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

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

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

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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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EUROPEAN STANDARD
 NORME EUROPÉENNE
 EUROPÄISCHE NORM

EN 1047-1

August 2019

ICS 13.310

Supersedes EN 1047-1:2005

English Version

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

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

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

This European Standard was approved by CEN on 12 May 2019.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
 COMITÉ EUROPÉEN DE NORMALISATION
 EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 1047-1:2019) 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of an identical text or by endorsement, at the latest by February 2020, and conflicting national standards shall be withdrawn at the latest by February 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 1047-1:2005.

Compared with EN 1047-1:2005, the following changes were made:

- type tests in the past have shown that testing intermediate heights in the fire endurance test do not give a quality benefit. Therefore, this standard requires the test of the smallest and highest model (see 5.1.1.1 and Annex C);
- for the fire shock and impact test the number of test specimens now is dependent on if a plinth is used (see 3.5, 5.1.1.2.1, 5.1.1.2.2, 5.3 and 6.4.4);
- due to testing knowledge gained since the publication of the standard EN 1047-1 it could be seen that the depth is not as critical as the width of a specimen. Therefore, the tolerance on the depth was changed from $\pm 15\%$ to $\pm 20\%$;
- new clauses have been added to explain for which technical design ranges the results of the type tests are usable, see 5.1, 5.2, Clause 9 and Annex C;
- a requirement on the material thickness of the test specimen compared to the technical documentation has been added (5.3); photographic documentation shall include pictures from the interior of the test specimen (6.4.4);
- references have been updated;
- the definition 3.3 has been made up-to-date;
- corrections have been made in Table 1;
- editorial changes have been made in 4.2, 5.2, 6.1 and 6.2.2.

This document, EN 1047 *Secure storage units — Classification and methods of test for resistance to fire*, is composed of two parts:

- *Part 1: Data cabinets and diskette inserts*
- *Part 2: Data rooms and data container*

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North

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Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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Introduction

The testing conditions given in this document 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 ± 1) °C, and for the maximum relative humidity (85 %) for the D and DIS protection classes, as defined in this document, 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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EN 1047-1:2019 (E)**1 Scope**

This document 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).

Diskette inserts are only 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 using methods defined in 5.1.2. Where several inserts are installed, they are 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 do 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 ($\Delta T_A \cdot K$) does not exceed the temperature increase of the tested data cabinet ($\Delta T_B \cdot K$) in which the diskette insert has been type-tested by more than the difference between the maximum value for the diskette insert ($\Delta T_i \cdot K$) and the maximum admissible temperature increase (30 K), i.e. $\Delta T_A - \Delta T_B \leq 30 K - \Delta T_i$ (see example in Annex B).

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

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1363-1:2012, *Fire resistance tests — Part 1: General Requirements*

EN 60584-1, *Thermocouples — Part 1: EMF specifications and tolerances (IEC 60584-1)*

EN 61515, *Mineral insulated metal-sheathed thermocouple cables and thermocouples (IEC 61515)*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

data cabinet

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

Note 1 to entry: 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, solid state drives (flash memory) and video and audio cassettes

3.4

compartment

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

Note 1 to entry: A compartment formed by inserting a shelf board is not a compartment within the meaning of this standard.

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3.5

plinth

structure connected below the cabinet, which raises the base of the cabinet to a higher level

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 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 characterize 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 under 85 %.
- DIS Thermally and humidity sensitive media such as diskettes, but excluding media which lose data below 50 °C and a relative air humidity under 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 at least one lock.

5 Test specimens, documents and correlation

5.1 Test specimen

5.1.1 Data cabinets

5.1.1.1 Fire endurance test

From a technical design ranges (see Clause 9) the laboratory shall test the smallest and the highest model (see also Annex C).

NOTE This document aims to assess a technical design range by testing the two most critical models of a technical design range.

The test specimen 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.

5.1.1.2 Fire shock and impact test

5.1.1.2.1 Testing without a connected plinth

If a series does not contain a permanent connected plinth, or no plinth at all the laboratory shall test the highest model with the narrowest width of the technical design range.

NOTE A plinth is not seen as permanently connected if it is attached with plastic screws to the cabinet or if the cabinet stands on a plinth without any connection at all.

5.1.1.2.2 Testing with a connected plinth

If a series contains a permanent connected plinth, every single model of a series shall be tested with a plinth. Models of the same construction (see 9.1 a) and 9.1 b)) having

- 1) an internal width, which does not differ by more than $\pm 15\%$ of the tested specimen;
- 2) an internal depth, which does not differ by more than $\pm 20\%$ of the tested specimen;
- 3) an internal height, which does not differ by more than $\pm 15\%$ of the tested specimen

do not need to be submitted to an extra test.

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

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 as well as the complete series including materials and their thicknesses, dimensions of rabbet edges, boltwork, lock configuration, welds including the method of their execution. The mass of the plinth shall be given if one of the test specimens is supplied with 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 can 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.

The envisaged protection class of the technical design range shall be given.

NOTE 2 In connection with the type test, the testing laboratory can 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 (if available).

The mass of the lighter test specimen (data cabinets) shall not deviate from the heavier by more than 10 %, calculated from the heavier of the two specimens. 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.