1A	....	95	95	....	95	95	....	95	95	....	95	95	....	95	95
2	47	47	95	47	47	95	47	47	95	47	47	95	47	47	95
3	47	47	95	1	47	95	47	47	95	47	47	95	47	47	95
4	47	47	95	47	47	95	47	47	37	47	47	37	47	47	95
5	47	47	95	47	47	95	43	44	53	47	44*	95	47	47	95
6	47	47	95	47	47	95	47	47	95	47	47	95	47	47	95
7	47	47	95	47	47	95	47	47	69	47	47	95	47	47	95
8	47	47	95	47	44*	95	47	47	95	47	47	92	47	47	32
9	47	47	95	47	47	95	28	28	23	47	47	95	42	47	41
10	47	47	95	12	50	46*	27	3	14	31*	27	30	25	36	24

Note: * Test error.

Overall, the tires tested performed well throughout the endurance test matrix, particularly Test Methods 1 through 8, for which each tire brand had at least one sample that completed 47 hours of those Test Methods. The results indicate that decreased inflation pressure and increased speed of Test Method 9, and the even higher speed of Test Method 10, define the upper boundary of current new tire performance. For Test Methods 8 and 9, the inflation pressure was decreased to 80 percent of maximum inflation pressure, and the test speed was increased from 88 km/h (55 mph) to 100 km/h (63 mph). In addition, the test loads were increased in Test Method 9 to 90/100/110 percent of the tire's maximum load rating. For Test Method 10, inflation was increased to 100 percent and test speed raised to 120 km/h (75 mph), the same test speed used in the endurance test for light vehicle tires in FMVSS No. 139. The results indicate that higher speeds and lower inflation pressure appear to have the most impact on tire failure compared with changes in test load or duration.

Phase I High Speed Test:

We tested 60 new load range G tires from major tire manufacturers Hankook, Dayton, Bridgestone, and General for high speed performance. Since the FMVSS No. 119 high speed requirements currently apply only to tires with a rim diameter code of 14.5 or less and to motorcycle tires, the performance levels for the high speed baseline tests in our heavy truck tire test program (*see* Test Method A of Table 3 below, "Phase I High Speed Test Matrix") were set at the FMVSS No. 119 levels of performance for those tires, simply as a starting point for the test program. Test conditions were varied to produce different levels of severity by changing the load, inflation pressure and speed. *See* Table 3, "Phase I High Speed Test Matrix," below for a summary of the high speed test matrix.

Table 3 - Phase I High Speed Test Matrix

Test Method #	Sample No.			Speed Step	Speed (mph)	Duration (min)	Inflation (%Max)	Load (%Max)
A	1	2	3	1	75	30	100	88
				2	80	30		
				3	85	30		
				4	90	30		
				5	95	30		
				6	100	30		
	Total Time (hrs):					3.0		
B	1	2	3	1	75	30	95	80
				2	81	30		
				3	88	30		
	-	-	3	4	88	60		
	Total Time (hrs):					2.5		
C	1	2	3	1	75	30	95	90
				2	81	30		
				3	88	30		
	-	-	3	4	88	60		
	Total Time (hrs):					2.5		
D	1	2	3	1	75	30	90	80
				2	81	30		
				3	88	30		
	-	-	3	4	88	60		
	Total Time (hrs):					2.5		
E	1	2	3	1	75	30	90	90
				2	81	30		
				3	88	30		
	-	-	3	4	88	60		
	Total Time (hrs):					2.5		

Test severity, as defined by more severe running conditions (*i.e.* increased load, higher speed, or reduced inflation pressure), increased from Test Method A to Test Method E. In Test Method A, the first three speed steps represent the current conditions in FMVSS No. 119 (specified for applicable tires) and the next three test speeds represent speed conditions beyond those currently in FMVSS No. 119. The tires were tested to a stepped-up speed profile starting at 120 km/h (75 mph), with a load condition of 88 percent of maximum load rating for 30 minutes. The test speed was increased in 5-mph increments every 30 minutes until failure or a speed of 160 km/h (100 mph) was achieved, whichever occurred first. Therefore, the target completion time for the baseline high speed test was 3 hours for a total of six speed steps for Test Method A only. The primary reason for testing beyond 137 km/h (85 mph) in the baseline tests was to assess the upper boundary of high speed performance for heavy truck tires.

The initial test speed for Test Methods B through E was set to 120 km/h (75 mph), and increased to 130 km/h (81 mph) and 140 km/h (88 mph) in 30-minute intervals for a total of three test steps. The 10-km/h increments were used to increase the speed severity moderately for tire samples as they advanced through the different test methods. For each tire brand tested, the first two samples were tested for three 30-minute speed steps, for a total test duration of 1.5 hours. The third sample was tested for an additional hour at the last speed step of 140 km/h (88 mph), resulting in a test duration of 2.5 hours.

The test load was based on the maximum load rating for the subject tire as labeled on the sidewall. The test load ranged from 80 percent of maximum load rating to 90 percent of maximum load rating. Inflation pressures ranged from 90 percent to 100 percent of maximum pressure labeled on the sidewall.

Each tire was conditioned for the test at an ambient temperature of 35 °C ± 3 °C (95 °F ± 5 °F) for three hours, and then broken in for two hours under 88 percent of maximum load and 100 percent maximum inflation pressure at 80 km/h (50 mph).[13] The tire was allowed to cool to 35 °C ± 3 °C (95 °F ± 5 °F) and the inflation pressure was adjusted to applicable pressure immediately before the test. The break-in procedure was performed to bring the tire to operating temperature, which allows the tire to flex, expand and contract such that air within the tire may fully permeate into the tire cavity. The break-in procedure also removes mold release agents and flashings produced by the molding process, which could contribute to variability in the test.

At the completion of the test, tires were visually inspected for belt separation, tread separation, and evidence of damage.

Phase I High Speed Test Results:

Of the 60 new tires tested for high speed performance under a variety of test conditions, 7 experienced test failures. Of these 7 failures, 4 failed as a result of tread chunking, 2 failed as a result of tread separation, and 1 failed due to belt separation. Most of these failures occurred in Test Method A at test speeds of 152 km/h (95 mph) or at 160 km/h (100 mph). Table 4 below, "Phase I High Speed Test Results (Hours Completed)," shows how the tires performed, as tested under each test method. The Test Methods included in Table 4 are the same Test Methods for which the test conditions are shown in detail in Table 3.

TABLE 4—PHASE I HIGH SPEED TEST RESULTS (HOURS COMPLETED)

Test Method	Target hours			Tire Brands (hours completed)												
				Hankook			Dayton			Bridgestone			General			
	Sample No.															
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
A	3.0	3.0	3.0	3.0	3.0	3.0	2.3	2.8	2.5	2.9	3.0	2.9	3.0	3.0	2.8	
B	1.5	1.5	2.5	1.5	1.5	2.5	1.5	1.5	2.5	1.5	1.5	2.5	1.5	1.5	2.5	
C	1.5	1.5	2.5	1.5	1.5	2.5	1.5	1.5	2.5	1.5	1.5	2.5	1.5	1.5	2.5	
D	1.5	1.5	2.5	1.5	1.5	2.5	1.5	1.5	2.5	1.5	1.5	2.5	1.5	1.5	2.5	
E	1.5	1.5	2.5	1.5	1.5	2.5	1.5	1.5	1.8	1.5	1.5	2.5	1.5	1.5	2.5	

Test Method A was extended so that samples would be tested to the baseline FMVSS No. 119 conditions and then tested at increased speeds. For Test Method A, speed was increased beyond the FMVSS No. 119 test speeds to 90, 95, and 100 mph, in 30-minute increments (the total test duration target was three hours). Inflation pressure and load were unchanged. Each sample was tested at 88 percent of maximum load rating, 100 percent inflation pressure and to speeds that were increased in 30-minute increments to a stepped profile, initiating at 120 km/h (75 mph) and concluding at 160 km/h (100 mph) or failure, whichever occurred first.

Overall, the new tires tested to the high-speed matrix performed well, as shown in Table 4. All of the 7 tires that failed completed at least 1.5 hours, which represents the first three 30-minute speed steps of the targeted test duration. Test Method A was designed to test tires to 100 mph or failure, whichever occurred first. The results for Test Method A reveal that all of the tires were able to withstand speeds of up to 90 mph, when inflated at 100 percent of maximum inflation pressure. The results also show that all of the tires tested to Test Methods B through E were able to complete the 1.5 hours at test speeds of 120, 130, and 140 km/h (75, 81 and 88 mph). In addition, when tested to an additional hour at the last speed step of 140 km/h (88 mph), all the tires tested, except one Dayton tire, were able to complete the entire 2.5 hours of the high-speed test.

Phase II Testing

While Phase I testing provided NHTSA with a general understanding of the current level of performance for new heavy duty truck tires, Phase II testing refined the test matrices to develop possible, practicable, proposals to upgrade the endurance and high speed tests in FMVSS No. 119. In Phase II, NHTSA tested 365 new tires. Testing also was expanded to include test tires of additional tire sizes (385/65 R 22.5 and 315/80 R 22.5), load ranges (F, H, J, L, and N tires, and load range G "bias ply" type tires), brands from other manufacturers (Continental, Goodyear, Michelin, Kumho, and Yokohama), and steer, drive, and all-position tread types, as shown in Table 5.

These tires included speed ratings ranging from 56 mph to 75 mph. Most of the tires were tested for both endurance performance and for high-speed performance. Some tire models were tested in 2005, and certain tire models tested were retested in 2008 to validate their performance. In the results section, superscripts were used to identify which tires were tested first. FMVSS No. 119 does not apply to speed-restricted service and bias-ply tires, therefore those tires were not included in the costs and benefits analysis section. The data for those tires were collected to learn about their performance levels. Of the 365 tires tested, 159 tires were tested to the proposed methods. Seventy-eight tires were tested for Endurance and 81 were tested for High Speed performance.

TABLE 5—PHASE II TIRE INFORMATION

Group No.	Manufacture/model	Tire size and LR	Max speed (mph)	Application
1	Goodyear G647 RSS	225/70R19.5 LR F	75	Regional/P&D
2	Michelin XRV	225/70R19.5 LR F	75	Long haul
3	Bridgestone R293	11R24.5 LR G	75	Long haul

[13] Traditionally, a high speed test has an initial break-in step that involves a tire running on the roadwheel under specified conditions to allow for tire growth. The endurance test does not need a break-in step primarily because the 47-hour test duration allows time for break-in during the test.

TABLE 5—PHASE II TIRE INFORMATION—Continued

Group No.	Manufacture/model	Tire size and LR	Max speed (mph)	Application
4	Bridgestone M1X 711	11R24.5 LR G	75	Long haul
5	General D460	11R24.5 LR G	75	Long haul
6	Michelin XZY3	11R24.5 LR G	65	Mixed service
7	General S580	11R24.5 LR H	75	Long haul
8	Goodyear G167	11R24.5 LR H	75	Long haul
9	Goodyear G395	11R24.5 LR H	75	Long haul
10	Goodyear Marathon LHT	245/70R17.5 LR H	62	N/A
11	Kumho 943	11R24.5 LR H	75	Regional/P&D
12	Kumho KRS02	11R24.5 LR H	75	N/A
13	Yokohama TY303	11R24.5 LR H	75	Long haul
14	Yokohama RY023	11R24.5 LR H	75	Long haul
15	Bridgestone R184 CZ	215/75R17.5 LR H	65	High Load Trailer
16	Bridgestone L320	11.00R24.5 LR H	65	Mixed service
17	Goodyear Unisteel G291	315/80R22.5 LR J	75	Regional/P&D
18	Goodyear G286 (wb)	385/65R22.5 LR J	68	Mixed service
19	Michelin XZY3 (wb)	385/80R22.5 LR J	65	Mixed service
20	Michelin XTA	215/75R17.5 LR J	62	L. haul/Regional
21	Kumho KRT02	235/75R17.5 LR J	62	Regional/P&D
22	Yokohama RY253 (wb)	385/65R22.5 LR J	65	Long haul
23	Continental HMS 45+	315/80R22.5 LR L	56	Mixed service
24	Michelin XZUS	315/80R22.5 LR L	65	Regional/P&D
25	Michelin XZA2 Energy	315/80R22.5 LR L	75	Long haul
26	Milestar TRX (bias-ply)	N/A LR G	N/A	N/A
27	Prime X Rockmaster	N/A LR N	N/A	N/A

Note: (wb) means it is a wide-base tire; * means speed-restricted service tire.

