



SLOVENSKI STANDARD
oSIST prEN 16139:2022
01-september-2022

Pohištvo - Trdnost, trajnost in varnost - Zahteve za sedežno pohištvo za javno uporabo

Furniture - Strength, durability and safety - Requirements for non-domestic seating

Möbel - Festigkeit, Dauerhaltbarkeit und Sicherheit - Anforderungen an Sitzmöbel für den Nicht-Wohnbereich

Mobilier - Résistance, durabilité et sécurité - Exigences applicables aux sièges à usage collectif

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Ta slovenski standard je istoveten z: prEN 16139

ICS:

97.140

Pohištvo

Furniture

oSIST prEN 16139:2022

en,fr,de

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 16139

September 2022

ICS 97.140

Will supersede EN 16139:2013

English Version

Furniture - Strength, durability and safety - Requirements for non-domestic seating

Mobilier - Résistance, durabilité et sécurité - Exigences
applicables aux sièges à usage collectif

Möbel - Festigkeit, Dauerhaltbarkeit und Sicherheit -
Anforderungen an Sitzmöbel für den Nicht-
Wohnbereich

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 207.

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

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Contents	Page
European foreword	4
1 Scope	5
2 Normative references	5
3 Terms and definitions	5
4 Safety, strength and durability	7
4.1 General requirements	7
4.2 General requirements	7
4.3 General requirements	7
4.3.1 General	7
4.3.2 Shear and compression points when setting up and folding	8
4.3.3 Shear and compression points under influence of powered mechanisms	8
4.3.4 Shear and compression points during use	8
4.4 Stability	8
4.5 Test methods	8
4.5.1 General	8
4.5.2 Requirements	10
5 Information for use	11
6 Test report	11
Annex A (informative) Additional tests	12
Annex B (informative) Test severity in relation to applications	13
Annex C (informative) Dimensional requirements for non-domestic chairs	14
Annex D (normative) Seat side-to-side durability test at D-G points	16
D.1 General	16
D.2 Loading points	16
D.3 Seat side-to-side durability test in D-G points – procedure	17
Annex E (informative) Rationale for single column seating	19
E.1 For term 3.7 Single column seating	19
E.2 For Table 1, selection of applicability	19
E.3 For Table 1, test 4. Arm rest sideways static load test EN 1728:2012, 6.10	19
E.4 For Table 1, test 10. Seat side-to-side durability test Annex E	19
E.5 For Table 1, test 14 and 15 (test not applicable for single column seating swivelling)	19
E.6 For Table 1, test 16. Seat impact test EN 1728:2012, 6.24	20
Annex F (normative) Test methods for finger entrapment and shear and compression	21
F.1 Finger entrapment	21
F.2 Shear and compression	25

Annex G (normative) Rolling resistance of the unloaded chair	27
G.1 General	27
G.2 Test method.....	27
G.3 Requirement.....	28
Annex H (normative) Leg rest durability test.....	29
H.1 General	29
H.2 Test method.....	29
Bibliography	32

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[oSIST prEN 16139:2022](https://standards.iteh.ai/catalog/standards/sist/4cdc0d37-8d57-447d-8c05-5a2959abbe54/osist-pren-16139-2022)

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prEN 16139:2022 (E)**European foreword**

This document (prEN 16139:2022) has been prepared by Technical Committee CEN/TC 207 “Furniture”, the secretariat of which is held by UNI.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 16139:2013.

In comparison with the previous edition, the following technical modifications have been made:

- a) introduction of single column seating;
- b) changes to Annex C (Informative) in terms of dimensional requirements;
- c) introduction of “side to side” durability requirements for “single column seating” and “side to side” test method in Annex D (normative);
- d) new Annex E (informative) new rationale for “single column seating”;
- e) new Annex F (normative) Test methods for finger entrapment and shear and compression;
- f) new Rolling resistance requirement and a new test methods in Annex G (Normative);
- g) new introduction of “leg rest” static requirement;
- h) introduction of “leg rest” durability requirement with a “leg rest” test method in Annex H (Normative);
- i) introduction of “backward fall test” requirement.

1 Scope

This document specifies requirements for the safety, strength and durability of all types of non-domestic seating intended to be used by adults with a weight of not more than 110 kg, including office visitor chairs.

This document does not apply to ranked seating, office work chairs, chairs for educational institutions, outdoor seating and to links for linked seating for which European Standards or drafts exist. It does also not apply to work chairs for industrial use.

This document does not include requirements for the durability of upholstery materials, castors, reclining and tilting mechanisms and seat height adjustment mechanisms.

This document does not include requirements for the resistance to ageing, degradation and flammability.

This document does not include requirements for electrical safety.

Annex A contains additional tests.

Annex B contains information on the level of test severity in relation to applications.

Annex C contains dimensional requirements for office visitor chairs.

Annex D contains a seat side-to-side durability test in D-G points.

Annex E contains a rationale for single column seating.

Annex F contains test methods for finger entrapment and shear and compression.

Annex G describes rolling resistance of the unloaded chair.

Annex H contains a test method for durability "Leg rest".

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.

prEN 1022:2022, *Furniture - Seating - Determination of stability*

EN 1728:2012, *Furniture – Seating – Test methods for the determination of strength and durability*

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

3.1

accessible part

part to which access can easily be gained by the user when the seating is in its intended configuration of use and for which the probability of unintentional user contact is high

3.2

part accessible during setting up and folding

part to which access can only be gained when setting up and folding the furniture

prEN 16139:2022 (E)**3.3****castors**

castors assembly comprising a housing, one or more wheels, an axle and, if required, accessories

3.4**leg rest**

extension of the seat area intended to support the legs of the sitter

Note 1 to entry: A leg rest may or may not be permanently attached to the seat.

3.5**foot rest**

component intended as an occasional support for the feet or to assist getting on and off a tall chair or tall stool

Note 1 to entry: A foot rest may be a part of the structure of the underframe of a chair or stool.

3.6**visitor chair**

seating for one person used in the office environment additional to the office work chair

Note 1 to entry: It is used for meetings or consultations as well as for reading, writing, listening and waiting.

3.7**single column seating**

item of seating whose upper part, which includes the seat, is mounted on a single support with a diameter of up to 120 mm at its narrowest point

Note 1 to entry: This includes e.g. chairs with gas lifts.

[SOURCE: prEN 12520:2021, definition 3.4]

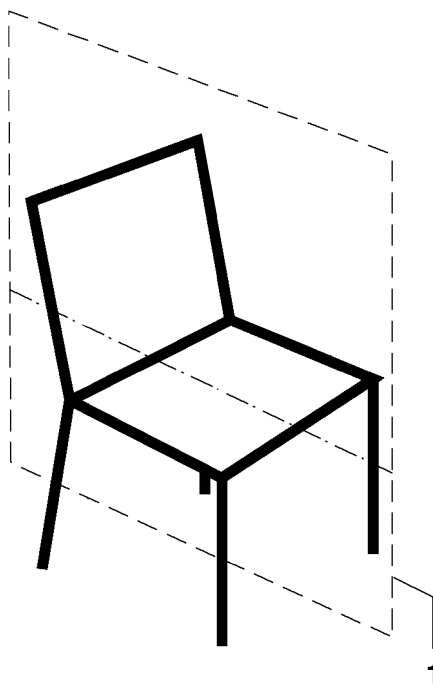
3.8**tall chair/stool seating**

chair / stool with the height of seat from the floor high than the seat height specified in Table C.1 and with a foot rest

3.9**median plane**

vertical plane passing through the geometric centre of the seat, dividing the seat from side to side into two equal parts

Note 1 to entry: See Figure 1.

**Key**

- 1 median plane

Figure 1 — Median plane

4 Safety, strength and durability

4.1 General requirements

The seating shall be designed so as to minimize the risk of injury to the user.

All parts of the seating with which the user comes into contact during intended use, shall be designed so that physical injury and damage are avoided.

This requirement is met when:

- a) edges of the seating which are directly in contact with the user are rounded or chamfered;
- b) all other edges accessible during intended use are free from burrs and/or sharp edges.

Movable and adjustable parts shall be designed so that injuries and inadvertent operation are avoided.

It shall not be possible for any load bearing part of the seating to come loose unintentionally.

4.2 General requirements

There shall be no holes in the ends of tubular components or holes in rigid components in accessible parts between 8 mm and 12 mm, unless the depth of penetration is less than 10 mm. This requirement is fulfilled if there is no hazard present when tested in accordance with F.1.

4.3 General requirements

4.3.1 General

The requirements contained within 4.3.2, 4.3.3 and 4.3.4 do not apply to electrically actuated furniture which are subject to the requirements of prEN 17684:2022, 5.3.3.

prEN 16139:2022 (E)**4.3.2 Shear and compression points when setting up and folding**

Unless 4.3.3 or 4.3.4 are applicable, shear and compression points that are created only during setting up and folding are acceptable, because the user can be assumed to be in control of his/her movements and to be able to cease applying the force immediately upon experiencing pain.

The edges of parts moving relative to each other and creating shear and compression points shall be as specified in 4.1.

4.3.3 Shear and compression points under influence of powered mechanisms

This clause does not apply to shear and compression points generated by motorised components which are subject to the requirements of prEN 17684:2022, 5.3.3.

With the exception of operation of doors, flaps, lids and extension elements, there shall be no areas where the distance between two accessible parts moving relative to each other can be less than 25 mm, and more than 8 mm in any position during movement that could present a risk of injury to the user, created by parts of the furniture operated by powered mechanisms, e.g. mechanical springs and gas lifts.

This requirement is fulfilled if there is no hazard present when tested in accordance with F.2.1.

4.3.4 Shear and compression points during use

With the exception of operation of doors, flaps, lids and extension elements, there shall be no areas where the distance between two accessible parts moving relative to each other can be less than 25 mm, and more than 8 mm in any position that could present a risk of injury to the user, created by loads applied during normal use.

