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**Varnostne shranjevalne enote - Klasifikacija in metode preskušanja požarne  
odpornosti - 2. del: Prostori in vsebniki za shranjevanje podatkov**

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

Wertbehältnisse - Klassifizierung und Methoden zur Prüfung des Widerstandes gegen  
Brand - Teil 2: Datensicherungsräume und Datensicherungscontainer

Unités de stockage en lieu sûr - Classification et méthodes d'essai de résistance au feu -  
Partie 2: Conteneurs et chambres réfractaires

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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

**oSIST prEN 1047-2:2017****en**



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English Version

**Secure storage units - Classification and methods of test  
for resistance to fire - Part 2: Data rooms and data  
container**

Unités de stockage en lieu sûr - Classification et  
méthodes d'essai de résistance au feu - Partie 2:  
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Wertbehältnisse - Klassifizierung und Methoden zur  
Prüfung des Widerstandes gegen Brand - Teil 2:  
Datensicherungsräume und Datensicherungscontainer

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 263.

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**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## European foreword

This document (prEN 1047-2:2017) 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 document is currently submitted to the CEN Enquiry.

This document will supersede EN 1047-2:2009+A1:2013.

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*

In comparison with EN 1047-2:2009+A1:2013, the following changes have been made:

- references have been updated;
- the definitions have been updated to the state of the art;
- the requirements in Table 1 have changed;
- the requirements for doors have been updated (see 4.2);
- for easier and shorter reading the general requirements (for instance equipment of the test specimen and position of fire-retarding penetration seals) for data rooms type A and data room type B as well as data containers have moved into one new clause (see 5.1);
- the configuration (including a number and type of cables and pipes reaching into the room) is defined more precisely and is updated to the state of the art for the type test and the series products (see 3.8.2, 3.8.3, 3.8.4, 5.1.2, and 7.2);
- to make sure that customers wishing to have higher data rooms, the test specimen in the furnace is allowed to be higher than the limit of 2 700 mm which was in the standard before (see 5.2.2 and 5.3.2);
- an additional type test for the floor has been added (see 5.2.4, 5.3.3, 5.4.3, 5.5, 6.2d, 6.3.7, 6.6.3 and Annex A);
- the requirements for the comparison test have changed (see Table 1, 5.6, 6.2.1e, 6.3.8, 6.4.5, and 6.6.4);
- the thermocouples have been repositioned for the data room test (see 6.3.4);
- the requirements for series products have been updated and have been moved from the scope to the new Clause 7 "series products". Above all the height of a data room may only be increased by 15 % and decreased by 35 % (before both were at 50 %);
- the figures in the standard have been updated;
- editorial changes have been made throughout the standard.

## 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 rooms and data containers.

The values for the maximum temperature increase in protection classes R60D and C60D specified in accordance with Table 1 in this European Standard relate to the relatively short time of high temperature exposure occurring during a fire test; in general, they are not experienced by data media and systems hardware stored in data rooms and data containers in the normal and correct way.

EN 1363-1 establishes the general principles for determining the fire resistance of various elements of construction when subjected to standard fire exposure conditions. Alternative and additional procedures to meet special requirements are given in EN 1363-2. The development of the temperatures and the relative humidity in the interior of a data room and data container cannot be measured under the standard series EN 1363.

The sensitivity of media (see 3.5) and hardware systems (see 3.6) to temperature and humidity requires additional protection with regard to excessively high temperatures and relative humidity, proof of which cannot be furnished through type tests in accordance with the European Standards EN 1363-1 and EN 1363-2. This additional protection requires a series of product solutions, the performance of which is type tested and certified on the basis of the standard series EN 1047.

EN 1047-1 covers the type testing of data cabinets as freestanding units.

EN 1047-2 covers the type testing of data rooms and data containers. For wall, ceiling and floor elements type tested within the framework of this system test, proof of an additional protection can be furnished in accordance with the European Standards EN 1363-1 and EN 1363-2.

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## 1 Scope

This part of the European Standard EN 1047 specifies requirements for data rooms and data containers. It includes a method of test for the determination of the ability of data rooms and data containers to protect temperature and humidity sensitive data media (see 3.5) and hardware systems (see 3.6) from the effects of fire. A test method for measuring the resistance to mechanical stress (impact test) provided by data rooms type B and data containers is also specified.

Requirements are also specified for test specimens, the technical documentation of the test specimens, materials specimens, physical fittings, the correlation of test specimens with the technical documentation and the preparation for type testing, as test procedures as well as the series production.