Phase II Endurance Test

NHTSA tested new tires with load ranges F, G, H, J, L and N from several major tire manufacturers. Table 6, "Phase II Endurance Test Matrix," shows the endurance test conditions used for Phase II testing. These test conditions were selected based on our analysis of the Phase I results. We varied the severity of the test conditions by adjusting load, inflation pressure and/or speed. For each test method, the test load was stepped-up through 85, 90, and 100 percent of maximum load rating. Inflation pressures ranged from 80 percent to 90 percent of maximum inflation pressure stated on the sidewall. Test speeds ranged from 80 km/h (50 mph) to 100 km/h (62 mph). Each tire was conditioned at ambient temperature 35 °C ± 3 °C (95 °F ± 5 °F) for three hours. All the tires were tested for a total duration of 71 hours consisting of the 47 hours of the current FMVSS No. 119 endurance test plus an additional 24 hours.

Table 6--Phase II Endurance Test Matrix

Test Method #	Samples	Load Step	*Load (%Max)	**Duration (hours)	Speed (km/h)	*Inflation (%Max)
1	3	1	85	7	80	90
		2	90	16		
		3	100	24		
		4	100	24		
2	3	1	85	7	80	80
		2	90	16		
		3	100	24		
		4	100	24		
3	3	1	85	7	90	90
		2	90	16		
		3	100	24		
		4	100	24		
4	3	1	85	7	90	80
		2	90	16		
		3	100	24		
		4	100	24		
5	3	1	85	7	100	90
		2	90	16		
		3	100	24		
		4	100	24		
6	3	1	85	7	100	80
		2	90	16		
		3	100	24		
		4	100	24		

Note: * Percent of sidewall maximum; ** Total hours per test method is 71

The results of the endurance tests for new tires in Phase I indicated that higher speeds and lower inflation pressure appear to have the most impact on tire failure compared with changes in test load or duration. Based on these results, in the Phase II program NHTSA decided to moderately increase the severity of its endurance test matrix over the current requirements in FMVSS No. 119. The least severe test condition, Test Method 1, had the lowest test speed (80 km/h or 50 mph), and the highest inflation pressure (90 percent of maximum inflation pressure). The most severe test condition, Test Method 6, had the highest test speed (100 km/h or 62 mph), and the lowest inflation pressure (80 percent of maximum inflation pressure).

Phase II Endurance Test Results

Tables 7 through 14 of this preamble, below, summarize the results of the endurance testing in Phase II. The results indicate that as the test severity increased, in going from Test Method 1 to Test Method 6, tire failure rate increased. Tires tested under Test Method 1 were more likely to achieve the target of 71 hours compared to tires tested to Test Method 6. All of the load range G (radial) and H tires tested under Test Methods 1 and 2 achieved the target of 71 hours, whereas only a few of the load range G tires and none of the load range H tires tested to Test Methods 5 and 6 were able to achieve the target of 71 hours. The dashes in the tables represent Test Methods that were not performed for that specified tire.

Three tire groups (Nos. 10, 20, and 21) were speed-rated 62 mph. These groups were tested with a variation in speed. Samples #1 from these three tire groups were tested at 50 mph. If sample #1 did not complete the 71-hour test, sample #2 was tested at 45 mph and sample #3 was tested at 40 mph. If sample #1 completed the 71-hour test at 50 mph, the remaining samples were tested at the same speed.

TABLE 7—PHASE II ENDURANCE TEST RESULTS, LOAD RANGE F

Test Method No.	Proposed (hours)			Tire Brands (Hours Completed)					
				Goodyear 647 RSS			Michelin XRV		
	Sample No.								
	1	2	3	1	2	3	1	2	3
2	47	47	47	71	71	71	71	71	71

TABLE 8—PHASE II ENDURANCE TEST RESULTS, LOAD RANGE G

Test Method No.	Proposed (hours)			Tire Brands (Hours Completed)								
				Bridgestone R293—Steer			Bridgestone MIX 711—Drive			General D460—Drive		
	Sample No.											
	1	2	3	1	2	3	1	2	3	1	2	3
1	47	47	47	71	71	71	71	71	71			
2	47	47	47	71	71	71	71	71	71	71	71	71
3	47	47	47	71	71	71	71	71	65			
4	47	47	47	71	71	71	71	71	71			
5	47	47	47	71	71	44	40	37	32			
6	47	47	47	24	71	33	33	33	34			

TABLE 9—PHASE II ENDURANCE TEST RESULTS, LOAD RANGE H

Test Method No.	Proposed (hours)			Group Samples (Hours Completed)															
				Goodyear G395—Steer			Goodyear G167—Drive			Kumho 943—Drive			Kumho KRS02—Drive			Yokohama RY023—Steer			
	Sample No.																		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
1	47	47	47	71	71	71	71	71	71	71									
2	47	47	47	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	
3	47	47	47	41	35	50	46	69	71										
4	47	47	47	71	55	56	47	48	56										
5	47	47	47	18	19	19	24	5	27										
6	47	47	47	13	25	17	19	8	7										

TABLE 10—PHASE II ENDURANCE TEST RESULTS, LOAD RANGE H

Test Method No.	Proposed (hours)			Group Samples (Hours Completed)														
				Goodyear Marathon LHT			Bridgestone R184 CZ			Bridgestone L320			Yokohama TY303			General S580		
	Sample No.																	
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
2	47	47	47	22	30	35	71	71	71	71	71	71	71	71	71	71	71	71

Samples 2 and 3 from Goodyear LHT were tested at 45 and 40 mph.

TABLE 11—PHASE II ENDURANCE TEST RESULTS, LOAD RANGE J

Test Method No.	Proposed (hours)			Tire Brands (Hours Completed)															
				Yokohama RY253 (wb)—All Pos.			Goodyear G286 (wb)—Steer			[1] Michelin XZY3 (wb)—All Pos.			Goodyear Unisteel G291			[2] Michelin XZY3 (wb)—All Pos.		
	Sample No.																	
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
1	47	47	47	71	71	71	7	4	7	71	71	71	....	....	....	....	....	....
2	47	47	47	71	71	71	7	5	7	65	44	71	71	71	71	71	65	71
3	47	47	47	55	45	42	2	2	5	6	70	44	....	....	....	....	....	....
4	47	47	47	42	43	34	....	....	....	....	....	....	....	....	....	....	....	....

Superscripts 1 and 2: 1 represents tires tested in 2005; 2 represents tires tested in 2008.

TABLE 12—PHASE II ENDURANCE TEST RESULTS, LOAD RANGE J

Test Method No.	Proposed (hours)			Group Samples (Hours Completed)								
				[2] Yokohama RY253 (wb)			Michelin XTA			Kumho KRT02		
	Sample No.											
	1	2	3	1	2	3	1	2	3	1	2	3
2	47	47	47	71	71	71	71	71	71	27	56	71

Samples 2 and 3 from Kumho KRT02 were tested at 45 and 40 mph.

TABLE 13—PHASE II ENDURANCE TEST RESULTS, LOAD RANGE L

Test Method No.	Proposed (hours)			Tire Brands (Hours Completed)															
				[1] Conti. HMS45 + Steer			[1] Michelin XZUS—All Pos.			[1] Michelin XZA2 Energy—All			Conti.HMS45 + − Steer			[2] Michelin XZUS—All Pos.		
	Sample No.																	
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
1	47	47	47	19	21	20	30	28	33	....	....	....	....	....	....	....	....	....
2	47	47	47	29	20	30	30	32	48	64	59	56	55	46.7	43	55	40	41
3	47	47	47	8	9	4	....	....	....	....	....	....	....	....	....	....	....	....
4	47	47	47	14	14	17	....	....	....	....	....	....	....	....	....	....	....	....
5	47	47	47	3	2	3	....	....	....	....	....	....	....	....	....	....	....	....
6	47	47	47	4	4	3	....	....	....	....	....	....	....	....	....	....	....	....

Note: Superscript 1 represents tires tested in 2005, 2 represents tires tested in 2008.

TABLE 14—PHASE II ENDURANCE TEST RESULTS, LOAD RANGE G BIAS PLY (TRAILER APPLICATION) AND N

Test Method No.	Proposed (hours)			Tire Brands (Hours Completed)											
				(G-Bias) Milestar TRX			(G-Bias) Milestar TRX			(G-Bias) Milestar TRX			(N) Prime X Rockmaster		
	Sample No.														
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
1	47	47	47	71	71	71	71	71	70	71	71	64	5	6	4
2	47	47	47	52	10	48	71	66	62	71	53	67	....	....	....
3	47	47	47	45	71	35	54	67	55	3	71	71	....	....	....

Test results also indicate that some higher load range J, L, and N tires were overall less likely to achieve their target of 71 hours than the load range G and H tires. Some load range J and L tires are also used on inter-city coach buses (motorcoaches), which are operated at highway speeds. (Tire industry data show that load range J and L tires comprise 8 percent of the new truck tire market share (*see* Docket NHTSA–2002–13707, item 18.1).) Nineteen out of the 24 (79%) load range J tires met the proposed 47-hour test. Five out of the 9 (56%) load range L tires tested met the proposed conditions. The load range J and L tires we tested had speed ratings ranging from 62 to 75 mph, and all 9 tires speed-rated 75 mph met the proposed 47-hour endurance test requirements. The agency assumes that most load range J and L tires are speed-rated 75 mph, and that the tires would thus meet the proposed endurance requirements. The agency is seeking comment on the percentage of these tires that are speed-rated 75 mph.

All of the tires were not tested to every test method for several reasons. For load range G and H tires, the

Bridgestone and Goodyear tires were tested to Test Method 1 through Test Method 6. The Continental D 460, Kumho 943, Kumho KRS02, and Yokohama RY023 tires were not tested to Test Method 1 and Test Methods 3 through 6, primarily because failures from the other groups began to surface when tested to Test Method 3. In similar fashion, tires for load range J, L, N, and G (bias ply), were not tested once a pattern of failures indicated that a particular test method was beginning to result in failures for those tires.

Phase II High Speed Test

Based on the results of the high speed tests of new tires in Phase I,[14] we revised the high speed test matrix for Phase II by reducing the test speeds to speeds that are more representative of the upper limit for heavy vehicle application. Table 15 below summarizes the test conditions used for the high speed test in Phase II.

Table 15 - Phase II High Speed Test Matrix

Test Method #	Samples	Speed Step	Speed (km/h)	Duration (min)	Inflation (%Max)	Load (%Max)
A	3	1	100	30	95	90
		2	110	30		
		3	120	30		
		4	120	60		
			Total Time (hrs):	2.5		
B	3	1	100	30	90	90
		2	110	30		
		3	120	30		
		4	120	60		
			Total Time (hrs):	2.5		
C	3	1	100	30	95	85
		2	110	30		
		3	120	30		
		4	120	60		
			Total Time (hrs):	2.5		
D	3	1	100	30	90	85
		2	110	30		
		3	120	30		
		4	120	60		
			Total Time (hrs):	2.5		

We tested new tires of load ranges F, G, H, J, and L from several major tire manufacturers. Test conditions varied in severity by adjusting load, inflation pressure and/or speed. The applied load was based on the single maximum load for the subject tire, stated on the sidewall. The applied load ranged from 85 percent of maximum load rating to 90 percent of maximum load rating. In Test Method (TM) C, the least severe test method, the test load was set to 85 percent of maximum load rating, and inflation pressure at 95 percent of maximum. In the most severe Test Method (B), the load was set at 90 percent of maximum load rating, and inflation at 90 percent of maximum. Inflation pressures ranged from 90 percent to 95 percent of maximum pressure stated on the sidewall. Generally, test speeds were 100/110/120 km/h (62/68/75 mph). Each tire was conditioned at an ambient temperature of 35 °C ± 3 °C (95 °F ± 5 °F) for three hours, broken in for two hours at 80 km/h (50 mph) under 88 percent of maximum load rating, and then run for duration of 2.5 hours. The duration for the final speed step of 120 km/h (75 mph) was 1.5 hours, which represents an additional hour beyond the normal speed step of 30 minutes.

