



International
Standard

ISO 23373

**Heavy commercial vehicles
and buses — Vehicle dynamics
simulation and validation — Tyre
model for lateral estimation
of heavy vehicle combinations
operated at dry paved road surface**

First edition

*Véhicules utilitaires lourds et bus — Simulation et validation de
la dynamique du véhicule — Modèle de pneu pour l'estimation
latérale des combinaisons de véhicules lourds exploités sur une
surface de route pavée sèche*

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Published in Switzerland

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This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 33, *Vehicle dynamics, chassis components and driving automation systems testing*.

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Introduction

This document describes a generic tyre model intended for lateral stability performance estimations of commercial vehicle combinations operated at dry paved road surface.

Even though the recommended use is limited to moderate excitation levels, non-linear components of truck tyres are included to not underestimate risk levels, especially when it comes to loads with high centres of gravity. Hence the standard model calculates the lateral force from vertical force and slip angle input with a non-linear formula.

The tyre model in this document is inspired by a trigonometric formula for calculating steady-state lateral or longitudinal force under pure slip conditions, often referred to as the Magic Formula. This formula was introduced by HB Pacejka and colleagues in the 1980s.

The standard tyre model is however less complex compared to many tyre models based on the Magic Formula, for example, by neglecting the influence of camber inclination, asymmetry and combined longitudinal slip and sideslip. There are five characterizing parameters in the tyre model that describe the steady state properties of the tyre, and two parameters that describe its transient properties.

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