

that were believed to be more real-world and stringent.

In addition to the tests cited above, the proposed standard would have contained tests for two new aspects of performance: Low inflation pressure performance and aging effects. By seeking to establish tests for these aspects of performance, the agency was attempting to address concerns raised by members of Congress in hearings preceding the enactment of the TREAD Act that NHTSA's current test requirements do not evaluate how well tires perform either when significantly underinflated or after being in use for several years and being subjected to environmental variables, such as heat. In particular, underinflation and heat were factors highlighted as contributing to failure of the Firestone ATX and Wilderness tires in the TREAD hearings, and in the agency's Firestone investigation (NHTSA Office of Defects Investigation (ODI) investigation number EA00-023).

To test low inflation pressure performance, the agency proposed two alternative tests based on agency testing and data analyses. Both tests would have evaluated tires when they are significantly under-inflated. For instance, 140 kPa (20 psi) for P-metric tires (the low inflation pressure threshold requirement for warning lamp activation in the proposed Tire Pressure Monitoring System (TPMS) standard, Docket No. NHTSA-00-8572 (66 FR 38982, July 26, 2001) would have been used as the "inflation pressure" testing parameter for standard load P-metric tires. To test for resistance to aging effects, the agency proposed three alternative tests that would have evaluated a tire's long term durability through methods different than and/or beyond those required by both the current and the proposed endurance test parameters. The three tests would have used peel strength testing, long-term durability endurance requirements, and oven aging, respectively. The agency solicited comments on which of the two proposed tests for addressing low inflation pressure performance, and which of the three tests proposed for addressing aging effects, should have been chosen for the new standard.

In addition to proposing test procedures for the new standard, the agency also discussed in this document its ongoing and future research plans on tire safety, and sought comments on the future use of shearography analysis (a method of analysis using laser technology) for evaluating the condition of tires subjected to the proposed testing procedures and the plans for revising the Uniform Tire Quality Grading

Temperature Grading Requirement testing speeds so that they would have been consistent with the test speeds in the proposed high speed tests.

With regard to tire selection criteria and the de-rating of P-metric tires, the agency proposed retaining the de-rating percentage of 1.10 for P-metric tires used on non-passenger car vehicles and revising FMVSS No. 110 to require that the determination of vehicle normal load ("reserve load") on the tire be based on 85% of the load at vehicle placard pressure.

Finally, the agency discussed revising FMVSS Nos. 110, *Tire selection and rims*, for passenger cars, 49 CFR 571.110, and 120, *Tire selection and rims for motor vehicles other than passenger cars*, 49 CFR 571.120, to reflect the applicability of the proposed light vehicle tire standard to vehicles up to 10,000 pounds GVWR, and revising FMVSS Nos. 117, *Retreaded pneumatic tires*, 49 CFR 571.117, and 129, *New non-pneumatic tires for passenger cars*, 49 CFR 571.129, to replace the performance tests which reference or mirror those in FMVSS No. 109 with those specified in the proposed new light vehicle tire standard.

Emphasizing that the agency was mindful of the principles for regulatory decisionmaking set forth in Executive Order 12866, Regulatory Planning and Review, and wished to adopt only those amendments that contribute to improved safety, NHTSA carefully examined the benefits and costs of these amendments. The agency noted that its efforts to do so, however, were limited by two factors: (1) The limited time allowed by the schedule specified in the TREAD Act for completing this rulemaking, and (2) the difficulty inherent in crash avoidance rulemakings, stemming from the multiplicity of the factors contributing to the occurrence of any crash and the difficulty of ascertaining the relative contribution of each factor, in linking specific improvements in safety requirements with specific reductions in crashes and resulting deaths and injuries.

The agency, based on the proposed high speed and endurance test, estimated that the benefits of this would have been 27 lives saved and 667 injuries reduced and emphasized that not all benefits could have been quantified, e.g., benefits from the proposed aging test, the proposed low inflation pressure performance tests, the proposed road hazard and bead unseating tests, and aspects of the proposal that address the overloading of vehicles.

The agency estimated that about one-third (32.8 percent) of all tires would have needed improvements to pass the high speed and endurance tests and that the overall annual cost of these tests for new original equipment (64 million tires) and replacement tires (223 million tires) would have been estimated at \$282 million for a total of 287 million tires sold annually and the net costs per equivalent life saved would have been about \$7.2 million. The agency noted that it anticipated receiving cost data and other information that would enable it to refine its assessment of benefits and costs.

Expressing concern about the overall costs of the rulemaking and the net costs per equivalent life saved, the agency sought comments on the proposed new standard, including its applicability and test procedures, modifications to related existing standards, and lead time provided for manufacturers to achieve compliance.

C. Post-NPRM Technical Submissions to NHTSA Tire Upgrade Docket

1. NHTSA Testing at Standards Testing Labs (STL)

The agency conducted tire testing at Standards Testing Labs (STL) to evaluate the performance of tires tested to the high speed and endurance parameters proposed in the NPRM. The agency tested 20 (15 P-metric and 5 LT) current production tires.

For high speed testing, at an ambient temperature of 38° C, all 20 tires tested for a duration of 30 minutes at 140, 150, and 160 km/h with the proposed inflation pressures completed the test without failure. At an ambient temperature of 40° C with the other parameters being the same, all 15 P-metric tires completed the test without failure. For LT tires, 1 of 5 tires tested failed the high-speed test. Testing to these same conditions during Winter 2002 with 40 P-metric and 20 LT tires resulted in failures in 2 P-metric tires and 0 LT tires.

Endurance testing was conducted with the same parameters proposed in the NPRM—load combinations of 90/100/110 percent load, test speeds of 120 km/h, duration of 40 hours, ambient temperature of 40 C, and the inflation pressure of 180 kPa for P-metric tires and 75 percent of maximum inflation pressure for LT tires. Four of 15 tires failed to complete the test, representing a 27 percent failure rate. The same 15 tire brands were tested at the same parameters except the ambient temperature was reduced to 38° C and the loads were reduced to 85/90/100 percent. Under these conditions, 1 of