

American National Standard for For High Voltage Expulsion and Current- Limiting Type Power Class Fuses and Fuse Disconnecting Switches

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American National Standards Institute, Inc.

The Institute of Electrical and Electronics Engineers, Inc.
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Foreword (This Foreword is not part of American National Standard C37.46-2000)

This standard is a revision of American National Standard Specifications for Power Fuses and Fuse Disconnecting Switches, ANSI C37.46-1981, to bring it up to date and in line with present day requirements for high-voltage fuses, fuse links, and fuse disconnecting switches.

This standard was prepared by the NEMA High Voltage Fuse Technical Committee with cooperation from the IEEE Subcommittee on High Voltage Fuses. Liaison was maintained with Edison Electric Institute (EEI) and International Electrotechnical Commission (IEC) during the development of the revisions in order to incorporate the latest thinking up to the time of publication.

This standard is one of a series of complementary standards covering various types of high-voltage fuses and switches, arranged so that certain standards apply to all devices while other standards provide additional specifications for a particular device. For any device, ANSI/IEEE C37.40-1993, IEEE ANSI/IEEE C37.41-2000, plus the additional standard covering that device, constitute a complete standard for the device. In addition, ANSI/IEEE C37.48-1997 is an application, operation, and maintenance guide for all the devices.

The following standards make up this series:

ANSI/IEEE C37.40-1993, Service Conditions and Definitions for High-Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches, and Accessories

ANSI/IEEE C37.41-2000, Design Tests for High-Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches, and Accessories

ANSI C37.42-1996, Specifications for High Voltage Expulsion Type Distribution Class Fuses, Cutouts, Fuse Disconnecting Switches and Fuse Links

ANSI C37.45-2000, Specifications for High Voltage Distribution Class Enclosed Single-Pole Air Switches

ANSI C37.46-2000, Specifications for High Voltage Expulsion and Current-Limiting Type Power Class Fuses and Fuse Disconnecting Switches

ANSI C37.47-2000, Specifications for High Voltage Current-Limiting Type Distribution Class Fuses and Fuse Disconnecting Switches

ANSI/IEEE C37.48-1997, Guide for Application, Operation, and Maintenance of High Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches, and Accessories

Suggestions for improvement of this standard will be welcome. They should be sent to the National Electrical Manufacturers Association, 1300 North 17th Street, Suite 1847, Rosslyn, VA 22209. Attention: Secretary ASC 37.

This standard was processed and approved for submittal to ANSI by Accredited Standards Committee on Power Switchgear, C37. Committee approval of the standard does not necessarily imply that all the committee members voted for its approval. At the time it approved this standard, the C37 Committee had the following members:

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For High Voltage Expulsion and Current-Limiting Type Power Class Fuses and Fuse Disconnecting Switches

1 General Scope

This standard establishes specifications for high voltage (above 1000 volts) expulsion and current-limiting type power class fuses, and accessories. All of these devices are intended for use on alternating current systems. These specifications apply to the following specific types of equipment:

- a) Expulsion type power class fuses
- b) Current-limiting type power class fuses
- c) Power class fuse disconnecting switches
- d) Expulsion and current-limiting type, indoor power class fuses, items (a) through (c), used in fuse enclosure packages (FEP) (see types listed in clauses 1.1 and 1.2 below)
- e) Fuse supports, fuseholders, fuse hooks, fuse units, and refill units, of the type used exclusively with power class fuses and fuse disconnecting switches
- f) Removable switch blades of the type used exclusively with power class fuses and fuse disconnecting switches
- g) Fuse links of the type used exclusively with power class fuses and fuse disconnecting switches.

The power class expulsion fuses listed above are similar to those now covered in IEC 60282-2. These power class expulsion fuses are similar to their class "B" fuses. At present, ANSI/IEEE standards do not cover the class "C" fuses listed in the IEC standard. Some of the power class current-limiting type fuses listed above are similar to those now covered in IEC 60282-1. This ANSI standard contains specific requirements for more types of current-limiting fuses than IEC 60282-1. Use caution if devices specified and tested per ANSI/IEEE standards are compared to those specified and tested per IEC standards as they may or may not be the same.

In the headings and the text of this document there will be some areas where information is included in brackets []. The information in the brackets is a term used in IEC standards that may be similar to the term we are using, a term that is common in some parts of the world, or is a term that has been used previously in ANSI and IEEE standards. Caution is again advised when making comparisons.

1.1 Description of Fuse Enclosure Packages Using Expulsion Type Indoor Power Class Fuses

Type 1E A fuse mounted in an enclosure with relatively free air circulation within the enclosure. (Examples - An Expulsion type fuse mounted in an enclosure or in a vault.)

Type 2E A fuse mounted in a container with restricted air flow surrounding the fuse, but relatively free air circulation within the enclosure on the outside surfaces of the container. (Example - An expulsion type fuse in an enclosure with insulating barriers that form a container that restricts the airflow.)

Type 3E A fuse mounted in an enclosure, directly immersed in liquid, with relatively free liquid circulation around the fuse. (Example - An expulsion type fuse in a switchgear enclosure.)

1.2 Description of Fuse Enclosure Packages Using Current-Limiting Type Indoor Power Class Fuses

Type 1C A fuse mounted in an enclosure with relatively free air circulation within the enclosure. (Examples - A current-limiting type fuse mounted in a live front pad mounted transformer or in a vault.)

Type 2C A fuse mounted in a container with restricted airflow surrounding the fuse, but relatively free air circulation within the enclosure on the outside surfaces of the container. (Example - a current-limiting type fuse inside a canister in a vault.)

Type 3C A fuse mounted in a container with restricted airflow surrounding the fuse, but relatively free liquid circulation within the enclosure on the outside surfaces of the container. (Example - a current-limiting type fuse inside a canister immersed in transformer oil.)

Type 4C A combination of types 2 and 3, where the container is partially in air and partially in liquid. Example - a current-limiting type fuse inside a transformer bushing.)

Type 5C A fuse mounted in an enclosure, directly immersed in liquid, with relatively free liquid circulation around the fuse. (Example - an oil immersible current-limiting type fuse in a transformer or switchgear enclosure.)

2 Referenced and Related Standards

2.1 Referenced American National Standards

This standard is intended to be used in conjunction with the following American National Standards. When these referenced standards are superseded by a revision approved by the American National Standards Institute, Inc., the revision may not apply:

ANSI/IEEE C37.40-1993, *Service Conditions and Definitions for High-Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches, and Accessories.*

ANSI/IEEE C37.41-2000, *Design Tests for High-Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches, and Accessories.*

ANSI/IEEE C37.48-1997, *Guide for Application, Operation, and Maintenance of High-Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches, and Accessories.*

ANSI/IEEE C37.53.1-1989 (R1996), *Conformance Test Procedures for High Voltage Current-Limiting Motor Starter Fuses.*

2.2 Other Referenced Standards

IEC 60282-1-1994, *High Voltage Fuse - Part 1, Current-Limiting Fuses*

IEC 60282-2-1995, *High Voltage Fuse - Part 2, Expulsion Fuses*

3 General Rating Information

3.1 Ratings of Power Class Fuse Supports and Fuse Disconnecting Switches