SLOVENSKI STANDARD

SIST EN 40-6:2002

01-september-2002

Nadomeġļ a:

SIST EN 40-6:2001

Drogovi za razsvetljavo - 6. del: Zahteve za aluminijaste drogove za razsvetljavo

Lighting columns - Part 6: Requirements for aluminium lighting columns

Lichtmaste - Teil 6: Anforderungen für Lichtmaste aus Aluminium

Candélabres d'éclairage public - Partie 6: Exigences pour les candélabres d'éclairage public en aluminium

Ta slovenski standard je istoveten z: EN 40-6:2002

ICS:

77.150.10

93.080.40

SIST EN 40-6:2002 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 40-6

April 2002

ICS 77.150.10; 93.080.40

Supersedes EN 40-6:2000

English version

Lighting columns - Part 6: Requirements for aluminium lighting columns

Candélabres d'éclairage public - Partie 6: Exigences pour les candélabres d'éclairage public en aluminium

Lichtmaste - Teil 6: Anforderungen für Lichtmaste aus Aluminium

This European Standard was approved by CEN on 25 February 2002.

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 Management Centre 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 Management Centre 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, Malta, 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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Ref. No. EN 40-6:2002 E

Contents

Foreword

This document EN 40-6:2002 has been prepared by Technical Committee CEN/TC 50 "Lighting columns and spigots", the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by October 2002, and conflicting national standards shall be withdrawn at the latest by January 2004.

This document supercedes EN 40-6:2000.

This document 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 89/106/EEC.

For relationship with EU Directive 89/106/EEC see informative annex ZA which is an integral part of this document.

In this standard the annexes A and B are informative and the annex C is normative.

Wherever reference is made to classes, they are considered to be technical classes and not classes according to 3(2) of the Construction Products Directive.

This European Standard is the sixth in a series relating to specifications for lighting columns. At present the Parts of this standard are 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: 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 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, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies requirements for aluminium 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 requirements of resistance to horizontal (wind) loads and performance under vehicle impact (passive safety) in support of the Essential Requirement No 4 Safety in use measured according to the corresponding test methods included in this European Standard or available in separate European Standards.

It provides for the evaluation of conformity of the products to this European Standard.

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).

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 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 procedures specification for arc welding.

EN 288-4	Specification and approval of welding procedures for metallic materials – Part 4: Welding procedure tests for the arc welding of aluminium and its alloys.
EN 288-8	Specification and approval of welding procedures for metallic materials – Part 8: Approval by a pre-production welding test.
EN 485-3	Aluminium and aluminium alloys - Sheet, strip and plates -Part 3: Tolerances on shape and dimensions for hot rolled products.
EN 485-4	Aluminium and aluminium alloys - Sheet, strip and plates – Part 4: Tolerances on shape and dimensions for cold rolled products.
EN 571-1	Non-destructive testing – Penetrant testing – General principles.
EN 755-7	Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 7: Seamless tubes, tolerances on dimension and form.
EN 755-8	Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 8: Porthole tubes, tolerances on dimensions and form.
EN 970	Non-destructive examination of fusion welds - Visual examination.
EN 1011-1	Welding - Recommendations for welding of metallic materials – General guidance for arc welding.
EN 1011-4	Welding - Recommendations for welding of metallic materials - Arc welding of aluminium and aluminium alloys.
EN 1706	Aluminium and aluminium alloys - Castings - Chemical composition and mechanical properties.
EN 10025	Hot rolled products of non-alloy structural steels - Technical delivery conditions.
EN 10204	Metallic products - Types of inspection documents.
EN 12767	Passive safety of support structures for road equipment – Requirements and test methods.
EN 50102	Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code).

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 40-1 apply.

4 Materials

4.1 Aluminium

Materials used shall comply with one of the following standards: EN 485-3, EN 485-4, EN 755-7, EN 755-8 and EN 1706.

Electrolytic action between the foundation bolts and the flange plate shall be prevented by insulation or physical separation.

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 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 aluminium and its alloys shall be in accordance with EN 1011-1 and prEN 1011-4.

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 structural joints.

Welding procedures shall be verified by testing to the requirements of EN 288-4. 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 specifications for the parent metal to be welded. Verification shall be by a welding co-ordinator.

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 as used in the original procedure tests. The approval range shall be in accordance with that for the original procedure.

8 Joints

8.1 General

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

NOTE 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 Protection against mechanical impact

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.

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 consideration of 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 0,2 m above ground level or the whole exterior for a column with flange plate.

NOTE 1 The minimum of 0,2 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.

NOTE 2 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.

NOTE 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.

NOTE For CE marking and labelling see ZA.3.

13 Conformity control

13.1 Evaluation of conformity

13.1.1 Factory production control

Lighting columns and brackets shall be manufactured under a permanent factory production control system which incorporates the relevant requirements of 13.3 to 13.10 and clauses 14 and 15.

The production control system shall include the following operations:

- the specification and verification of raw materials and constituents;
- the identification of the controlling and checking procedures for the design of new or modified products including the inspection and calibration of equipment;
- the controls and tests to be carried out during manufacture according to a frequency laid down;
- the identification and recording of any instances of non-conformity;
- the procedures for correcting any instances of non-conformity.

The manufacturer shall record the results of the production control system. These records shall include at least the following:

- identification of the product tested;
- the dates of sampling;
- the test methods used;
- the test and inspection results;
- the dates of the tests;
- the identification of the responsible authority within the factory;
- calibration of records.