

This document is a preview generated by EVS

**Cables for signs and luminous-discharge-tube installations operating from a no-load rated output voltage exceeding 1 000 V but not exceeding 10 000 V**

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 50143:2009 sisaldb Euroopa standardi EN 50143:2009 ingliskeelset teksti.	This Estonian standard EVS-EN 50143:2009 consists of the English text of the European standard EN 50143:2009.
Standard on kinnitatud Eesti Standardikeskuse 29.05.2009 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 29.05.2009 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kätesaadavaks tegemise kuupäev on 26.03.2009.	Date of Availability of the European standard text 26.03.2009.
Standard on kätesaadav Eesti standardiorganisatsionist.	The standard is available from Estonian standardisation organisation.

**ICS** 29.060.20

**Võtmesõnad:** electric cable, electric conductor, electrical equipment

**Standardite reproduutseerimis- ja levitamisõigus kuulub Eesti Standardikeskusele**

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:  
Aru 10 Tallinn 10317 Eesti; [www.evs.ee](http://www.evs.ee); Telefon: 605 5050; E-post: [info@evs.ee](mailto:info@evs.ee)

March 2009

ICS 29.060.20

Supersedes EN 50143:1997 + A1:2003

English version

**Cables for signs and luminous-discharge-tube installations  
operating from a no-load rated output voltage  
exceeding 1 000 V but not exceeding 10 000 V**

Câbles pour installations d'enseignes  
et de tubes à décharges lumineuses  
fonctionnant avec une tension à vide  
supérieure à 1 000 V  
mais ne dépassant pas 10 000 V

Leitungen für Leuchtröhrengeräte  
und Leuchtröhren-Anlagen  
mit einer Leerlaufspannung von  
über 1 000 V, aber nicht über 10 000 V

This European Standard was approved by CENELEC on 2009-02-01. CENELEC 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 CENELEC 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 CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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

**CENELEC**

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

**Central Secretariat: avenue Marnix 17, B - 1000 Brussels**

## Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 20, Electric cables.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50143 on 2009-02-01.

This European Standard supersedes EN 50143:1997 + A1:2003.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2010-02-01
  - latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2012-02-01
-

## Contents

<b>Introduction .....</b>	<b>5</b>
<b>1 Scope.....</b>	<b>6</b>
<b>2 Normative references .....</b>	<b>6</b>
<b>3 Terms and definitions .....</b>	<b>7</b>
<b>4 Rated voltage .....</b>	<b>7</b>
<b>5 General requirements for the construction of cables .....</b>	<b>8</b>
5.1 Conductors .....	8
5.2 Insulation .....	8
5.3 Oversheath .....	8
5.4 Non-metallic components of halogen free cables .....	9
<b>6 Cable types.....</b>	<b>9</b>
6.1 General.....	9
6.2 Requirements.....	10
<b>7 Silicone rubber insulated cables (types B, C2 and D2) .....</b>	<b>10</b>
7.1 Construction.....	10
7.2 Tests .....	10
7.3 Maximum continuous conductor temperature .....	11
<b>8 PVC insulated cables (types E, F and G) .....</b>	<b>14</b>
8.1 Construction.....	14
8.2 Tests .....	14
8.3 Maximum continuous conductor temperature .....	14
<b>9 Cables with a composite insulation of polyethylene and PVC (type K) .....</b>	<b>18</b>
9.1 Construction.....	18
9.2 Tests .....	18
9.3 Maximum continuous conductor temperature .....	18
<b>10 Silicone rubber insulated cables (type L).....</b>	<b>20</b>
10.1 Construction.....	20
10.2 Tests .....	20
10.3 Maximum continuous conductor temperature .....	20
<b>11 Test methods.....</b>	<b>22</b>
11.1 General.....	22
11.2 Classification of test according to the frequency with which they are carried out.....	22
11.3 Sampling.....	22
11.4 Pre-conditioning .....	22
11.5 Test temperature .....	22
11.6 Test voltage .....	22
<b>12 Marking .....</b>	<b>22</b>
12.1 Indication of origin.....	22
12.2 Indication of cable type and rated voltage .....	23
12.3 Continuity of marks .....	23
12.4 Additional marking.....	23
12.5 Durability.....	23
12.6 Legibility .....	23
12.7 Use of the name CENELEC .....	23
<b>13 Guide to use (informative).....</b>	<b>23</b>

