Martela Oyj
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TEST REPORT **514/15**

Inspiring spaces
Martela

Product **378D/KR/L9**

Test requested by Martela AB, Brogatan 1, SE-57161, Bodafors

Test specimen Seat shell: laminated, molded plywood
Frame: metal
Arms: metal
Legs: metal

Test method Determination of strength, durability and safety of non-domestic chair according to
EN 16139:2013 Furniture. Strength, durability and safety. Requirements for non-domestic seating.

The test specimen was selected by Martela and arrived at test laboratory November 6, 2014.

Tests were carried out 19.12.2014 – 26.12.2014 in temperature 23ºC ± 2ºC.

Results Testing methods and results are explained in pages 2-6.

Assessment of the results

378D/KR/L9 meets the requirements of non-domestic seating for strength, durability and safety as presented in the EN 16139:2013 with level L1 type of usage.

The test result is only valid to the specimen tested and no other.

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Martela Testing laboratory

Nummela, January 9, 2015

approved by:

Tero Karttunen
Quality and Test Manager

tested by:

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FINAS
Finnish Accreditation Service
T280 (EN ISO/IEC 17025)

EN16139:2013 Furniture - Strength, durability and safety - Requirements for non-domestic seating			
Annex B – Test severity in relation to applications Table shows the type of use that might be expected from furniture in relation to the two levels of test severity contained in Table 1.			
Level	**Type of use**	**Application**	**Used severity**
L1	**General use**	Areas in which seatings are usually intended for mixed use (short-time and for a period of several hours, light to heavy load). Examples of end-use: all kind of applications in office buildings, showrooms, public halls, function rooms, cafés, restaurants, canteens, banks, bars.	X
L2	**Extreme use**	Areas in which seatings are occasionally or repeatedly subject to extremely high loads due to their specific types of use or due to improper use. Examples of end-use: night-clubs, police stations, transport terminals, sport changing rooms, prisons, barracks (non-controlled areas).	

EN16139:2013 Furniture - Strength, durability and safety - Requirements for non-domestic seating (INFORMATIVE)			
Annex C Dimensional requirements for office visitor chairs	**Requirement**	**Measured**	**Results**
C.2.1 Seat height [a] Fixed seat height Adjustable seat height	400-500mm min. range 420mm-480mm	423 mm	OK
C.2.2 Seat depth [b]	380mm-470mm	425 mm	OK
C.2.3 Seat width [d]	min 400mm	453 mm	OK
C.2.4 Distance between arm rests [r]	min 460mm	470 mm	OK

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Reference to standard	Requirements	Record	RESULTS
4.1 General safety	a) Accessible corners are rounded or chamfered	Record weather the requirements are filled	OK
	b) The edges of the seat, back rest and arm rests which are in contact with the user when sitting in the chair are rounded or chamfered		OK
	c) The edges of handles are rounded or chamfered in the direction of the force applied		OK
	d) All other edges are free from burrs and rounded or chamfered		OK
	e) The ends of hollow components are closed or capped		OK
	Movable and adjustable parts shall be designed so that injuries and inadvertent operation are avoided.		N/A
	It shall not be possible for any load bearing part of the seating to come loose unintentionally.		N/A
	All parts which are lubricated to assist sliding shall be designed to protect users from lubricant stains when in normal use.		N/A
4.2.1 Shear and squeeze points when setting up and folding	Unless 4.2.2 or 4.2.3 are applicable, shear and squeeze points that are created only during setting up and folding, including tipping seat actions, 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 squeeze points shall be as specified in 4.1.	Record weather the requirements (less than 18 mm or more than 7 mm) are filled.	N/A
4.2.2 Shear and squeeze points under influence of powered mechanism	With the exception of tipping seats there shall be no shear and squeeze points created by parts of the seating operated by powered mechanisms, e.g. springs and gas lifts.		N/A
4.2.3 Shear and squeeze points during use	There shall be no shear and squeeze points created by forces applied during normal use as well as during normal movements and actions, see Table 1		OK

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4.3 Stability			**Requirements**	
Tests			**Swivelling chair**	**Non swivelling chair**
4.3.1 General EN 16139:2012	The seating shall not overturn under the following conditions by:	a) by pressing down on the front edge of the seat surface in the median plane (3.8);	EN 1335-2	EN 1022 OK
		b) by applying a load on the seat surface via the front corner;	EN 1335-2	EN 1022 OK
		c) by leaning sideways on a with or without arm rests;	EN 1335-2	EN 1022 OK
		d) by leaning against the back rest;	EN 1335-2	EN 1022 OK
		e) by sitting on the front edge of the seat;	EN 1335-2	EN 1022 OK
		f) by loading the foot rest.	EN 1022: 2005, 6.3	EN 1022 N/A
4.4 Rolling resistance of the unloaded chair EN 16139:2012	This subclause is only applicable to single seating units fitted with castors or wheels. The unloaded seating shall not roll unintentionally. This requirement is met when:	the rolling resistance is ≥ 12 N when tested in accordance with EN 1335-3:2009, 7.4;		N/A
		all castors are of the same type.		N/A
4.5 Safety of the construction EN 16139:2012	The following tests described in Clause 6, Table 1 are considered to be relevant to safety: Test No.: 1, 2, 4, 6, 7, 8, 9, 10, 12, 13, 14. Seating is considered to satisfy the safety requirements if, on completion of the relevant tests, the chair satisfies all requirements of Clause 5.			OK

