



Irish Standard
I.S. EN IEC 62772:2023

Version 1.0

Composite hollow core station post insulators with a.c. voltage greater than 1 000 V and d.c. voltage greater than 1 500 V - Definitions, test methods and acceptance criteria

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National Foreword

I.S. EN IEC 62772:2023 V1.0 is the version of the NSAI adopted European document EN IEC 62772:2023, *Composite hollow core station post insulators with a.c. voltage greater than 1 000 V and d.c. voltage greater than 1 500 V - Definitions, test methods and acceptance criteria*, including any Corrections, Amendments etc. to EN IEC 62772:2023 listed on page(s) II.

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EUROPEAN STANDARD

EN IEC 62772

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2023

ICS 29.080.10

Supersedes EN 62772:2016

English Version

**Composite hollow core station post insulators with a.c. voltage
greater than 1 000 V and d.c. voltage greater than 1 500 V -
Definitions, test methods and acceptance criteria
(IEC 62772:2023)**

Isolateurs supports composites creux présentant une tension alternative supérieure à 1 000 V et une tension continue supérieure à 1 500 V - Définitions, méthodes d'essai et critères d'acceptation
(IEC 62772:2023)

Hohlkern-Verbundstützisolatoren für Schaltanlagen mit einer Wechselfspannung über 1 000 V und einer Gleichspannung über 1 500 V - Begriffe, Prüfverfahren und Annahmekriterien
(IEC 62772:2023)

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Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 36/569/FDIS, future edition 2 of IEC 62772, prepared by IEC/TC 36 "Insulators" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62772:2023.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2024-09-20
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2026-12-20

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In the official version, for Bibliography, the following notes have to be added for the standard indicated:

IEC 60068-2-17 NOTE Approved as EN IEC 60068-2-17

IEC 62155 NOTE Approved as EN 62155

ISO 1101 NOTE Approved as EN ISO 1101

IEC 60060-1 NOTE Approved as EN 60060-1

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cencenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60168	-	Tests on indoor and outdoor post insulators of ceramic material or glass for systems with nominal voltages greater than 1 000 V	EN 60168	-
IEC 61109	-	Insulators for overhead lines - Composite suspension and tension insulators for a.c. systems with a nominal voltage greater than 1 000 V - Definitions, test methods and acceptance criteria	EN 61109	-
IEC 61462	-	Composite hollow insulators - Pressurized and unpressurized insulators for use in electrical equipment with AC rated voltage greater than 1 000 V AC and D.C. voltage greater than 1500V - Definitions, test methods, acceptance criteria and design recommendations	EN IEC 61462	-
IEC 62217	-	Polymeric HV insulators for indoor and outdoor use - General definitions, test methods and acceptance criteria	EN 62217	-
IEC 62231	2006	Composite station post insulators for substations with a.c. voltages greater than 1 000 V up to 245 kV - Definitions, test methods and acceptance criteria	EN 62231	2006
IEC/TR 62039	-	Selection guidelines for polymeric materials for outdoor use under HV stress	-	-

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Edition 2.0 2023-11

INTERNATIONAL STANDARD

NORME INTERNATIONALE



Composite hollow core station post insulators with a.c. voltage greater than 1 000 V and d.c. voltage greater than 1 500 V – Definitions, test methods and acceptance criteria

Isolateurs supports composites creux présentant une tension alternative supérieure à 1 000 V et une tension continue supérieure à 1 500 V – Définitions, méthodes d'essai et critères d'acceptation



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IEC 62772

Edition 2.0 2023-11

INTERNATIONAL STANDARD

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Isolateurs supports composites creux présentant une tension alternative supérieure à 1 000 V et une tension continue supérieure à 1 500 V – Définitions, méthodes d'essai et critères d'acceptation

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**COMPOSITE HOLLOW CORE STATION POST
INSULATORS WITH AC VOLTAGE GREATER THAN
1 000 V AND DC VOLTAGE GREATER THAN 1 500 V –
DEFINITIONS, TEST METHODS AND ACCEPTANCE CRITERIA****FOREWORD**

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IEC 62772 has been prepared by IEC technical committee 36: Insulators. It is an International Standard.

This second edition cancels and replaces the first edition published in 2016. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) modifications of terms and definitions;
- b) modifications of tests procedures included in IEC TR 62039 and IEC 62217 (Hydrophobicity transfer test; Water diffusion test on the core with housing);
- c) harmonization of Table 1 (Required design and type tests) with other product standards;
- d) update of Annex A (Qualification of fillers);
- e) addition of a new informative Annex B (Load definitions, relationship of loads).

