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EUROPEAN STANDARD

EN 14074

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## Office furniture - Tables and desks and storage furniture - Test methods for the determination of strength and durability of moving parts

Mobilier de bureau - Tables de travail de bureau et meubles de rangement - Méthodes d'essai pour la détermination de la résistance et de la durabilité des parties mobiles

Büromöbel - Büro-Arbeitstische und Büroschränke - Prüfverfahren für die Bestimmung der Festigkeit und der Dauerhaltbarkeit beweglicher Teile

This European Standard was approved by CEN on 27 May 2004.

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.

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## Foreword

This document (EN 14074:2004) has been prepared by Technical Committee CEN/TC 207 "Furniture", the secretariat of which is held by UNI.

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of an identical text or by endorsement, at the latest by February 2005, and conflicting national standards shall be withdrawn at the latest by February 2005.

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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**EN 14074:2004 (E)****1 Scope**

This document specifies test methods for the determination of strength and durability of moving parts of desks, tables and storage furniture.

This document does not apply to high density mechanized filing systems, rotary filing systems or plan files.

The tests are intended to simulate normal functional use, as well as misuse that might reasonably be expected to occur.

Safety requirements can be found in EN 14073-2.

Assessment of ageing is not included.

**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.

Not applicable – no normative references in this document.

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**3 Terms and definitions**

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

**3.1****catch device**

device, which keeps or pulls a component in place, but does not require a second action in order to release it, e.g. a magnetic catch or a self-closing-mechanism

**3.2****locking mechanism**

mechanism that limits access to the interior of a unit or a storage element. It requires a key or a combination in order to operate it or to make it possible to operate it.

**4 General test conditions****4.1 Preliminary preparation**

The tests specified in this Standard are designed to be applied to an item of furniture that is fully assembled and ready for use.

The tests refer to furniture parts with conventional functions. Combination of tests may be necessary to cover the properties of multi-function parts, e.g. a shelf that can be pulled out on runners shall be tested for strength of shelf supports as well as for strength as an extension element.

Before any of the tests are commenced, the item shall be old enough to ensure that it has developed its full strength.

The furniture shall be tested as delivered. Ready to Assemble furniture shall be assembled according to the instructions supplied with it. If the furniture can be assembled or combined in different ways, the most adverse combination shall be used for each test. This is also applicable to units that can be combined with other units or components.

Wall or screen mounted units shall be installed according to the manufacturers instructions.

Free standing units shall be placed on the floor surface (5.2) with stops (5.4) around each leg or base.

The tests shall be carried out in indoor ambient conditions but, if during a test, the atmosphere temperature is outside the range 15 °C to 25 °C, the maximum and/or minimum temperature shall be recorded in the test report.

Tighten any assembly fittings before testing. Further re-tightening shall not take place unless it is specifically required by the manufacturer.

## 4.2 Test equipment

The forces in the static load tests shall be applied sufficiently slowly to ensure that the influence of dynamic load is negligible. Unless otherwise stated, the static loads shall be maintained for  $(10 \pm 2)$ s.

The forces in durability tests shall be applied sufficiently slowly to ensure that heating does not occur. Unless otherwise stated, the durability loads shall be maintained for  $(2 \pm 1)$ s.

Unless otherwise specified, the tests may be applied by any suitable device because results are dependent only upon correctly applied loads and not upon the apparatus.

The test equipment shall be capable of following the deformations that may occur during the tests.

## 4.3 Tolerances

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Unless otherwise stated:

- forces shall have an accuracy of  $\pm 5\%$  of the nominal force;
- dimensions an accuracy of  $\pm 1,0$  mm of the nominal dimension;
- masses an accuracy of  $\pm 0,5\%$  of the nominal mass;
- velocities an accuracy of  $\pm 5\%$  of the nominal velocity;
- angles an accuracy of  $\pm 2^\circ$  of the nominal angle.

The accuracy for the position of loading pads shall be  $\pm 5$  mm.

The relationship  $10\text{N} = 1$  kg may be used.

## 4.4 Sequence of testing

The tests shall be carried out on the same unit. The tests shall be carried out on the same part and in the specified sequence, but it is not necessary to test the different parts of the item in the sequence of the clauses.

For any unit fitted with more than one flap, door or extension element that is identical in every respect excluding the direction of opening, it is only necessary to test one of the relevant flaps, doors or extension elements. For an item fitted with flaps, doors or extension elements which are not identical, the flap, door or extension element producing the most adverse conditions shall be tested.

**EN 14074:2004 (E)****5 Test apparatus****5.1 Obstacles for rolling test**

Steel strips, 50 mm wide and 2 mm high with the edges having a radius of 2 mm, 500 mm apart and parallel on the floor surface and perpendicular to the test direction..

**5.2 Floor surface**

A rigid, horizontal and flat surface.

For the rolling test, a horizontal smooth steel surface.

**5.3 Wall Surface**

A rigid, vertical and flat surface.

**5.4 Stops**

Devices to prevent the unit from sliding no higher than 12 mm except in cases where the design of the unit necessitates the use of higher stops, in which case the lowest that will prevent the item from sliding shall be used.

**5.5 Masses**

Masses shall not reinforce the structure or redistribute the stresses.

If bags with metal shots etc. are used they shall be divided into small compartments to prevent the contents from moving during the tests.

Loads shall be evenly distributed unless otherwise stated.

Suspended pocket files shall be loaded with typing paper or a suitable representation of it and where applicable pocket files shall be oriented in the most adverse direction.

**5.6 Glass marbles**

Glass marbles between 10 mm and 15 mm in diameter shall be used for the slam open test for extension elements described in (6.2.3). They shall be in a flexible bag large enough to allow them to move freely during the test.

