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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 44125.2-2024

**Railway applications - Calculation of braking
performance(stopping, slowing and stationary braking) - Part 2:
General algorithms utilizing step by step calculation**

铁路应用 制动性能计算（停车、减速和静态制动）第2部分：分步计算法
(English Translation)

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting:

This document is Part 2 of GB/T 44125 "Calculation of braking performance for railway applications (parking, deceleration and static braking)":

GB/T 44125 has published the following parts:

--- Part 1: Average calculation method;

--- Part 2: Step-by-step calculation method:

This document is modified to adopt ISO :20138-2:2019 "Calculation of braking performance for railway applications (parking, deceleration and static braking) Part 2 "Step-by-step calculation method":

This document has the following structural adjustments compared to ISO :20138-2:2019:

--- Changed the table in Appendix C: The original input data table is divided into train input data table and vehicle input data table, and the numbers are repeated in sequence:

New sorting (see Appendix C):

The technical differences between this document and ISO :20138-2:2019 and their reasons are as follows:

--- Replaced ISO :20138-1:2018 with the normative reference GB/T 44125.1 (see 5.1, 5:2, 5:3:4, 5:4:1, 6:3, 6:4:1, 6:5:4, 6:5:8, 6:6:2, Chapter 7), the consistency between the two documents is modified to adapt to my country's technical conditions, increase Operability:

The following editorial changes were made to this document:

--- Deleted the terminology database description in ISO :20138-2:2019 (see Chapter 3);

--- Changed the variable a in Table 1 and formula (12) to a_{ins} (see Chapter 4, 5:4:2);

--- Changed the unit of ramp inclination angle ($^{\circ}$) in Table C:3 to rad (see C:1:2):

--- Changed the pressure unit "bar" to "kPa" in Table C:2 of ISO :20138-2:2019 (see Table C:3):

Introduction

The International Organization for Standardization Railway Application Technical Committee (ISO/TC269) has developed the braking performance calculation (parking, deceleration and static braking) Standards for dynamics: average calculation method and step-by-step calculation method, used for calculation of braking distance, deceleration, power and energy of railway vehicles:

The calculation method of braking performance is in line with China's national conditions and in line with international standards: GB/T 44125 "Calculation of braking performance for railway applications (parking, Deceleration and Static Braking)", which is planned to consist of two parts:

--- Part 1: Average calculation method: The purpose is to use a general algorithm and formula with average value input to calculate all types of trains and the stopping or deceleration distance of a single rolling stock and the corresponding braking power and energy for the corresponding braking distance:

--- Part 2: Step-by-step calculation method: The purpose is to use a general algorithm and formula with instantaneous value input to calculate all types of trains and the stopping or deceleration distance of a single rolling stock and the corresponding braking power and energy for the corresponding braking distance:

Braking performance calculations for railway applications (stopping, deceleration and Static braking) Part 2: Step-by-step calculation method

1 Scope

This document specifies the calculation of the braking system stopping/decelerating distance and the braking power and A general algorithm for energy and other braking performance:

This document applies to the calculation of the braking forces generated by common types of braking systems:

This document is not applicable to the calculation of parking brake distances in conditions exceeding the available adhesion level (wheel slip):

Note 1: This document does not specify specific acceptance criteria such as pass/fail:

NOTE 2 This document is not intended as a design guide for the selection of braking systems, nor does it specify performance requirements for braking systems:

NOTE 3 If other types of braking systems are used, such as new equipment or new types of equipment, other methods of calculating braking force are used:

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document:

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document:

GB/T 44125.1 Calculation of braking performance for railway applications (parking, deceleration and static braking) Part 1: Average calculation method (GB/T 44125.1-2024, ISO :20138-1:2018, MOD)

3 Terms and definitions

The following terms and definitions apply to this document:

Slowing distance slowing distance the distance traveled from the initial braking request to the final speed v_{fin} :

Note: When the final speed $v_{fin}=0\text{m/s}$, the deceleration distance is also called the parking braking distance:

deceleration time slowingtime the time elapsed from the initial braking request to the final speed v_{fin} being reached:

Note: When the final speed $v_{fin}=0\text{m/s}$, the deceleration time is also called parking brake time:

4 Symbols and units of measurement

The symbols and units of variables used in this document shall comply with the requirements of Table 1 and GB/T 44125.1: