SLOVENSKI STANDARD

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Komunikacijski kabli - Specifikacije za preskusne metode - 4-4. del: Metode za preskuġanje vplivov okolja - Odpornost proti topilom in onesnaġenim tekoļinam

Communication cables - Specifications for test methods - Part 4-4: Environmental test methods - Resistance to solvents and contaminating fluids

Kommunikationskabel - Spezifikationen für Prüfverfahren - Teil 4-4: Umweltprüfverfahren - Widerstandsfähigkeit gegen Lösemittel und verunreinigende Flüssigkeiten

Câbles de communication - Spécifications des méthodes d'essai - Partie 4-4: Méthodes d'essais d'environnement - Résistance aux solvants et aux fluides contaminants

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Communication cables - Specifications for test methods - Part 4-4: Environmental test methods - Resistance to solvents and contaminating fluids

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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.

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

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Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 46X, Communication cables.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 50289-4-4 on 2007-09-01.

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)	2008-09-01
- latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2010-09-01

This European Standard has been prepared under the European Mandate M/212 given to CENELEC by the European Commission and the European Free Trade Association.

Contents

1 Scope

This Part 4-4 of EN 50289 details the method of test to determine the ability of a cable used in analogue and digital communication systems to withstand solvents and contaminating fluids.

It is to be read in conjunction with Part 4-1 of EN 50289, which contains essential provisions for its application.

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 50289-4-1	2001	Communication cables - Specifications for test methods – Part 4-1: Environmental test methods - General requirements
EN 50290-1-2	2004	Communication cables – Part 1-2: Definitions

3 Definitions

For the purposes of this document, the definitions of EN 50290-1-2 apply.

4 General

The properties of plastic materials can be changed during and after contact with contaminating fluids or solvents. The changes may differ even when the fluid or solvents are from the same family with similar content.

A cable can therefore not generally be regarded as resistant against solvents and contaminating fluids. It can be only stated as resistant against such fluids against it has been tested.

5 Test fluids

Fluids with possible detrimental effect on r.f. cables are given in the following two lists, together with the temperature at which the conditioning should be carried out.

The test fluids shall be prescribed in the relevant detail or sectional specification and shall be preferably selected from Tables 1 and 2 below.

Other test fluids, test temperatures and test times may be agreed between customer and supplier.

5.1 List of test fluids

Table 1 - Fuels, lubricants, hydraulic fluids and anti-freeze agents

	Test fluid	Test temperature
a)	A mixture of toluene (aromatic) 30 % and isoctane (aliphatic) 70 % (volume)	40 °C ± 2 °C
b)	Wide cut aviation turbine fuel Fluids a) and b) are representative of the worst possible combination of solvents likely to be encountered in cable applications.	70 °C ± 2 °C
c)	Di-octyl sebacate (aircraft turbine engine lubrication oil) [a]	150 °C ± 2 °C
d)	Mineral oil, viscosity approximately 15 cSt at 38 °C	70 °C ± 2 °C
e)	Castor oil 20 %, 2-ethoxyethanol 80 % (volume) (this represents a normal hydraulic fluid)	20 °C ± 2 °C
f)	Phosphate ester hydraulic fluid (synthetic hydraulic fluid)	70 °C ± 2 °C
g)	Dimethyl silicone fluid (high temperature hydraulic fluid) [a]	150 °C ± 2 °C
h)	Lithium soap/synthetic oil grease (low temperature grease)	20 °C ± 2 °C
i)	Monopropylene glycol (de-icing fluid)	20 °C ± 2 °C

[a] These fluids are only to be tested on special high temperature cable with a specified operating temperature ≥ 150 °C.

Table 2 - Cleaning agents and moisture repellents

	Test fluid	Test temperature
a)	Carbon tetrachloride	15 °C to 35 °C
b)	Trichloroethylene, type C	15 °C to 35 °C
c)	White spirit	15 °C to 35 °C
d)	Petroleum jelly	15 °C to 35 °C

5.2 Precaution

Warning note Many of the fluids listed are highly inflammable and may also have toxic effects.

6 Procedure

For each test with a new medium, a new test sample shall be used.

A test sample of sufficient length for the required tests shall be taken from the finished cable and immersed in the test fluid. the bending radius during immersion shall be ≥ the minimum bending radius according to the relevant sectional or detail specification.

Unless otherwise prescribed by the relevant specification the period of immersion shall be 18 h at the test temperature indicated.

After completion of the conditioning, the specimen shall be wiped clean of surplus fluid and then allowed to dry for 2 h at 70 °C, unless a lower value is prescribed by the relevant sectional or detail specification, whereupon they are exposed to standard atmospheric recovery conditions for 1,5 h to 2 h.

7 Final measurements

At the conclusion of the recovery period, the cables shall meet the requirements of the relevant detail or sectional specification for the following properties, unless otherwise specified:

a) visual inspection of all construction elements;

b) mechanical dimensions;

c) voltage withstanding of dielectric and sheath;

d) tensile strength and elongation at break of dielectric and sheath;

e) transmission characteristics.

8 Information to be given in the relevant specification

a) applicable conditioning fluids;

b) drying temperature, if different from 70 °C;

c) requirements for final measurements;

d) any deviation from the standard test procedure.

8.1 Requirements

– No visible damage or visible change.

– The electrical and mechanical characteristics shall remain within the specified limits.

9 Test report

The test report shall include

– test temperature,

– duration of immersion,

– indicate whether the specimen passes or fails the test.

NOTE In case of different solvents or contaminating fluids, the influence of those fluids to the cable characteristics may change after a drying period of hours or days. Tests may be repeated after a recovery time which is agreed between customer and supplier. Time and test results shall be reported in the test report.