



SLOVENSKI STANDARD

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SIST EN 1047-1:1997

Varnostne shranjevalne enote – Klasifikacija in metode preskušanja požarne odpornosti – 1. del: Omare za zaščito nosilcev podatkov in vložki za diskete

Secure storage units - Classification and methods of test for resistance to fire - Part 1: Data cabinets and diskette inserts

Wertbehältnisse - Klassifizierung und Methoden zur Prüfung des Widerstandes gegen Brand - Teil 1: Datensicherungsschränke und Disketteneinsätze

Unités de stockage en lieu sur - Classification et méthodes d'essai de résistance au feu - Partie 1: Meubles de rangement fermés et cartouches à disquettes

Ta slovenski standard je istoveten z: EN 1047-1:2005

ICS:

13.220.40	Sposobnost vžiga in obnašanje materialov in proizvodov pri gorenju	Ignitability and burning behaviour of materials and products
13.310	Varstvo pred kriminalom	Protection against crime
35.220.99	Druge naprave za shranjevanje podatkov	Other data storage devices

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English Version

**Secure storage units - Classification and methods of test for
resistance to fire - Part 1: Data cabinets and diskette inserts**

Unités de stockage en lieu sûr - Classification et méthodes
d'essais de résistance au feu - Partie 1: Meubles ignifuges
et containers pour supports sensibles

Wertbehältnisse - Klassifizierung und Methoden zur
Prüfung des Widerstandes gegen Brand - Teil 1:
Datensicherungsschränke und Disketteneinsätze

This European Standard was approved by CEN on 26 August 2005.

CEN 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 CEN 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 CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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

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Foreword

This European Standard (EN 1047-1:2005) has been prepared by Technical Committee CEN/TC 263 "Secure storage of cash, valuables and data media", the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2006, and conflicting national standards shall be withdrawn at the latest by April 2006.

This document supersedes EN 1047-1:1996.

Part 2 of this standard has been published under the following title:

EN 1047-2 Secure storage units
 Classification and methods of test for resistance to fire
 Part 2: Data rooms and data containers

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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Introduction

The testing conditions given in this European Standard provide a basis for simulating fires to determine, in a reproducible way, the fire resistance of data cabinets and diskette inserts in various protection classes. The protection classes enable a comparison to be made of the resistance against fire provided by different constructions.

The threshold values for the maximum temperature increases in the protection classes S 60 P/S 120 P (150 K), S 60 D/S 120 D (50 K) and S 60 DIS/S 120 DIS (30 K) for data cabinets as well as DI 60 P/DIS (30 K) and DI 120 P/DIS (30 K) for diskette inserts from a starting temperature of $(21 \pm 1) ^\circ\text{C}$, and for the maximum relative humidity (85 %) for the D and DIS protection classes, as defined in this European Standard, refer to the relatively short-term stress due to high temperatures during a fire test. They are not normally experienced by data media stored in data cabinets and diskette inserts in the normal and correct way.

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1 Scope

This part of this European Standard specifies requirements for fire resisting data cabinets and diskette inserts.

Two methods of test are specified to determine the ability of fire resisting data cabinets to protect temperature and humidity sensitive contents from the effects of fire: a fire endurance test and a fire shock and impact test. Two levels of fire severity (S 60 and S 120) based upon time of fire exposure; and three protection classes (P, D and DIS) are specified using the maximum temperature increases and humidity values permitted within the storage space of the data cabinet.

Diskette inserts (DI 60 P/DIS and DI 120 P/DIS) are installed in data cabinets of protection class S 60 P or S 120 P, respectively, and subjected to a fire endurance test (see 5.1.2).

Requirements are also specified for test specimens, the technical documentation for the test specimen, correlation of the test specimen with the technical documentation, preparation for type testing and test procedures.

A scheme to classify the fire resisting data cabinets and diskette inserts from the test results is also given (see Table 1).

Cabinets having the same design, protection and construction features (type and thickness of construction and protective materials, rebate geometry, locking, etc.) will only give the same fire protection classification as that of a test specimen if they are of similar internal dimensions. The maximum difference in internal dimensions (height, width and depth of the storage space, measured from wall to wall) to which the test classification could apply is $\pm 15\%$. Cabinets having internal dimensions which differ by more than this amount from that of the tested specimen should be submitted to an extra test.

The wall, ceiling and door thicknesses should not be below the specified minimum limit of the type-tested thickness by more than 3 %.

Diskette inserts should only be installed in data cabinets having the same design as the series of protection class S 60 P and S 120 P, respectively, in which the insert has been tested in accordance with 5.1.2. Where several inserts are installed, they should be built in one beside the other or one above the other from bottom to top, respectively. The volume and total height of the installed inserts should not exceed 50 % of the total internal volume or 50 % of the internal height, respectively, of the data cabinets into which they are installed. The dimensions of the insert can be adapted by increasing the width and depth to the corresponding dimensions of the data cabinets. A reduction of these dimensions as well as a change of the height is only admitted within the specified tolerance.

The temperature increases during type-tests on data cabinets and diskette inserts will be considered in deciding the permitted diskette insert installations. For a permitted installation, the temperature increase of the intended data cabinet (ΔT_a K) should not exceed the temperature increase of the tested data cabinet (ΔT_b K) in which the diskette insert has been type-tested by more than the difference between the maximum value for the diskette insert (ΔT_i K) and the maximum admissible temperature increase (30 K), i.e: $\Delta T_a - \Delta T_b \leq 30 \text{ K} - \Delta T_i$ (See example in Annex B).

A description of the installation of the diskette inserts should be given in the technical documentation of the manufacturer.

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 1363-1:1999, *Fire resistance tests – Part 1: General requirements*

EN 60584-1 *Thermocouples – Part 1: Reference tables (IEC 60584-1:1995)*

EN 1047-1:2005 (E)

EN 61515 *Mineral insulated thermocouple cables and thermocouples (IEC 61515:1995)*

3 Terms and definitions

For the purposes of this European standard, the following terms and definitions apply.

3.1**data cabinet**

cabinet designed to protect media and valuables against the effects of fire

NOTE A data cabinet can have doors, drawers, lids, connections and fittings.

3.2**diskette insert**

insert which is installed in a data cabinet of protection class S 60 P or S 120 P, respectively

3.3**media**

material holding data including paper documents, magnetic tapes, films, diskettes, cassettes, optical disks and video and audio cassettes

3.4**compartment**

part of a data cabinet which is closed with a separate door, lid or cover

NOTE A compartment formed by inserting a shelf board is not a compartment within the meaning of this standard.

4 Requirements, classification and locking

4.1 Data cabinets and diskette inserts shall provide protection against the effects of fire (see Clause 6) and be classified as specified in Table 1.

Table 1 — Protection class requirements

Protection class		Maximum temperature increase	Maximum relative humidity
60 min	120 min		
S 60 P	S 120 P	150 K	no requirement
S 60 D	S 120 D	50 K	85 %
S 60 DIS	S 120 DIS	30 K	85 %
DI 60 P/DIS	DI 120 P/DIS	30 K	85 %

Where S is the symbol applied to fire resisting data cabinets, DI the symbol for the diskette insert.

The numerical values in the protection class are the duration of fire exposure during the type test in minutes; the letters characterise the types of media that can be protected in each class as follows:

- P Thermally sensitive paper documents, but excluding papers of grades which lose data below 170 °C.
- D Thermally and humidity sensitive media such as magnetic media and thermally sensitive documents, but excluding media which lose data below 70 °C and a relative air humidity above 85 %.
- DIS Thermally and humidity sensitive media such as diskettes, but excluding media which lose data below 50 °C and a relative air humidity above 85 %.

NOTE P/DIS inserts only provide DIS protection when correctly installed in the appropriate P class data cabinet.

4.2 Data cabinets shall be fitted with a lock.

5 Test specimens, documents and correlation

5.1 Test specimens

5.1.1 Data cabinets

Two identical data cabinets shall be available: one for the fire endurance test, the other for the fire shock and impact test. The test specimen for the fire endurance test shall be modified at its base for installing the measuring instrumentation (see 6.3.1 and Figure 2) and may have, but need not have a plinth.

EN 1047-1:2005 (E)**5.1.2 Diskette inserts**

The diskette insert and the data cabinet made available for the fire endurance test (see 6.4.2.) to be made shall be of protection class S 60 P or S 120 P, respectively. The selection of the data cabinet is made taking account of the results of the relevant fire endurance test (see Clause 1).

The data cabinets of protection class S 60 P and S 120 P, respectively, and the diskette insert need to be modified at their base for installing the measuring instrumentation. A fire shock and impact test is not made.

5.2 Technical documentation of the test specimen

Detailed technical documentation (drawings, specifications of materials, installation and processing advice) shall be submitted to the testing laboratory before the type test. The drawings shall give specifications as to height, width and depth of the test specimens, materials and their thicknesses, dimensions of rabbet edges, locking system, welds including the method of their execution. The mass of the plinth shall be given if one of the test specimens is supplied without a plinth.

Samples and detailed specifications of all heat protection materials and seals used in the test specimens shall accompany the test specimens.

NOTE 1 With reference to all heat protection materials, the technical documentation should include: a) quality control parameters, and b) details of the performance characteristics, or c) details of the constituent materials and processing methods.

The date(s) on which the test specimens were filled with protection materials shall be given.

A statement of the protection class the test specimen shall be tested to shall be given.

NOTE 2 In connection with the type test, the testing laboratory should mark three sets of the technical documentation with signature, stamp and date. One set is sent to the applicant. One set is added to the monitoring documentation for certification and quality assurance, and one set is kept in the testing files of the test laboratory.

5.3 Correlation of test specimen and technical documentation

Examine the correlation of the test specimens with the technical documentation before and after commencing the type test. Establish that the dimensions, design, materials and type of construction of the test specimens correspond to the technical documentation (see 5.2).

Make a photographic record of the following construction details: the outside of the cabinet, the inside of the cabinet, rabbet edges, seals and plinth.

The mass of the lighter test specimen (data cabinets) shall not deviate from the heavier by more than 10 %. For this comparison add the mass of the plinth specified (see 5.1) to the mass of the test specimen supplied for the fire endurance test if that test specimen was supplied with no plinth.

6 Test methods**6.1 Principle**

The fire endurance of the test specimen is assessed by heating and cooling in a furnace.

The performance of the test specimen against fire shock and impact is assessed by a heating/cooling regime combined with a drop test.

During these type tests the temperature and, where appropriate, the relative humidity in the interior of the test specimen is measured.

6.2 Test equipment

6.2.1 The furnace which must be capable of providing the uniform heating and cooling conditions specified in this standard, and constructed so that the four vertical walls of the test specimen can each be exposed to the same heating conditions with no direct flame impingement onto the test specimen.

The distance between the interior walls of the furnace and the surface of the test specimen shall be ≥ 750 mm. The furnace conditions shall conform to EN 1363-1. To meet these conditions, the setting of the neutral pressure level shall be made in accordance with 6.2.2 and the measurement of the temperature in the interior of the furnace shall be made with instrumentation in accordance with 6.2.3.

6.2.2 The furnace shall be operated such that the neutral pressure level is reached after approximately 5 min of firing, measured at 1,000 mm above the furnace base. Test specimens with a height of $> 1,000$ mm shall be placed on the furnace base during the type test. Test specimens with a height of $\leq 1,000$ mm shall be positioned on a plinth of brick with a height of 500 mm. Pressure measuring heads in accordance with 4.5.2 of EN 1363-1:1999 shall be used.

NOTE In order to ensure consistent heating conditions, the width of the plinth area around the projected cross-sectional area of the test specimen should not exceed 200 mm.

6.2.3 Instrumentation for measuring the furnace temperature shall use thermocouples of type K (NiCr-Ni) with an accuracy in accordance with EN 60584-1. They shall be mineral insulated in accordance with EN 61515 with an outside diameter of 3 mm and with an uncovered measuring point of at least 25 mm.

6.2.4 Instrumentation for measuring the air and surface temperatures in the test specimen shall use thermocouples consisting of 0,5 mm diameter wires of type K (NiCr-Ni) or type J (Fe-CuNi) with an accuracy in accordance with EN 60584-1. The measurement results of test specimens of protection class P shall be recorded at intervals not greater than 1 min, and of test specimens of protection class D, DIS and P/DIS at intervals not greater than 5 min. The contact measurement points shall be in accordance with 4.5.1.2 and 4.5.1.4 of EN 1363-1:1999, respectively.

6.2.5 For the fire shock and impact test, irreversible thermal indicators, capable of measuring the temperature with an error limit of max. 2°C of the temperature value indicated shall be used.

NOTE Conventional temperature measuring devices are regarded as being impractical to use in the fire shock and impact test because of potential damage due to the impact of the drop test. Devices other than irreversible thermal indicators can be used if it can be shown that no loss of accuracy will occur.

6.2.6 Instrumentation for measuring air humidity inside the test specimen during the fire endurance test in the range 45 % to 85 % relative air humidity, and capable of operating over the temperature range 20°C to 75°C with an error limit of max. 3 % of the indicated relative air humidity value. The relative air humidity values shall be recorded at intervals not greater than 5 min.

6.2.7 Timing device, capable of running continuously throughout the test period.

6.2.8 Equipment for weighing test specimens, with an error limit of ± 3 %.

6.2.9 Lifting equipment, capable of lifting the test specimen to the required height in the drop test.

6.2.10 Impact surface, bed of rounded pebbles 0,5 m thick, particle size (50 ± 15) mm, of a hard (≥ 6 Mohs) mineral such as quartzite, granite, basalt or flint laid on a concrete base at least 300 mm thick. The length and width of the impact surface shall be more than twice the width and depth of the test specimen.

NOTE The testing laboratory should ensure that the bed of pebbles is not allowed to become too compacted by repeated tests.