SLOVENSKI STANDARD

SIST EN 61138:1999

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julij 1999

Cables for portable earthing and short-circuiting equipment (IEC 61138:1994+A1:1995, modified)

ICS 29.060.20

Referenčna številka
SIST EN 61138:1999(en)

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61138

August 1997

ICS 29.060.20; 29.240.01

Descriptors: Electric cable, low voltage, flexible cable, insulated cable, rubber covering, ethylene propylene rubber, polyvinyl chloride, electrical earthing, short circuiting, constructional characteristics, test, marking

English version

Cables for portable earthing and short-circuiting equipment
(IEC 61138:1994 + A1:1995, modified)

Câbles d'équipement portable de mise à la terre et de court-circuit
(CEI 61138:1994 + A1:1995, modifiée)

Leitungen für ortsveränderliche Erdungs- und Kurzschließ-Einrichtungen
(IEC 61138:1994 + A1:1995, modifiziert)

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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.

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CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of the International Standard IEC 61138:1994 and its amendement 1:1995, prepared by SC 20B, Low voltage cables, of IEC TC 20, Electric cables, together with the common modifications prepared by the Technical Committee CENELEC TC 20, Electric cables was submitted to the Unique Acceptance Procedure and was approved as by CENELEC EN 61138 on 1997-03-11.

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)	1997-12-01
- latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	1997-12-01

For products with have complied with the relevant national standard before 1997-12-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 1998-12-01.

Annexes designated "normative" are part of the body of the standard.
In this standard, annex ZA is normative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61138:1994 and its amendment 1:1995 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

Subclause 1.6.2.5

Replace the second and third indents with the following:

- HD 21.1, Table 2, TM 2 as a general purpose compound
- Table 5 of this standard for TM 6 as a low temperature resistant compound.
  (NOTE: TM 6 will be added to HD 21.1 at a later date.)

Sublause 1.7

Replace: - PVC/ST5 with TM 2
- PVC/ST8 with TM 6

Sublause 2.1.1

Replace the code designations for PVC types as follows:

TM2/Copper	-	H00V-D
TM2/Aluminium	-	H00V-AD
TM6/Copper	-	H00V3-D
TM6/Aluminium	-	H00V3-AD

Table 5

Replace Table 5 with the one attached.

TABLE 5

Requirements for the non-electrical test for polyvinyl chloride (PVC) covering TM 6

1	2	3	4	5	6
Ref. No.	Test	Unit	Type of compound	Test method described in EN 60811	
			TM 6	Section	Clause
1.	Mechanical properties				
1.1	Properties before ageing			1-1	9.2
1.1.1	Values to be obtained for the tensile strength: - median, min.	N/mm²	7,5		
1.1.2	Values to be obtained for the elongation at break: - median, min.	%	125	1-2	8.1
1.2	Properties after ageing in air				
1.2.1	Ageing conditions: - temperature - duration of treatment	°C h	80 ± 2 7x24		
1.2.2	Value to be obtained for the tensile strength: - median, min. - variation [1], max.	N/mm² %	7,5 ±20		
1.2.3	Values to be obtained for the elongation at break: - median, min. - variation [1], max.	% %	125 ±20		
1.3	Properties after immersion in mineral oil			2-1	10
1.3.1	Test Conditions - temperature of oil - duration of immersion in oil	°C h	- -		
1.3.2	Value to be obtained for the tensile strength - variation [1], max	%	-		
1.3.3	Value to be obtained for the elongation at break - variation [1], max	%	-		
2.	Loss of mass test			3-2	8.2
2.1	Ageing conditions - temperature - duration of treatment	°C h	80 ± 2 7 x 24		
2.2	Values to be obtained for the loss of mass, max.	mg/cm²	2,0		

(1) Variations: difference between the median value after ageing and the median value without ageing, expressed as a percentage of the latter

TABLE 5 (continued)

1	2	3	4	5	6
Ref. No.	Test	Unit	Type of compound	Test method described in EN 60811	
			TM 6	Section	Clause
3.	Compatibility Test (2)				
3.1	Ageing conditions - temperature - duration of treatment	 ° C h	 - -	1-2	8.1.4
3.2	Mechanical properties after ageing Values to be obtained		 -		
4.	Heat shock test			3-1	9.2
4.1	Test conditions: - temperature - duration of treatment	 °C h	 - -		
4.2	Result to be obtained		-		
5.	Pressure test at high temperature			3-1	8.2
5.1	Test conditions: - force exerted by the blade - duration of heating under load - temperature	 h °C	 (5) (5) 70 ± 2	 3-1 3-1	 8.2.4 8.2.5
5.2	Result to be obtained: - median of the depth of indentation, maximum	 %	 50		
6.	Bending test at low temperature			1-4	8.2
6.1	Test conditions: - temperature - period of application of low temperature	 °C	 -40 ± 2 (5)	 1-4	 8.2.3
6.2	Result to be obtained		(4)		

