FINAL DRAFT
International Standard

ISO/FDIS 20138-1

Railway applications — Calculation of braking performance (stopping, slowing and stationary braking) —

Part 1: General algorithms utilizing mean value calculation

Applications ferroviaires — Calcul des performances de freinage (freinage d'arrêt, de ralentissement et d'immobilisation) —

Partie 1: Algorithmes généraux utilisant le calcul par la valeur moyenne

ISO/TC **269**/SC **2**

Secretariat: **AFNOR**

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Foreword

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This document was prepared by Technical Committee ISO/TC 269, *Railway applications,* Subcommittee SC 2, *Rolling stock*.

This second edition cancels and replaces the first edition (ISO 20138-1:2018), which has been technically revised.

The main changes are as follows:

— ISO 24478 has been added to Clause 2;

— new terms “brake subsystem” and “mean swept radius” have been added to Clause 3;

— Clause 4 “Symbols” with Table 1 have been revised;

— the symbols that are explained in Table 1 have been deleted from formulae keys;

— Clause 5 “Stopping and slowing distances calculation” has been revised;

— Clause 6 “Stationary braking” has been revised;

— Annex A “Methodology of stopping and slowing distance calculation” has been revised;

— Annex B “Workflow for stationary brake calculations” has been revised;

— Annex C “Examples for brake calculation” has been revised;

— Annex D “Calculation of braking forces (non-stationary)” has been revised;

— Annex E “Additional results for stationary brake calculation for rail vehicle or unit with a different relationship between braking force and load per wheelset“ and Annex F “Tread brake with different lever length ratios” have been added;

— the Bibliography has been revised.

A list of all parts in the ISO 20138 series can be found on the ISO website.

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Introduction

The objective of this document is to enable the railway industry and operators to work with common calculation methods.

This document (i.e. ISO 20138-1) and ISO 20138-2 complement each other but also can be used separately, depending on the requirements of the user.

— In this document, the braking force equals the retarding force, as the assumed braking forces used in a brake calculation never exceed the values which can be transferred by the assumed wheel/rail adhesion.

— ISO 20138-2 details the step by step calculation methodology utilizing instantaneous values of braking force provided by each operational brake system throughout the stopping or slowing time.

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