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

GB/T 25118-2025

Replacing GB/T 25118-2010

**Railway applications - Electric equipment for rolling stock -
Resistors**

轨道交通 机车车辆电气设备 电阻器

(English Translation)

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Foreword

This document conforms to GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting is scheduled.

This document supersedes GB/T 25118-2010 "Rules for Open-Type Power Resistors in Electrical Equipment of Rail Transit Locomotives and Rolling Stock".

Compared with GB/T 25118-2010, apart from structural adjustments and editorial changes, the main technical changes are as follows.

- a) Terms and definitions have been changed (see Chapter 3, Chapter 3 of the 2010 edition);
- b) Product information has been changed (see 4.1, 4.2 in the 2010 version).
- c) The technical requirements and test methods for inductors have been changed (see

6.1.4, 8.2.6, and 6.1.3 and 8.2.4 in the 2010 version).

d) The technical requirements for materials have been changed (see 6.1.9, 6.1.8 in the 2010 edition).

e) The technical requirements and test methods for electromagnetic compatibility have been changed (see 6.1.11, 8.2.7, and 6.1.10 and 8.2.5 in the 2010 version).

f) The technical requirements for fire protection have been changed (see 6.1.12, 6.1.11 in the 2010 edition).

g) Increased technical requirements for welding (see 6.1.13);

h) The technical requirements and test methods for noise have been changed (see 6.2.4, 8.2.8, and 6.2.4 and 8.2.6 in the 2010 version).

i) Dimensional measurement and weighing tests have been added (see 8.2.1, 8.2.2);

j) The test voltages for the basic insulation test and the functional insulation test have been changed (see 8.5.2.2, 8.5.2.3, and 8.5.2.2 in the 2010 version).

8.5.2.3);

k) A salt spray test has been added (see 8.9);

l) Technical requirements for braking resistors of AC drive diesel locomotives have been added (see Appendix C);

m) Additional product documentation has been added (see Appendix D);

n) A rain test (artificial rain method) has been added (see Appendix F).

This document is modified to adopt IEC 60322:2001 "Code for open-type power resistors in electrical equipment of rail transport locomotives and rolling stock".

Compared with IEC 60322:2001, this document has undergone many structural adjustments. A comparison table of the structural numbering changes between the two documents is provided.

See Appendix A.

This document differs significantly from IEC 60322:2001. The relevant clauses are indicated in vertical margins.

Single lines (l) are indicated. A summary of these technical differences and their causes can be found in Appendix B.

The following editorial changes have been made to this document.

--To harmonize with existing standards, the standard name has been changed to "Resistors for Electrical Equipment of Rail Transit Locomotives and Rolling Stock";

-- IEC 60364-4-41 (see 3.3) has been replaced by GB/T 16895.21, which is cited in the informational reference.

--Change U i to UNm (see 3.13);

--The phrase "Unless otherwise specified in the technical conditions, use the values specified above as described herein" has been removed (see Table 1).

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the National Railway Administration.

This document is under the jurisdiction of the National Technical Committee on Standardization of Rail Transit Electrical Equipment and Systems (SAC/TC 278).

1 Scope

This document specifies various open-type power resistors (such as braking resistors, heating resistors, and absorption resistors) used in the main and auxiliary circuits of locomotives and rolling stock.

This section provides product information, normal operating conditions, structural and performance requirements, and inspection classifications for resistors and filter resistors, along with descriptions of the corresponding test methods.

In this context, the environmental conditions, technical requirements, test methods, inspection rules, marking, packaging, and transportation of braking resistor devices for AC drive diesel locomotives are specified.

As specified in Appendix C.

This document applies to the design, manufacture, and inspection of open-type power resistors for rail transit locomotives and rolling stock. It does not apply to other vehicles (such as mining locomotives).

For open-type power resistors used in electrical equipment (such as cars, trolleybuses, etc.), refer to the relevant regulations.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are listed below.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

GB/T 2423.17-2024 Environmental testing-Part 2: Test methods-Test Ka. Salt spray (IEC 60068-2-11:2021, IDT GB 2894 Safety signs and their usage guidelines GB/T 2900.36 Electrical Terminology - Electric Traction (GB/T 2900.36-2021, IEC 60050-811:2017, IDT) GB/T 3767-2016 Acoustic pressure method for determining the sound power level and sound energy level of a noise source in an approximately free field above a reflecting surface.

Engineering Law (ISO 3744:2010, IDT) GB/T 5465.2 Graphical symbols for electrical equipment - Part 2: Graphical symbols (GB/T 5465.2-2023, IEC 60417) Database. 2023-03, IDT GB/T 13384 General Technical Requirements for Packaging of Mechanical and Electrical Products GB/T 21413.1-2018 Electrical Equipment for Rail Transit Locomotives and Rolling Stock - Part 1: General Operating Conditions and General Rules (IEC 60077-1:2017, MOD) GB/T 21414 Regulations for the Protection of Electrical Hazards in Rail Transit Locomotives and Rolling Stock (GB/T 21414-2021, IEC 61991.

2019, MOD)

GB/T 21563 Shock and vibration tests on rail transit locomotives and rolling stock (GB/T 21563-2018, IEC 61373.

2010, MOD)

GB/T 24338.4 Electromagnetic compatibility of rail transit - Part 3-2.Equipment for rolling stock (GB/T 24338.4-2018) IEC 62236-3-2:2008, MOD) GB/T 25343 (all parts) Welding of railway vehicles and their components GB/T 25840 specifies the guidelines for permissible temperature rise of electrical equipment components (particularly terminals) (GB/T 25840-2010).

IEC/TR 60943:2009 (IDT) GB/T 32347.1-2015 Environmental conditions for rail transit equipment - Part 1: Rolling stock equipment (IEC 62498-1:2010) MOD) GB/T 32350.1-2025 Railway Transportation Insulation Coordination Part 1: Basic Requirements - Electrical Clearances and...

Creepage distance (IEC 62497-1:2010/AMD 1.2013, MOD)