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Testing of Campus chair (1 appendix)

1 Introduction

By commission of Lammhults Möbel AB, a Campus chair has been tested by SP in accordance with Möbelfakta requirement specification 4.2.1 Seating furniture for public locations, issue 0202.

2 Test specimen

Frame: Steel tube Ø16 mm.
Seat/backrest: Laminated board.

The test specimen was selected by the customer and arrived at SP on July 3, 2006.

3 Test methods and test procedure

Before testing the test specimen was conditioned for one week in a climate of 23°C ± 2°C and 50% ± 5% relative humidity, in accordance with the standards. Testing was also carried out in this climate.

The test methods are explained in Appendix 1 in accordance with Möbelfakta requirement 4.2.1 Seating furniture for public locations, issue 0202.

The test was carried out over the period Aug 16 - 28, 2006.

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4 Results

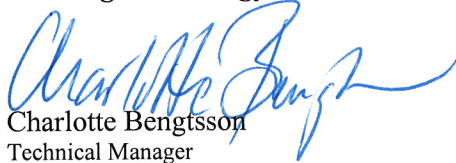
The result is reported in Appendix 1.

At the end of the test, the tested piece did not exhibit any faults, fractures or other damage judged to affect its safety when used in accordance with SS-ENV 12520. The requirement has been met.

At the end of the test, the tested piece did not exhibit any damage or deformation which is expected to affect its function or appearance.

The test results apply solely to the specimen tested.

SP Swedish National Testing and Research Institute Building Technology and Mechanics - Wood Technology



Charlotte Bengtsson
Technical Manager



Bengt-Åke Andersson
Technical Officer

Appendix

Test report (5 pages).

This is a translation from the Swedish original document. In the event of any dispute as to the content of the document, the Swedish text shall take precedence.

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Appendix 1

4.2. Contract use

4.2.1 Seating

1.	General requirements	Safety	Strength/ Durability (performance)	References: Requirements
1.1	Components or parts accessible during normal use shall have no burrs, sharp edges or sharp points.	x ✓	-	SS-ENV 12520. Clause 4.1
1.2	There shall be no open-ended tubes.	x ✓	-	SS-ENV 12520. Clause 4.1
1.3	<u>Shear and squeeze points.</u> The distance between moving parts accessible during normal use shall be kept to ≤ 8 mm or ≥ 25 mm in any position during movement.			SS-ENV 12520. Clause 4.2
1.3.1	<u>Shear and squeeze points when setting up and folding.</u> The requirements in 1.3 are not applicable when shear and squeeze points are created only when setting up and folding.	x	-	SS-ENV 12520. Clause 4.2.1
1.3.2	<u>Shear and squeeze points under the influence of powered mechanisms.</u> The requirements in 1.3 are applicable to all moving parts created by parts operated by powered mechanisms, including springs.	x	-	SS-ENV 12520. Clause 4.2.2
1.3.3	<u>Shear and squeeze points under body weight</u> Shear and squeeze points as defined in 1.3 are not acceptable if unintentional movement of the parts may occur so that a hazard is created by the weight of the user.	x	-	SS-ENV 12520. Clause 4.2.3
1.4	<u>Shear and squeeze points shall not be created by normal movements and actions, e.g. attempting to move the seating by lifting the seat or by adjusting the backrest.</u> All lubricated parts shall, when in normal use, be designed to protect from contact with the lubricant.	-	x	Möbelfakta ²⁾

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4.2. Contract use

4.2.1 Seating

Cont. General requirements		Safety	Strength/ Durability (performance)	References: Requirements
1.5	<u>Knock-down furniture / assembly instructions.</u> Parts or components being parts of a knock-down furniture shall be so prepared that the assembly can be done without any difficulties and in a reliable way. When the assembly requires an instruction it shall be easy to understand and instructive. The instruction shall by a list, a diagram or in an other way make it possible to control that all parts or components are supplied.	-	x	Möbelfakta ²⁾
2.	Stability The seating shall not overturn. The stability requirements shall be fulfilled before and after the tests specified in clause 3 - Safety and Strength and Durability (performance).	x	-	References: Test method SS-EN 1022
3.	Safety, strength and durability (performance)	Safety	Strength / Durability (performance)	References: Test methods
3.1	Seat and back static load test	x	- 1)	SS-EN 1728. Clause 6.2.1
3.2	Additional seat and back static load test for tilting chairs, reclining chairs and loungers	x	- 1)	SS-EN 1728. Clause 6.3
3.3	Seat front edge static load	x	- 1)	SS-EN 1728 Clause 6.2.2
3.4	Foot rail/foot rest and leg rest static load test	x	- 1)	SS-EN 1728. Clause 6.4

