

Vehicle/Pavement Surface Interaction: Impact of Friction on Crash Rates and Crash Reductions

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Abstract

Road safety has always been recognized as being of great social and economic importance, and highway authorities have been executing various types of programs and research projects to reduce the severity and number of accidents in urban and rural areas. Significant achievements in research, road improvements, improved vehicle design, traffic management schemes have contributed important reduction in the accident rate. It is of great economic interest as well as of utmost importance for safety to identify and implement those measures which are most effective in reducing accident rates. Low-cost engineering measures can provide very good value for money.

It has been researched and proved in several countries however, that there is still quite a large potential for improvement in accident rate reduction. It has been estimated that the number of road accidents causing passenger injuries could be decreased by 60 % if existing knowledge used to improve road engineering, monitoring and vehicle design. It has been extensively researched and proven in several European countries that more than 35% of all wet road accidents are related to road surface characteristics, such as skid-resistance, macro-texture, micro-texture etc.

Recent studies show that a decrease in the coefficient of friction from 0.60 to 0.50 on a route of ring road type under heavy traffic conditions equals an increase of the accidents at least of 50% under wet road conditions. But the number of accidents under dry road conditions is not significantly affected, although it is still showing an increasing tendency. It also has been proven that there is a direct relationship between skid resistance and the severity of accidents, in particular under difficult road conditions. It has been shown that the same decrease of the coefficient of friction (from 0.60 to 0.50) increases the cost in damage (i.e. severity) at least by a factor of 3 under wet road conditions.

In this workshop, an analysis of friction measurement technology and data of friction characteristic properties of road surfaces in relation with real braking performance will be discussed. A new technology for measurement of friction characteristics of pavement surfaces together with a new approach for data processing will be described. An application of the new measurement method and data processing to pavement management systems will be shown.