



Four Design A/S  
Attn.: Inge Prebble  
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Order no. 466892  
Page 1 of 1  
Appendices 4  
Initials laha/prni/hbs

## Test Report

Material: Model: Four Cast XL og Four Cast XL PLUS with/without armrests

Type:	Chair with armrests			Lab.no.:	466892A
Length:	600 mm	Width:	490 mm	Height:	865 - 950 mm
Weight:	8 kg				
Materials:	Beech veneer				

Sampling: The test material was sampled by the client and received at the Danish Technological Institute 03-02-2012.

Method: EN 1729 Furniture – Chairs and tables for educational institutions – Part 1: Functional dimensions. Tested according to table A.1. Clauses 1-11.

EN 1729 Furniture – Chairs and tables for educational institutions – Part 2: Safety requirements and test methods. Loading according to EN 1729-2:2006 size 7, (Brown).

EN 15373:2007 Furniture - Strength, durability and safety - Requirements for non-domestic seating. Loading according to Test severity 2. General use. Clauses 6.1.6, 6.1.8, 6.1.9, 6.1.13, 6.2.

Period: The testing was carried out from 06-02-2012 to 27-02-2012.

Result: Models Four Cast XL og Four Cast XL PLUS with/without armrests fulfil the requirements in EN 1729-1:2006 and the requirements in Table A.1. Loading according to EN 1729-2:2006, size 7 (brown). Arm rests according to EN 15373:2007.

Individual results appear from Appendices 1, 2 and 3.

Storage: The test material will be destroyed after 1 month, unless otherwise agreed.

Terms: The test was performed according to the rear side conditions, which are according to the guidelines laid down by DANAK (The Danish Accreditation). The testing is only valid for the tested specimen. The test report may only be extracted, if the laboratory has approved the extract.

27-02-2012, Danish Technological Institute, Wood Technology, Taastrup  
Revised 29-02-2012. This report replaces all previous for these samples

Test responsible

Verifier

## Testing of model: Four Cast XL and Four Cast XL PLUS Lab. No.: 466892A

### EN 1729-1:2006 – Tabel A.1

Size code	0	1	2	3	4	5	6	7
Colour code	White	Orange	Violet	Yellow	Red	Green	Blue	Brown
1. Length of the lower leg (without shoes)	200-250	250-280	280-315	315-355	355-405	405-435	435-485	485+
2. Person height (without shoes)	800-950	930-1160	1080-1210	1190-1420	1330-1590	1460-1765	1590-1880	1740-2070
3. H <sub>8</sub> -Seat height ± 10	210	260	310	350	380	430	460	510
Measured							451	
4. T <sub>4</sub> -Effective seat depth ± 10 mm (0-2) ± 20 mm (3-7)	225	250	270	300	340	380	420	460
Measured							440	
5. B <sub>3</sub> -Min. seat width	210	240	280	320	340	360	380	400
Measured								467
6. T <sub>7</sub> -Seat depth (min.)	Actual t <sub>4</sub> minus 20 mm	Actual t <sub>4</sub> minus 20 mm	Actual t <sub>4</sub> minus 20 mm	Actual t <sub>4</sub> minus 30 mm	Actual t <sub>4</sub> minus 30 mm	Actual t <sub>4</sub> minus 30 mm	Actual t <sub>4</sub> minus 30 mm	Actual t <sub>4</sub> minus 30 mm
Measured							410	
7. H <sub>6</sub> -Height of point S- -10 to +20	140	150	160	180	190	200	210	220
Measured							85	

**Testing of model: Four Cast XL and Four Cast XL PLUS  
 Lab. No.: 466892A**

Size code	0	1	2	3	4	5	6	7
Colour code	White	Orange	Violet	Yellow	Red	Green	Blue	Brown
8. H <sub>7</sub> -Back height, min	100	100	100	100	100	100	100	100
Measured							450-530	
9. B <sub>4</sub> -Min. back width	-	210	250	270	270	300	330	360
Measured								440
10. R <sub>2</sub> -The horizontal radius of the back	-	300	300	300	300	300	300	300
Measured								>300
11. β-The inclination of the back, degrees	-	95° to 110°	95° to 110°	95° to 110°	95° to 110°	95° to 110°	95° to 110°	95° to 110°
Measured							108	

