

2023-12

ISO/~~DIS-PRF~~ 23373-2:2023(E)

ISO-/TC-22/SC-33/~~WG-6~~

Secretariat:-DIN

Date: 2024-02-27

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

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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Contents

Forewordiv
Introduction.....v
1 Scope1
2 Normative references.....1
3 Terms and definitions1
4 Tyre model formulae5
4.1 Steady-state calculation5
4.2 Transient properties.....5
4.3 Standard values of the model parameters.....6
Bibliography8

Foreword — iv

Introduction — v

1 — Scope — 1

2 — Normative references — 1

3 — Terms and definitions — 2

4 — Tyre model formulae — 4

4.1 — Steady state calculation — 4

4.2 — Transient properties — 5

4.3 — Standard values of the model parameters — 6

Bibliography — 7

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Foreword

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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 to~~ underestimate risk levels, especially when it comes to loads with high centrecentres of gravity ~~loads~~. 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, ~~introduced by HB Pacejka and colleagues from 1980's~~, 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, ~~this for example~~, by ~~for instance~~ neglecting the influence of camber inclination, asymmetry and combined longitudinal slip and sideslip. There are five characterizing parameters in the tyre model ~~describing that~~ describe the steady state properties of the tyre, and two parameters that describe its transient properties.

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