

What is the UTQG system?

We are often asked about the relevance and applicability of the UTQG system to replacement tyres sold in Australia. Here below is an extract on this topic from US sources. Spelling has deliberately been left un-edited so as not to compromise the original format.

Uniform Tire Quality Grading, commonly abbreviated as UTQG, is the term encompassing a set of standards for passenger car tires that measures a tire’s treadwear, temperature resistance and traction. The UTQG was created by the National Highway Traffic Safety Administration in 1978, a branch of the United States Department of Transportation (DOT). All tires manufactured for sale in the United States since March 31, 1979 are federally mandated to have the UTQG ratings on their sidewall as part of the DOT approval process, in which non-DOT approved tires are not legal for street use in the United States.

Dedicated winter tires, also known as snow tires, are not required to have a UTQG rating.

Non-passenger car tires, such as those for motorcycles, buses, medium trucks and above along with trailers are also not required to have a UTQG rating.

Treadwear

The treadwear grade is a comparative rating based on the wear rate of the tire when tested under controlled conditions on a specified government test track. A tire graded 200 would last twice as long on the government test course under specified test conditions as one graded 100. In theory, this means that a tire with a 200 grade will wear twice as long as a tire with a 100 grade. However, tire manufacturers are not under any obligation to grade a tire based on the test results, except to say that they cannot overstate the grade. This is enforced by NHTSA requiring documentation to justify any assignment of a grade on a tire, “These treadwear grades are no guarantee of actual tire mileage; differences in driving habits, service practices, climate, and road characteristics will affect a tire’s longevity.”

As Course Monitoring Tires have changed, their treadwear grades have changed to numbers considerably higher than 100. As a result, it would be incorrect to say that a tire with a treadwear grade of 200 gets twice the life of the Course Monitoring Tire.

Traction

Traction grades, from highest to lowest, are AA, A, B and C. They represent the tire’s ability to stop on wet pavement as measured under controlled conditions on specified government test surfaces of asphalt and concrete. The testing does not take into account cornering, hydroplaning, acceleration or stopping on a dry surface. Nor does it account for the significantly different effectiveness of ABS versus non-ABS braking systems on a tire’s stopping distance.

The UTQGS traction test procedure measures a tire’s coefficient of friction when it is tested on wet asphalt and concrete surfaces. The test tire is installed on an instrumented axle of a traction trailer, which is towed by a truck at 40 miles per hour (mph) over wet asphalt and concrete surfaces. The tow truck is equipped with an on-board water supply system that sprays water in front of the test tire. The brakes, from the test tire only, are momentarily locked, and sensors on the axle measure the longitudinal and vertical forces as it slides in a straight line. The coefficient of friction for the pair, test tire and surface, is then determined as the ratio of the longitudinal and vertical forces.

This Bulletin should be considered as being of a general advisory nature only. In case of conflict with existing recommendations issued by a vehicle manufacturer, these latter recommendations should apply.



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The UTQGS traction rating procedure specifies that the traction coefficients for asphalt and for concrete are to be calculated using the locked-wheel traction coefficient on the tire, or sliding coefficient of friction. More specifically, upon application of the brakes, the tire is subjected to shear between the wheel and the road surface, and deforms towards the rear of the vehicle. This generates a traction force to oppose the motion of the vehicle. As braking torque increases, the tire deforms more and tread elements near the rear of the contact patch with the road begin to slip rather than grip. The coefficient of friction rapidly reaches a maximum value at about 10-20 percent slip, and then declines as the longitudinal slip values increase to 100 percent, which represents a fully locked tire. The maximum coefficient of friction in the 0-100 percent slip range is termed “peak” coefficient of friction, and the lower coefficient value for the fully locked tire is termed “slide” coefficient of friction.

Temperature

The temperature grades, from highest to lowest, are A, B and C. These represent the tire’s resistance to the generation of heat at speed. Tires graded A effectively dissipate heat up to a maximum speed that is greater than 115 mph. B rates at a maximum between 100 mph and 115 mph. C rates at a maximum of between 85 mph to 100 mph. Tires that cannot grade up to C or higher cannot be sold in the US.

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