In addition, a scheme to classify data rooms and data containers from the test results is given (see Table 1).

As well as providing protection against fire, correctly installed data rooms and data containers offer a defined protection against impacts caused by failure during fire of components and objects external to the data room or data container.

Data rooms and data containers having the same design, protection and construction features (type and thickness of construction and protective materials, rebate geometry, lockings, doors, etc.) will only be given the same protection classification as that of the test specimen if the tolerances are within the ranges specified in Clause 7.

**NOTE** This European Standard does not regulate the use of data rooms in the meaning of the building laws of the respective countries. In the construction of data rooms, it is advised to consider the respective national requirements.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 206, *Concrete — Specification, performance, production and conformity*

EN 1363-1:2012, *Fire resistance tests — Part 1: General Requirements*

EN 1363-2:1999, *Fire resistance tests — Part 2: Alternative and additional procedures*

EN 1364-1:2015, *Fire resistance tests for non-loadbearing elements — Part 1: Walls*

EN 1364-2:1999, *Fire resistance tests for non-loadbearing elements — Part 2: Ceilings*

EN 1366-3:2009, *Fire resistance tests for service installations — Part 3: Penetration seals*

EN 1992-1-1, *Eurocode 2: Design of concrete structures — Part 1-1: General rules and rules for buildings*

EN 12735-1, *Copper and copper alloys — Seamless, round tubes for air conditioning and refrigeration — Part 1: Tubes for piping systems*

EN 13369:2013, *Common rules for precast concrete products*

EN 50441-2, *Cables for indoor residential telecommunication installations — Part 2: Screened cables — Grade 1*

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EN 50525-3-21, *Electric cables — Low voltage energy cables of rated voltages up to and including 450/750 V (U0/U) — Part 3-21: Cables with special fire performance — Flexible cables with halogen-free crosslinked insulation, and low emission of smoke*

EN 60584-1, *Thermocouples — Part 1: EMF specifications and tolerances (IEC 60854-1)*

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

HD 361 S3:1999, *System for cable designation*

ISO/IEC 11801, *Information technology — Generic cabling for customer premises*

### **3 Terms and definitions**

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

**3.1**  
**test specimen**  
data room type A, data room type B or data container designed to protect media, hardware systems and valuables against the effects of fire, or construction elements (e.g. floor, wall) of the data room or data container

**3.2**  
**data room type A**  
room consisting of walls, ceiling and floor which provides the fire resistance specified in this standard (see Table 1) when installed within walls and ceilings fulfilling the requirements for integrity, insulation and load bearing capacity for 90 min according to EN 1365-1 and EN 1365-2, respectively. The floor of the data room type A shall satisfy the fire resistance requirements specified in this standard and provide the same protection against the penetration of water vapour as the wall and ceiling construction

**3.2.1**  
**exterior cell**  
construction built for testing to simulate the room into which the internal cell of the data room type A in accordance with 3.2 is installed

**3.2.2**  
**internal cell**  
independent and self-supporting construction intended for installation as a data room type A in a building situation which satisfies the requirements for walls, ceiling and floor specified in 3.2

**3.3**  
**data room type B**  
room consisting of walls, ceiling and floor which provides the fire resistance specified in this standard (see Table 2) when the floor onto which it is installed fulfils the requirements for integrity, insulation and load bearing capacity for 90 min according to EN 1365-2.

**3.4**  
**data container**  
structure which can be transported in one piece or in modular parts and which provides the fire resistance specified in this standard (see Table 1) when the floor onto which it is installed fulfils the requirements for integrity, insulation and load bearing capacity for 90 min according to EN 1365-2.



Note 1 to entry: Data containers differ from data cabinets according to EN 1047-1 insofar as they contain computer hardware and therefore have fire-resistant penetration seals and openings.

### 3.5

#### **data media**

material holding information, including paper documents, magnetic tapes, films, cassettes, optical disks, solid state drives (flash memory) and video and audio cassettes except those that lose their data at temperatures below 75 °C and relative air humidity below 85 %

### 3.6

#### **hardware system**

electronic system which stores, processes, moves or transmits data and/or has an archive function

Note 1 to entry: Types of hardware systems include host computers, master computers, master control modules, PI tape drives, network computers, MB tape drives with robot support, etc.

