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

**GB/T 21413.5-2023**

Replacing GB/T 21413.5-2008

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**Railway applications - Electric equipment for rolling stock - Part  
5: Electrotechnical components - Rules for HV fuses**

轨道交通 机车车辆电气设备 第5部分：电工器件 高压熔断器规则

**(English Translation)**

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## Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents" Drafting:

This document is Part 5 of GB/T 21413 "Electrical Equipment for Rail Transit Rolling Stocks": GB/T 21413 has been released with Lower part:

- Part 1: General conditions of use and general rules;
- Part 2: General rules for electrical devices;
- Part 3: Rules for DC circuit breakers for electrical devices;
- Part 4: Rules for AC circuit breakers for electrical devices;
- Part 5: Rules for high-voltage fuses for electrical devices:

This document replaces GB/T 21413.5-2008 "Electrical equipment for rolling stock for railway applications - Part 5: High-voltage fusion of electrical components "Circuit Breaker Rules", compared with GB/T 21413.5-2008, in addition to structural adjustments and editorial changes, the main technical changes are as follows:

- a) Changed terms and definitions (see 3.1, 3:1 of the:2008 version);
- b) Changed the characteristic parameters (see Chapter 5, Chapter 5 of the:2008 edition);
- c) Changed the technical specifications that should be provided when the product leaves the factory (see 6.1, 6:1 of the:2008 version);
- d) Changed the marking requirements (see 6.2,:2008 version of 6:2);
- e) Changed "temperature rise" to "temperature limit" (see 8.2:2,:2008 version of 8:2:2);
- f) The rated current requirements of the fuse link and its base have been changed (see 8.2:5, 8:2:6,:2008 version of 8:2:5, 8:2:6);
- g) Changed the verification method of the agreed non-fuse current and agreed fusing current of the "g" fuse link (see 9.3:4:2,:2008 version 9:3:4:2);
- h) The test sequence requirements and test circuits in breaking capacity verification have been changed (see 9.3:4:3:2, 9:3:4:3:3,:2008 version of 9:3:4:3:2, 9:3:4:3:3);
- j) The temperature rise test wiring requirements have been changed (see Appendix B, Appendix A of the:2008 edition):

This document is modified to adopt IEC 60077-5:2019 "Electrical Equipment for Rail Transit Rolling Stocks Part 5: High Voltage for Electrical Devices" Circuit Breaker Rules:

Compared with IEC 60077-5:2019, this document has made the following structural adjustments:

- Move the resistance value measurement error requirement from 9:4:2 to 8:2:9;
- Replaced the positions of Appendix A and Appendix B in the order they appear in the text:

The technical differences between this document and IEC 60077-5:2019 and their reasons are as follows:

- Deleted abbreviations because they do not appear in the text;
- Added the composition of the fuse in Figure 1 to better understand the standard;
- The rated current symbol "In" is changed to "Ir" (see Chapter 5, Table 1, 9:3:4:3:2, Appendix A), consistent with GB/T 21413.1-2018 Unified with GB/T 21413.2-2021;
- Added the technical indicators "resistance value" and "time-current characteristics of (20±5)°C fuse link" that should be provided when the product leaves the factory (see 6.1), as a criterion for resistance measurement and time-current characteristic verification;
- Replaced ISO 3 with normatively cited GB/T 321-2005 (see 8.2:5);
- Replaced IEC 61373 with normative reference GB/T 21563 (see 9.3:4:5):

The following editorial changes have been made to this document:

- Added clause columns corresponding to the technical requirements in Table 3, Table 4 and Table 5;
- References changed:

Please note that some content in this document may be subject to patents: The publisher of this document assumes no responsibility for identifying patents:

## Introduction

The electrical equipment of rolling stock is an important part of rolling stock: Its function and performance directly affect the performance and safety of the entire vehicle:

Reliable operation is to standardize the design, manufacturing, inspection and storage of rolling stock electrical equipment and the key electrical components used:

According to the requirements, GB/T 21413 "Electrical Equipment for Rail Transit Rolling Stocks" was specially formulated: This series of documents comprehensively covers the electrical equipment of rolling stock:

General requirements and special requirements for key electrical components to guide the design units, inspection and testing of electrical equipment and electrical components for rolling stock in my country:

Units and operating units carry out relevant work in a scientific manner:

GB/T 21413 is planned to consist of five parts:

- Part 1: General conditions of use and general rules: The purpose is to standardize as much as possible common features in rolling stock electrical equipment rules and

requirements to achieve consistency in equipment requirements and testing:

---Part 2: General rules for electrical devices: The purpose is to apply the general conditions specified in Part 1 to rolling stock all electrical devices to ensure the consistency of the technical requirements and testing of the corresponding devices:

---Part 3: Rules for DC circuit breakers for electrical devices: The purpose is to standardize the basic characteristics of DC circuit breakers in electrical devices requirements, work performance requirements and inspection requirements:

---Part 4: Rules for AC circuit breakers for electrical devices: The purpose is to standardize the basic characteristics of AC circuit breakers in electrical equipment requirements, work performance requirements and inspection requirements:

---Part 5: Rules for high-voltage fuses for electrical devices: The purpose is to standardize the basic characteristics of high-voltage fuses in electrical devices requirements, work performance requirements and inspection requirements:

Rail transit rolling stock electrical equipment Part 5: Rules for high-voltage fuses for electrical equipment

## 1 Scope

Based on the general rules of GB/T 21413.2-2021, this document specifies additional or modified rules for high-voltage fuses:

**Note 1:** In this document, the term "high voltage fuse" refers to fuses used in the voltage range of rail transit rolling stock:

High-voltage fuses specified in this document refer to high-voltage fuses connected to the main circuit and/or auxiliary circuit: According to IEC 60850 A certain range, the nominal voltage range of these circuits is DC600V~DC3000V: These fuses are also available in the nominal voltage range in the AC auxiliary circuit of 0V~1500V:

**Note 2:** If necessary, certain rules may be applied to fuses installed on other rolling stock (such as mining locomotives, trolleybuses, etc.):

This document applies to high-voltage fuses on rolling stock:

This document together with GB/T 21413.2-2021 gives the following content:

---Fuse characteristics;

---The fuse should meet:

- Working performance under normal conditions;
- Working performance under short circuit conditions;
- Dielectric properties: