



SLOVENSKI STANDARD
SIST HD 21.1 S2:1998/A14:1998

01-februar-1998

**Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V
- Part 1: General requirements - Amendment A14**

Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V -- Part 1 : General requirements

Polyvinylchlorid-isolierte Leitungen mit Nennspannungen bis 450/750 V -- Teil 1:
Allgemeine Anforderungen

Conducteurs et câbles isolés au polychlorure de vinyle, de tension assignée au plus
égale à 450/750 V -- Partie 1: Prescriptions générales

Ta slovenski standard je istoveten z: HD 21.1 S2:1990/A14:1997

ICS:

29.060.20 Kabli Cables

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HARMONIZATION DOCUMENT
DOCUMENT D'HARMONISATION
HARMONISIERUNGSDOKUMENT

HD 21.1 S2/A14

January 1997

UDC (621.315.211.2 + 621.315.32)027.475-036.743.22-777.001.2.002.2(083.71)(083.73)
ICS 29.060.20

Descriptors: See HD 21.1 S2

English version

**Polyvinyl chloride insulated cables of rated voltages up to
and including 450/750 V
Part 1 : General requirements**

Conducteurs et câbles isolés au
polychlorure de vinyle, de tension
assignée au plus égale à 450/750 V
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Nennspannungen bis 450/750 V
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This amendment A14 modifies the Harmonization Document HD 21.1 S2:1990; it was approved by CENELEC on 1996-10-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for implementation of this amendment on a national level.

Up-to-date lists and bibliographical references concerning such national implementation may be obtained on application to the Central Secretariat or to any CENELEC member.

This amendment exists in three official versions (English, French, German).

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



REPUBLIKA SLOVENIJA
MINISTRSTVO ZA ZNANOST IN TEHNOLOGIJO
Urad RS za standardizacijo in meroslovje
LJUBLJANA

CENELEC

SIST. **HD 21.1 S2/A14** European Committee for Electrotechnical Standardization
PREVZET PO METODI RAZGLASITVE
-02- 1998 Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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

Foreword

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

It introduces new PVC types TI 5 and TM 4, initially for use with EN 50214, Flexible cables for lifts.

The text of the draft was submitted to the formal vote and was approved by CENELEC as amendment A14 to HD 21.1 S2:1990 on 1996-10-01.

The following dates were fixed:

- latest date by which the existence of the amendment has to be announced at national level (doa) 1997-06-01
- latest date by which the amendment has to be implemented at national level by publication of a harmonized national standard or by endorsement (dop) 1997-12-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 1997-12-01

For products which have complied with HD 21.1 S2:1990 and its amendments A5:1990, A6:1991, A7:1992, A8:1994, A9:1993, A12:1993, A13:1994, A15:1995 and A16:1995 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.

SIST HD 21.1 S2:1998/A14:1998

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AMENDMENT 14 TO HD 21.1 S2

Sub-clause 5.2.1

Add insulation compound 'TI 5' to the list given in line five.

Table I

Add insulation compound 'TI 5' as attached.

Sub-clause 5.5.1

Add the following to the list of compound types:

'Type TM 4 for flexible cables operating at low temperatures.'

Table II

Add sheathing compound 'TM 4' as attached.



TABLE I

Requirements for the non-electrical test for polyvinyl chloride (PVC) insulation

1	2	3	4	5	6	7	8	9	10
Ref No	Test	Unit	Type of compound					Test method described in	
			T11	T12	T13	T14	T15	EN	Clause
	Maximum rated conductor temperature	°C	70	70	90	70	70		
1	<u>Tensile strength and elongation at break</u>								
1.1	Properties in the state as delivered							60811-1-1	9.1
1.1.1	Values to be obtained for the tensile strength: - median, min.	N/mm ²	12.5	10.0	15.0	12.5	10.0		
1.1.2	Values to be obtained for the elongation at break: - median, min.	%	125	150	150	125	150		
1.2	Properties after ageing in air oven							60811-1-2	8.1
1.2.1	Ageing conditions: - temperature - duration of treatment	°C h	80±2 7x24	80±2 7x24	115±2 14x24	80±2 7x24	80±2 7x24		
1.2.2	Value to be obtained for the tensile strength: - median, min. - variation*, max.	N/mm ² %	12.5 ±20	10.0 ±20	15.0 ±25	12.5 ±20	10.0 ±20		
1.2.3	Values to be obtained for the elongation at break: - median, min. - variation*, max.	% %	125 ±20	150 ±20	150 ±25	125 ±20	150 ±20		
2.	<u>Loss of mass test</u>							60811-3-2	8.1
2.1	Ageing conditions - temperature - duration of treatment	°C h	80±2 7x24	80±2 7x24	115±2 14x24	80±2 7x24	80±2 7x24		
2.2	Values to be obtained for the loss of mass, max.	mg/cm ²	2.0	2.0	1.5	2.0	2.0		

* Variation: difference between the median value after ageing and the median value without ageing, expressed as a percentage of the latter

TABLE I (continued)

Requirements for the non-electrical test for polyvinyl chloride (PVC) insulation

1	2	3	4	5	6	7	8	9	10
Ref No	Test	Unit	Type of compound					Test method described in	
			T11	T12	T13	T14	T15	EN	Clause
	Maximum rated conductor temperature	°C	70	70	90	70	70		
3.	<u>Test of non-contamination</u> ⁽¹⁾								
3.1	Ageing conditions		**	**	-	-	**	60811-1-2	8.1.4
3.2	Mechanical properties after ageing								
	Values to be obtained		***	***	-	-	***		
4.	<u>Heat shock test</u>							60811-3-1	9.1
4.1	Test conditions: - temperature - duration of treatment	°C h	150±2 1	150±2 1	150±2 1	150±2 1	150±2 1		
4.2	Result to be obtained		*****	*****	*****	*****	*****		
5.	<u>Pressure test at high temperature</u>							60811-3-1	8.1
5.1	Test conditions: - force exerted by the blade - duration of heating under load - duration of heating under load - temperature		***** ***** ***** 80±2	***** ***** ***** 70±2	***** ***** ***** 90±2	***** ***** ***** 80±2	***** ***** ***** 70±2	60811-3-1	8.1.4
5.2	Result to be obtained: - median of the depth of indentation, maximum	%	50	50	50	50	50		

- (1) If applicable
 ** As in Ref. No. 1.2.1
 *** As in Ref. Nos. 1.2.2 & 1.2.3
 **** Absence of cracks
 ***** See test method referred to in columns 9 and 10

TABLE I (continued)

1	2	3	4	5	6	7	8	9	10
Ref No	Test	Unit	Type of compound					Test method described in	
			TI1	TI2	TI3	TI4	TI5	EN	Clause
	Maximum rated conductor temperature	°C	70	70	90	70	70		
6.	<u>Bending test at low temperature</u>							60811-1-4	8.1
6.1	Test conditions: - temperature - period of application of low temperature	°C	-15±2 *****	-15±2 *****	-15±2 *****	-40±2 *****	-30±2 *****	60811-1-4	8.1.4 and 8.1.5
6.2	Result to be obtained		****	****	****	****	****		
7.	<u>Elongation test at low temperature</u>							60811-1-4	8.3
7.1	Test conditions: - temperature - period of application of low temperature	°C	-15±2 *****	-15±2 *****	-	-40±2 *****	-30±2 *****	60811-1-4	8.3.4 and 8.3.5
7.2	Result to be obtained: - elongation without break, min.	%	30	30	-	30	30		
8.	<u>Impact test at low temperature</u>							60811-1-4	8.5
8.1	Test conditions: - temperature - period of application of low temperature - mass of hammer	°C	-15±2 *****	-15±2 *****	-	-40±2 *****	-30±2 *****	60811-1-4	8.5.5
			*****	*****	-	*****	*****	60811-1-4	8.5.4
8.2	Result to be obtained		*****	*****	-	*****	*****	60811-1-4	8.5.6
9.	<u>Minimum Thermal stability at 200°C</u>	min	-	-	240	-	-	60811-3-2	9

**** Absence of cracks

***** See test method referred to in columns 9 and 10

TABLE II

Requirements for the non-electrical test for polyvinyl chloride (PVC) sheath

1	2	3	4	5	6	7	8
Ref. No.	Test	Unit	Type of compound			Test method described in	
			TM1	TM2	TM4	EN	Clause
1.	<u>Tensile strength and elongation at break</u>						
1.1	Properties in the state as delivered					60811-1-1	9.2
1.1.1	Values to be obtained for the tensile strength: - median, min.	N/mm ²	12.5	10.0	10.0		
1.1.2	Values to be obtained for the elongation at break: - median, min.	%	125	150	150		
1.2	Properties after ageing in air					60811-1-2	8.1
1.2.1	Ageing conditions: - temperature - duration of treatment	°C h	80±2 7x24	80±2 7x24	80±2 7x24		
1.2.2	Value to be obtained for the tensile strength: - median, min. - variation (*), max.	N/mm ² %	12.5 ±20	10.0 ±20	10.0 ±20		
1.2.3	Values to be obtained for the elongation at break: - median, min. - variation (*), max.	% %	125 ±20	150 ±20	150 ±20		
2.	<u>Loss of mass test</u>					60811-3-2	8.2
2.1	Ageing conditions		**	**	**		
2.2	Values to be obtained for the loss of mass, max.	mg/cm ²	2.0	2.0	2.0		

- * Variations: difference between the median value after ageing and the median value without ageing, expressed as a percentage of the latter
- ** As in Ref. No. 1.2.1

TABLE II (continued)

1	2	3	4	5	6	7	8
Ref. No.	Test	Unit	Type of compound			Test method described in	
			TM1	TM2	TM4	EN	Clause
3.	<u>Test of non-contamination</u> ⁽¹⁾						
3.1	Ageing conditions		**	**	**	60811-1-2	8.1.4
3.2	Mechanical properties after ageing Values to be obtained		***	***	***		
4.	<u>Heat shock test</u>					60811-3-1	9.2
4.1	Test conditions: - temperature - duration of treatment	°C h	150±2 1	150±2 1	150±2 1		
4.2	Result to be obtained		****	****	****		
5.	<u>Pressure test at high temperature</u>					60811-3-1	8.2
5.1	Test conditions: - force exerted by the blade - duration of heating under load - temperature	h °C	**** **** 80±2	**** **** 70±2	**** **** 70±2	60811-3-1 60811-3-1	8.2.4 8.2.
5.2	Result to be obtained: - median of the depth of indentation, maximum	%	50	50	50		
6.	<u>Bending test at low temperature</u>					60811-1-4	8.2
6.1	Test conditions: - temperature - period of application of low temperature	°C	-15±2 ****	-15±2 ****	-30±2 ****	60811-1-4	8.2.3
6.2	Result to be obtained		****	****	****		

- (1) If applicable
 ** As in Ref. No. 1.2.1
 *** As in Ref. Nos. 1.2.2 & 1.2.3
 **** Absence of cracks
 ***** See test method referred to in columns 8 and 9