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4.2. Contract use

4.2.1 Seating

3.	Cont. Safety, strength and durability (performance)	Cycles	Forces / loads	Safety	Strength / Durability (performance)	References: Test methods
3.5	Arm sideways static load test	10	400 N	x	- 1)	SS-EN 1728. Clause 6.5
3.6	Wing sideways static load test	10	300 N	x	- 1)	SS-EN 1728. Clause 6.5
3.7	Arm downwards static load test	10	800 N	x	- 1)	SS-EN 1728. Clause 6.6
3.8	Combined seat and back fatigue test	100 000	Seat 1000 N Back 300 N (max.)	x ✓	- 1)	SS-EN 1728. Clause 6.7
3.9	Additional seat and back fatigue test for tilting chairs, reclining chairs and loungers, inclination $\leq 70^\circ$ - backrest > 55° inclination - backrest < 55° inclination	50 000 50 000	According to formula: Seat 1000 N Back 300 N (max.)	x	- 1)	SS-EN 1728. Clause 6.9
3.10	Seat front edge fatigue test	50 000	1000 N	x ✓	- 1)	SS-EN 1728 Clause 6.8
3.11	Arm fatigue test	30 000	400 N	x	- 1)	SS-EN 1728. Clause 6.10
3.12	Leg forward static load test	10	620 N (max.) 1300 N (balancing load)	x ✓	- 1)	SS-EN 1728. Clause 6.12
3.13	Leg sideways static load test	10	490 N (max.) 1300 N (balancing load)	x ✓ ¹	- 1)	SS-EN 1728. Clause 6.13

¹ In clause 3.13, the force has been reduced to 450N in accordance with the standard.

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4.2. Contract use

4.2.1 Seating

3.14	Seat impact test	10	Drop height 240 mm	x	√	-	1)	SS-EN 1728. Clause 6.15
3.	Cont. Safety, strength and durability (performance)	Cycles	Forces / loads	Safety	Strength / Durability (performance)	References: Tests		
3.15	Leg rest fatigue test	25 000	1000 N	-	x	SS-EN 1728. Clause 6.11		
3.16	Diagonal static base load test	10	500 N	-	x	SS-EN 1728. Clause 6.14		
3.17	Back impact test	10	Drop height 330 mm / 48°	-	√	SS-EN 1728. Clause 6.16		
3.18	Drop test	2 x 5	Drop height 200 mm	-	√	SS-EN 1728. Clause 6.18		

1) When assessing the test results the "Criteria of defects" accordance with "Strength and durability (function)", below, shall also be considered.

2) The requirement is given by Möbelfakta as no requirement is given in other standards e.g. CEN- or ISO standards

The extent and requirements are adapted to SS-EN 13761: Office furniture – Visitors chairs.

√ The test has been completed without any remarks

⊗ The requirement is not fulfilled

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Appendix 1

4.2. Contract use

4.2.1 Seating

Assessment of results

Safety:

After carrying out the tests, the tested piece of furniture did not demonstrate any ruptures, fractures or other damage that can affect the safe use of the article as per SS-ENV 12520. This also implies that after the testing there are no burrs, sharp edges or sharp points. See clause 1.1.

Strength and durability (performance):

After carrying out the tests the tested piece of furniture did not demonstrate any ruptures, fractures or other damage that can affect the durability or appearance as:

- Fracture of any member, component or joint.
 - Loosening of any joint intended to be rigid.
 - Deformation or wear of any part or component such that it's functioning is affected.
 - Loosening of any means of fixing components.
 - Any movable parts that no longer open or close freely, or catches that do not operate properly.
 - Clearly audible noise.
 - The height change of upholstery.
When tested according to clause 3.8 or 3.9 alternatively the height change of the seat shall not exceed 25 mm.
- Assessment of the height change shall be carried out according to the method described in prEN 14443: Domestic furniture – Seating – Test methods for the determination if durability of upholstery