(2) Only applicable when called up by the particular cable standard
(3) As in Ref. Nos. 1.2.2 & 1.2.3
(4) Absence of cracks
(5) See test method referred to in columns 5 and 6

TABLE 5 (concluded)

1	2	3	4	5	6
Ref. No.	Test	Unit	Type of compound	Test method described in EN 60811	
			TM 6	Section	Clause
7.	Elongation test at low temperature			1-4	8.4
7.1	Test conditions: - temperature - period of application of low temperature	°C	-40 ± 2 (5)	1-4	8.4.4 & 8.4.5
7.2	Result to be obtained: - elongation without break, min.	%	30		
8.	Impact test at low temperature			1-4	8.5
8.1	Test conditions: - temperature - period of application of low temperature - mass of hammer	°C	-40 ± 2 (5) (5)	1-4 1-4	8.5.5 8.5.4
8.2	Result to be obtained		(4)	1-4	8.5.6
9.	Minimum thermal stability at 200°C	min	-	3-2	9

(4) Absence of cracks
(5) See test method referred to in columns 5 and 6

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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).

NOTE: When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60227-1 [1)]	1993	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V Part 1: General requirements	-	-
IEC 60227-2 [2)]	1979	Part 2: Test methods	-	-
IEC 60228 (mod)	1978	Conductors of insulated cables First supplement: Guide to the dimensional limits of circular conductors	HD 383 S2 [3)]	1986
IEC 60245-2 (mod)	1980	Rubber insulated cables of rated voltages up to and including 450/750 V Part 2: Test methods	HD 22.2 S2 [4)]	1992
IEC 60502	1983	Extruded solid dielectric insulated power cables for rated voltages from 1 kV up to 30 kV	-	-
IEC 60719	1992	Calculation of the lower and upper limits for the average outer dimensions of cables with circular copper conductors and of rated voltages up to and including 450/750 V	EN 60719	1993

1) HD 21.1 S3:1997, which is related to, but not directly equivalent with, IEC 60227-1:1993 applies instead.

2) HD 21.2 S3:1997, which is related to, but not directly equivalent with, IEC 60227-2:1979 applies instead.

3) HD 383 S2 includes supplement IEC 60228A:1982

4) HD 22.2 S2 is superseded by HD 22.2 S3:1997, which is related to, but not directly equivalent with, IEC 60245-2:1994.

Publication	Year	Title	EN/HD	Year
IEC 60811-1-1	1993	Insulating and sheathing materials of electric cables - Common test methods Part 1: General application Section 1: Measurement of thickness and overall dimensions - Tests for determining the mechanical properties	EN 60811-1-1	1995
IEC 60811-1-2	1985	Section 2: Thermal ageing methods	EN 60811-1-2[5]	1995
IEC 60811-1-3	1985	Section 3: Methods for determining the density - Water absorption tests Shrinkage test	HD 505.1.3 S2[6]	1991
IEC 60811-1-4	1985	Section 4: Test at low temperature	EN 60811-1-4[7]	1995
IEC 60811-2-1	1986	Part 2: Methods specific to elastomeric compounds Section 1: Ozone resistance test Hot set test - Mineral oil immersion test	EN 60811-2-1[8]	1995
IEC 60811-3-1	1985	Part 3: Methods specific to PVC compounds Section 1: Pressure test at high temperature Tests for resistance to cracking	EN 60811-3-1[9]	1995
IEC 60811-3-2	1985	Section 2: Loss of mass test Thermal stability test	EN 60811-3-2[10]	1995
IEC 61230 (mod)	1993	Live working - Portable equipment for earthing or earthing and short-circuiting	EN 61230	1995

5) EN 60811-1-2 includes corrigendum May 1986 + A1:1989 to IEC 60811-1-2.
6) HD 505.1.3 S2 is superseded by EN 60811-1-3:1995 which is based on IEC 60811-1-3:1993.
7) EN 60811-1-4 includes corrigendum May 1986 + A1:1993 to IEC 60811-1-4
8) EN 60811-2-1 includes corrigendum May 1986 + A1:1992 + A2:1993 to IEC 60811-2-1
9) EN 60811-3-1 includes corrigendum May 1996 to IEC 60811-3-1.
10) EN 60811-3-2 includes corrigendum May 1986 + A1:1993 to IEC 60811-3-2

NORME INTERNATIONALE
INTERNATIONAL STANDARD

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Deuxième édition
Second edition
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Câbles d'équipement portable de mise à la terre et de court-circuit

Cables for portable earthing and short-circuiting equipment

Bureau Central de la Commission Electrotechnique Internationale 3, rue de Varembé Genève, Suisse

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Международная Электротехническая Комиссия

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