



**SLOVENSKI STANDARD**  
**SIST EN 1047-2:2009+A1:2013**  
**01-september-2013**

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**Varnostne shranjevalne enote - Klasifikacija in metode preskušanja odpornosti proti ognju - 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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**Ta slovenski standard je istoveten z: EN 1047-2:2009+A1:2013**

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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  
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**EN 1047-2:2009+A1**

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## 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: Conteneurs et  
chambres réfractaires

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

This European Standard was approved by CEN on 23 July 2009 and includes Amendment 1 approved by CEN on 10 December 2012.

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 CEN-CENELEC Management Centre or to any CEN member.

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## Foreword



This document (EN 1047-2:2009+A1:2013) 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 August 2013, and conflicting national standards shall be withdrawn at the latest by August 2013.

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

This document includes Amendment 1 approved by CEN on 10 December 2012.

This document supersedes  EN 1047-2:2009 .

The start and finish of text introduced or altered by amendment is indicated in the text by tags  .

Part 1 of this Standard has been published as:

- EN 1047-1, *Secure storage units — Classification and methods of test for resistance to fire — Part 1: Data cabinets and diskette inserts.*

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

**EN 1047-2:2009+A1:2013 (E)****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 2 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.

## 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 well as test procedures.

In addition, a scheme to classify data rooms and data containers from the test results is given (see Table 2).

As well as providing protection against fire, correctly installed data rooms and data containers offer 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 Table 1.

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, the respective national requirements should be considered.

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## EN 1047-2:2009+A1:2013 (E)

Table 1 — Permitted differences between the series products and the test specimen

		Minimum	Maximum
Data rooms type A and type B			
	internal height	- 50 %	+ 50%
	internal width	- 70 %	no limit <sup>1)</sup>
	internal length	- 70 %	no limit <sup>1)</sup>
Data containers			
	internal height	- 50 %	increase not permitted
	internal width	- 15 %	+ 50 % <sup>3)</sup>
	internal length	- 15 %	+ 50 %
Door openings (clear opening dimensions)			
	height	- 50 %	increase not permitted
	width	- 25 %	increase not permitted
Compact thickness of walls, the ceiling, floor and door		- 3 % <sup>2)</sup>	no limit
Openings (outside dimensions) e.g. ventilation openings		no limit	+ 15 %
<p><sup>1)</sup> For the type test, load bearing structures may be installed in the test specimen. Proof of an existing load bearing structure in the fire endurance test (see 6.6.1) is required if the dimensions of the series product differ from those of the test specimen.</p> <p><sup>2)</sup> Deviations from the tolerance (- 3 % for walls, ceiling, floor and door) are only allowed upon permission by the certification body and/or testing laboratory.</p> <p><sup>3)</sup> Enlargement of the internal width of the data container (maximum + 50 %) in connection with the installation of additional wall panels is only allowed upon permission by the certification body and/or testing laboratory respectively.</p>			

## 2 Normative references

**A1** 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. **A1**

EN 206-1, *Concrete — Part 1: Specification, performance, production and conformity*

**A1** *deleted text* **A1**



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

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

EN 1364-1:1999, *Fire resistance tests for non-loadbearing elements — Part 1: Walls*

EN 1365-1, *Fire resistance tests for loadbearing elements — Part 1: Walls*

EN 1365-2, *Fire resistance tests for loadbearing elements — Part 2: Floors and roofs*

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

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

### 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 2) 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. The floor of the data room type B 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

#### 3.4

##### **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 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. The floor of the data container 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

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NOTE Data containers differ from data cabinets according to EN 1047-1 insofar as they contain computer hardware and therefore have fire-resistant sealings and openings.

