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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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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 29.080.10

ISBN 978-2-8322-7404-0

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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.