

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Composite hollow core station post insulators for sub stations 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 pour postes 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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## CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references.....	7
3 Terms and definitions .....	8
4 Identification and marking .....	12
5 Environmental conditions .....	12
6 Information on transport, storage and installation .....	12
7 Classification of tests.....	12
7.1 General.....	12
7.2 Design tests.....	13
7.3 Type tests .....	13
7.4 Sample tests .....	13
7.5 Routine tests.....	13
8 Design tests .....	14
8.1 General.....	14
8.2 Tests on interfaces and connections of end fittings .....	15
8.2.1 General .....	15
8.2.2 Test specimens.....	15
8.2.3 Reference dry power frequency test .....	15
8.2.4 Thermal mechanical pre-stressing test .....	15
8.2.5 Water immersion pre-stressing test .....	15
8.2.6 Verification tests .....	15
8.3 Assembled core load tests.....	16
8.3.1 Test for the verification of the maximum design cantilever load (MDCL) .....	16
8.3.2 Test for the verification of the maximum design torsion load (MDToL) .....	16
8.3.3 Verification of the specified tension load (STL) .....	17
8.4 Tests on shed and housing material.....	18
8.4.1 General .....	18
8.4.2 Tracking and erosion test .....	18
8.4.3 Flammability test.....	18
8.5 Tests on the tube material .....	18
8.5.1 General .....	18
8.5.2 Dye penetration test.....	18
8.5.3 Water diffusion test .....	18
9 Type tests .....	18
9.1 Internal pressure test .....	18
9.2 Bending test.....	18
9.3 Specified tension load test, compression and buckling withstand load test.....	19
9.4 Electrical tests .....	19
9.5 Wet switching impulse withstand voltage .....	19
10 Sample tests .....	19
11 Routine tests .....	19
11.1 General.....	19
11.2 Routine seal leak rate test.....	19

11.3	Test procedure.....	19
11.4	Acceptance criteria .....	19
12	Documentation .....	20
Annex A (informative)	Water diffusion test.....	21
Bibliography	.....	22
Figure A.1	– Example of sample preparation for water diffusion test.....	21
Table 1	– Required design and type tests.....	14

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**COMPOSITE HOLLOW CORE STATION POST INSULATORS  
FOR SUBSTATIONS 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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International Standard IEC 62772 has been prepared by IEC technical committee 36: Insulators.

The text of this standard is based on the following documents:

FDIS	Report on voting
36/386/FDIS	36/389/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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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 on 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 standard 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 a.c. 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 although this standard has no voltage limit.

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. The ageing performance of the polymeric housing can be evaluated by the salt fog test standardized in IEC 62217. For the time being, no test is defined to quantify the HTM, but CIGRÉ SC L.1 deals with this subject intensively and Technical Brochure No. 442 is available for the evaluation of the retention of the hydrophobicity.

# COMPOSITE HOLLOW CORE STATION POST INSULATORS FOR SUBSTATIONS WITH A.C. VOLTAGE GREATER THAN 1 000 V AND D.C. VOLTAGE GREATER THAN 1 500 V – DEFINITIONS, TEST METHODS AND ACCEPTANCE CRITERIA

## 1 Scope

This International Standard applies to composite hollow core station post insulators consisting of a load-bearing insulating tube (core) made of resin impregnated fibres and an insulating filler material (e.g. solid, liquid, foam, gaseous – pressurized or unpressurized), a housing (outside the insulating tube) made of polymeric material (for example silicone or ethylene-propylene) and metal 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.

The object of this standard is:

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

All the tests in this standard, apart from the thermal-mechanical test, are performed at normal ambient temperature. This standard does not prescribe tests that may be characteristic of the apparatus of which the composite hollow core station post insulator ultimately may form a part. Further technical input is required in this area.

NOTE 1 "Pressurized" means a permanent gas or liquid pressure greater than 0,05 MPa (0,5 bar) gauge. The gas can be dry air or inert gases, for example sulphur hexafluoride, nitrogen, or a mixture of such gases.

NOTE 2 "Unpressurized" means a gas or liquid pressure smaller than or equal to 0,05 MPa (0,5 bar) gauge.

## 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 60060-1:2010, *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 616:2001, *Tests on indoor and outdoor post insulators of ceramic material or glass for systems with nominal voltages greater than 1 000 V*

IEC 61109:2008, *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*

IEC 61462:2007, *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*