The loads used for durability tests within Table 1 are considered representative of normal use.

This requirement is fulfilled if there is no hazard present when tested in accordance with F.2.2.

4.4 Stability

The seating shall fulfil the relevant requirements of prEN 1022:2022.

4.5 Test methods**4.5.1 General**

Seating shall be tested for strength and durability according to and in the order given in Table 1 and in accordance with the test conditions contained in EN 1728:2012.

The following tests described in Table 1 are considered to be relevant for safety.

Test No.: 1, 2, 4, 6, 7, 8, 9, 10, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23.

The guidance for selecting level L1 or L2 with due respect for the end use of the product is given in Annex B.

Table 1 — Safety, strength and durability tests

Test	Application	Reference	Loading ^a	Level	
				L1	L2
1. Seat static and back static load test	All	EN 1728:2012, 6.4	Seat: force, N Back: force, N 10 times	1 600 560 (min. force, 410)	2 000 700 (min. force, 410)
2. Seat front edge static load test	All ^a	EN 1728:2012, 6.5	Force, N 10 times	1 300	1 600
3. Vertical static load on back	All ^b	EN 1728:2012, 6.6	Force, N Seat load, N 10 times	600 1 300	900 1 800
4.1 Foot rest static load test	All	EN 1728:2012, 6.8	Force, N 10 times	1 300	1 600
4.2 leg rest static load test ^e	All	EN 1728:2012, 6.9	Force, N 10 times	1 300	1 600
5. Arm rest sideways static load test	All	EN 1728:2012, 6.10	Force, N 10 times	400	900
6. Arm rest downwards static load test	All	EN 1728:2012, 6.11	Force, N 5 times	750	900
7. Vertical upwards static load on arm rests	All	EN 1728:2012, 6.13.1, 6.13.2	Seat load, N Lift 10 times, during ≥ 10 s	250 or lift stack with max. 8 chairs of max. 25 kg	1 200
8. Combined seat and back durability test	All	EN 1728:2012, 6.17	Cycles Seat: 1 000 N Back ^c 300 N	100 000	200 000
10. Seat side-to-side durability test	Single column	Annex D	Force, N Cycles Alternating load applied to points D-G	1 100 20 000	1100 20000
11. Arm rest durability test	All	EN 1728:2012, 6.20	Cycles Force: 400 N	30 000	60 000
12. Foot rest durability test	All	EN 1728:2012, 6.21	Cycles Force: 1 000 N	50 000	100 000
13. Leg rest durability test ^d	All	Annex H	Cycles Force: 1 000 N	10 000	20 000
14. Leg forward static load test	Not on Single column	EN 1728:2012, 6.15	Force, N Minimum force Seat load, N 10 times	500 ^e 150 1 000	620 ^d 200 1 800

prEN 16139:2022 (E)

Test	Application	Reference	Loading ^a	Level	
				L1	L2
15. Leg sideways static load test	Not on Single column	EN 1728:2012, 6.16	Force, N Minimum force Seat load, N 10 times	400 ^e 150 1 000	760 ^d 200 1 800
16. Seat impact test	All	EN 1728:2012, 6.24	Drop height, mm Cycles (fixed seat height) Cycles (adjustable seat height)	240/10 5 in highest position 5 in lowest position	300 10 5 in highest position 5 in lowest position
17. Backward fall test ^f	All	EN 1728:2012, 6.28	Number of impacts	5	10
18. Back impact test ^g	All	EN 1728:2012, 6.25	Height of fall, mm/° 10 times	210/38	330/48
19. Arm rest impact test	All	EN 1728:2012, 6.26	Height of fall, mm/° 10 times	210/38	330/48
20. Drop test (multiple seating)	All	EN 1728:2012, 6.27.1	Drop height, mm 2 × 5 times	not applicable	450
21. Auxiliary writing surface static load test	All	EN 1728:2012, 6.14	Force, N 10 times	300	300
22. Auxiliary writing surface durability test	All	EN 1728:2012, 6.22	Cycles Force: 150 N	10 000	20 000
23. Rolling resistance	Chair and stool with castors	Annex G	Drop height, mm Or angle	83 23,5°	83 23,5°

^a Seat load on parts not undergoing test: 750 N.

^b The test is only applicable for chairs without head/neck rest and for chairs with a height of the backrest < 1 000 mm above ground.

^c No minimum force defined.

^d For items of seating with a leg rest attached to the structure of the item, and where the leg rest is designed to support the weight of the user

^e In derogation to EN 1728:2012, if the item tends to overturn before the specified force is reached, reduce the force to a magnitude that just prevents forward overturning, but not lower than the minimum specified force. Record the actual force used.

^f This test is only for single seating units where the back will be the first part of the structure to strike the floor and the force used to overturn the chair rearwards is less than 30 N.

^g This test is for all seating not tested in accordance with Test 17.

4.5.2 Requirements

The safety, strength and durability requirements are fulfilled when during and after testing in accordance with Table 1: