SLOVENSKI STANDARD
SIST EN 40-5:2001

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Drogovi za razsvetljavo - 5. del: Specifikacije za jeklene drogove za razsvetljavo

Lighting columns - Part 5: Specification for steel lighting columns

Lichtmaste - Teil 5: Regeln für Maste aus Stahl

Candélabres d'éclairage public - Partie 5: Spécification pour les candélabres d'éclairage public en acier

Ta slovenski standard je istoveten z: **EN 40-5:2000**

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SIST EN 40-5:2001 **en**

EUROPEAN STANDARD
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EN 40-5

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Supersedes EN 40-5:1982, EN 40-3:1982
and EN 40-4:1982

English version

Lighting columns - Part 5: Specification for steel lighting columns

Candélabres d'éclairage public - Partie 5: Spécification pour les candélabres d'éclairage public en acier

Lichtmaste - Teil 5: Regeln für Maste aus Stahl

This European Standard was approved by CEN on 16 July 1999.

CEN 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 CEN 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 CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Contents

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 50 "Lighting columns and spigots", the secretariat of which is held by BSI.

This European Standard replaces EN 40-5:1982, EN 40-3:1982 and EN 40-4:1982.

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 October 2000, and conflicting national standards shall be withdrawn at the latest by October 2000.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

This European Standard is the fifth in a series relating to specifications for lighting columns. There will be six parts to this Standard as follows:

Part 1: Definitions and terms

Part 2: General requirements and dimensions

Part 3: Design and verification
- 3-1 Specification for characteristic loads
- 3-2 Verification by testing
- 3-3 Verification by calculation

Part 4: Specifications for reinforced and prestressed concrete lighting columns

Part 5: Specifications for steel columns

Part 6: Specifications for aluminium columns

1 Scope

This European Standard specifies requirements for steel lighting columns. It includes materials and conformity control. It applies to post top columns not exceeding 20 m height for post top lanterns and to columns with brackets not exceeding 18 m height for side entry lanterns.

This European Standard specifies performance related to the essential requirement of resistance to horizontal (wind) loads, measured according to prEN 40-3. Passive safety and the behaviour of a column under the impact of a vehicle are not included in this standard. This group of lighting columns will have additional requirements (see prEN 40-2).

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.

EN 40-1	Lighting columns - Part 1: Definitions and terms
prEN 40-2:1999	Lighting columns - Part 2: General requirements and dimensions
EN 40-3-1	Lighting columns - Design and verification - Part 3-1: Specification for characteristic loads
EN 40-3-2	Lighting columns - Design and verification - Part 3-2: Verification by testing
prEN 40-3-3	Lighting columns - Design and verification - Part 3-3: Verification by calculation
EN 287-1	Approval testing of welders - Fusion welding - Part 1: Steels
EN 288-1	Specification and approval of welding procedures for metallic materials - Part 1: General rules for fusion welding
EN 288-2	Specification and approval of welding procedures for metallic materials - Part 2: Welding procedure specification for arc welding
EN 288-3	Specification and approval of welding procedures for metallic materials - Part 3: Welding procedure tests for arc welding of steels
EN 288-8	Specification and approval of welding procedures for metallic materials - Part 8: Approval by a pre-production welding test
EN 970	Non-destructive examination of fusion welds - Visual examination

EN 1011-1	Welding - Recommendations for welding of metallic materials - Part 1: General guidance for arc welding
prEN 1011-2	Welding - Recommendations for welding of metallic materials - Part 2: Arc welding of ferritic steels.
prEN 1011-3	Welding - Recommendations for welding of metallic materials - Part 3: Arc welding of stainless steels.
EN ISO 1461	Hot dip galvanized coatings on fabricated iron and steel articles - Specifications and test methods (ISO 1461:1999)
EN 10025	Hot rolled products of non-alloy structural steels - Technical delivery conditions (includes amendment A1:1993)
EN 10088	Stainless steels
EN 10149-1	Hot-rolled flat products made of high yield strength steels for cold forming - Part 1: General delivery conditions.
EN 10149-2	Hot-rolled flat products made of high yield strength steels for cold forming - Part 2: Delivery conditions for thermomechanically rolled steels.
EN 10204	Metallic products - Types of inspection documents
EN 10210	Hot finished structural hollow sections of non-alloy and fine grain structural steels
EN 10219	Cold formed structural hollow section of non-alloy and fine grain steels
EN 50102	Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)
ISO 2063	Metallic and other inorganic coatings - Thermal spraying - Zinc, aluminium and their alloys
ISO 8501-1	Preparation of steel substances before application of paints and related products - Visual assessment of surface cleanliness - Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substates after overall removal of previous coastings.
ISO 9717	Phosphate conversion coatings for metals - Method of specifying requirements

3 Definitions

For the purposes of this standard, definitions given in EN 40-1 apply.

4 Materials

4.1 Steel

The steel used shall comply with one of the following standards, and be suitable for hot-dip galvanizing when such surface protection is required. Rimming steel shall not be used.

