

STN	Vonkajšie elektrické vedenia so striedavým napätím nad 1 kV. Časť 2-19: Národné normatívne hľadiská (NNA) pre Veľkú Britániu a Severné Írsko (založené na EN 50341-1: 2012).	STN EN 50341-2-9 33 3300
------------	---	--

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)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 11/15

Obsahuje: EN 50341-2-9:2015

121833

Úrad pre normalizáciu, metrológiu a skúšobníctvo SR, 2015
Podľa zákona č. 264/1999 Z. z. v znení neskorších predpisov sa môžu slovenské technické normy rozmnožovať a rozširovať iba so súhlasom Úradu pre normalizáciu, metrológiu a skúšobníctvo SR.

EUROPEAN STANDARD

EN 50341-2-9

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2015

ICS 29.240.20

English Version

**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)**

This European Standard was approved by CENELEC on 2015-06-02.

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

CONTENTS

1	Scope	6
1.1	General	6
2	Normative References, definitions and symbols	6
2.1	Normative references	6
2.3	Symbols	7
3	Basis of design.....	7
3.2	Requirements of overhead lines	7
3.2.2	Reliability requirements	7
3.2.5	Strength coordination	7
3.2.6	Additional considerations.....	7
3.3	Limit states	7
3.3.3	Serviceability limit states	7
4	Actions on lines	8
4.1	Introduction.....	8
4.3	Wind loads.....	8
4.3.1	Field of application and basic wind velocity.....	8
4.3.2	Mean wind velocity	8
4.3.3	Mean wind pressure	9
4.4	Wind forces on overhead line components	9
4.4.1	Wind forces on conductors.....	10
4.4.3	Wind forces on lattice towers	10
4.5	Ice loads	11
4.6	Combined Wind and Ice loads	12
4.7	Temperature effects	13
4.8	Security loads	13
4.9	Safety loads.....	14
4.9.1	Construction and maintenance loads.....	14
4.9.2	Loads related to the weight of linesmen	14
4.10	Forces due to short-circuit currents.....	14
4.11	Other special forces	14
4.12	Load cases	14
4.12.2	Standard load cases.....	14
4.13	Partial factors for actions	15
5	Electrical requirements	18
5.2	Currents.....	18
5.2.1	Normal current.....	18
5.2.2	Short circuit current	18

5.5	Minimum air clearance distances to avoid flashover	19
5.5.3	Empirical method based on European experience.....	19
5.6	Load cases for calculation of clearances.....	19
5.6.1	Load cases for calculation of clearances	19
5.6.3	Wind load for determination of electric clearances	19
5.6.4	Ice load for determination of electric clearances	19
5.6.5	Combined wind and ice loads.....	19
5.8	Internal clearances within the span and at the top of support	19
5.9	External clearances	20
5.9.1	General.....	20
5.9.4	External clearances to crossing traffic routes	20
5.9.6	External clearances to other power lines or overhead telecommunication lines.....	21
5.9.7	External clearances to recreational areas (playgrounds, sports areas, etc.)	21
5.10	Corona effect.....	21
5.10.2	Audible noise	21
5.10.3	Corona loss	21
5.11	Electrical and magnetic field	21
5.11.1	Electrical and magnetic fields under a line	21
6	Earthing Systems.....	21
6.2	Ratings with regard to corrosion and mechanical strength.....	21
6.2.1	Earth electrodes	21
6.4	Dimensioning with regard to human safety.....	21
7	Supports	22
7.3	Lattice steel towers	22
7.3.6	Ultimate limit states.....	22
7.4	Steel poles.....	22
7.4.5	Structural analysis	22
7.4.6	Ultimate limit states	22
7.5	Wood Poles	23
7.5.1	General.....	23
7.5.5	Ultimate limit states	23
7.7	Guyed structures	24
8.	Foundations.....	24
8.2	Basis of geotechnical design	24
8.2.2	Geotechnical design	24
8.2.3	Design by prescriptive measures	24
8.2.4	Load tests and tests on experimental models.....	24
8.4	Supervision of construction, monitoring and maintenance	24
9.	Conductor and earth wires	24
10.	Insulators	25
10.10	Characteristics and dimensions of insulators	25

11	Line equipment – overhead line fittings	26
11.9	Characteristics and dimensions of insulator fittings.....	26
12	Quality assurance, checks and taking-over	26
	Annex J Angles in lattice steel towers.....	26
J.4	Buckling resistance of angles in compression (see 7.3.6.4).....	26
	J.4.2 Effective non-dimensional slenderness for flexural buckling.....	26
J.4.3	Slenderness of members	26
	J.4.3.3 Primary bracing patterns.....	26
J.5	Design resistance of bolted connections (see 7.3.8)	27
	J.5.1 General.....	27
Figure NA.1	10-Minute mean wind speeds for GB, $v_{b, map}$ in metres per second.....	28
Figure NA.2	Ice thickness for GB, r_o and (r_w) in millimetres.....	29
Figure NA.3	Weather Zones for site heights of 0 to 100m	30
Figure NA.4	Weather Zones for site heights of 100 to 200m	31
Figure NA.5	Weather Zones for site heights of 200 to 300m	32
Figure NA.6	Weather Zones for site heights of 300 to 400m	33
Figure NA.7	Weather Zones for site heights of 400 to 500m	34

Foreword

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

British Standards Institution
389 Chiswick High Road
London W4 4AL

Tel: + 44 20 8996 9000
Fax: + 44 20 8996 7799
email: info@bsi.org.uk

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

Reference

Name and Date of GB and NI Statute

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

(ncpt)

GB.2 National normative standards

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

koniec náhľadu – text ďalej pokračuje v platenej verzii STN