Phase II High Speed Test Results

Tables 16 through 24, below, summarize the results of the high-speed test for new tires tested in Phase II, and indicate that heavy truck tires performed well under the test matrix of Phase II. For the 138 tires tested for high-speed durability, only 10 tires failed to meet the set target of 2.5 hours at speed. For example, the Goodyear Drive tire samples 1, 2, and 3 (load range H) under Test Method C, completed 2.5, 2.4 and 2.1 hours, respectively (see Table 17). Similarly, the same tire brand completed 2.1, 2.4 and 1.9 hours under Test Method B. Eighty-one out of the 138 tires were tested to the proposed high speed requirements. Ninety-nine percent (80/81) met the 1.5-hour proposed requirement, Test Method D. Several

[14] Most failures occurred in Test Method A at test speeds of 152 km/h (95 mph) or at 160 km/h (100 mph).

tire models from Bridgestone and Goodyear tire brands were tested first and yielded very positive results under Test Methods C and D, which were less severe because of the lower loading conditions. Additional tire brands (Bridgestone, Continental, Michelin, Kumho and Yokohama) were tested to Test Methods C and D to validate the test conditions for use in a potential upgrade for the heavy truck tire standard.

TABLE 16—PHASE II HIGH SPEED TEST RESULTS, LOAD RANGE F

Test Method No.	Target (hours)			Tire Brands (Hours Completed)					
				Goodyear 647 RSS—Steer			Michelin XRV—All Pos.		
	Sample No.								
	1	2	3	1	2	3	1	2	3
D	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5

TABLE 17—PHASE II HIGH SPEED TEST RESULTS, LOAD RANGE G

Test Method No.	Target Hours			Tire Brands (Hours Completed)											
				Bridgestone R293—Steer			Bridgestone MIX 711—Drive			General D460—Drive			Michelin XZY3		
	Sample No.														
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
A	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	....	....	....	....	....	....
B	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	....	....	....	....	....	....
C	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
D	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5

TABLE 18—PHASE II HIGH SPEED TEST RESULTS, LOAD RANGE H

Test Method No.	Target Hours			Tire Brands (Hours Completed)															
				Goodyear G395—Steer			Goodyear G167—Drive			Kumho 943—Drive			Kumho KRS02—Drive			Yokohama RY023—Steer			
	Sample No.																		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
A	2.5	2.5	2.5	2.5	2.5	2.5	1.6	2.2	1.9	....	....	....	....	....	....	....	....	....
B	2.5	2.5	2.5	2.5	2.5	2.5	2.1	2.4	1.9	....	....	....	....	....	....	....	....	....
C	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.1	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
D	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5

TABLE 19—PHASE II HIGH SPEED TEST RESULTS, LOAD RANGE H

Test Method No.	Target Hours			Group Samples (Hours Completed)											
				Goodyear Marathon LHT			Bridgestone R184 CZ			Bridgestone L320			Yokohama TY303—Drive		
	Sample No.														
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
C	2.5	2.5	2.5	....	....	....	....	....	....	....	....	....	2.5	2.5	2.5
D	2.5	2.5	2.5	2.3	2.5	1.6	2.5	2.5	2.5	1.3	1.8	1.8	2.5	2.5	2.5

TABLE 20—PHASE II HIGH SPEED TEST RESULTS, LOAD RANGE J

Test Method No.	Target (hours)			Tire Brands (Hours Completed)								
				Goodyear Unisteel G291—All Pos.			Yokohama RY253 (wb)—All Pos.			Michelin XZY3 (wb)—All Pos.		
	Sample No.											
	1	2	3	1	2	3	1	2	3	1	2	3
D	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5

TABLE 21—PHASE II HIGH SPEED TEST RESULTS, LOAD RANGE J

Test Method No.	Target Hours			Tire Brands (Hours Completed)					
				Michelin XTA			Kumho KRT02		
	Sample No.								
	1	2	3	1	2	3	1	2	3
D	2.5	2.5	2.5	2.5	2.5	2.5	2.3	2.5	2.5

TABLE 22—PHASE II HIGH SPEED TEST RESULTS, LOAD RANGE L

Test Method No.	Target Hours			Tire Brands (Hours Completed)								
				Continental HMS 45+			Michelin XZUS—All Pos.			Michelin XZA2 Energy—All Pos.		
	Sample No.											
	1	2	3	1	2	3	1	2	3	1	2	3
D	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.25	2.5	2.5	2.5	2.5

TABLE 23—PHASE II HIGH SPEED TEST RESULTS, LOAD RANGE J, NO BREAK-IN STEP

Test Method No.	Target (hours)			Tire Brands (Hours Completed)								
				Michelin XZY3 (wb)—All Pos.			Goodyear Unisteel G291—All Pos.			Yokohama RY253 (wb)—All Pos.		
	Sample No.											
	1	2	3	1	2	3	1	2	3	1	2	3
D	2.5	2.5	2.5	2.5	2.5	2.5	1.5	2. 5	2.5	2.5	2.5	2.5

TABLE 24—PHASE II HIGH SPEED TEST RESULTS, LOAD RANGE L, NO BREAK-IN STEP

Test Method No.	Target (hours)			Tire Brands (Hours Completed)					
				Michelin XZUS—All Pos.			Michelin XZA2 Energy—All Pos.		
	Sample No.								
	1	2	3	1	2	3	1	2	3
D	2.5	2.5	2.5	2.15	2.5	2.3	2.5	2.5	2.5

b. Summary

The results of the endurance and high speed tests indicated that the test requirements of FMVSS No. 119 can be upgraded for radial tires to specify more stringent, yet practicable, levels of performance that ensure better durability in real-world applications.

Based on these test results, NHTSA proposes to upgrade the endurance performance requirement and establish a new high-speed performance requirement for radial tires of load ranges F, G, H, J, and L, that are not for speed-restricted service, which comprise about 98 percent of the truck tires sold in the United States.[15] These tires are typically used for regional haul and long haul operations and on motorcoaches. The remaining 2 percent represent the higher load rating tires and bias ply tires, which are more often used in mixed service (on/off-road operations in lower speed applications), such as construction, logging, crane, and rigging operations. However, the agency is also considering requiring non-speed-restricted, load range M radial tires to comply with the upgraded endurance and new high speed tests because some of these tires are used in similar applications as load range L tires. The agency is not proposing any new requirements for load range N tires, which represent less than 1 percent of new tires sold and are typically used in lower speed operations. The agency is also not proposing any new requirements for bias ply tires, primarily because they are typically not installed on new heavy vehicles and they represent a very small portion of the tires sold as replacement tires. These tires would continue to be required to comply with the current requirements. In addition, the agency is not proposing updated requirements for light truck tires with tread depth 18/32 inch or greater or for speed-restricted tires; these tires, used on light truck applications, are load range E category, and are not the focus of this rulemaking. The agency is not proposing any new requirements for bias ply tires, primarily because we are not aware that they are installed on new heavy vehicles, and we aimed at upgrading radial tires, which represent the vast majority of the tires used on heavy vehicles.

IV. Proposed Endurance Test

NHTSA is proposing to upgrade FMVSS No. 119's requirements for load ranges F, G, H, J, and L tires that are not for speed-restricted service by setting more stringent requirements for the endurance test. NHTSA proposes that the endurance test be conducted using the parameters shown in Table 25. The proposed and current endurance test parameters may be compared as shown in Tables 25 and 26 below:

TABLE 25—PROPOSED FMVSS NO. 119 ENDURANCE TEST CONDITIONS

Load ranges	Steps	Load (% max)	Duration (hrs)	Speed (km/h)	Inflation pressure (% max)
	1	85	7		
F, G, H, J, and L	2	90	16	80	80
	3	100	24		

TABLE 26—CURRENT FMVSS NO. 119 ENDURANCE TEST CONDITIONS

Load ranges	Speed (km/h)	Inflation pressure (% max)	Load (% max)		
			Duration (hrs)		
			7	16	24
F	64				
G	56	100	66	84	101
H, J, L, M, N	48				

A tire would comply with the proposed requirements if, at the end of the endurance test as currently defined by the standard, there is no visual evidence of tread, sidewall, ply, cord, inner liner, belt or bead separation, chunking, open splices, cracking or broken cords, and the tire pressure, when measured at any time between 15 and 25 minutes after the end of the test, is not less than 95% of the initial test pressure.

a. Test Speed

NHTSA proposes to raise the test speed for the endurance test to 80 km/h (50 mph) for load range F, G, H, J, and L tires, which are not for speed-restricted service. This represents a 25 percent increase in speed for a load range F tire, a 43 percent increase for a load range G tire, and a 67 percent increase for load range H, J, and L tires. It is noted that these tests are performed on a curved road wheel, a 67-inch diameter steel drum, on which the tire being tested runs as on a treadmill. Because the road wheel is curved, it subjects the tire to reverse deflection compared to a tire running on a flat surface, which makes the tire run hotter (and is therefore a more severe test). According to American Society for Testing and Materials International (ASTM International) research on equivalent flat-to-curved speeds based on equivalent belt-edge temperatures, a load range G truck tire tested on a 67-inch diameter road wheel at 85 km/h (53 mph) experiences belt-edge temperatures similar to what a tire experiences when tested on a flat road surface at 120 km/h (75 mph). Thus, it was determined that the effects on the tire in the two situations will be similar, even though the one tire is rotating at 85 km/h (53 mph) and the other at 120 km/h (75 mph). ("Phase 1—Final Report," ASTM Truck/Bus Tire Test Development Task Group, 9/5/06, Docket No. NHTSA–2002–13707–10.)

In NHTSA's Phase II testing, tires were tested to speeds of 80, 90, and 100 km/h (50, 56, and 62 mph) as potential upgrades to the current test speeds. Only 3 of 30 tire samples were able to complete a 71-hour, or even a 47-hour test, at 100 km/h (62 mph). At 90 km/h (56 mph), all except three of the load range G and H tires were able to complete 47 hours. At 80 km/h (50 mph), all of the load range F, G and H tires completed the 71-hour test without failure, even at 80 percent inflation. Load range J tires had mixed results, and for load range L tires, only 7 of 21 tires tested were able to complete 47 hours of the endurance test.

Given these results, NHTSA believes that a speed of 80 km/h (50 mph) for the endurance test, when coupled with the inflation pressure and load parameters

[15] New truck tire market share by load range is as follows: F–5 percent, G–64 percent, H–23 percent, J–3 percent, L–5 percent, M and N is less than 1 percent. *See* Docket NHTSA–2002–13707, item 18.1.

we are proposing, represents a substantial and realistic upgrade over current requirements for commercial vehicle tires. In selecting this test speed, we considered the maximum speed rating of the tires we tested and those typically used in commercial vehicle applications, including motorcoaches, and found that, according to tire manufacturer catalogs,[16] the majority of the tires in these usage categories were rated at 120 km/h (75 mph). All the test tires that were rated at 120 km/h (75 mph) and some that were rated at 110 km/h (68 mph) or lower completed the proposed 47-hour Endurance test without failure. Even though load range J and L tires comprise only about 6 percent of the commercial vehicle tire market, NHTSA is aware that load range J and L tires are used on some commercial inter-city coach buses (motorcoaches), operated on interstate highways, and their use as such highlights the need to propose upgrading the endurance test speed for these tires. The agency is aware that while some load range J and L tires are rated at a maximum speed of 120 km/h (75 mph), many others are rated at speeds between 88 km/h (55 mph) and 110 km/h (68 mph). As a result, the agency solicits comment on the appropriateness of the 80 km/h (50 mph) test speed for load range F, G, H, J, and L tires in the endurance test.

