

ISO/FDIS 20138-2:2025(en)

ISO/TC 269/SC 02/WG 1_2

Secretariat: AFNOR

Date: 2025-09-10

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

~~Second edition~~

~~Date: 2025-05-20~~

**iTeh Standards
(<https://standards.iteh.ai>)
Document Preview**

[ISO/FDIS 20138-2](#)

<https://standards.iteh.ai/catalog/standards/iso/f0c6d6f7-74a5-460a-8a07-e7c777184f74/iso-fdis-20138-2>

Part 2:
General algorithms utilizing step by step calculation

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

Partie 2: Algorithmes généraux utilisant le calcul pas à pas

FDIS stage

(<https://standards.iteh.ai>)
Document Preview

[ISO/FDIS 20138-2](#)

<https://standards.iteh.ai/catalog/standards/iso/f0c6d6f7-74a5-460a-8a07-e7c777184f74/iso-fdis-20138-2>

© ISO 2025

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or [ISO's ISO's](#) member body in the country of the requester.

ISO [Copyright Office](#) [copyright office](#)

CP 401 • [Ch. de Blandonnet 8](#)

CH-1214 Vernier, Geneva

Phone: + 41 22 749 01 11

[Email:](#) [E-mail: copyright@iso.org](mailto:copyright@iso.org)

Website: www.iso.org

Published in Switzerland

iTeh Standards

(<https://standards.iteh.ai>)

Document Preview

[ISO/FDIS 20138-2](#)

<https://standards.iteh.ai/catalog/standards/iso/f0c6d6f7-74a5-460a-8a07-e7c777184f74/iso-fdis-20138-2>

Content

**iTeh Standards
(<https://standards.iteh.ai>)
Document Preview**

[ISO/FDIS 20138-2](#)

<https://standards.iteh.ai/catalog/standards/iso/f0c6d6f7-74a5-460a-8a07-e7c777184f74/iso-fdis-20138-2>

Contents

Foreword	vi
Introduction	viii
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Symbols	2
5 General explanation of step by step calculation	5
5.1 Method	5
5.2 Braking force models	5
5.3 Algorithm	5
5.4 Supplementary dynamic calculations	8
6 Considerations for stopping or slowing distances and deceleration calculations	8
6.1 Accuracy of input values	8
6.2 Distance calculations	9
6.3 General characteristics	9
6.4 Brake equipment type characteristics	9
6.5 Initial and operating characteristics	9
6.6 Other deceleration calculations	10
7 Immobilization brake calculation	11
Annex A (informative) Workflow of kinetic calculations	12
Annex B (informative) Calculation of braking forces (non-stationary)	15
Annex C (informative) Examples for brake calculation	19
Bibliography	34

<https://standards.iteh.ai/catalog/standards/iso/f0c6d6f7-74a5-460a-8a07-e7c777184f74/iso-fdis-20138-2>

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

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 20138-2:2019), which has been technically revised.

The main changes are as follows:

- ~~— normative reference to~~ ISO 24478 has been added;
- ~~— to Clause 3 “Terms and definitions” has been revised (2;~~
- ~~— the former~~ terms 3.1 “slowing distance” and 3.2 “slowing time” have been deleted and ~~the~~this document now refers to ISO 24478 and ISO 20138-1 only);
- ~~— in Clause 4 3:~~
- 4 “Symbols” ~~and Table 1 have~~has been revised;
- 5 ~~Clause 5~~ “General explanation of step by step calculation” has been revised;
- 6 ~~Clause 6~~ “Considerations for stopping or slowing distances and deceleration calculations” has been revised;
- ~~Annex A~~ Annex A “Workflow of kinetic calculations” has been revised;
- ~~Annex B~~ Annex B has been revised and renamed in “Calculation of retarding forces (non-stationary)”;