

Overhead electrical lines exceeding AC 1 kV - Part 2-9:
National Normative Aspects (NNA) for Great Britain and
Northern Ireland (based on EN 50341-1:2012)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 50341-2-9:2016 sisaldab Euroopa standardi EN 50341-2-9:2015 ingliskeelset teksti.	This Estonian standard EVS-EN 50341-2-9:2016 consists of the English text of the European standard EN 50341-2-9:2015.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
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Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

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EUROPEAN STANDARD

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**Overhead electrical lines exceeding AC 1 kV - Part 2-9: National
Normative Aspects (NNA) for Great Britain and Northern Ireland
(based on EN 50341-1:2012)**

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CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

1. The British National Committee is identified by the following address:

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Attention: Secretary of PEL/11 Overhead lines – Standards Development

2. The British National Committee has prepared this NNA (part 2-9 of EN 50341) listing the GB National Normative Aspects under its sole responsibility and duly passed this document through the CENELEC and CLC/TC 11 procedures.

NOTE: The British National NC also takes sole responsibility for the technically correct co-ordination of this NNA with EN 50341-1. It has performed the necessary checks in the frame of quality assurance / control. However, it is noted that this quality control has been made in the framework of the general responsibility of a standards committee under the national laws / regulations.

3. This Part 2-9 is normative in GB and informative for other countries.
4. This document shall be read in conjunction with Part 1 (EN 50341-1). All clause numbers used in this NNA correspond to those in Part 1. Specific sub-clauses that are prefixed "GB" are to be read as amendments to the relevant text in Part 1. Any necessary clarification regarding the application of this NNA in conjunction with Part 1 shall be referred to the British NC who will, in co-operation with CLC/TC 11, clarify the requirements.

Where no reference is made in this NNA to a specific sub-clause, then Part 1 shall apply.

5. In the case of "boxed values" defined in Part 1, amended values (if any), which are defined in this NNA, shall be taken into account in GB and Northern Ireland.

However any boxed value whether in Part 1 or in this NNA, shall not be amended in the direction of greater risk in a Project Specification.

6. The GB and Northern Ireland standards/ regulations relating to overhead electrical lines exceeding A.C. 1 kV are listed in subclause 2.1.
7. The British NC declares in accordance with clause 4.1 of Part 1 that this NNA follows both design "Approach 1" and design "Approach 3". The specific design Approach to be used shall be specified in the Project Specification.

1 SCOPE

1.1 General

(ncpt) GB.1 General

This NNA is only applicable to all new overhead lines above A.C. 1kV.

This Euronorm is only applicable to new overhead lines and shall not be applied to maintenance, reconductoring, tee-offs, extensions or diversions to existing overhead lines unless specifically required by the Project Specification.

For details of the application of this standard for overhead lines constructed with covered conductor refer to the Project Specification.

For details of the application of this standard to telecommunication systems involving optical fibres either incorporated in or wrapped around earthwires or conductors or suspended from overhead line supports, reference should be made to the Project Specification.

2 NORMATIVE REFERENCES, DEFINITIONS AND SYMBOLS

2.1 Normative references

(A-dev) GB.1 National statutes

<i>Reference</i>	<i>Name and Date of GB and NI Statute</i>
	<i>Electricity Act 1989, Chapter 29,</i>
	<i>Health and Safety at Work Act 1974 and subsequent amendments</i>
<i>SI 635</i>	<i>The Electricity at Work Regulations 1989 (Northern Ireland) 1991</i>
<i>SI 1355</i>	<i>The Electricity (Overhead Lines) Regulations 1970</i>
<i>SI 2035</i>	<i>The Overhead Lines (Exemption) Regulations 1990</i>
<i>SI 2665</i>	<i>The Electricity Safety, Quality and Continuity Regulations 2002</i>
<i>SI 381</i>	<i>The Electricity Safety, Quality and Continuity Regulations (Northern Ireland) 2012</i>
<i>SI 3074</i>	<i>The Overhead Lines (Exemption) Regulations 1992</i>
<i>SI 320</i>	<i>The Construction (Design & Management) Regulations 2007</i>
<i>SI 231(NI)</i>	<i>Electricity (Northern Ireland) Order 1992</i>
<i>SR 142</i>	<i>The Construction (Design & Management) (Amendment) Regulations (Northern Ireland) 2001</i>
<i>SR 209</i>	<i>The Construction (Design & Management) Regulations (Northern Ireland) 1995</i>
<i>SR 536</i>	<i>Electricity Supply Industry Regulations (Northern Ireland) 1991</i>
<i>SR 21</i>	<i>Electricity Supply (Amendment) Regulations (Northern Ireland) 1993</i>
<i>SI 1039 (NI9)</i>	<i>Health and Safety at Work (Northern Ireland) Order 1978</i>
<i>SI 2448 (S.165)</i>	<i>The Electricity Act 1989 (Scotland)</i>

(ncpt) GB.2 National normative standards

<i>BSEN 1991-1-4:2005</i>	<i>Actions on Structures - Part 1-4: General Actions – Wind actions</i>
<i>BSEN 1995-1-1:2008</i>	<i>Design of Timber Structures – Part 1-1 General – Common rules and rules for buildings</i>
<i>BS 7354:1990</i>	<i>Design of high-voltage open-terminal stations</i>
<i>BSEN 10025</i>	<i>Hot rolled products of structural steels</i>
<i>BSEN 14229:2010</i>	<i>Structural timber – wood poles for overhead lines</i>
<i>BSEN 50182:2001</i>	<i>Conductors for overhead lines – round wire concentric lay stranded conductors</i>

Electricity Association Technical Report (EATR) 111 - High Voltage Single Circuit Overhead Lines on Wood Poles (1991)

2.3 Symbols

(ncpt)

GB.1 Additional symbols

A_{SITE}	altitude of the site above mean sea level
a	altitude in metres above sea level of the conductor
c_{alt}	altitude factor
c_{dir}	wind direction factor
D_c	diameter of the conductor, mm
f_{yb}	yield strength for bolt
K_i	ice thickness coefficient
K_c	shape factor
L	length of conductor span, m
N_c	number of phases and earthwires
q_x	wind pressure on conductor, N/m ²
q_c	wind pressure on structural element, N/m ²
r_B	basic radial thickness of ice, mm
r_o	radial ice thickness in mm in the absence of wind, mm
r_r	reference ice thickness, mm
r_w	radial ice thickness in mm in the presence of wind
$v_{b,0}$	fundamental basic wind velocity, m/sec
$v_{b,\text{map}}$	10-minute wind velocity at sea level taken from a GB map, m/sec
z	height above ground, m
γ_v	partial safety factor on wind speed and ice thickness (partial factors on actions)
γ_m	partial factor on strength of structural materials
γ_{dl}	partial factors on permanent actions

3 BASIS OF DESIGN

3.2 Requirements of overhead lines

3.2.2 Reliability requirements

(ncpt)

GB.1 Reliability levels

The partial coefficients to be used for the reliability levels are shown in Table 4.13.1/GB.1. The required reliability level shall be stated in the Project Specification. For temporary loading conditions reduced reliability levels may be specified.

3.2.5 Strength coordination

(ncpt)

GB.1 Strength coordination

The required degree of strength coordination shall be stated in the Project Specification.

3.2.6 Additional considerations

(ncpt)

GB.1 Additional considerations

Higher partial factors than those shown within this NNA may be specified in the Project Specification. Any additional considerations shall also be stated in the Project Specification.

3.3 Limit states

3.3.3 Serviceability limit states

(ncpt)

GB.1 Specific requirement

These shall be defined in the Project Specification.