The agency is also considering requiring non-speed-restricted, load range M radial tires to comply with the upgraded endurance test because some of these wide base tires may be used in similar applications that load range L tires are used. Given that the maximum speed rating of these tires allows them to be used in high speed operations, possibly instead of two lower load range tires, the agency believes that they should be considered for inclusion in the upgrade since they could be used in different vehicle applications than the typical speed-restricted, load range M radial tires. Accordingly, the agency solicits comment on requiring non-speed-restricted, load range M radial tires to comply with the upgraded endurance test.

We are unaware of non-speed restricted, radial, load range N tires being used in high speed operations, thus we are not proposing that they be required to comply with this upgrade. NHTSA does not propose to raise the endurance test speed for non-speed-restricted, load range N tires from 48 km/h (30 mph), given their typical use on heavy vehicles, and our concern that increasing the speed would not be practicable. Due to their design and typical application to heavy vehicles used in mixed (on/off-road) service at slow speeds, load range N tires performed poorly even at the lowest test speed used by NHTSA. As stated previously, these tires make up about 1 percent of the total market for truck tires. NHTSA believes there is no demonstrated safety need to upgrade these tires to comply with a more stringent endurance test, given the typical uses of the tires.

b. Load

NHTSA proposes to change the load combination for the endurance test to 85, 90, and 100 percent of the tire's maximum load rating, from the 66, 84, and 101 percent combination currently required. NHTSA's Phase II testing specified test loads at 85, 90, and 100 percent for the same durations as currently required in FMVSS No. 119. Increasing the first two load steps from 66 and 84 percent increased the stringency of the first 23 hours of the proposed test, and makes them consistent with the loads specified in FMVSS No. 139's endurance test for light vehicle tires. NHTSA believes increasing the test load combination from 66, 84, 101 percent to 85, 90, and 100 percent of the tire's maximum load rating represents an overall upgrade of the loading condition for FMVSS No. 119.

Tire failure on a vehicle in service can occur due to under-inflation or overloading, or both. Heavy vehicle tires are used predominantly on commercial vehicles, such as transit buses, tractor trailer combination vehicles, and ready-mix concrete trucks, for which loading to the vehicle's gross vehicle weight rating is typical of normal use. Non-commercial heavy vehicles such as recreational vehicles (motor homes) and school buses also use truck tires. Unlike passenger cars and other light vehicles, which are rarely loaded to their maximum vehicle weight, heavy vehicles are often used in commercial service where the vehicle is loaded to its rated cargo or passenger load to maximize the profitability of the vehicle's operation. Hence, the first two steps of the proposed endurance test reflect the tire's performance conditions at which it is expected to be used in normal service.

c. Inflation Pressure

NHTSA proposes to set inflation pressure at 80 percent of the sidewall-labeled inflation pressure that corresponds to the tire's maximum load rating. This represents a 20 percent decrease from the current endurance test, which requires tires to be fully inflated. Data from a tire pressure survey conducted by FMCSA suggests that tires on commercial vehicles (particularly trailers) are often run under-inflated by at least 140 kPa (20 psi).[17] For a load range G tire, which has a maximum inflation pressure of 760 kPa (110 psi), this level of under-inflation represents roughly an 18 percent loss of inflation pressure. NHTSA believes that conducting the endurance test at some level of under-inflation instead of fully inflated better reflects real-world conditions. NHTSA testing found that all load range G and H tires were able to complete the endurance test at an inflation of 80 percent of maximum, even at 80 km/h (50 mph).[18] Load range J tires, which have a higher maximum load rating than load range G and H tires, showed mixed results, while higher load range L and N tires experienced failure rates at both the 90 percent and 80 percent levels of inflation.

NHTSA believes that testing at this level of under-inflation represents an appropriate upgrade of the severity of the endurance test for load range F through L truck tires. We note that the endurance tests in the light vehicle tire standards, FMVSS Nos. 109 and 139, are conducted with the tire under-inflated to 25 percent below its maximum inflation pressure. NHTSA is aware that the tire industry considers 20 percent under-inflation to be essentially flat for truck tires, which are designed to run close to their maximum inflation.

d. Duration

NHTSA proposes not to amend FMVSS No. 119's endurance test duration of 47 hours. The current 47-hour test at 56 km/h (35 mph) results in a distance traveled for a load range G tire of 2,632 km (1,645 miles), and increasing the speed to 80 km/h (50 mph) increases the traveled distance to 3,760 km (2,350 miles), a 43 percent increase in distance. NHTSA's Phase II testing extended the endurance test duration to 71 hours so researchers could assess how long beyond the 47-hour duration the tires were able to

[16] Tire catalogs were found online (www.—) at manufacturer Web sites.

[17] The FMCSA study, "Commercial Vehicle Tire Condition Sensors" (Federal Motor Carrier Safety Administration, Nov. 2003), looked at a total of 6,087 units and 35,128 tire samples and found, among other things, that approximately 7 percent of the sampled heavy vehicles have at least one tire under-inflated by 20 psi or more.

[18] We also note that at higher test speeds, tire performance appears noticeably sensitive to inflation pressures. At 100 km/h, more failures occurred at the 80 percent inflation level, and time to failure was also shorter at that inflation level compared to 100 percent inflation.

perform. Because the failure rate did not change significantly in testing tires beyond 47 hours,[19] this indicates that the tires' performance to the endurance test is less sensitive to changes in duration than to changes in speed and inflation pressure. Thus, we believe that extending the duration beyond the 47 hours already required will not provide additional performance benefits.

e. Ambient Temperature

NHTSA proposes to add a ±3 °C (±5 °F) tolerance to the current ambient temperature specified for FMVSS No. 119's endurance test, 35 °C (95 °F). Tire test laboratories benefit from an ambient temperature tolerance. The proposed ±3 °C (±5 °F) tolerance for the ambient temperature is consistent with FMVSS No. 109 and FMVSS No. 139 in providing a ±3 °C (±5 °F) tolerance needed to facilitate the operations at the tire laboratories.[20]

f. Endurance Test Conclusions

The agency tentatively concludes that the proposed requirements for the endurance test better reflect the reality of tire usage than the current FMVSS No. 119 requirements. The proposed parameters for the endurance test, particularly the increased test speed and the reduced inflation pressure, reflect conditions that a heavy vehicle tire is more likely to experience in normal service.

Based on research performed by the ASTM, a tire operated at a highway speed of 120 km/h (75 mph) experiences an equivalent level of stringency when tested at 85 km/h (53 mph) on a curved test wheel.[21] We believe that the agency's proposed endurance test speed of 80 km/h (50 mph) on the curved test wheel is therefore a realistic speed.

The proposed inflation pressure for the endurance test is 80 percent of the maximum sidewall pressure, compared with 100 percent currently specified in FMVSS No. 119. According to the results of FMCSA's tire pressure monitoring survey cited above, on 6,087 heavy vehicle units with over 35,000 tires sampled, approximately 20 percent of the vehicles had at least one tire that was under-inflated by 20 psi or more. As a result, testing with some level of under-inflation reflects the reality of what heavy truck tires typically experience in service.

The agency's testing to the proposed endurance test showed that 85 percent of all the load range F, G, H, J, and L tires tested completed the 47-hour portion of the test, with the load range J and L tires speed-rated less than 75 mph comprising 11 out of 12 of the failures under 47 hours. All the load range G and H tires tested completed the 47-hour portion of the test without any failures. However, even though the load range G and H tires met the proposed requirements when tested for a duration of 47 hours, NHTSA expects that some manufacturers of load range G and H tires may make some design changes to these tires to maintain an adequate margin of compliance. We expect that design changes will be needed for some load range J and L tires, particularly those with a maximum speed rating lower than 120 km/h (75 mph), to enable them to comply with the proposed Endurance test requirements at 80 km/h (50 mph). The agency seeks comments on the appropriateness of the proposed endurance test parameters for these tires.

V. Proposed High Speed Test

In its tire testing program, NHTSA performed high speed tests on load range F, G and H tires because these are the ones predominantly used on commercial vehicles and are the most likely of all higher load range tires to be operated at the speed conditions proposed for this test. NHTSA performed high speed tests on load range J and L tires even though the tires have a small market share (about 8 percent), because some of these tires have a maximum speed rating of 75 mph and are used on motorcoaches.[22] NHTSA did not perform high speed tests on speed-restricted load range M or N tires, because we were aware that these tires are not typically operated at these speed conditions. After careful review of the testing results and of the information on the use of load range J and L tires on coach buses, NHTSA proposes to include in FMVSS No. 119 a high speed test for load range F, G, H, J, and L tires, that are not for speed-restricted service. In addition, the agency is also considering requiring non-speed-restricted, load range M radial tires to comply with the upgraded endurance and new high speed tests because some of these tires are used in high speed operations. Bias ply and load range N tires that are for speed restricted-service would not be subjected to a high speed test.

NHTSA proposes that the high speed test would be initiated after a 2-hour break-in at 80 km/h (50 mph) and 85 percent of maximum load rating, with inflation pressure at 90 percent of maximum. The break-in procedure conditions a new tire for testing since it exercises the tire components and increases the tire temperature, which results in some growth in the rubber components of the tire. This tire growth results in a slight decrease in the tire's inflation pressure at the end of the break-in period and leads to less growth and negligible pressure decrease at the end of the 90-minute high speed test.

There is currently a high speed test in FMVSS No. 119, but it applies only to motorcycle tires and to non-speed-restricted tires with a rim diameter code of 14.5 or less marked load range A, B, C, or D. Therefore, heavy vehicle tires with a load range of F or above have not been required to meet the high speed test requirements in the current standard. Table 22 shows test parameters for the proposed high speed test.

[19] When a tire failed, it generally failed well before 47 hours, rather than completing the 47 hours and then failing.

[20] In FMVSS No. 139, NHTSA requires an ambient temperature for road-wheel testing of not less than 32 °C and not more than 38 °C.

[21] ASTM Truck/Bus Tire Test Development Task Group, Phase I—Final Report, September 7, 2006. *Available at* Docket No. NHTSA–2002–13707, Item 10.

[22] The same size tire can become a load range G, H, or J tire depending on its construction and on its inflation pressure (*e.g.,* for a 315/80R22.5 tire, the maximum load rating (3,750 kg or 8,270 lbs) for the load range J tire is achieved at an inflation pressure of 830 kPa (120 psi), and the maximum load rating (3,450 kg or 7,610 lbs) when used in the load range H application is achieved at an inflation pressure of 760 kPa (110 psi)). A comparison of the load/inflation pressure values in the 2007 Tire and Rim Association Year Book for the proposed high-speed test conditions (85 percent of maximum load rating, 90 percent of maximum inflation pressure) indicates that the tires are well within the load limits specified for the test inflation pressure. For the tire size example used above, the test load for a load range J tire would be 3,188 kg or 7,030 lbs (85 percent of maximum load rating) and the test inflation pressure would be 747 kPa (108 psi), which is well above the inflation pressure of 670 kPa needed to support that test load according to the Year Book.

