

Specification for

Cartridge fuse-links (rated up to 5 amperes) for a.c. and d.c. service

ICS 29.120.50

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The Government departments and scientific and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the Committee entrusted with the preparation of the standard.

This British Standard, having been approved by the Electrical Industry Standards Committee and endorsed by the Chairman of the Engineering Divisional Council, was published under the authority of the General Council on 31 January 1958

Electrical Association for Women
 Fire Offices Committee
 Lloyds Register of Shipping
 Radio and Electronic Component Manufacturers' Federation.

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The following BSI references relate to the work on this standard:—

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Foreword

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution.

BS 646:1958+A2:2013 supersedes BS 646:1958 (incorporating Amendment No. 1), which is withdrawn.

Text introduced or altered by Amendment No. 2 is indicated in the text by tags **A2** and **A2**. Previous amendments are not indicated.

This standard makes reference to the following British Standards:

BS 88-1, *Low voltage fuses – Part 1: General requirements*

BS 410-1, *Test sieves – Part 1: Technical requirements and testing*

BS 481, *Woven wire and perforated plate sieves and screens for industrial purposes*

BS 1362, *General purpose fuse-links for domestic and similar purposes (primarily for use in plugs)*

BS 1363-1, *13A plugs, socket-outlets, adaptors and connection units – Part 1: Specification for rewirable and non-rewirable 13 A fused plugs*

The previous (1935) edition of this specification included two types of fuse-link, namely Type A and Type B, but it was decided that when a new edition was issued, it should apply to the Type A fuse-link only. The current edition, therefore, applies to the former Type A fuse-links, and the Type B fuse-links are the subject of a new British Standard, BS 2950 “*Cartridge fuse-links for use with telecommunications and light electrical apparatus*”. The designations Type A and Type B have been discarded and each type of fuse-link should be referred to in terms of its relevant British Standard (i.e., BS 646 or BS 2950).

The specification prescribes new requirements and tests, and the breaking capacity rating has been raised to values corresponding to BS 88 Categories of Duty AC1 and DC1. Both a.c. and d.c. are prescribed for all tests for duty which include tests at prospective currents simulating the most severe operating conditions.

This British Standard is one of a series including the following:

BS 88-1, *Low voltage fuses – Part 1: General requirements*

BS 88-3, *Supplementary requirements for fuses for use by unskilled persons (fuses mainly for household and similar applications) – Part 3: Examples of standardized systems of fuses A to F*

BS 1362, *General purpose fuse-links for domestic and similar purposes (primarily for use in plugs)*

BS 3036, *Semi enclosed electric fuses (ratings up to 100A and 240V to earth)*

Fuses within the scope of this standard are not sensitive to normal electromagnetic disturbances, and therefore no immunity tests are required.

Significant electromagnetic disturbance generated by a fuse is limited to the instant of its operation. Provided that the maximum arc voltages during operation in the type test comply with the requirements of the clause in this standard specifying maximum arc voltage, the requirements for electromagnetic compatibility are deemed to be satisfied.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 9 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Section 1. General

1 Scope

This British Standard relates to cartridge fuse-links of current-ratings up to 5 amperes (hitherto known as Type A fuse-links) intended for use in plugs, and socket-outlet adaptors ~~for~~ for two-wire circuits of which the declared voltage does not exceed 250 volts a.c. at 50 cycles per second, or 250 volts d.c.

Fuse-links for use in plugs specified in BS 1363 are separately provided for in BS 1362.

2 Definitions

The following definitions have been adopted for the purpose of this standard.

2.1

fuse

a device for the purpose of protecting a circuit against damage from an excessive current flowing in it by opening the circuit on the melting of a fuse-element by such excessive current. The fuse comprises all the parts that form the complete device

2.2

fuse-element

that part of the fuse which is designed to melt and thus open a circuit

2.3

cartridge

a totally-enclosing fuse-element container consisting of insulating material; generally tubular in form, and having its ends enclosed by metallic caps

2.4

cartridge fuse-link (hereinafter called a fuse-link)

a cartridge containing a fuse-element

2.5

voltage-rating

a voltage stated by the manufacturer as the highest declared voltage that may be associated with the fuse-link

2.6

recovery-voltage

the r.m.s. value of the normal-frequency a.c. voltage, or the d.c. voltage, that exists across the terminals of a fuse after the opening of the circuit

2.7

current-rating

a current less than the minimum fusing-current, stated by the manufacturer as the current that the fuse-link will carry continuously in the testing-enclosure without deterioration (see Figure 2)

2.8

minimum fusing-current

the minimum current at which a fuse-element in a fuse-link will melt in the testing-enclosure

2.9

fusing-factor

the ratio, greater than unity, of the minimum fusing-current to the current-rating, namely:

$$\text{Fusing factor} = \frac{\text{Minimum fusing-current}}{\text{current-rating}}$$

2.10

prospective current (of a circuit)

the direct current, or the r.m.s. value of the alternating current, that would flow on the making of the circuit when the circuit is equipped for the insertion of a fuse-link, but the fuse-link is replaced by a link of negligible impedance

2.11

breaking-capacity rating (of a fuse)

a prospective current stated by the manufacturer as the greatest prospective current that may be associated with the fuse under prescribed conditions of voltage and of power-factor or time-constant

2.12

duty (of a fuse)

the satisfactory opening, at declared voltages not higher than its voltage rating, of the circuit or circuits protected by it under conditions that produce for the requisite length of time any prospective current greater than its minimum fusing-current up to its breaking-capacity rating

2.13

type-test

a test of a sample or an article intended to show that all other articles made to the same design would, or would not, pass an identical test

Section 2. Requirements

3 Voltage-ratings

The standard voltage-ratings are 250 volts alternating at 50 c/s, and 250 volts d.c.

~~Text deleted~~