

**Lighting columns - Design and verification - Part 3-3:
Verification by calculation**

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NATIONAL FOREWORD

See Eesti standard EVS-EN 40-3-3:2013 sisaldab Euroopa standardi EN 40-3-3:2013 ingliskeelset teksti.	This Estonian standard EVS-EN 40-3-3:2013 consists of the English text of the European standard EN 40-3-3:2013.
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English Version

Lighting columns - Part 3-3: Design and verification - Verification by calculation

Candélabres d'éclairage public - Partie 3-3: Conception et vérification - Vérification par calcul

Lichtmaste - Teil 3-3: Bemessung und Nachweis - Rechnerischer Nachweis

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Foreword

This document (EN 40-3-3:2013) has been prepared by Technical Committee CEN/TC 50 "Lighting columns and spigots", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2013, and conflicting national standards shall be withdrawn at the latest by August 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 40-3-3:2003.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

There are seven parts to the series of standards EN 40 - Lighting columns, as follows:

- Part 1: Definitions and terms;
- Part 2 : General requirements and dimensions;
- Part 3: Design and verification:
 - Part 3-1: Specification for characteristic loads;
 - Part 3-2: Verification by testing;
 - Part 3-3: Verification by calculation;
- Part 4: Requirements for reinforced and prestressed concrete lighting columns,
- Part 5: Requirements for steel lighting columns;
- Part 6: Requirements for aluminium lighting columns;
- Part 7: Requirements for fibre reinforced polymer composite lighting columns.

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies the requirements for the verification of the design of lighting columns by calculation. It applies to lighting columns of nominal height (including any bracket) not exceeding 20 m. Special structural designs to permit the attachment of signs, overhead wires, etc. are not covered by this European Standard.

The requirements for lighting columns made from materials other than concrete, steel, aluminium or fibre reinforced polymer composite (for example wood, plastic and cast iron) are not specifically covered in this standard. Fibre reinforced polymer composite lighting columns are covered in this standard in conjunction with EN 40-7.

This European Standard includes performance requirements for horizontal loads due to wind. Passive safety and the behaviour of a lighting column under the impact of a vehicle are not addressed. Such lighting columns will have additional requirements (see EN 12767).

The calculations used in this European Standard are based on limit state principles, where the effects of factored loads are compared with the relevant resistance of the structure. Two limit states are considered:

- a) the ultimate limit state, which corresponds to the load-carrying capacity of the lighting column;
- b) the serviceability limit state, which relates to the deflection of the lighting column in service.

NOTE In following this approach, simplifications appropriate to lighting columns have been adopted. These are:

- 1) the calculations are applicable to circular and regular octagonal cross-sections;
- 2) the number of separate partial safety factors have been reduced to a minimum;
- 3) serviceability partial safety factors have a value equal to unity.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 40-1:1991, *Lighting columns — Part 1: Definitions and terms*

EN 40-3-1, *Lighting columns — Part 3-1: Design and verification — Specification for characteristic loads*

EN 40-4, *Lighting columns — Part 4: Requirements for reinforced and prestressed concrete lighting columns*

EN 40-7:2002, *Lighting columns — Part 7: Requirements for fibre reinforced polymer composite lighting columns*

EN 1993-1-1, *Eurocode 3: Design of steel structures — Part 1-1: General rules and rules for buildings*

EN 1999-1-1, *Eurocode 9: Design of aluminium structures — Part 1-1: General rules — General rules and rules for buildings*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 40-1:1991 apply.