### 3.7

#### **door**

component that provides access to, respectively, a data room or data container equipped with at least one lock

### 3.8

#### **fire-retarding penetration seals**

permanently sealable openings through which cables and/or tubes enter a data room or data container (see 4.3)

### 3.9

#### **configuration**

number and type of cables and tubes which enter through the wall opening and are held in place in one or several fire-retarding penetration seals

### 3.10

#### **openings**

openings for the installation of e.g. ventilation facilities (see 4.4)

### 3.11

#### **load bearing structure**

supporting and reinforcing building components which guarantee the load bearing capacity of ceiling and/or wall elements

## 4 Requirements and classification

**4.1** Data rooms and data containers shall provide protection against fire (see Clause 6) and shall be classified in accordance with Table 2.

**Table 1 — Protection class requirements**

Protection class	Data room / data container test (6.6.1) and floor test (6.6.3) <sup>c</sup>		Impact test (6.6.2)	Comparison tests <sup>b</sup> (6.6.4)	
	Maximum temperature increase	Maximum relative humidity		Maximum temperature increase	Maximum relative humidity
R60D Type A	50 K <sup>d</sup>	85 %	<sup>a</sup>	Assessment according to <sup>b</sup>	85 %
R60D Type B	50 K <sup>d</sup>	85 %	Integrity to 3.1.10 and 10.4.5 of EN 1363-1:2012	Assessment according to <sup>b</sup>	85 %
C60D	50 K <sup>d</sup>	85 %	Integrity to 3.1.10 and 10.4.5 of EN 1363-1:2012	Assessment according to <sup>b</sup>	85 %
<p>where</p> <p>R refers to data rooms;</p> <p>C refers to data containers;</p> <p>60 refers to the 60 min fire exposure time;</p> <p>D characterises the kind of data media and hardware systems which may be protected and includes all kinds of data media except those that lose their data at temperatures below 75 °C and relative air humidity below 85 %.</p>					

Protection class	Data room / data container test (6.6.1) and floor test (6.6.3) <sup>c</sup>	Impact test (6.6.2)	Comparison tests <sup>b</sup> (6.6.4)
<p><sup>a</sup> Data rooms of type A are only installed within walls and ceilings with minimum fire integrity (see 3.2) and are therefore not tested for impact resistance.</p> <p><sup>b</sup> Assessment of comparison test results for modified or alternative constructions.</p> <p>If the construction differs from the type-tested construction and for all other construction variants (see 5.6 and 6.6.4), the results of the comparison test conducted on the specimens are assessed according to the following formula:</p> $\Delta T_A \geq \Delta T_B$ <p><math>\Delta T_A</math> = temperature rise in K of the test specimen having the construction of the type-tested specimen of the data room resp. data container;</p> <p><math>\Delta T_B</math> = temperature rise in K of the alternative constructions or other construction variants during the comparison test (see 6.6.4);</p> <p><sup>c</sup> The floor of the data room shall be tested in addition (see 5.5 and 6.6.3)</p> <p><sup>d</sup> At any time only one of the thermocouples as defined in 6.3.4 is allowed to reach a maximum of 55°C.</p>			

#### 4.2 Doors of data rooms shall be self-closing in case of fire.

The definition on self-closing shall be given in the user manual (e.g. door angle necessary for the self-closing function).

Doors shall be equipped with at least one lock.

#### 4.3 Data rooms and data containers may have permanently closed fire-retarding penetration seals (see 3.8) through which cables and tubes may enter.

#### 4.4 Openings (see 3.10) in data rooms and data containers shall be closed in case of fire (e.g. through self-closing devices).

## 5 Test specimens, technical documentation, material samples, physical fittings and correlation

### 5.1 General requirements for data rooms type A and B and data containers

#### 5.1.1 General requirements for test specimens

The test specimen for data rooms type A (see 5.2), data rooms type B (see 5.3) and data containers (see 5.4) shall at least have one door (see 3.7), fire-retarding penetration seals (see 3.8 and 5.1.2) with configuration (see 3.9 and 5.1.2) and openings (see 3.10). The function of the data room door shall be shown before the type test in such a way that the conditions of 6.5 will not be affected.

NOTE Construction variants can be tested in accordance with 6.6.4.

For data rooms type A (see 5.2) and data rooms type B (see 5.3) fire-retarding penetration seals and openings shall be fitted in the top third at the short sides of the test specimen (see 6.3.4 g and Figure 6). The usage of the long sides of the test specimen is only possible in cases where the short sides of the