Order no. 466892  
 Appendix 2  
 Page 1 of 1  
 Initials laha/prni/hbs

## Testing of model: Four Cast XL and Four Cast XL PLUS Lab. No.: 466892A

### Loading according to EN 1729-2:2006, size 7 (brown)

Testing	Test Method	Result
<b>4 Safety requirements</b>		
4 a)-i)	EN 1729-2:2006 4	Passed
4 l)	EN 1729-2:2006 5.2	Passed
4 m)	EN 1729-2:2006 5.3	Passed

Testing	Test Method	Cycles	Loading	Result
<b>5 Testing of chairs</b>				
5.2.1 Stability forward	EN 1022:2005 6.2		Seat: 600 N Horizontal: 20 N	Passed
5.2.2 Stability sideways	EN 1022:2005 6.4		Seat: 600 N Horizontal: 20 N	Passed
5.2.3 Stability backwards	EN 1022:2005 6.6		Seat: 600 N Back: 180 N	Passed
5.3.1 Seat and back static loading	EN 1728:2000 6.2.1	10	Seat: 2000 N Back: Max 520 N	Passed
5.3.2 Seat and back fatigue testing	EN 1728:2000 6.7	100000	Seat: 1250 N Back: 300 N	Passed
5.3.3 Seat front edge fatigue testing	EN 1728:2000 6.8	50000	Vertical: 800 N	Passed
5.3.4 Sideways static loading	EN 1728:2000 6.13	10	Vertical: 1600 N Horizontal: Max 600 N	Passed
5.3.5 Forward static loading	EN 1728:2000 6.12	10	Vertical: 1600 N Horizontal: Max 600 N	Passed
5.3.6 Seat impact testing	EN 1728:2000 6.15	10	Drop height: 300 mm	Passed
5.3.7 Back impact testing	EN 1728:2000 6.16	10	Drop height: 620 mm	Passed
5.3.8 Static loading of foot rest	EN 1728:2000 6.4	10	Vertical: 1000 N	N/A
5.3.9 Drop test	EN 1729-2:2006 Annex A	5	Drop height: 600 mm	Passed

Order no. 466892  
 Appendix 3  
 Page 1 of 2  
 Initials laha/prni/hbs

## Testing of model: Four Cast XL and Four Cast XL PLUS Lab. No.: 466892A

### Loading according to Test severity 2.

Test	Test Method	Cycles	Load	Result
5.1 General	EN 15373, 5.1			N/A
5.2.2 Shear and squeeze points under influence of powered mechanisms	EN 15373, 5.2.2			N/A
5.2.3 Shear and squeeze points during use	EN 15373, 5.2.3			N/A
5.3.2 Swivelling chairs	EN 15373, 5.3.2			N/A
5.3.3 Non swivelling chairs	EN 15373, 5.3.3			N/A
5.4 Rolling resistance of the unloaded chair	EN 15373, 5.4			N/A
6.1.1 Static Load - Seat and Back	EN 1728, 6.2.1			N/A
6.1.2 Static Load of Seat Front Edge	EN 1728, 6.2.2			N/A
6.1.3 Additional Static Load Test for Tilting Chairs and Intermediate Reclining Chairs	EN 1728, 6.3.1			N/A
6.1.3 Additional Static Load Test for Fully Reclining Chairs	EN 1728, 6.3.2			N/A
6.1.4 Vertical Static Load on Back	EN 15373, A.2			N/A
6.1.5 Static Load Test of Foot Rail/Foot Rest and Leg Rest	EN 1728, 6.4			N/A
6.1.6 Sideways Static Load of Arms	EN 1728, 6.5	10	600 N	Passed
6.1.7 Sideways Static Load of Wings	EN 1728, 6.5			N/A
6.1.8 Downwards Static Load of Arms	EN 1728, 6.6	10	900 N	Passed
6.1.9 Vertical Upwards Static Load on Arm Rests	EN 15373, A.1	10	Seat: 1000 N or lift stack	Passed
6.1.10 Combined Seat and Back Fatigue Test	EN 1728, 6.7			N/A
6.1.11 Seat and Back Fatigue Test for Tilting Chairs and Intermediate Reclining Chairs	EN 1728, 6.9.1			N/A
6.1.11 Seat and Back Fatigue Test for Fully Reclining Chairs and Loungers	EN 1728, 6.9.2			N/A
6.1.12 Seat Front Edge Fatigue Test	EN 1728, 6.8			N/A
6.1.13 Arm Fatigue Test	EN 1728, 6.10	50000	400 N	Passed
6.1.14 Leg Rest Fatigue Test	EN 1728, 6.11			N/A
6.1.15 Foot Rail Fatigue Test	EN 15373, A.5			N/A
6.1.16 Leg Forward Static Load Test	EN 1728, 6.12			N/A
6.1.17 Legs Sideways Static Load Test	EN 1728, 6.13			N/A
6.1.18 Diagonal Static Base Load Test	EN 1728, 6.14			N/A
6.1.19 Seat Impact Test	EN 1728, 6.15			N/A
6.1.20 Back Impact Test	EN 1728, 6.16			N/A

