

ICS 29.120.50

CCS K 43



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

GB/Z 15166.8-2025

**High-voltage alternating-current fuses - Part 8: Application
guide**

(English Translation)

Issued on: February 28, 2025

Implemented on: September 1, 2025

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

Preface

Introduction

1 Scope

2 Normative references

3 Terms, definitions and abbreviations

3.1 Terms and Definitions

3.2 Symbols and abbreviations

4 Tutorial Part

4.1 A brief introduction to fuses

4.2 Current limiting fuse

4.3 Ejection fuse

4.4 Other related protective devices

4.5 Fuse base (fuse holder or fuse bracket)

5 Application section

5.1 Application Information Overview

5.2 Typical Applications

5.3 Installation, operation, maintenance and replacement

5.4 Recycling

Appendix A (Informative) Practical Guidelines for Derating Thermal Ratings of Current-Limiting Fuses

A.1 Purpose

A.2 Overview

References

Figure 1 Fuse pre-arcing time-current characteristic curve

Figure 2 Current-limiting fuses and ejector fuses for interrupting large currents 1)

Figure 3 Comparison of prospective current and operating Joule integral (I^2t) of current limiting fuse and non-current limiting fuse

Figure 4 Typical "DIN" specification current limiting fuse cross section

Figure 5 Current range of different fuse categories

Figure 6 Typical cut-off characteristics

Figure 7 Structure of drop-out fuse for power distribution

Figure 8 Ejection fuse type

Figure 9 Class B ejection fuse

Figure 10 Schematic diagram of the switching current limiter
Figure 11 Schematic diagram of pyrotechnic auxiliary fuse
Figure 12 Description of the terms "upstream" and "downstream" fuses
Figure 13 Current-limiting fuse/current-limiting fuse matching example
Figure 14 Current-limiting fuse/current-limiting fuse TCC curve example
Figure 15 Example of current limiting fuse/ejection fuse
Figure 16 Example of TCC curve for current limiting fuse/ejection fuse
Figure 17 Example of ejector fuse/current limiting fuse
Figure 18 Example of TCC curve for ejector fuse/current limiting fuse
Figure 19 Range instance
Figure 20 Related characteristics of protection of high voltage/low voltage transformer circuit
Figure 21 An example of matching fusion fit
Figure 22 Example of time-current cross-coordination
Figure 23 Fuse "no damage" margin
Figure 24 Relevant characteristics of motor circuit protection
Figure 25 Example of capacitor case rupture curve characteristics
Figure A.1 Derating curves for certain permissible temperature limits
Figure A.2 Example. Size
Figure A.3 is from IEC 60890
Figure A.4 Application Example
Table 1 Common types of current limiting fuses
Table 2 Common types of ejector fuses
Table 3 Non-current limiting fuse types
Table 4 Fuse related devices

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 8 of GB/T 15166 "High Voltage AC Fuses". GB/T 15166 has been published in the following parts.

--- Part 1: Terminology;

--- Part 2: Current limiting fuses;

- Part 3: Ejection fuses;
- Part 4: Fuses for external protection of shunt capacitors;
- Part 5: Guidelines for the selection of fuses for high-voltage fuses for motor circuits;
- Part 6: Guidelines for the selection of fuses for high-voltage fuses used in transformer circuits;
- Part 8: Application guidelines.

This document is equivalent to IEC TR62655:2013 "High Voltage Fuse Tutorial and Application Guidelines", and the document type is changed from IEC Technical Report Adjusted to become my country's standardized guiding technical document.

The following minimal editorial changes were made to this document.

- In order to coordinate with the existing standard system, the name of the standard is changed to "High Voltage AC Fuses Part 8: Application Guidelines";
- Deleted footnotes not relevant to this document.

Introduction

High voltage AC fuse products are widely used in power generation, transmission and distribution systems with a nominal voltage of 3kV and above, as well as in factories, mines, and residential buildings.

In this regard, my country has established a system to support high-voltage alternating current.

GB/T 15166 series of national standards for high voltage AC fuse products. GB/T 15166 aims to establish the GB/T 15166 series of national standards for high voltage AC fuse design, the criteria for ratings, tests and selection for special applications are planned to consist of 8 parts.

--- Part 1: Terminology. The purpose is to provide common terminology for standards within the system.

--- Part 2: Current-limiting fuses. The purpose is to provide normative requirements for high-voltage AC current-limiting fuses.

--- Part 3: Ejection fuses. The purpose is to provide standard requirements for high voltage AC ejection fuses.

--- Part 4: Fuses for external protection of shunt capacitors. The purpose is to provide fuses for external protection of shunt capacitors, a special type of fuse.

Special additional requirements may be put forward for different situations.

--- Part 5: Guidelines for the selection of fuses for high-voltage fuses for motor circuits. The purpose is to protect motor circuits.

This special operating condition of fuses poses special additional requirements.

--- Part 6: Guidelines for the selection of fuses for high-voltage fuses used in transformer circuits. The purpose is to protect the transformer circuit this special operating condition of fuses poses special additional requirements.

--- Part 7: Guidelines for the selection of fuses for high-voltage fuses used to protect voltage transformers.

The special working condition of the fuse-link puts forward special additional requirements.

--- Part 8: Application Guidelines. The purpose is to provide guidance for the selection of fuses under different operating conditions.

This document combines information from previously published Parts 1 to 6, as well as new information.

Information may be deleted during their future revisions.

High voltage AC fuses Part 8: Application guidelines

1 Scope

This document gives general information on the construction, operation and application of high voltage fuses. It covers all fuses with rated voltages above 1 kV AC.

Current limiting, ejection, electronic, non-current limiting and other types of fuses, such as actual applications in North America, Europe and other regions.

This document does not contain requirements and is for informational reference only.

2 Normative references

The contents of the following documents constitute 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.

IEC 60038 IEC standard voltages Note. GB/T 156-2017 standard voltage (IEC 60038:2009, MOD) IEC 60071-1 Insulation coordination - Part 1: Definitions, principles and rules Definitions, principles and rules) Note. GB/T 311.1-2012 Insulation coordination Part 1: Definitions, principles and rules (IEC 60071-1:2006, MOD) IEC 60076-1 Power transformers-Part 1: General Note. GB/T 1094.1-2013 Power transformers Part 1: General