The text of this International Standard is based on the following documents:

Draft	Report on voting
36/569/FDIS	36/587/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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INTRODUCTION

Composite hollow core station post insulators consist of an insulating hollow core (tube), bearing the mechanical load protected by a polymeric housing, the load being transmitted to the core by end fittings. The hollow core is filled entirely with an insulating material. The core is made of resin impregnated fibres.

Composite hollow core station post insulators are typically applied as post insulators in substations. In order to perform the design tests, IEC 62217 is to be applied for materials and interfaces of the insulator. Some tests have been grouped together as "design tests", to be performed only once on insulators which satisfy the same design conditions. For all design tests on composite hollow core station post insulators, the common clauses defined in IEC 62217 are applied. As far as practical, the influence of time on the electrical and mechanical properties of the components (core material, housing, interfaces etc.) and of the complete composite hollow core station post insulator has been considered in specifying the design tests to ensure a satisfactory life-time under normally known stress conditions in service.

This document relates to IEC 61462, *Composite hollow insulators – Pressurized and unpressurized insulators for use in electrical equipment with rated voltage greater than 1 000 V – Definitions, test methods, acceptance criteria and design recommendations*, as well as IEC 62231, *Composite station post insulators for substations with AC voltages greater than 1 000 V up to 245 kV – Definitions, test methods and acceptance criteria*. Tests and requirements described in IEC 62231 can be used despite the intended operating voltage limit for substations.

The use of polymeric housing materials that show hydrophobicity and hydrophobicity transfer mechanism (HTM) is preferred for composite hollow core station post insulators. This is due to the fact that the influence of diameter can be significant for hydrophilic surfaces (see also IEC 60815-3). For instance silicone rubber is recognized as successful countermeasure against severe polluted service conditions. For the time being, the 1 000 h AC tracking and erosion test of IEC 62217 is used to establish a minimum requirement for the tracking and erosion resistance, for both AC and DC.

Composite hollow core station post insulators are used in both AC and DC applications. Before the appropriate standard for DC applications will be issued, the majority of tests listed in this standard can also be applied to DC insulators. In spite of this, a specific tracking and erosion test procedure for DC applications as a design test is still being considered to be developed. Some information about the difference of AC and DC material erosion test can be found in the CIGRE Technical Brochure 611 [8]¹. For the time being, the 1 000 h AC tracking and erosion test of IEC 62217 is used to establish a minimum requirement for the tracking and erosion resistance.

¹ Numbers in square brackets refer to the Bibliography.

COMPOSITE HOLLOW CORE STATION POST INSULATORS WITH AC VOLTAGE GREATER THAN 1 000 V AND DC VOLTAGE GREATER THAN 1 500 V – DEFINITIONS, TEST METHODS AND ACCEPTANCE CRITERIA

1 Scope

This document, which is an International Standard, applies to composite hollow core station post insulators consisting of a load-bearing insulating tube (core) made of resin impregnated fibres, insulating filler material (solid, liquid, gaseous – pressurized or unpressurized), a housing (outside the insulating tube) made of polymeric material (for example silicone or ethylene-propylene) and fixing devices at the ends of the insulating tube. Composite hollow core station post insulators as defined in this standard are intended for general use in substations in both, outdoor and indoor environments, operating with a rated AC voltage greater than 1 000 V and a frequency not greater than 100 Hz or for use in direct current systems with a rated voltage greater than 1 500 V DC.

The object of this document is:

- to define the terms used;
- to specify test methods;
- to specify acceptance criteria.

All the tests in this document, apart from the thermal-mechanical test, are performed at normal ambient temperature. This document does not specify tests that are characteristic of the apparatus of which the composite hollow core station post insulator ultimately may form a part (e.g. disconnect switch, reactor support, HVDC valves).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60168, *Tests on indoor and outdoor post insulators of ceramic material or glass for systems with nominal voltages greater than 1000 V*

IEC 61109, *Insulators for overhead lines – Composite suspension and tension insulators for AC systems with a nominal voltage greater than 1 000 V – Definitions, test methods and acceptance criteria*

IEC 61462, *Composite hollow insulators – Pressurized and unpressurized insulators for use in electrical equipment with rated voltage greater than 1 000 V – Definitions, test methods, acceptance criteria and design recommendations*

IEC 62217, *Polymeric HV insulators for indoor and outdoor use – General definitions, test methods and acceptance criteria*

IEC 62231:2006, *Composite station post insulators for substations with AC voltages greater than 1 000 V up to 245 kV – Definitions, test methods and acceptance criteria*

IEC TR 62039, *Selection guidelines for polymeric materials for outdoor use under HV stress*

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