Order no. 466892  
 Appendix 3  
 Page 2 of 2  
 Initials laha/prni/hbs

**Testing of model: Four Cast XL and Four Cast XL PLUS  
 Lab. No.: 466892A**

<b>Test</b>	<b>Test Method</b>	<b>Cycles</b>	<b>Load</b>	<b>Result</b>
6.1.21 Arm Impact Test	EN 1728, 6.17			N/A
6.1.22 Drop Test (multiple seating)	EN 1728, 6.18			N/A
6.1.23 Auxiliary writing surface static load test	EN 15373, A.3			N/A
6.1.24 Auxiliary writing surface fatigue test	EN 15373, A.4			N/A
6.2 Strength and durability requirements	EN 15373, 6.2			Passed
7 Information for use	EN 15373, 7			N/A

Order no. 466892  
Appendix 4  
Page 1 of 3  
Initials laha/prni/hbs

**Testing of model: Four Cast XL and Four Cast XL PLUS  
Lab. No.: 466892A**

**Photo**



Four Cast XL PLUS

Order no. 466892  
Appendix 4  
Page 2 of 3  
Initials laha/prni/hbs

**Testing of model: Four Cast XL and Four Cast XL PLUS**  
**Lab. No.: 466892A**



Four Cast XL



Order no. 466892  
Appendix 4  
Page 3 of 3  
Initials laha/prni/hbs

**Testing of model: Four Cast XL and Four Cast XL PLUS  
Lab. No.: 466892A**



Four Cast XL PLUS with armrests

The general conditions pertaining to assignments accepted by Danish Technological Institute shall apply in full to the technical testing and calibration at Danish Technological Institute and to the completion of test reports and calibration certificates within the relevant field.

### **Danish Accreditation (DANAK)**

DANAK was established in 1991 in pursuance of the Danish Act No. 394 of 13 June 1990 on the promotion of Trade and Industry.

The requirements to be met by accredited laboratories are laid down in the "Danish Agency for Trade and Industry's ("Erhvervsfremme Styrelsens") Statutory Order on accreditation of laboratories to perform testing etc. and GLP inspection. The statutory order refers to other documents, where the criteria for accreditation are specified further.

The standards DS/EN ISO/IEC 17025 "General requirements for the competence of testing and calibration laboratories" and DS/EN 45002 "General criteria for the assessment of testing laboratories" describe fundamental criteria for accreditation. DANAK uses guidance documents to clarify the requirements in the standards, where this is considered to be necessary. These will mainly be drawn up by the "European co-operation of Accreditation (EA)" or the "International Laboratory Accreditation Co-operation (ILAC)" with the purpose of obtaining uniform criteria for accreditation. In addition, DANAK draws up Technical Regulations with specific requirements for accreditation that are not contained in the standards.

In order for a laboratory to be accredited it is, among other things, required:

- that the laboratory and its personnel are not subject to any commercial, financial or other pressures, which might influence their technical judgement

- that the laboratory operates a documented quality system
- that the laboratory has at its disposal all items of equipment, facilities and premises required for correct performance of the service that it is accredited to perform
- that the laboratory management and personnel have technical competence and practical experience in performing the service that they are accredited to perform
- that the laboratory has procedures for traceability and uncertainty calculations
- that accredited testing or calibration is performed in accordance with fully validated and documented methods
- that the laboratory keeps records, which contain sufficient information to permit repetition of the accredited test or calibration
- that the laboratory is subject to surveillance by DANAK on a regular basis
- that the laboratory shall take out an insurance, which covers liability in connection with the performance of accredited services

Reports carrying DANAK's logo are used, when reporting accredited services and show that these have been performed in accordance with the rules for accreditation.