



NSAI
Standards

Irish Standard
I.S. EN 50151:2003

Railway applications - Fixed installations - Electric traction - Special requirements for composite insulators

I.S. EN 50151:2003

Incorporating amendments/corrigenda issued since publication:

Corrigendum Jun. 2010

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I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

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SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

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EUROPEAN STANDARD

EN 50151

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2003

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Incorporates corrigendum June 2010

English version

**Railway applications –
Fixed installations –
Electric traction –
Special requirements for composite insulators**

Applications ferroviaires –
Installations fixes –
Traction électrique –
Prescriptions particulières pour
les isolateurs en matière composite

Bahnanwendungen –
Ortsfeste Anlagen –
Zugförderung –
Besondere Anforderungen an
Verbundisolatoren

This European Standard was approved by CENELEC on 2003-10-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Lithuania, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

This European Standard was prepared by SC 9XC, Electric supply and earthing systems for public transport equipment and ancillary apparatus (fixed installations), of Technical Committee CENELEC TC 9X, Electrical and electronic applications for railways.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50151 on 2003-10-01.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2004-10-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2006-10-01

Annexes designated "informative" are given for information only.

In this standard, Annexes A, B and C are informative.

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and supports the Public Procurement Directive 93/38/EEC.

This document has been prepared under a mandate given to CENELEC by the European Commission and supports the Directive 2008/57/EC.

The contents of the corrigendum of June 2010 have been included in this copy.

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Introduction

This standard specifies requirements for the design and testing of composite insulators used on railway electrification overhead contact systems. The insulators, which are installed at relatively low heights in the harsh environment of the railway infrastructure, require special consideration during design to reduce the effects of vandalism and environmental pollution from railway operations, especially when combined with a lack of natural washing. Insulators may be included in arrangements in tunnels and over bridges or be in contact with traction unit pantographs where mechanical combined loading (tension, bending and torsion) may require special consideration.

The standard is intended to allow the user to comply with local working practices, to ensure compatibility with existing electrification systems, and provide an insulator which will give reliable service over its target life span with minimum maintenance.

Insulators in overhead lines are predominately designed to resist tension and/or bending loads and are not designed to resist torsional loads. Mitigating measures to reduce torsional loading are generally introduced by the contact systems design engineer. Some combined loading (tension, compression and torsion) can be experienced and this is represented in the testing procedure specified in this document.

The testing procedures given for railway applications in this standard are predominately referenced from IEC 61109 and EN 61952.

1 Scope

This European Standard specifies characteristics for composite insulators for use in electric traction overhead contact lines for railways and tramways, as defined in EN 50119. Specific applications where high torsional loads can occur are outside the scope of this standard and particular tests should be agreed between the supplier and purchaser, to represent the critical loading arrangements.

The provisions contained in this European Standard are for the new construction of electric traction overhead contact lines using insulators or when complete refurbishment of existing lines takes place.

This standard provides the purchaser and manufacturer with a range of tests which are used to evaluate the suitability of an insulator product for a given railway environment. Additional tests may be specified by the client to measure the compliance of the insulator under particular operating conditions.

The standard establishes the product characteristics, the test methods and acceptance criteria.

The object of this European Standard is to stipulate the provisions for the design and provision of the service indicated by the manufacturer to the purchaser or informed buyer for application on the railway infrastructure.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies (including amendments).

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| EN 50119 | <i>Railway applications - Fixed installations - Electric traction overhead contact lines</i> |
| EN 50124 series | <i>Railway applications - Insulation coordination</i> |
| EN 50163 | <i>Railway applications - Supply voltages of traction systems</i> |
| EN 60707 | <i>Flammability of solid non-metallic materials when exposed to flame sources - List of test methods (IEC 60707)</i> |
| EN 61952 | <i>Insulators for overhead lines - Composite line post insulators for alternative current with a nominal voltage > 1 000 V (IEC 61952)</i> |
| HD 405 series | <i>Test on electric cables under fire conditions (IEC 60332 series)</i> |
| HD 602 | <i>Test on gases evolved during combustion of materials from cables - Determination of degree of acidity (corrosivity) of gases by measuring pH and conductivity (IEC 60754, mod.)</i> |
| HD 606 series | <i>Measurement of smoke density of electric cables burning under defined conditions (IEC 61034 series, mod.)</i> |
| IEC 61109 | <i>Composite insulators for a.c. overhead lines with a nominal voltage greater than 1 000 V - Definitions, test methods and acceptance criteria</i> |
| IEC 61467 | <i>Insulators for overhead lines with a nominal voltage above 1 000 V - AC power arc tests on insulator sets</i> |

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