Steel sheet and plate:	EN 10025 except grade S185/ EN 10149-1 and EN 10149-2
Hot-finished steel tube:	EN 10210
Cold-formed steel tube:	EN 10219
Stainless steels:	EN 10088

4.2 Foundation bolts

The minimum mechanical properties of the steel used for foundation bolts shall comply with the requirements of EN 10025 grade S 235 JR.

5 Dimensions

Dimensions shall be in accordance with prEN 40-2.

6 Design and design verification

The column shall be designed to sustain safely the dead loads and the wind loads specified in accordance with EN 40-3-1.

The structural design of a lighting column shall be verified either by calculation in accordance with prEN 40- 3-3 or by testing in accordance with EN 40-3-2.

7 Welding

7.1 Welding process

Arc welding of ferritic steels shall be in accordance with EN 1011-1 and prEN 1011-2.

Arc welding of stainless steels shall be in accordance with EN 1011-1 and prEN 1011-3.

7.2 Welding procedures

Welding procedures shall comply with EN 288-1 and EN 288-2.

Written procedures shall be provided for the main structural joints which shall include where relevant, the flange plate joint, the base compartment to shaft joint, the door reinforcement, any intermediate column joint, the column to bracket joint and the column seam weld when this is carried out at the time of column manufacture.

Welding procedures shall be approved in accordance with EN 288-8. Pre-production test pieces shall represent the main assembly types.

Welding procedures shall be verified by testing to the requirements in accordance with EN 288-3. The welding consumables and procedures used shall be such that the mechanical properties of the as-deposited weld metal will not be less than the respective minimum values required by the designer's specification for the parent metal being welded. Verification shall be by a welding coordinator.

Procedures shall be reviewed and reapproved where necessary after a period of seven years.

7.3 Welding personnel

Welders shall be tested for each approved procedure to which they shall be required to work (see 7.2). Test pieces shall be used as in the original procedure tests. The approval range shall be in accordance with that for the original procedure. In all other respects the requirements of EN 287-1 shall apply.

8 Joints

8.1 General

All joints shall be designed to the requirements specified in clause 6.

NOTE:1 Design of joint details should avoid moisture retention and corrosion.

8.2 Friction joints

When joints are made by drawing parts together to form a friction joint the additional stresses in the connection shall be included in the design.

8.3 Welded joints

Welded joints shall comply with the requirements of clause 7.

9 Impact resistance

A type test shall be carried out on each type of column base, or part, provided that each end of the part extends at least 0,3 m above and below the door opening. The test shall comply with an impact protection category of IK08 as specified in EN 50102 with the door fitted. This test may be carried out either before or after the application of any corrosion protection.

The test equipment shall be either impact pendulum hammer or vertical free fall hammer.

The number of impacts shall be five and shall be applied around the circumference at the mid height of the door. For circular columns these shall be equi-spaced around the remaining circumference excluding the door. For octagonal columns these shall be on each of the adjacent faces excluding the door.

After testing there shall be no indentation greater than 3 mm in depth when measured with a profile gauge. The test validates those products of which the outside diameter (or flat dimension) is equal to or less than the diameter being tested, with the same wall thickness and material strength.

NOTE 1 A type is defined by the shape, the dimensions and thickness and material of the section at mid door height.

NOTE 2 For sections other than circular or octagonal the provisions defined above apply.

10 Internal finish and sharp edges

10.1 Cableways

Cableways shall conform with the requirements of prEN 40-2.

10.2 Access points

All access points used for the installation and fitting of electrical equipment shall be free from rough edges and burrs.

11 Corrosion protection

11.1 Areas of the column for corrosion protection

For corrosion protection purposes the column is divided into the following areas:

Area A: The exterior surface of the column from the top to a minimum of 0,20 m above ground level or the whole exterior for a column with a flange plate.

NOTE:1 The minimum of 0,20 m allows a protection overlap.

Area B: The exterior surface of the ground section including a minimum length of 0,25 m above ground level.

Area C: The interior surface of the column

NOTE2: The minimum values in A and B can be increased in countries where snow can cause corrosion problems.

11.2 Corrosion protection measures

Unless otherwise specified the corrosion protection measures given in annex A are recommended.

NOTE1: Additional measures for corrosion protection at the erection site do not fall within the scope of this standard.

12 Marking

All columns and brackets shall be clearly and durably marked with

a) the name or symbol of the manufacturer;

b) the year of manufacture;

c) a reference to this standard;

d) a unique product code.

The marking shall be formed either in the material or by painting, hard stamping or by a securely fixed label.

13 Conformity control

13.1 Factory production control

Lighting columns and brackets shall be manufactured under a factory production control system which incorporates the requirements of 13.2 to 13.10 and clauses 14 and 15.

13.2 Sampling

A control sample for verification testing shall be taken randomly from each lot presented for testing. All lighting columns and/or brackets manufactured shall be submitted for verification. The minimum number of articles from each lot to form the control sample shall comply with table 1.

A lot shall consist of columns or brackets of the same nominal height/projection, type and design strength.