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**Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-27: Tests - Dust - Laminar flow (IEC 61300-2-27:1995)**

Fibre optic interconnecting devices and passive components - Basic test and measurement procedures -- Part 2-27: Tests - Dust - Laminar flow

Lichtwellenleiter - Verbindungselemente und passive Bauteile - Grundlegende Prüf- und Meßverfahren -- Teil 2-27: Prüfungen: Staub - Laminare Strömung

Dispositifs d'interconnexion et composants passifs à fibres optiques - Méthodes fondamentales d'essais et de mesures -- Partie 2-27: Essais - Poussière - Ecoulement laminaire

**Ta slovenski standard je istoveten z: EN 61300-2-27:1997**

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**ICS:**

33.180.20	Povezovalne naprave za optična vlakna	Fibre optic interconnecting devices
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**SIST EN 61300-2-27:1999****en**

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English version

**Fibre optic interconnecting devices and passive components  
Basic test and measurement procedures  
Part 2-27: Tests - Dust - Laminar flow  
(IEC 61300-2-27:1995)**

Dispositifs d'interconnexion et  
composants passifs à fibres optiques  
Méthodes fondamentales d'essais et  
de mesures  
Partie 2-27: Essais - Poussière  
Écoulement laminaire  
(CEI 61300-2-27:1995)

Lichtwellenleiter - Verbindungselemente  
und passive Bauteile - Grundlegende  
Prüf- und Meßverfahren  
Teil 2-27: Prüfungen: Staub - Laminare  
Strömung  
(IEC 61300-2-27:1995)

This European Standard was approved by CENELEC on 1997-07-01. 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

## 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 61300-2-27:1995, prepared by SC 86B, Fibre optic interconnecting devices and passive components, of IEC TC 86, Fibre optics, was submitted to the formal vote and was approved by CENELEC as EN 61300-2-27 on 1997-07-01 without any modification.

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) 1998-06-01
- latest date by which the national standards conflicting  
with the EN have to be withdrawn (dow) 1998-06-01

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### Endorsement notice

The text of the International Standard IEC 61300-2-27:1995 was approved by CENELEC as a European Standard without any modification.

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**Dispositifs d'interconnexion et composants  
passifs à fibres optiques –  
Méthodes fondamentales d'essais  
et de mesures –**

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**Partie 2-27:**

**Essais – Poussière – Ecoulement laminaire**

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**Fibre optic interconnecting devices  
and passive components –**

**Basic test and measurement procedures –**

**Part 2-27:**

**Tests – Dust – Laminar flow**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**FIBRE OPTIC INTERCONNECTING DEVICES  
AND PASSIVE COMPONENTS – BASIC TEST AND  
MEASUREMENT PROCEDURES –**

**Part 2-27: Tests – Dust – Laminar flow**

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardisation comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international cooperation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organization liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of the IEC on technical matters, prepared by technical committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 3) They have the form of recommendations for international use published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
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International Standard IEC 1300-2-27 has been prepared by sub-committee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics.

The text of this standard is based on the following documents:

DIS	Report on voting
86B/564/DIS	86B/651/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

IEC 1300 consists of the following parts under the general title *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures*:

- Part 1: General and guidance
- Part 2: Tests
- Part 3: Examinations and measurements

# FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS – BASIC TEST AND MEASUREMENT PROCEDURES –

## Part 2-27: Tests – Dust – Laminar flow

### 1 General

#### 1.1 *Scope and object*

The purpose of this part of IEC 1300 is to determine the effects of dust on fibre optic devices.

#### 1.2 *General description*

The specimen is exposed to a specified dust concentration within a conditioning chamber in which the air is circulated over a period of time.

### 2 Apparatus

The apparatus consists of the following elements.

#### 2.1 *Test chamber*

The test chamber shall be capable of controlling the dust concentration, velocity, temperature, and humidity of the dust-laden air. It shall be capable of being raised to and maintained at a temperature of  $63 \text{ }^{\circ}\text{C} \pm 2 \text{ }^{\circ}\text{C}$  with a relative humidity not exceeding 60 %. In order to provide adequate circulation of the dust-laden air, no more than 50 % of the cross-sectional area (normal to the air flow) and no more than 30 % of the volume of the chamber shall be occupied by the test specimen. The dust-laden air shall be introduced into the chamber in such a manner as to allow it to become approximately laminar in flow before it strikes the specimen.

#### 2.2 *Dust*

The dust shall be capable of passing through a sieve of 150  $\mu\text{m}$  aperture.

### 3 Procedure

The preparation of the specimen shall be in accordance with the detail specification. Unless otherwise specified, the specimen shall be subjected to the test in a non-operational mode.

3.1 Position the specimen as near to the centre of the test chamber as practicable. If more than one specimen is being tested, there shall be a minimum clearance of 100 mm between surfaces of the specimens and any other object or material which would provide protection. No surface of the test specimen shall be any closer than 100 mm to any wall of the test chamber. The test specimen shall be orientated to expose the most critical or vulnerable parts to the dust stream. Changes in specimen orientation during the test shall be specified in the detail specification.

3.2 Set the chamber controls to maintain an internal chamber temperature of  $23\text{ °C} \pm 2\text{ °C}$  and a relative humidity of less than 22 %. Adjust the air velocity to  $530\text{ m/min} \pm 70\text{ m/min}$ . Adjust the dust feeder to control the dust concentration to the specified severity. Maintain these chamber conditions for the specified duration.

3.3 Upon completion of the initial conditioning period, stop the dust feed and reduce the air velocity to  $90\text{ m/min} \pm 50\text{ m/min}$ . Raise the internal chamber temperature to  $63\text{ °C} \pm 2\text{ °C}$ . Maintain a relative humidity of less than 10 %. Maintain these chamber conditions for the specified duration.

3.4 Upon completion of the intermediate conditioning period, maintain the temperature at  $63\text{ °C} \pm 2\text{ °C}$ . Increase the air velocity to  $530\text{ m/min} \pm 70\text{ m/min}$ . Adjust the dust feeder to control the dust concentration to the specified severity. Maintain a relative humidity of less than 10 %. Maintain these chamber conditions for the specified duration.

3.5 Upon completion of the test, turn off all chamber controls and allow the specimen to return to standard ambient conditions. Remove accumulated dust from the specimen by brushing, wiping or shaking, exercising care to avoid introducing any additional dust into the test specimen. Dust shall not be removed by either air blast or vacuum cleaning.

3.6 The specimen shall be examined and all necessary observations recorded as specified in the detail specification. Careful attention shall be given to those specimens which contain bearings, seals, lubricants, etc. Where applicable, prior to remating interconnecting devices, normal cleaning procedures may be used to remove any residual dust.

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### 4 Severity

The severity consists of the dust concentration and duration of exposure. The severity shall be specified in the detail specification.

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The following preferred severities are non-mandatory severities which may be specified for this procedure:

Dust concentration g/m <sup>3</sup>	Duration h
10,6 ± 7,1	1
	2
	4
	6
	8
25 ± 5	12
	16
	24