

Specification for

**High-voltage
switchgear and
controlgear for
industrial use —
Cast aluminium alloy
enclosures for gas-filled
high-voltage
switchgear and
controlgear**

ICS: 29.130.10

National foreword

This British Standard has been prepared under the direction of the Power Electrical Engineering Standards Policy Committee and is the English language version of EN 50052:1986+A2:1993, incorporating corrigendum August 2007, published by the European Committee for Electrotechnical Standardization (CENELEC). It supersedes EN 50052:1986+A1:1990 which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to CENELEC text carry the number of the CENELEC amendment. For example, text altered by CENELEC amendment A1 is indicated by A1 A1.

NOTE With reference to note 3 or 4.2, it should be noted that the use of asbestos gaskets is being phased out as soon as possible.

Cross-references. Details of International Standards quoted in this standard for which there is an identical or technically equivalent British Standard are given in National appendix X.

Copies of ASTM documents may be purchased through BSI Sales Department, Linford Wood, Milton Keynes, MK14 6LE.

Copies of CIATF documents may be purchased from: CIATF, Walchestrass 27, Post Fach 7190, CH 8023, Zurich, Switzerland.

The Technical Committee has reviewed the provisions of ISO 3134:1985, ISO 6520:1982 (Parts 401, 506 and 5011) and ISO Guide 2:1976, to which reference is made in the text, and has decided that they are acceptable for use in conjunction with this standard.

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.

This British Standard was published under the authority of the Board of BSI and comes into effect on 29 February 1988

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Incorporating corrigenda AC1:1987 and August 2007

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English version

Cast aluminium alloy enclosures for gas-filled high-voltage switchgear and controlgear

Enveloppes en alliage d'aluminium coulé pour
l'appareillage à haute tension sous pression
de gaz

Kapselungen aus Leichtmetallguss für
gasgefüllte Hochspannungs-Schaltgeräte
und-Schaltanlagen

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

This European Standard has been prepared by CENELEC Technical Committee 17C: High voltage enclosed switchgear and controlgear. It is based on Amendment No. 2 to IEC Publication 517 (1975) which gives, however, only general guidance not sufficient for the service allowance of pressurized high-voltage switchgear and controlgear.

The present EN has been written to get an international specification for the design, construction, testing, inspection and certification of pressurized enclosures used in high-voltage switchgear and controlgear.

This standard follows to that extent also, Article 2 of the Directive 76/767/EEC.

This standard deals only with cast aluminium alloy enclosures. Other standards for metallic enclosures are under consideration and will be issued progressively.

Reference is made to IEC Publication 517 (1975):

High-voltage metal-enclosed switchgear for rated voltages of 72,5 kV and above (HD 358)

with its Amendments No. 1 (1977), No. 2 (1982) and No. 3 (1983).

This European Standard contains a normative technical Annex A: Welder performance test.

Brief history

The Amendment 1 to the European Standard EN 50052 has been prepared by CLC/TC 17C; it has been submitted to the CENELEC members for formal vote and acceptance by CENELEC.

Technical text

The text of the Amendment 1 to the European Standard EN 50052 was approved by the members of CENELEC on 11 September 1989.

The following dates are applicable:

- latest date of announcement of the EN at national level (doa): 1 March 1990
- date of latest publication of a new harmonized standard (dop): 1 September 1990
- date of withdrawal of conflicting national standards (dow): 1 September 1990

Foreword to amendment A1

At the 11th CLC/TC 17C meeting held in Brussels on 15 and 16 June 1988, the following decision was taken:

The scope of EN 50052 will be restricted to the range of rated voltages of “72,5 kV and above”. (This also applies for EN 50064, and for prEN 50068 and prEN 50069 which are in preparation.)

These requirements are more appropriate for pressurized enclosures of gas-insulated metal-enclosed switchgear in accordance with HD 358 (IEC 517).

Foreword to amendment A2

This amendment was prepared by CENELEC Technical Committee TC17C, High-voltage enclosed switchgear and controlgear.

The text of the draft was submitted to the voting procedure in March 1993 and was approved by CENELEC as amendment A2 to EN 50052:1986 on July 6, 1993.

The present amendment A2 supersedes amendment A1:1990.

The following dates were accepted:

- latest date of publication of an identical national standard (dop) 1994-10-01
- latest date of withdrawal of conflicting national standards (dow) 1994-10-01

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0 Introduction

This standard covers the requirements for the design, construction, testing, inspection and certification of gas-filled enclosures for use specifically in high-voltage switch-gear and controlgear, or for associated gas-filled equipment. Special consideration is given to these enclosures for the following reasons.

- a) The enclosures usually form the containment of electrical equipment, thus their shape is determined by electrical rather than mechanical considerations.
- b) The enclosures are installed in restricted access areas and the equipment is operated by experts and instructed persons only.
- c) As the thorough drying of the inert, non-corrosive gas-filling medium is fundamental to the satisfactory operation of the electrical equipment, it is periodically checked. For this reason, no internal corrosion allowance is required on the wall thickness of these enclosures.
- d) The enclosures are subjected to only small fluctuations of pressure as the gas-filling density shall be maintained within close limits to ensure satisfactory insulating and arc-quenching properties. Therefore the enclosures are not liable to fatigue due to pressure cycling.
- e) The operating pressure is relatively low.

For the foregoing reasons and to ensure the minimum disturbance, hence reducing the risk of moisture and dust entering the enclosures which would prevent correct electrical operation of the switchgear, no pressure tests shall be carried out after installation and before placing in service and no periodic inspection of the enclosure interiors or pressure tests shall be carried out after the equipment is placed in service.

1 Scope

This standard applies to cast aluminium alloy enclosures pressurized with dry air, inert gases, for example sulphur hexafluoride or nitrogen or a mixture of such gases, used in indoor or outdoor **A2** installations of high-voltage switchgear and controlgear, where the gas is used principally for its dielectric and/or arc-quenching properties, with rated voltages.

- 1 kV and up to and including 52 kV and with gas-filled compartments with design pressure greater than 3 bar (gauge);
- and with rated voltage 72,5 kV and above. **A2**

The enclosures comprise parts of electrical equipment not necessarily limited to the following examples:

Circuit-breakers
Switch-disconnectors
Disconnectors
Earthing switches
Current transformers
Voltage transformers
Surge arrestors
Busbars and connections

The scope also covers pressurized components such as the centre chamber of live tank switchgear, gas-insulated current transformers, etc.

2 Quality assurance

It is the intention of this standard that the switchgear manufacturer shall be responsible for achieving and maintaining a consistent and adequate quality of product.

Sufficient examinations shall be made by the founder to ensure that the materials, production and testing comply in all respects with the requirements of this standard. Inspection by user inspectors shall not absolve the manufacturer or the founder from their responsibility to exercise such quality assurance procedures as to ensure that the requirements and intent of this standard are satisfied.

3 Definitions

For the purposes of this standard the following definitions apply.

3.1

national standard

a technical specification available to the public drawn up with the cooperation and in general agreement with all interests affected by it, and approved by a standards organization recognized on the national level
(CLC-Memorandum No. 1 (1974),
ISO Guide 2-1976)

3.2

enclosure

a part of gas-insulated metal-enclosed switchgear retaining the insulating gas under the prescribed conditions necessary to maintain safely the rated insulation level, protecting the equipment against external influences and providing a high degree of protection to personnel
(IEC Publication 517)

3.3

manufacturer

individual or body responsible for designing and producing the enclosure. In this standard this is the switchgear manufacturer