TABLE 27–HIGH SPEED TEST CONDITIONS

Load ranges	Steps	Speed (km/h)	Duration (minutes)	Load (% max)	Inflation pressure (% max)
F, G, H, J, and L	Break-in	80	120	85	90
	1	Max—20	30		
	2	Max—10	30	85	90
	3	Max	30		

A tire would comply with the proposed requirements if, at the end of the high speed test, there is no visual evidence of tread, sidewall, ply, cord, inner liner, or bead separation, chunking, open splices, cracking, or broken cords,[23] and the tire pressure, when measured at any time between 15 and 25 minutes after the end of the test, must not be less than 95% of the initial test pressure. Load range M tires are not included in the high speed test table but the agency seeks comments on whether those non-speed-restricted, radial tires, should be required to comply with the new proposed high speed test requirements. We are unaware of non-speed restricted, radial, load range N tires being used in high speed operations, thus we tentatively conclude that they not be required to comply with this upgrade.

a. Test Speed and Break-In Procedure

NHTSA proposes to set the test speed for the high-speed test at the tire's maximum speed less 20 km/h (12 mph) for step 1, maximum speed less 10 km/h (6 mph) for step 2, and at maximum speed for the final step. This approach is similar to the approach used by the United Nations Economic Commission for Europe (ECE) tire Regulations, which establish tire test speeds based on the maximum rated speed of the tire. It is also consistent with RMA's suggestion to the agency that tires should only be tested for high speed performance up to their maximum speed rating.[24] We are proposing this approach, instead of establishing one set of test speeds as a minimum requirement for all tires as we have done for motorcycle and passenger car tires, because unlike motorcycle and passenger car tires, heavy vehicle tires are designed for a wide range of applications and have a narrow range of maximum speed ratings.

The truck tires for which we are proposing a high speed test in FMVSS No. 119 have speed ratings ranging only from 100–120 km/h (62–75 mph), which are typical operating speeds for the heavy vehicles on which these tires are installed. If one set of test speeds were applied to these tires regardless of the speed rating, a tire speed rated at the lower end of the range could be subjected to test speeds above the speed rating of the tire, which could be inappropriate. (An example of this situation is a tire speed rated to 62 mph tested at a speed of 75 mph.) Conversely, subjecting a tire that is speed rated at the higher end of the range to a test speed substantially below the speed rating of the tire might under-test the tire and fail to evaluate its high speed performance. Therefore, we are proposing to establish test speeds based on the tire's speed rating because we believe that it results in a high speed test that better reflects the limits of the tire's performance.

However, we disagree with RMA's suggestion that the high speed test procedure should exclude the break-in step, which is normally the first step when conducting a high speed test. The regulatory text of this NPRM does not remove the break-in step from the procedure but we are soliciting comments on whether it is appropriate to do so. The agency's tire testing included a break-in step and we plan to gather additional data on tires tested without the break-in step to determine whether there is a difference in the tire's performance.

We have tentatively decided to retain the break-in step because the step helps to condition the rubber components of new tires through initial flexing that allows the tire to expand and grow prior to testing. As a result, tire growth is minimized during the test, which in turn minimizes the decrease of the test pressure at the end of the test. Further, the high speed test for light vehicle tires has a break-in step. When we issued the upgraded light vehicle tire standard in 2003, the agency included the tire break-in procedure in FMVSS No. 139's high speed test procedure with the support of the tire industry (68 FR 38151). Since the high speed test proposed today would be a new test for heavy vehicle tires, we are proposing to adopt a break-in procedure similar to that of light vehicle tires. As noted above, Phase II high speed testing included the break-in step to evaluate high speed performance, testing that involved testing most tires above their maximum speed rating.

Phase II testing used test speeds of 100, 110, and 120 km/h (62, 68, and 75 mph). The truck tires tested (load range G and H) performed well, and most were able to complete the 2.5-hour target duration without failure. All except one of the tires tested to the high-speed test in Phase II completed the first 1.5 hours without failure.

The agency solicits comments on the performance of tires to a high speed test, and is particularly interested in the performance of load range J and L tires. We are aware that while some load range J and L tires have maximum rated speeds at 120 km/h (75 mph), some are rated below that speed. Further, according to Tire and Rim Association Yearbook, manufacturers may recommend that tires may be used at speeds higher than the tire manufacturer's rated speed if the load and pressure are adjusted. As a result, the agency seeks comment on the appropriateness of the test speeds for load range F, G, H, J, and L tires in the high speed test. The agency tentatively concludes that a high speed test at the proposed test speeds represents an important and practicable improvement to FMVSS No. 119 in the safety requirements of load range F, G, H, J, and L tires that are not for speed-restricted service.

In addition, the agency is considering requiring load range M tires speed rated 75 mph to comply with the high speed test because some of these wide base tires may be used in similar applications load range L tires are used. Given that the maximum speed rating of these tires allows them to be used in high speed operations, possibly instead of two lower load range tires, the agency believes that they should be considered for inclusion in the upgrade since they could be used in different vehicle applications than the typical load range M and N tires. Accordingly, the agency seeks comment on the appropriateness of requiring load range M tires speed rated 75 mph to comply with the high speed test.

[23] We note that all of these terms are defined in the current standard.

[24] Docket No. NHTSA 2002–13707–0016.1.

b. Load

NHTSA proposes to set the test load for the high speed test at 85 percent of the maximum load rating for the tire. NHTSA's testing specified test loads at 85 and 90 percent. Most tires tested were able to complete the 90 percent load rating application without any failure,[25] and additional tire types tested to 85 percent load were also able to complete 1.5 hours without failure.

We chose to select a different load for the high speed test so as not to duplicate the load conditions used in the endurance test. The recent update of the high speed test in the FMVSS No. 139 specifies a test load of 85 percent of the tire's maximum load rating. NHTSA tentatively concludes that a test load of 85 percent of the maximum load rating of the tire will provide a necessary improvement, while setting a realistic level of performance for load range F, G, H, J, and L tires that are not for speed-restricted service.

c. Inflation Pressure

NHTSA proposes that the high speed test inflation pressure be set at 90 percent of the sidewall-labeled inflation pressure that corresponds to the tire's maximum load rating. For Phase II testing, NHTSA researchers selected inflation pressures of 90 and 95 percent to assess the tire's high-speed performance at slight levels of under inflation. The high speed test in the light vehicle tire standards, FMVSS Nos. 109 and 139, is conducted with the tire under inflated to about 8 percent below its maximum inflation pressure. Therefore, for this Phase II testing, inflation pressures of 5 and 10 percent below maximum were considered reasonable levels. Inflation test pressures in this range, with a test load of 85 percent, do not result in the tire being overloaded for the given inflation pressure. Based on the test results where only 10 out of 102 tires were unable to finish the 150 minute test, NHTSA proposes that the high speed inflation pressure be set at 90 percent of the sidewall-labeled inflation pressure that corresponds to the tire's maximum load rating per sidewall labeling.

d. Duration

NHTSA proposes a 90-minute duration for FMVSS No. 119's high speed test, to be applied to load range F, G, H, J and L tires, that are not for speed-restricted service. The current duration for the high speed test in FMVSS Nos. 119 and 139 is 90 minutes, consisting of three 30-minute speed steps. High speed tests are typically of relatively short duration, given that the purpose of the test is to assess the tire's performance close to its upper design limit of speed. Overall, 90 percent of the test tires performed well at the 100, 110, and 120 km/h (62, 68, and 75 mph) speeds, and were able to complete 90 minutes of the test without any failures.[26] Therefore, NHTSA proposes to extend FMVSS No. 119's high speed test to apply to load range F, G, H, J and L tires, that are not for speed-restricted service, with a total 90-minute duration.

e. Ambient Temperature

NHTSA proposes an ambient temperature range of 35 °C ±3 °C (95 °F ±5 °F) for the FMVSS No. 119 high speed test upgrade. The ambient temperature specified for FMVSS No. 119's high-speed test is currently 35 °C (95 °F) without any temperature tolerance. Because an ambient temperature tolerance provides test laboratories with needed flexibility, we propose specifying a 6 °C tolerance for the ambient temperature instead of a single temperature. The agency tentatively concludes that this proposal for FMVSS No. 119's high speed test is reasonable and appropriate.

VI. Tire Maximum Speed Marking

FMVSS No. 119 currently requires certain information to be marked on the tire sidewall. S6.5(d) of the standard requires that each tire's maximum load rating for single and dual applications and the corresponding inflation pressure be labeled on the sidewall, which provides information to the vehicle operator to ensure proper selection and use of tires. These load and inflation pressure values are also used by NHTSA to determine test values for compliance testing purposes.

The tire's maximum speed rating is currently not required to be labeled on the sidewall,[27] except for tires that are speed-restricted to 90 km/h (55 mph) or below. For speed-restricted tires, S6.5(e) of the standard requires that the label on the sidewall be as follows: "Max Speed __ km/h (__ mph)."[28] For tires that are not speed-restricted, the end user does not know from the tire sidewall labeling the design maximum speed capability of the tire for the specified maximum load rating and corresponding inflation pressure. We believe that having the maximum speed rating labeled on the sidewall would benefit the end user, especially as the speed capability in any one load range can vary.

As such, the agency is proposing a requirement for a maximum speed rating label for radial truck tires with load ranges F and above. The agency is proposing the same speed labeling format as the one described in S6.5(e)—which requires each tire to be labeled, "Max Speed __ km/h (__ mph)"—subject to aspects discussed below. The agency believes that a maximum speed label that includes a numerical value would be less subject to misunderstanding by consumers.

Numerical Value Versus a Symbol

We are aware that some tire manufacturers now voluntarily label the non-speed restricted heavy vehicle tires they sell in the U.S. with speed restrictions that use a different format, *i.e.*, speed symbols, to indicate the tire's speed.[29] For heavy vehicle tires, the speed symbols and the corresponding speed category used internationally are: F—80 km/h (50 mph); G—90 km/h (55 mph); J—100 km/h (62 mph); K—110 km/h (68 mph); and L—120 km/h (75 mph). We have tentatively determined that the speed symbol format is less desirable than labeling the tire with a numerical value, because the consumer is more likely to understand the meaning of the latter than that of a letter symbol. Further, the letter format could be lead to confusion given that the current load range label required on heavy vehicle tires uses a similar lettering scheme (load ranges F, G, H, J, L, M and N) that includes letters that are identical in some instances to the speed symbols used on heavy vehicles (speed symbols F, G, J, K, and L). The corresponding speed for these speed symbols are typically listed in the industry publications such as the annual Year Book of the Tire and Rim Association or the Japan Automobile Tyre Manufacturers Association.

[25] However, the Goodyear brand drive axle tire appeared sensitive to load, as it failed more at 90 percent load. The failure of these tires to reach the test target of 2.5 hours duration raised some concerns that other drive axle tires with lug-type treads may not pass at 90 percent load.

[26] NHTSA's Phase II testing extended the high-speed test to 2.5 hours to assess the limits of performance based on current truck tire technology, but not specifically with the aim of developing a proposal for a longer high-speed test.

[27] Currently the maximum speed ratings for most tires are listed only in tire manufacturers' catalogs. Some tire manufacturers identify their tires by maximum speed, maximum speed limit, or allowable speed range, while others may not publish the speed capability of their tires. Common maximum speed ratings for tires found in catalogs are 50, 56, 60, 62, 65, 68, 70, 75, and 81 mph.

[28] Tire manufacturers currently may include the speed rating, voluntarily, for tires that are not speed restricted to 90 km/h or less.

[29] As discussed later in this preamble, the Rubber Manufacturers Association has suggested to NHTSA that the agency require all radial tires with a load range of F and higher (that are not speed restricted) be labeled with a service description identified by an international labeling system.

We recognize that many large trucking fleets work closely with tire dealers, who have ready access to the industry publications and who recommend the best tires for the fleets based on vehicle use and in-service conditions. However, since many of the small fleets and owner-operated fleets make their own tire purchasing decisions without such help, labeling that is clear and easy to understand (the numerical value) should help users purchase the appropriate tires for their vehicles, know the speed restrictions of the tire, and use the tires in accordance with those speed restrictions.

