

DEVELOPMENT OF A LABORATORY TEST PROCEDURE FOR TIRE ABRASION MEASUREMENTS

In cooperation with

VMI Holland BV, Gelriaweg 16, 8161 RK Epe, the Netherlands



Tires are the only contact of a vehicle with the ground and the tread compound is the eventual contact of a full tire with the ground. To improve the wear properties of these rubber materials to maximize tire lifetime, there is a continuous drive to find methods that allow a better simulation of the tribological characteristics of the tread compounds in early development stages in the laboratory before having to manufacture a full tire. Full-scale tire wear tests are sophisticated, time-consuming, and enormously costly. It is, therefore, more sustainable and highly demanded to predict tire performance in a laboratory environment.

The objective of this assignment is to develop a laboratory test procedure for tire abrasion measurements with a Laboratory Abrasion Tester (LAT100). This master assignment is about the implementation of the recent development of LAT100 dynamic functions to establish an abrasion test procedure. Furthermore, the effect of laboratory parameters on tire wear prediction will be investigated.

Objective

The objective of this assignment is to implement the new development of dynamic testing with Laboratory Abrasion Tester (LAT100) on abrasion tests. The aim is developing a new test procedure which is in agreement with the conventional method being used for tire wear prediction and also improved in term of testing time.

Assignment

In this study, we look into the abrasion phenomenon as a complex tribological phenomenon, and a laboratory method will be developed using LAT100 dynamic functions to predict tire wear on real roads. The experimental part of the assignment will be performed at the University of Twente. Furthermore, the development of the new method should be in line with the tire situation on the road. Besides, the influence of LAT100 parameters like speed, load, slip angle, frictional energy, and temperature on the abrasion phenomenon will be investigated.

Report

The graduation report should contain the development of a laboratory method in comparison with the available conventional one; and the calculation of abrasion property and how it is in line with tire situation on the road.

Partner

This project will be done in cooperation with the company VMI Holland. About 1600 employees work worldwide for VMI on high-tech, innovative solutions. The main market of VMI is rubber processing and tire manufacturing.

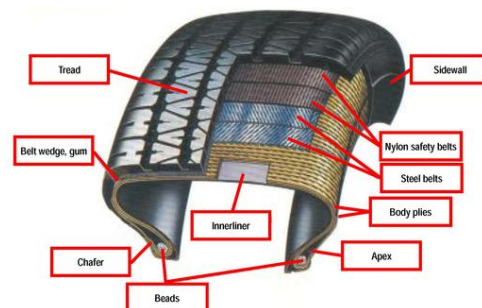


Fig. 1: Cross-section of a tire with reinforcing cords embedded in a rubber matrix

Start:

Earliest September 1, 2021

A remuneration of €400,-/month.

Contact

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