**3.5****data media**

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

**3.6****hardware system**

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

NOTE 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**

Ⓐ) access to, respectively, a data room or data container equipped with at least one lock Ⓐ)

**3.8****fire-retarding sealings**

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

**3.9****openings**

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

**3.10****load bearing structure**

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

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## 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 2 — Protection class requirements**

A1)

Protection class	Fire endurance test (6.6.1)		Impact test (6.6.2)	Comparison tests <sup>b</sup>	
	Maximum temperature increase	Maximum relative humidity		Maximum temperature increase	Maximum relative humidity
R60D Type A	50 K	85 %	a	Assessment according to <sup>b</sup>	Assessment according to <sup>b</sup>
R60D Type B	50 K	85 %	Integrity to 3.1.9 and 10.4.5 of EN 1363-1:1999	Assessment according to <sup>b</sup>	Assessment according to <sup>b</sup>
C60D	50 K	85 %	Integrity to 3.1.9 and 10.4.5 of EN 1363-1:1999	Assessment according to <sup>b</sup>	Assessment according to <sup>b</sup>

where

R refers to data rooms;

C refers to data containers; [SIST EN 1047-2:2009+A1:2013](https://standards.iteh.ai/catalog/standards/sist/3962465c-a5de-4561-a671-1047-2-2009a1-2013)  
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60 refers to the 60 min fire exposure time; [en-1047-2-2009a1-2013](https://standards.iteh.ai/catalog/standards/sist/3962465c-a5de-4561-a671-1047-2-2009a1-2013)

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 above 85 %.

<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.

<sup>b</sup> Assessment of comparison test results for floor constructions, alternative constructions for walls and ceiling or other construction variants.

If the construction of the floor differs from the wall or ceiling construction (see 5.4 and 6.6.3) or the construction of the walls and ceiling differs from the type-tested construction (see 5.5 and 6.6.3) and for all other construction variants (see 5.6 and 6.6.3), the results of the comparison test conducted on the specimens are assessed according to the following formula:

$$50 - \Delta T_A \geq \Delta T_B - \Delta T_C$$

$\Delta T_A$  = temperature rise in K during the type-test of the data room resp. data container;

$\Delta T_B$  = temperature rise in K above the floor construction, the alternative construction or other construction variant during the comparison test (see 6.6.3);

$\Delta T_C$  = temperature rise in K above the comparison specimen (respectively wall or ceiling panel and construction variant of the type test) during the comparison test.

A1)

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

**4.3** Data rooms and data containers may have permanently closed fire-retarding sealings (see 3.8) through which cables and pipes may enter.

**4.4** Openings (see 3.9) 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 Data room type A test specimens**

**5.1.1** An exterior cell shall be erected in the furnace, and within it, a data room type A test specimen shall be installed as an internal cell in the manner as if it were a data room being installed within walls and ceilings (see 3.2). The exterior cell shall be positioned in the furnace in accordance with Figure 10.

**5.1.2** The walls, ceiling and floor of the exterior cell shall be constructed of individual prefabricated units, each  $(100 \pm 5)$  mm thick, made of reinforced concrete grade C20/25 to EN 206-1 with a density of  $(2\,400 \pm 200)$  kg/m<sup>3</sup>, and shall be connected to one another.

The exterior cell shall have the following internal dimensions:

height  $(2\,600 \pm 100)$  mm,

width  $(2\,800 \pm 100)$  mm,

length  $(3\,800 \pm 100)$  mm.

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For the installation of the instrumentation for measuring the temperatures and air humidity in the test specimen that wall of the test specimen which is not exposed to fire shall be modified (see 6.3.2 and Figure 4).

**NOTE 1** In order to minimize the influence of the combined water in the concrete prefabricated units forming the exterior cell, they shall be manufactured at least 100 days before the beginning of the type test and shall be protected from humidity during storage.

**NOTE 2** Bolts may be used to connect the concrete prefabricated units and measures taken to protect the bolts against the effects of fire.

**5.1.3** The test specimen for the data room type A must at least have one door (see 3.7), fire-retarding sealings (see 3.8) and openings (see 3.9).

**NOTE** Construction variants may be tested in accordance with 6.6.3.

**5.1.4** The walls, ceiling and floor of the internal cell may be of different design and construction. However, these construction elements shall all be of the same materials with the same thickness and construction, and shall have a minimum of two joints (see Figure 1). Where a load bearing structure is used, the ceiling of the internal cell shall be divided in two fields in the longitudinal direction of the test specimen (see Figure 2). The resulting two ceiling segments shall again each have two joints. Additional joints and possible load bearing structures (see 3.10) shall be tested, if this is required for any design for which certification is sought.

**5.1.5** Fire-retarding sealings 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).

**5.1.6** In case the structure of the floor of the internal cell is different from the design of walls and the ceiling of the internal cell, respectively, a floor construction comparison test in accordance with 6.6.3 shall be made.