Multiples of 10 km/h

We propose to require that manufacturers must label their tires with maximum rated speeds in multiples of 10 km/h (e.g., 100, 110, or 120 km/h). The proposed new high speed test specifies test speeds that are multiples of 10 km/h: the test speed for the high-speed test would be the tire's maximum speed less 20 km/h (12 mph) for step 1, the tire's maximum speed less 10 km/h (6 mph) for step 2, and at maximum speed for the final step. NHTSA believes that compliance testing for High Speed performance would be conducted more efficiently and be less subject to test-speed problems, if the markings are in multiples of 10 km/h.

Terminology

We note that some manufacturers use the term "Maximum Speed" in their tire catalogs, while others use "Speed Rating." We seek comment on whether "Speed Rating" should be used on the label, instead of or in addition to "Max Speed."

VII. Other Issues

a. Alternatives Considered

1. International Standards

The ECE regulation that is applicable to truck tires is ECE Regulation 54, *Uniform Provisions Concerning the Approval of Pneumatic Tyres for Commercial Vehicles and Their Trailers.* It applies to both heavy truck tires and light truck tires, as was the case for FMVSS No. 119 prior to the establishment of FMVSS No. 139. It includes a load/speed endurance test that is similar to the existing FMVSS No. 119 endurance test for medium/heavy truck tires. The test parameters for load, inflation pressure, and duration are identical to those specified in FMVSS No. 119, except for the ambient temperature, which is specified at 25 °C ± 5 °C, compared with the specification of 35 °C ± 3 °C as proposed for the revision to FMVSS No. 119. The other difference between the two standards is that ECE Regulation 54 uses the tire's speed category to determine its test speed, whereas FMVSS No. 119 uses the tire's load range to determine its test speed. The test speeds in ECE Regulation 54 are approximately 48–56 km/h (30–35 mph) lower than the maximum speed rating of the tire, which results in test speeds that are in a speed range not very much different from the test speed required in FMVSS No. 119 for non-speed-restricted tires. Test speeds in ECE Regulation 54 range from 32–72 km/h (20–45 mph) whereas the Endurance test speeds in FMVSS No. 119 range from 48–64 km/h (30–40 mph). Hence, the severity of the ECE regulation for heavy vehicle tires is about the same as for tires under the current FMVSS No. 119. Additionally, the ECE has no high speed test for truck tires. In short, ECE Regulation 54 contains test parameters and performance requirements that are, in some cases, similar to the current FMVSS No. 119, but that we believe are in other cases less stringent.

The agency is not aware of other truck tire standards that are different from ECE Regulation 54 or FMVSS No. 119, since many national regulations typically adopt some version of the ECE regulation or the FMVSS.

2. ASTM Truck/Bus Tire Test Development Task Group

The ASTM Truck/Bus Tire Test Development Task Group recommended that the agency consider the artificial stresses and temperature impacts that are introduced into tire testing when tires (particularly medium truck tires and larger) are tested on a 67-inch diameter test road-wheel, as compared to a flat surface. The task group has been working to develop a tire temperature prediction model for two critical crown area temperatures, tread centerline and belt edge, based on comparisons of tire temperatures obtained from tests of five load range G tires [30] on a 67-inch diameter curved road wheel, on a flat track test surface, and on an outdoor test track. ("Phase 1–Final Report," ASTM Truck/Bus Tire Test Development Task Group, 9/5/06, Docket No. NHTSA–2002–13707–10. "Phase I & II Review," ASTM Truck/Bus Tire Test Development Task Group, 5/15/08, Docket No. NHTSA–2002–13707–14.) As a result of this work, the task group found that, for the five load range G tires it tested: (a) The average predicted temperature increases an average of 39 °C (70 °F) at the tread centerline and 22 °C (40 °F) at the tire's belt edge when tested on a 67-inch diameter curved road-wheel as compared to temperatures obtained from tires tested on a flat surface; (b) equivalent tread centerline temperatures were obtained between tires tested on a curved road-wheel at 67 km/h (42 mph) and tires tested on a flat roadway surface at 120 km/h (75 mph); and (c) equivalent tread belt edge temperatures were obtained between tires tested on a curved road-wheel at 79 km/h (49 mph) and tires tested on a flat roadway speed at 120 km/h (75 mph). The task group recommended that NHTSA develop a standard based on maintaining equivalent tire crown area temperatures (*i.e.*, centerline, shoulder, and belt edge) between flat and curve test surfaces.

It should be noted that in 2008, the Task Group also completed a Phase II, which included load range J and L tires to validate the applicability of the truck tire test conditions to additional tire sizes and service applications such as inter-city buses and refuse trucks and ready mix cement trucks. ASTM concluded from the results of Phase II that for tires with a maximum speed rating below 120 km/h (75 mph) the Endurance test speed should be reduced from 80 km/h (50 mph) to 72 km/h (45 mph).

NHTSA is aware that a tire operated on a curved road-wheel, compared to a tire operated on a flat road surface, experiences higher centerline and belt edge temperatures due to several factors, *e.g.*, severe reverse curvature at the tire contact patch; distortion of the tire contact patch shape; and over-deflection of the tire sidewall. NHTSA's tests are conducted on a curved road-wheel. There appears to be several anomalies in the results from the ASTM model, such as the centerline temperatures being higher for the 18/32-inch tread depth tire compared with the centerline temperatures for the 30/32-inch tread depth tire. (A tire with a greater tread depth generally runs hotter than one with a lower tread depth.) There are also test conditions where the model predicted lower tire temperatures when tested on the road-wheel than the tire temperatures when tested on the flat track machine and the test track. In addition, the test duration for the tires the task group tested was limited to 60 minutes to achieve a steady-state temperature, which does not reflect the level of stringency a tire experiences during a 47-hour test as performed under the current FMVSS No. 119 endurance test.

[30] The test tires, from Bridgestone, Goodyear, and Michelin, included three drive axle tires with a tread depth of 30/32 inch; one steer axle tire with a tread depth of 18/32 inch; and one trailer axle tire with a tread depth of 12/32 inch.

Nevertheless, we note that our rulemaking proposal to upgrade the endurance test includes parameters that are on the same order of magnitude as those provided in the task group's recommendations. Our proposal includes an endurance test speed of 80 km/h (50 mph) on a curved road-wheel, up to 100 percent maximum load rating, 80 percent of the maximum inflation pressure, and 35 °C (95 °F) ambient temperature. From the results in our Phase II endurance and high-speed tests, we tentatively believe that these parameters are reasonable and practicable and consistent with the task group's recommendation.

3. Rubber Manufacturers Association

On May 14, 2009, RMA submitted information to the agency regarding an upgrade of FMVSS No. 119 (see Docket No. NHTSA 2002–13707–0016.1 (RMA Perspective on the FMVSS 119 Revisions and Updates Mandated by the TREAD Act)). RMA's information included suggestions for a number of matters regulated by FMVSS No. 119, including the endurance and high speed tests, and had data from tests it had conducted (although from only one manufacturer). The suggestions are briefly described below.

RMA suggested that NHTSA mandate that all radial tires with a load range of F and higher (that are not for speed-restricted service) be labeled with a service description identified by an international labeling system, in support of global harmonization and that it be used as the basis for testing.[31] RMA suggested that the endurance test speed in the upgraded FMVSS No. 119 be based on that speed symbol. RMA suggested that tires with speed symbols of J, K, L, and M be tested at a speed equal to the difference between the speed symbol and 40 km/h (25 mph). If the tire has a speed symbol L, which deciphered is a speed rating of 120 km/h (75 mph), the endurance test speed would be 80 km/h (50 mph), or if a tire has a speed symbol J, which deciphered is a speed rating of 100 km/h (62 mph), the endurance test speed would be 60 km/h (37 mph).

RMA suggested that if a high speed test is adopted in FMVSS No. 119, the test should be a stepped-up speed test with three 30-minute steps. The test speeds RMA suggested would be indexed to the corresponding speed symbol of the tire (*i.e.*, step 1 test speed is 20 km/h below the speed symbol, step 2 test speed is 10 km/h below the speed symbol, and step 3 test speed is run at corresponding speed for that symbol). Further, RMA believed that the high speed test should be conducted without the initial break-in step. According to RMA, there are data supporting that the tire growth during the break-in step was negligible, and that the step was thus unnecessary.

Test conditions such as inflation pressure, load, duration, and ambient temperature in RMA's suggested tests (endurance and high speed) would be the same as NHTSA's proposed test conditions. Other issues discussed by RMA may be found in the docket submission.

Some of RMA's suggestions have been incorporated into this NPRM. As discussed above, NHTSA has proposed requiring tires to have a maximum speed rating label on their sidewalls so that users will know a tire's maximum speed capability. Thus, a labeling proposal in included in this NPRM. However, as explained above, the agency believes that using an international labeling system to identify the tire's maximum load and speed ratings would not benefit end users in the U.S. because the literature used to reference these values may not be readily available for all users, and because the lettering system may be confusing. Accordingly, the NPRM proposes that a numerical value be labeled rather than a symbol.

This NPRM incorporates RMA's suggestion that a high speed test should comprise a stepped-up speed test with three 30-minute steps using test speeds indexed to the corresponding speed rating of the tire. However, as explained earlier in this document, this NPRM does not propose RMA's suggestion to remove the break-in step from the high speed test but we are soliciting comments on whether it is appropriate to do so.

With regard to RMA's suggestion about the endurance test, at this time the agency does not believe that all tires should be tested to 40 km/h (25 mph) less than the tire's maximum speed rating in the endurance test. RMA used research findings from the ASTM as a basis for the suggestion to establish the test speeds. ASTM found that there was an equivalence in belt edge temperatures for tires tested on a flat road surface at 120 km/h (75 mph) and on a curved road wheel at 80 km/h (50 mph). Hence, this 40-km/h (25-mph) differential was used by RMA in its recommendations for the test speeds NHTSA should propose for the endurance test.

The RMA test data used to support its recommendations was limited, generated from only one of its members, Bridgestone Firestone. Also, the mix of tires in the RMA data did not reflect the real-world mix of heavy vehicle tires sold in the U.S. Although the ASTM findings appear to support the finding that a 40-km/h (25-mph) differential exists in test speeds in the 120-km/h (75-mph) range, NHTSA does not have enough information to conclude that these findings can be extrapolated to include speeds much lower than 120 km/h (75 mph). The agency is currently reviewing data from lower speed rated tires 100 km/h (62 mph). We request data from tire manufacturers on the performance of lower speed rated tires, particularly for the proposed endurance test, and comments from the public on RMA's submission to the docket.

We believe that the NPRM's proposed test conditions for the endurance test are practicable and reasonable and reflect our recognition of the severity of the endurance test on the curved road wheel.[32] Our data show that some tires that are speed rated 65 mph were able to meet the proposed endurance test when tested to 80 km/h (50 mph). The vast majority of the tires we tested completed the proposed 47-hour endurance test at 80 km/h (50 mph) without failure.

b. Deep Tread Truck Tires

The agency tested tires with tread depths that are typical of on-road service, and included drive axle tires with tread depths of about 30/32 inch, steel axle tires with tread depths of about 18/32 inch, and trailer tires with tread depths around 12/32 inch. We are aware that there are deep tread truck tires with a load range of H, J, or L that have tread depths greater than 32/32 inch, but none of these tires was included in our testing because they appear to represent a very small percentage of heavy truck tires. We are soliciting public comments on the applicability of the proposed endurance and high speed requirements to deep tread truck tires and welcome test data submissions for the docket.

c. Correction of Table III

In Table III, "Endurance Test Schedule," of FMVSS No. 119, there are several minor items of information that have been inadvertently omitted from the table over the course of years of amendments to the standard, most recently when the standard was

[31] The corresponding values for the maximum load and speed symbols of that labeling system may be found in literature published by entities such as: Tire & Rim Association, European Tyre and Rim Technical Organization, Japan Automobile Tyre Manufacturers Association, and others.

