

chunking as opposed to tread separation.

GRRF, JATMA, and ETRTO urged the Agency to adopt the high speed test program as specified in the draft Global Technical Regulation (GTR) submitted to the Agency by the *ad-hoc* group of WP29/GRRF.

Ford agreed with the agency's position that the current high speed test procedure should be upgraded.

Advocates supported the agency's selection of test speed increments, ambient temperature, inflation pressure, load, and duration with regard to NHTSA's proposed single minimum requirement to be met by all tires.

CU recommended all tires be speed rated and then tested according to the RMA 2000 procedure because the RMA 2000 procedure follows GTS 2000 closely and would provide greater promise for reaching global harmonization than the proposed FMVSS No. 139 test. CU, however, believed that ambient temperature testing conditions, as specified by RMA 2000, should be raised to 40° C to equal typical daytime temperatures in the southern regions of the U.S. during the summer.

RMA, ETRTO, GRRF, and JATMA stated that the temperature increase from 38° C to 40° C will create considerable complexity to the industry since most other tests are run at 38° C and suggest retaining 38° C as the ambient temperature for all tests. PC supported the agency's modification of the temperature parameters in order to better simulate real world conditions.

Ford recommended that the test be conducted at the maximum rated load (105% of the maximum rated load) for the tire and not the 85% condition so that tires would be tested at loads consistent with the critical stress conditions for the tire. GRRF stated that the load percentage used for testing should reflect the vehicle normal load condition but also take into account the effect of the curvature of the test drum. ITRA/TANA commended NHTSA for reducing the load in the parameters of the high speed test from 88% to 85%. CU supported the change in load if the proposed high speed methodology is adopted and stated that it will be beneficial for LT tires to be testing with same load conditions so that light trucks would also have the same reserve load under normal loading conditions.

GRRF stated that testing on a drum at the lower inflation pressures specified in the NPRM will result in an increase in stress in areas of the tire not usually subject to such high stress levels and may result in some tires having to be "stiffened" by having a greater amount

of material in these areas simply to pass the test. RMA stated that the proposal results in more overload (or over-deflection) in light truck tires compared to passenger tires and suggested the following test pressures: LT load range C: 330 kPa; LT load range D: 425 kPa; LT load range E: 520 kPa. Ford suggested testing at various inflation pressures to reflect a wider range of conditions to which tires may be exposed: P-metric 35, 32, 29 psi (241, 220, 200 kPa), Extra Load P-metric 42, 38, 34 psi (290, 262, 234 kPa), LT load range C 50, 46, 42 psi (345, 317, 290 kPa), LT load range D 65, 60, 55 psi (448, 414, 379 kPa), LT load Range E 80, 73, 66 psi (552, 503, 455 kPa). Public Citizen supported the proposed inflation pressures for the high-speed test.

GRRF, Ford, RMA, PC, and Advocates believed the test should be replaced with a procedure based on the rated speed capability of the tire. They felt that the road safety interests of the consumer would be better met by using speed values during the high speed test that take into account the speed capability of the tire and the designed maximum speed of the vehicle to which it may be fitted. In lieu of a speed-rating regime, RMA suggested speed steps of 130/140/150 km/h for light truck tires stating the change in predicted running temperature from a flat surface to a 1.7-m test wheel is different for passenger and light truck tires and, therefore, a reduction of 10 km/h in the test speeds for light truck tires to compensate for this effect and maintain a change in severity from flat to test wheel similar to passenger tires is needed.

GRRF stated that a test duration step of 10 minutes has been found to be acceptable in achieving temperature equilibrium and that the intermediate speed step duration is less relevant than the duration at the chosen final speed. CU agreed with NHTSA that the ten-minute speed steps used in RMA 2000 are too short to evaluate high-speed capability.

2. Endurance Test

ETRTO and GRRF stated that failure mode reached during the test might not reflect real world tire failure mode because of the deflection of the tire on the test wheel.

RMA and ITRA/TANA suggested an alternative test protocol that: (1) Reduces load from 110 to 100%; (2) reduces duration from 40 to 34 hours in 4/6/24-hour steps; (3) adjusts light truck tire inflation pressure from 75% of maximum to 81.8% of maximum to reflect a proportional load capacity as

shown in the TRA light truck load tables; (4) adjusts light truck tire speed from 120 km/h to 110 km/h to maintain comparable severity from flat to test wheel similar to passenger tires; and, (5) reduces ambient temperature from 40° C to 38° C. RMA stated that for light truck tires, this alternative test proposal adjusts the test conditions to be more equivalent to the tire temperatures that would be produced on a flat surface for the specified test conditions.

GRRF suggested that consideration should be given to combining the proposed endurance and aging tests in order to eliminate unnecessary testing.

CU and Advocates supported the proposed parameters.

GRRF, RMA, and JATMA stated that the test ambient temperature should be $38 \pm 3^\circ \text{C}$ so the existing equipments can be used without any change. Advocates agreed with the agency that 40° C is a more realistic selection based on the ambient operating temperatures in the southern part of the U.S. and Public Citizen supported the agency's modification of the temperature parameters in order to better simulate real world conditions.

RMA suggested testing at 85/90/100 percent of maximum load for P-metric and light truck tires and argue that the tires in the proposed test are significantly over-deflected (40 to 36%) during the last load/time step of 22 hours. Advocates stated that given the excessive loading of larger light trucks, those usually having GVWR greater than 6,000 pounds, it supports the more demanding alternative discussed by NHTSA. PC stated that NHTSA should adopt load specifications of 100, 110 and 115 percent to adequately provide for the loading conditions of these heavier commercial vehicles over 6,000 GVWR.

RMA suggested an adjustment in inflation pressure for LT tires from 75% to 81.8%, following the respective load/pressure formulas for passenger and light truck tires as defined by the TRA. According to RMA, this reflects a load capacity difference between passenger and light truck tires at the same percent pressure. ITRA/TANA stated that LT tires with heavier casing construction should be tested at pressures not less than 80 percent of their maximum inflation pressure because their designs generate a much higher temperature than P-metric tires when conducted on a curved test wheel in a lab instead of a flat road surface. Advocates supported the inflation parameters.

RMA believed that the increase in speed is the most significant change to the endurance test and states that the speed increase from 80 to 120 km/h