**5.7 Loading pad**

A rigid cylindrical object 100mm in diameter (or 50 mm in diameter to be used in limited space), having a flat face with 12 mm radius on the edge.

**5.8 Apparatus for slam open/shut of extension elements**

Apparatus as well as calibration instructions are given in annex A.

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## 6 Test methods

### 6.1 Determination of loading of storage parts

The volume of extension elements shall be taken as the area of the bottom of the extension element multiplied by the clear height. The clear height is the distance between the top surface of the bottom of the extension element and the lower edge of the front of the extension element of the extension element above, or the structure of the unit.

All parts intended for storage purposes shall be uniformly loaded according to Table 1 unless otherwise specified by the manufacturer.

**Table 1 — Loading of storage parts**

Part	Load	
Shelves	kg/dm <sup>2</sup>	1,5
Clothes Rails	kg/dm	5,0
Extension elements	kg/dm <sup>3</sup>	0,5
Suspended pocket files	kg/dm <sup>a)</sup>	4,0
a) Measured perpendicular to the suspended pocket file.		

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Further loads shall be placed on top of free standing units if this is necessary to prevent tilting.

### 6.2 Extension elements

#### 6.2.1 Strength of extension elements

Load the extension element according to 6.1.

Open the extension element to its open stops. If it is not fitted with open stops, and is intended to be taken out, open it to the point at which one-third of its inside length (depth) remains inside the unit, see figure 1.

Apply a vertical force equal to the total mass of the extension element up to a max of 250 N to one top front corner, see figure 1. The total mass is the weight of the extension element plus the load specified in 6.1.

If the extension element is forced out of the unit it shall be re-assembled if necessary and returned to the unit. This shall be recorded in the report.

Carry out the test ten times.

Before and after the test, inspect the function of the extension element (including the opening and closing forces if required).

Dimensions in millimetres

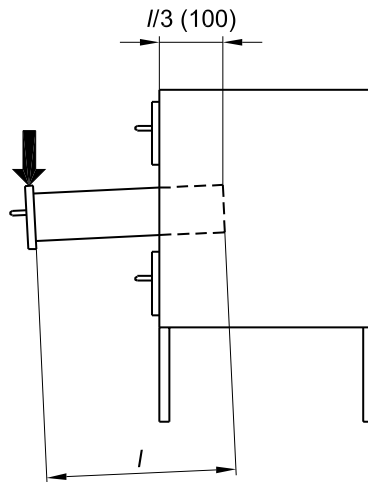


Figure 1 — Strength of extension elements

### 6.2.2 Durability test of extension elements

Load the extension element according to 6.1.

Open and close the extension element without vertical and horizontal support, over its full distance of travel, without forcing the stops, for 50 000 cycles. The recommended rate is maximum 6 cycles per minute.

If an extension element is not equipped with open stops, open it from the fully closed position to the point at which one-third of the inside length (depth) of the extension element remains inside the unit, see figure 2.

The operating force shall be applied at the level intended in normal use (i.e. the extension element handle) or, in case of two handles, in the middle between the handles. Ensure that no downwards force is applied to the extension element runners when closing the extension element.

Before and after the test, inspect the appearance and function of the extension element and runners (including the opening and closing force if required).

Dimensions in millimetres

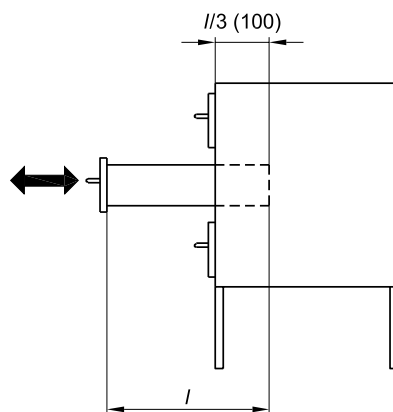


Figure 2 — Durability test of extension elements

### 6.2.3 Slam open of extension elements

Place the extension element on its runners and load it according to 6.1 with glass marbles (5.6) or in case of suspended pocket files, with typing paper or a suitable representation of it (5.5). Close the extension element to a position 300 mm from the fully open position (or fully close the extension element if the travel is less than 300 mm).

Testing shall be carried out with an apparatus working according to one of the two methods specified in A.1 and A.2 in Annex A.

The calibration slam open velocities shall be 1,3 m/s for a 5 kg extension element and 1,0 m/s for a 35 kg extension element (see A.1.3).

Apply the force on the centreline of the extension elements front or back at the same level as the handle.

The slamming force shall be applied until 10 mm before the extension elements reaches its end travel.

Slam the extension elements open 10 times.

Before and after the test, inspect the appearance and function of the extension element and runners (including the opening and closing force if required)

### 6.2.4 Interlock test

When interlocks are fitted, one extension element shall be fully extended and an outward force of 200 N shall be applied to the handles of each of the remaining extension elements one at a time.

The test shall be carried out a total of 10 times on each element. Record if the extension elements are retained closed.

## 6.3 Hinged or pivoted doors

### 6.3.1 Vertical load on doors

Load the door as shown in figure 3 with a mass of 30 kg placed 100 mm from its outer edge.

Swing the door 10 full cycles (back and forth) from a position 45° from fully closed to a position 10° from fully opened, but to a maximum of 135°. The recommended rate is maximum 6 cycles per minute.

Opening and closing can be done by hand using 3 sec. to 5 sec. for opening and 3 sec. to 5 sec. for closing.

Before and after the test, inspect the appearance and function of the door (unloaded) after using any adjustment provided.