[32] The endurance test is a more stringent test than the high speed test, primarily because of the lower inflation pressure and longer duration specified for the test.

amended on June 26, 2003. The Table III proposed in today's NPRM corrects those omissions, by including for tires described as "All other," a row for load range A, B, C, and D tires, and a row for load range E tires, which include bias-ply tires and others not covered under FMVSS No. 139. Footnote text has also been added to correspond to the footnote superscripts 1 and 2. In addition, the current Table III does not include load range C and D for speed-restricted service and load range M on the list of tires for non-speed-restricted service but it does include load range N, which is a higher load range tire. Load range C and D were inadvertently excluded from Table III. Also, load range M has been inadvertently excluded from Table III since both load range M and N tires are included in the list of speed-restricted tires required to comply with FMVSS No. 119. The agency seeks comments on including load range M on the list of non-speed-restricted tires covered under the standard. In addition, we are proposing to change the superscript format from numerical values 1 and 2 to alphabet letters A and B to enhance clarity. We are also seeking comments on this issue.

d. Separate Standard

We note for the reader that, assuming we issue a final rule on this subject, the final rule might separate the non-speed-restricted, radial tires of load ranges F, G, H, J, and L, from the requirements currently in FMVSS No. 119 that this NPRM does not propose to upgrade. We might set forth the upgraded requirements for the non-speed-restricted, radial tires of load ranges F, G, H, J, and L, in a new standard to make clear the regulatory language between those tires whose requirements were not upgraded. The agency took the same approach when it upgraded tires for vehicles with a GVWR of 4,536 kg (10,000 lb) or less, establishing FMVSS No. 139. RMA has also endorsed this approach in its letter to the agency; see Docket No. NHTSA 2002–13707–0016.1, p. 13.

VIII. Proposed Effective Date

NHTSA proposes that the proposed requirements for load range F, G, and H tires be effective two years after publication of a final rule. The results of the tire research indicate that most load range G and H tires are able to meet the proposed requirements with little if any modification. Load range J tires might need some design changes to comply with the upgraded requirements. Given the need for modification and the small market share of the tires, the agency proposes an effective date of three years after publication of a final rule for load range J and L tires. In addition, the agency's proposal to establish new labeling requirements for the maximum speed rating of the tire would require changes in some tire molds. We propose that the new maximum speed rating labeling requirements for load range F, G, H, J, and L tires be effective 5 years after the publication of the final rule. NHTSA requests comment on the proposed lead time for meeting the performance requirements and the labeling requirements.

IX. Costs and Benefits

According to Modern Tire Dealer, the 2008 sales for medium and heavy truck original equipment and replacement tires were 4.3 million and 15.5 million, respectively. Comments are requested on the number of tire sales by all (F, G, H, J, and L) load ranges and speed ratings. All of the G load range tires tested passed the proposed criteria. Also, all of the H load range tires tested, except for one brand speed rated at 62 mph, passed the proposed criteria. For the endurance test, of the six J load range brand/models tested, all three tires from three brand/models passed, two of three from a fourth brand/model passed, none of a fifth brand/model passed, and three tires from a sixth brand passed. Costs to bring the H and J load range tires into compliance with the proposal are not anticipated to be greater than $15 per tire.

Out of the fifteen load range L tires tested (three tires for each of five brand/models), only seven tires passed the proposed test and two did so with a small margin based on the proposed 47 hours duration for the endurance test. Comments are requested on the technology needed and cost to make other load range L tires pass the proposed endurance test. At one end of the cost spectrum, improved rubber compounds could be a countermeasure that could reduce heat retention with costs at about an additional $0.25 per pound. Since these tires have about 100 pounds of rubber this would add $25 in costs to each L load range tire. At the other end of the cost range, one could assume these tires need to be made significantly lighter to pass the test with better materials. This would entail using ultra high tensile strength steel costing an additional $2 per pound. Those tires now have 35 pounds of steel in them, totaling $70. Combining these two methods could add up to $95 per tire (these tires typically cost about $525 each). Comments are also requested on the costs associated with the new speed labeling requirement.

As discussed above, the costs to bring load range H, J and L tires to compliance with the proposed requirements are estimated to range from $15 to $95 per tire. The combined H, J, and L load range tire sales comprised about 29 percent of the total medium and heavy truck tire sales (19.8 million tires). Of the 29 percent, about 23 percent or 4,554,000 are believed to be H load range tires, about 3 percent or 594,000 are believed to be J load range tires, and about 3 percent or 594,000 to be L load range tires. There are an estimated 227,700 sales for H load range tires, 118,800 sales for J load range tires and 118,800 sales for L load range tires, all with a speed rating of 62, 65 or 68 mph. Applying the failure rate and cost per tire to the estimated sales of H, J and L load range tires with a speed rating of 62, 65 or 68 mph would result in a total cost of $13,314,362.

NHTSA believes that this NPRM has a beneficial effect on safety in that it would ensure greater tire durability as tires are held to more stringent standards than currently required. However, the agency has limited data on the crashes in the crash databases related to tires in these load ranges. Comments are requested on the different applications of various speed rating and load range tires (*e.g.,* over the road bus operations, etc.).

X. Rulemaking Analyses and Notices

Executive Order 12866 and DOT Regulatory Policies and Procedures

This rulemaking document was not reviewed by the Office of Management and Budget under E.O. 12866. It is not considered to be significant under E.O. 12866 or the Department's Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). This document proposes upgrades to FMVSS No. 119 that we believe most tire manufacturers will be able to meet without substantial difficulty. NHTSA has prepared a regulatory evaluation that discusses the costs and other impacts of this proposed rule.[33]

NHTSA believes that this NPRM has a beneficial effect on safety in that it would ensure greater tire durability as tires are held to more stringent standards than currently required. However, there might be some cost impacts for manufacturers of lower speed rated load range J and L tires. Some of these tires may not meet the

[33] The evaluation may be obtained by contacting Docket Management at the address or telephone number provided at the beginning of this document. You may also read the document via the Internet, by following the instructions in the section below entitled, "Public Participation." The evaluation will be listed in the docket summary.

proposed requirements in NHTSA's test program. Of the heavy-duty load range J and L tires that did not uniformly pass the upgrade testing, we anticipate that the costs to bring them into compliance would be no greater than $15 per load range J tire and $95 per load range L tire. Comments are requested on the costs of meeting the proposed changes to 571.119.

Regulatory Flexibility Act

Pursuant to the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.,* as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996), whenever an agency is required to publish a notice of proposed rulemaking or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effect of the rule on small entities (*i.e.,* small businesses, small organizations, and small governmental jurisdictions). The Small Business Administration's regulations at 13 CFR Part 121 define a small business, in part, as a business entity "which operates primarily within the United States." (13 CFR 121.105(a)). No regulatory flexibility analysis is required if the head of an agency certifies the rulemaking will not have a significant economic impact on a substantial number of small entities. SBREFA amended the Regulatory Flexibility Act to require Federal agencies to provide a statement of the factual basis for certifying that a rule will not have a significant economic impact on a substantial number of small entities.

NHTSA has considered the effects of this proposed rule under the Regulatory Flexibility Act. I certify that this proposed rule would not have a significant economic impact on a substantial number of small entities. The proposed rule, which would apply to new pneumatic tires, would affect tire manufacturers and/or suppliers. The agency does not believe that any of the tire manufacturers affected by this proposed rule are small businesses. However, small tire retail outlets across the country could in some small way be impacted by the proposal, in that the cost of some tires might increase.

The agency requests comments concerning the economic impact of the proposed rule on any small tire manufacturers, tire retail outlets, or any other entities which the agency has not mentioned.

Executive Order 13132 (Federalism)

NHTSA has examined today's proposed rule pursuant to Executive Order 13132 (64 FR 43255; Aug. 10, 1999) and concluded that no additional consultation with States, local governments, or their representatives is mandated beyond the rulemaking process. The agency has concluded that the proposal does not have sufficient federalism implications to warrant consultation with State and local officials or the preparation of a federalism summary impact statement. The proposed rule does not have "substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government."

NHTSA rules can have preemptive effect in two ways. First, the National Traffic and Motor Vehicle Safety Act contains an express preemption provision:

> When a motor vehicle safety standard is in effect under this chapter, a State or a political subdivision of a State may prescribe or continue in effect a standard applicable to the same aspect of performance of a motor vehicle or motor vehicle equipment only if the standard is identical to the standard prescribed under this chapter.

49 U.S.C. 30103(b)(1). It is this statutory command that preempts any non-identical State legislative and administrative law [34] addressing the same aspect of performance, not today's rulemaking.

Second, the Supreme Court has recognized the possibility, in some instances, of implied preemption of State requirements imposed on motor vehicle manufacturers, including sanctions imposed by State tort law. That possibility is dependent upon there being an actual conflict between a FMVSS and the State requirement. If and when such a conflict exists, the Supremacy Clause of the Constitution makes the State requirements unenforceable. *See Geier* v. *American Honda Motor Co.,* 529 U.S. 861 (2000), finding implied preemption of State tort law on the basis of a conflict discerned by the court,[35] not on the basis of an intent to preempt asserted by the agency itself.[36]

NHTSA has considered the nature (*e.g.,* the language and structure of the regulatory text) and objectives of today's proposed rule and does not discern any existing State requirements that conflict with the proposed rule or the potential for any future State requirements that might conflict with it. Without any conflict, there could not be any implied preemption of State law, including State tort law.

National Technology Transfer and Advancement Act

Under the National Technology Transfer and Advancement Act of 1995 (NTTAA) (Pub. L. 104–113), "all Federal agencies and departments shall use technical standards that are developed or adopted by voluntary consensus standards bodies, using such technical standards as a means to carry out policy objectives or activities determined by the agencies and departments." Voluntary consensus standards are technical standards (*e.g.,* materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies, such as the Society of Automotive Engineers (SAE). The NTTAA directs us to provide Congress, through OMB, explanations when we decide not to use available and applicable voluntary consensus standards.

NHTSA was unable to find any voluntary consensus standards relevant to this rulemaking. Additionally, please see section VI.A.1 above for discussion of international standards considered by the agency in this rulemaking.

Unfunded Mandates Reform Act

The Unfunded Mandates Reform Act of 1995 requires agencies to prepare a written assessment of the costs, benefits and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by State, local, or tribal governments, in the aggregate, or by the private sector, of more than $100 million annually (adjusted for inflation with base year of 1995). This proposed rule will not result in expenditures by State, local, or tribal governments, in the aggregate, or by the private sector in excess of $100 million annually.

National Environmental Policy Act

NHTSA has analyzed this rulemaking action for the purposes of the National Environmental Policy Act. The agency has determined that implementation of this action will not have any significant impact on the quality of the human environment.

Executive Order 12988

With respect to the review of the promulgation of a new regulation, section 3(b) of Executive Order 12988, "Civil Justice Reform" (61 FR 4729,

[34] The issue of potential preemption of State tort law is addressed in the immediately following paragraph discussing implied preemption.

[35] The conflict was discerned based upon the nature (*e.g.,* the language and structure of the regulatory text) and the safety-related objectives of FMVSS requirements in question and the impact of the State requirements on those objectives.

[36] Indeed, in the rulemaking that established the rule at issue in *Geier,* the agency did not assert preemption.

February 7, 1996) requires that Executive agencies make every reasonable effort to ensure that the regulation: (1) Clearly specifies the preemptive effect; (2) clearly specifies the effect on existing Federal law or regulation; (3) provides a clear legal standard for affected conduct, while promoting simplification and burden reduction; (4) clearly specifies the retroactive effect, if any; (5) adequately defines key terms; and (6) addresses other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General. This document is consistent with that requirement.

Pursuant to this Order, NHTSA notes as follows.

The issue of preemption is discussed above in connection with E.O. 13132. NHTSA notes further that there is no requirement that individuals submit a petition for reconsideration or pursue other administrative proceeding before they may file suit in court.

Paperwork Reduction Act

Under the Paperwork Reduction Act of 1995 (PRA), a person is not required to respond to a collection of information by a Federal agency unless the collection displays a valid OMB control number. This proposed rule contains no reporting requirements or requests for information.

Plain Language

Executive Order 12866 and the President's memorandum of June 1, 1998, require each agency to write all rules in plain language. Application of the principles of plain language includes consideration of the following questions:

• Have we organized the material to suit the public's needs?
• Are the requirements in the rule clearly stated?
• Does the rule contain technical language or jargon that isn't clear?
• Would a different format (grouping and order of sections, use of headings, paragraphing) make the rule easier to understand?
• Would more (but shorter) sections be better?
• Could we improve clarity by adding tables, lists, or diagrams?
• What else could we do to make the rule easier to understand?

If you have any responses to these questions, please include them in your comments on this proposal.

Regulation Identifier Number (RIN)

The Department of Transportation assigns a regulation identifier number (RIN) to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. You may use the RIN contained in the heading at the beginning of this document to find this action in the Unified Agenda.

Privacy Act

Please note that anyone is able to search the electronic form of all comments received into any of our dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (Volume 65, Number 70; Pages 19477–78), or you may visit *http://www.dot.gov/privacy.html.*

XI. Public Participation

How do I prepare and submit comments?

Your comments must be written and in English. To ensure that your comments are correctly filed in the Docket, please include the docket number of this document in your comments. Your comments must not be more than 15 pages long.[37] We established this limit to encourage you to write your primary comments in a concise fashion. However, you may attach necessary additional documents to your comments. There is no limit on the length of the attachments.

Please submit your comments by a method set forth in the **ADDRESSES** section at the beginning of this document.

Please note that pursuant to the Data Quality Act, in order for substantive data to be relied upon and used by the agency, it must meet the information quality standards set forth in the OMB and DOT Data Quality Act guidelines. Accordingly, we encourage you to consult the guidelines in preparing your comments. OMB's guidelines may be accessed at *http://www.whitehouse.gov/omb/fedreg/reproducible.html.*

How do I submit confidential business information?

If you wish to submit any information under a claim of confidentiality, you should submit three copies of your complete submission, including the information you claim to be confidential business information, to the Chief Counsel, NHTSA, at the address given above under **FOR FURTHER INFORMATION CONTACT**. When you send a comment containing information claimed to be confidential business information, you should include a cover letter setting forth the information specified in our confidential business information regulation.[38]

In addition, you should submit a copy, from which you have deleted the claimed confidential business information, to the Docket by one of the methods set forth above.

Will the Agency Consider Late Comments?

We will consider all comments received before the close of business on the comment closing date indicated above under **DATES**. To the extent possible, we will also consider comments received after that date. Therefore, if interested persons believe that any new information the agency places in the docket affects their comments, they may submit comments after the closing date concerning how the agency should consider that information for the final rule.

If a comment is received too late for us to consider in developing a final rule (assuming that one is issued), we will consider that comment as an informal suggestion for future rulemaking action.

How Can I Read the Comments Submitted By Other People?

You may read the materials placed in the docket for this document (*e.g.,* the comments submitted in response to this document by other interested persons) at any time by going to *http://www.regulations.gov.* Follow the online instructions for accessing the dockets. You may also read the materials at the DOT Docket .

List of Subjects in 49 CFR Part 571

Imports, Motor vehicle safety, Motor vehicles, Rubber and rubber products, and Tires.

In consideration of the foregoing, we propose to amend 49 CFR part 571 to read as follows:

PART 571—FEDERAL MOTOR VEHICLE SAFETY STANDARDS

1. The authority citation for Part 571 continues to read as follows:

Authority: 49 U.S.C. 322, 30111, 30115, 30166 and 30177; delegation of authority at 49 CFR 1.50.

2. Section 571.119 is amended by revising S3(a), S6.1.2(b), S6.3, S6.5(e), S7.1.2, S7.2(a), S7.2(e), S7.4, S7.4.1, S7.4.2, and Table III, by removing and reserving S3(b), and by adding definitions to S4, in alphabetical order.

[37] *See* 49 CFR 553.21.

[38] *See* 49 CFR 512.

The revised and added paragraphs read as follows:

§ 571.119 Standard No. 119; New pneumatic tires for motor vehicles with a GVWR of more than 4,536 kilograms (10,000 pounds) and motorcycles.

* * * * *

S3. * * *

(a) New pneumatic light truck tires, for use on motor vehicles with a GVWR of 4,536 kilograms (10,000 pounds) or less manufactured after 1948, of the following type: With a tread depth of 18/32 inch or greater, bias-ply with tread depth of 18/32 inch or less, and speed-restricted service.

(b) [Reserved]

* * * * *

S4. * * *

Bias ply tire means a pneumatic tire in which the ply cords that extend to the beads are laid at alternate angles substantially less than 90 degrees to the centerline of the tread.

* * * * *

Maximum speed rating means the maximum speed, as specified by the tire manufacturer, at which the tire can carry a load corresponding to the maximum load rating for single usage at the corresponding inflation pressure.

* * * * *

Non-speed-restricted service tire means a tire with a maximum speed rating above 90 km/h (55 mph).

Radial ply tire means a pneumatic tire in which the ply cords that extend to the beads are laid at substantially 90 degrees to the centerline of the tread.

Speed-restricted service tire means a tire with a maximum speed rating of 90 km/h (55 mph) or less.

* * * * *

S6.1.2 * * *

(b) The tire pressure, when measured at any time between 15 minutes and 25 minutes after the end of the test, shall not be less than 95 percent of the initial pressure specified in S7.2(a), for the endurance test, and in S7.4.2(a) for the high speed test.

* * * * *

S6.3 *High-speed performance.* When tested in accordance with the procedures of S7.4, a tire shall meet the requirements set forth in S6.1.1 and S6.1.2(a) and (b). However, this requirement applies only to motorcycle tires, to non-speed restricted tires of nominal rim diameter code 14.5 or less marked load range A, B, C, or D, and to non-speed restricted radial tires marked load range F, G, H, J, or L.

* * * * *

S6.5 * * *

(e)(1) Subject to S6.5(e)(2), the speed that corresponds to the maximum speed rating for each speed-restricted service tire and each non-speed-restricted service radial tire of load range F, G, H, J, and L shall be shown as follows:

Max speed ___ km/h (___ mph)

(2) For each non-speed-restricted service radial tire of load range F, G, H, J, and L, the speed shown shall be in a multiple of 10 km/h.

* * * * *

S7.1.2 The tire must be capable of meeting the requirements of S7.2 and S7.4 when conditioned to a temperature of 35 °C ± 3 °C (95 °F ± 5 °F) for 3 hours before the test is conducted, and with an ambient temperature maintained at 35 °C ± 3 °C (95 °F ± 5 °F) during all phases of testing. The tire must be capable of meeting the requirements of S7.3 when conditioned at a temperature of 21 °C ± 3 °C (70 °F ± 5 °F) for 3 hours before the test is conducted.

S7.2 *Endurance.* (a) Mount the tire on a model rim assembly and inflate it as follows: For a non-speed restricted radial tire of load range F, G, H, J, or L, inflate it to 80 percent of the inflation pressure corresponding to the maximum load rating marked on the tire. For all other tires, inflate it to 100 percent of the inflation pressure corresponding to the maximum load rating marked on the tire. Use the single maximum load value when the tire is marked with both single and dual maximum loads.

* * * * *

(e) Allow the tire to cool for between 15 and 25 minutes after running the tire for the required time. Measure the tire inflation pressure. Remove the tire from the model rim assembly, and inspect the tire for conditions specified in S6.1.2(a) and (b).

* * * * *

S7.4 *High-speed performance.*

S7.4.1 *Motorcycle tires, and non-speed restricted tires of nominal rim diameter code 14.5 or less marked load range A, B, C, or D.*

(a) Mount the tire on a test rim and inflate it to the pressure corresponding to the maximum load rating marked on the tire. Use the single maximum load value when the tire is marked with both single and dual maximum load.

(b) Condition the tire and rim assembly in accordance with S7.1.2.

(c) Before or after mounting the assembly on a test axle, adjust the tire pressure to that specified in S7.4.1(a).

(d) Mount the tire-rim assembly on an axle and press it against a flat-faced steel test wheel that is 1708 mm (67.23 inches) in diameter and at least as wide as the tread of the tire

(e) Apply a force of 88 percent of the maximum load rating marked on the tire (use the single maximum load value when the tire is marked with both single and dual maximum loads), and conduct the break-in procedure at 80 km/h (50 mph) for 2 hours.

(f) Remove the load, allow the tire to cool to 35 °C ±3 °C (95 °F ±5 °F), and then adjust the pressure to that specified in S7.4.1(a).

(g) Reapply the same load, and without interruption or readjustment of inflation pressure, conduct the test at 120 km/h (75 mph) for 30 minutes, then at 129 km/h (80 mph) for 30 minutes, and then at 137 km/h (85 mph) for 30 minutes.

(h) Allow the tire to cool between 15 minutes and 25 minutes. Measure its inflation pressure. Then, deflate the tire, remove the tire from the test rim, and inspect the tire for conditions specified in S6.1.2 (a) and (b).

S7.4.2 *Non-speed restricted radial tires marked load range F, G, H, J, or L.*

(a) Mount the tire on a test rim and inflate it to the pressure corresponding to 90 percent of the maximum load rating marked on the tire. Use a single maximum value when the tire is marked with both single and dual maximum load.

(b) Condition the tire in accordance with S7.1.2.

(c) Before or after mounting the assembly on a test axle, adjust the tire pressure to that specified in S7.4.2(a).

(d) Mount the tire-rim assembly on an axle and press it against a flat-faced steel test wheel that is 1708 mm (67.23 inches) in diameter and at least as wide as the tread of the tire.

(e) Apply a force of 85 percent of the maximum load rating marked on the tire (use the single maximum load value when the tire is marked with both single and dual maximum loads), and conduct the break-in procedure at 80 km/h (50 mph) for 2 hours.

(f) Remove the load, allow the tire to cool to 35 °C ± 3 °C (95 °F ± 5 °F), and then adjust the pressure to S7.4.2(a).

(g) Reapply the same load, and without interruption or readjustment of inflation pressure, conduct the test at maximum speed rating less 20 km/h for 30 minutes, then at maximum speed rating less 10 km/h for 30 minutes, and then at maximum speed rating for 30 minutes.

(h) Allow the tire to cool for between 15 minutes and 25 minutes. Measure its inflation pressure. Then, deflate the tire, remove the tire from the test rim, and inspect the tire for conditions specified in S6.1.2(a) and (b).

* * * * *

TABLE III—ENDURANCE TEST SCHEDULE

Description	Load range	Test wheel speed	Test load: Percent of maximum load rating		
		km/h	I—7 hours	II—16 hours	III—24 hours
Speed-restricted service:					
90 km/h (55 mph)	All	40	66	84	101
80 km/h (50 mph)	C, D	48	75	97	114
	E, F, G, H, J, L, M, N	32	66	84	101
56 km/h (35 mph)	All	24	66	84	101
Motorcycle	All	80	[1] 100	[2] 108	117
Radial	F, G, H, J, L	80	85	90	100
All other	A, B, C, D	80	[1] 75	[2] 97	114
	E	64	70	88	106
	F	64	66	84	101
	G	56	66	84	101
	H, J, L, M, N	48	66	84	101

[1] 4 hours for tire sizes subject to high speed requirements S6.3 .
[2] 6 hours for tire sizes subject to high speed requirements S6.3.

Issued: September 23, 2010.

Joseph Carra,

Acting Associate Administrator for Rulemaking.

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