<b>Annex A (normative) Requirements for halogens .....</b>	<b>24</b>
<b>Annex B (normative) Determination of halogens- Elemental test.....</b>	<b>26</b>
<b>Annex C (normative) Requirements for the non-electrical tests for type ZM1 sheath .....</b>	<b>28</b>
<b>Annex D (normative) Requirements for the compatibility test .....</b>	<b>30</b>
<b>Annex E (normative) Electrical test methods.....</b>	<b>31</b>
<b>Annex F (normative) Non-electrical test methods.....</b>	<b>33</b>
<b>Annex G (normative) Requirements for the non-electrical tests for polyethylene insulation .....</b>	<b>34</b>

### **Figures**

Figure 1 - Example of marking used on the outer surface of a cable .....	23
Figure E.1 - Cable trough.....	32
Figure E.2 - Test arrangement for resistance to long term breakdown .....	32

### **Tables**

Table 1 - Maximum permitted voltages against rated voltage of cable in an a.c. system .....	7
Table 2 - General data for cables type B, C2 and D2 to EN 50143 .....	11
Table 3 - Tests for cables type B, C2 and D2 to EN 50143.....	12
Table 4 - List of applicable tests for cables type B, C2 and D2.....	13
Table 5 - General data for cables type E, F and G to EN 50143 .....	15
Table 6 - Tests for cables type E, F and G to EN 50143.....	16
Table 7 - List of applicable tests for cables type E, F and G.....	17
Table 8 - Dimensions of cables type K to EN 50143 .....	18
Table 9 - Tests for cables type K to EN 50143.....	19
Table 10 - General data for cables type L to EN 50143.....	20
Table 11 - Tests for cables type L to EN 50143 .....	21
Table A.1 - Test method, measurement, requirements .....	24
Table A.2 - Sequential test programme .....	25
Table C.1 .....	28
Table D.1 - Requirements .....	30
Table G.1 .....	34

## Introduction

This revision of EN 50143 is made at the request of the European Sign Federation (ESF). It supports EN 50107.

By comparison with EN 50143:1997 the number of cable types has been rationalised. One new type (type L) has been introduced, and four types (types A, C1, D1 and H) withdrawn.

The object of the European Standard remains unchanged, namely:

- to standardise cables and cords that are safe and reliable when properly used in relation to the technical requirements of the installation of which they form a part;
- to state the characteristics and manufacturing requirements directly or indirectly bearing on safety; and
- to specify methods for checking conformity with those requirements.

## 1 Scope

EN 50143 applies to single core cables of rated voltages up to and including 5/10 kV ( $U_0/U$ ) used with electric signs and high-voltage luminous-discharge-tube installations. These cables are for use in installations complying with EN 50107.

The particular types of cables are specified in Clauses 7 to 10 of this standard.

## 2 Normative references

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

EN 50107 (series)		Signs and luminous-discharge-tube installations operating from a no-load rated output voltage exceeding 1 kV but not exceeding 10 kV
EN 50267-2-1		Common test methods for cables under fire conditions - Tests on gases evolved during combustion of materials from cables - Part 2-1: Procedures - Determination of the amount of halogen acid gas
EN 50267-2-2	1998	Common test methods for cables under fire conditions - Tests on gases evolved during combustion of materials from cables - Part 2-2: Procedures - Determination of degree of acidity of gases for materials by measuring pH and conductivity
EN 50363-1	2005	Insulating, sheathing and covering materials for low voltage energy cables - Part 1: Cross-linked elastomeric insulating compounds
EN 50363-3	2005	Insulating, sheathing and covering materials for low voltage energy cables - Part 3: PVC insulating compounds
EN 50363-4-1	2005	Insulating, sheathing and covering materials for low voltage energy cables - Part 4-1: PVC sheathing compounds
EN 50395	2005	Electrical test methods for low voltage energy cables
EN 50396	2005	Non electrical test methods for low voltage energy cables
EN 60228		Conductors of insulated cables (IEC 60228)
EN 60332-1-2		Tests on electric and optical fibre cables under fire conditions - Part 1-2: Test for vertical flame propagation for a single insulated wire or cable - Procedure for 1 kW pre-mixed flame (IEC 60332-1-2)
EN 60684-2		Flexible insulating sleeving - Part 2: Methods of test (IEC 60684-2)
EN 60811 (series)		Insulating and sheathing materials of electric and optical cables - Common test methods (IEC 60811 series)
EN 61034-2		Measurement of smoke density of cables burning under defined conditions - Part 2: Test procedure and requirements (IEC 61034-2)