EN16139:2013 Furniture - Strength, durability and safety - Requirements for non-domestic seating		
Reference to standard	**Requirements**	**RESULTS**
5 Safety, strength and durability requirements The chair shall be constructed to ensure that it does not create a risk of injury to the user of the chair under the following conditions:	- sitting on the seat, both centrally and off-centre; - moving forward, backwards, and sideways while sitting in the chair; - leaning over the arm rests; - pressing down on the arm rests while getting up from the chair	OK
These safety, strength and durability requirements are fulfilled when during and after testing.	a) there are no fractures of any member, joint or component	OK
	b) there are no loosening of joints intended to be rigid	
	c) no major structural element is significantly deformed	
	d) the chair fulfils its functions after removal of the test loads	

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EN16139:2013 Furniture - Strength, durability and safety - Requirements for non-domestic seating					
6 Test methods	**Reference**	**Loading** [a]	**L1**	~~**L2**~~	**RESULTS**
1. Seat and back static load test	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)~~	OK
2. Seat front edge static load test	EN 1728:2012, 6.5	Force, N 10 times	1300	~~1600~~	OK
3. Vertical static load on back [b]	EN 1728:2012, 6.6	Force, N Seat load, N 10 times	600 1 300	~~900~~ ~~1 800~~	OK
4. Foot rest and leg rest static load test	EN 1728:2012, 6.8, 6.9	Force, N 10 times	1 300	~~1 600~~	N/A
5. Arm sideways static load test	EN 1728:2012, 6.10	Force, N 10 times	400	~~900~~	OK
6. Arm downwards static load test	EN 1728:2012, 6.11	Force, N 5 times	750	~~900~~	OK
7. Vertical upwards static load on arm rests	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~~	OK
8. Seat and back durability test	EN 1728:2012, 6.17	Cycles Seat: 1 000 N Back [c]: 300 N	100 000	~~200 000~~	OK
9. Seat front edge durability test	EN 1728:2012, 6.18	Cycles Force: 800 N	50 000	~~100 000~~	OK
10. Arm durability test	EN 1728:2012, 6.20	Cycles Force: 400 N	30 000	~~60 000~~	OK
11. Foot rest durability test	EN 1728:2012, 6.21	Cycles Force: 1 000 N	50 000	~~100 000~~	N/A
12. Leg forward static load test	EN 1728:2012, 6.15	Force, N Seat load, N 10 times	500 1 000	~~620~~ ~~1 800~~	OK
13. Leg sideways static load test	EN 1728:2012, 6.16	Force, N Seat load, N 10 times	400 1 000	~~760~~ ~~1 800~~	OK

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14. Seat impact test	EN 1728:2012, 6.24	Drop height, mm 10 times	240	~~300~~	OK
15. Back impact test	EN 1728:2012, 6.25	Height of fall, mm/° 10 times	210/38	~~330/48~~	OK
16. Arm impact test	EN 1728:2012, 6.26	Height of fall, mm/° 10 times	210/38	~~330/48~~	OK
17. Drop test (multiple seating)	EN 1728:2012, 6.27.1	Drop height, mm 2 × 5 times	not applicable	~~450~~	N/A
18. Auxiliary writing surface static load test	EN 1728:2012, 6.14	Force, N 10 times	300	~~300~~	N/A
19. Auxiliary writing surface durability test	EN 1728:2012, 6.22	Cycles Force: 150 N	10 000	~~20 000~~	N/A
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.					
DEFECTS AND OBSERVATIONS AFTER TEST PROCEDURE					

EN16139:2013 Furniture - Strength, durability and safety - Requirements for non-domestic seating

7 Information for use

Information for use shall be available in the language of the country in which it will be delivered to the end user. It shall contain at least the following details:

Requirements:	**RESULTS**
a) information regarding the intended use (see Annex B);	N/A
b) if the chair is fitted with adjusting mechanisms: instruction for operating the adjusting mechanisms;	N/A
c) assembly instructions, where applicable;	N/A
d) instruction for the care and maintenance of the chair;	N/A
e) if the seating is fitted with castors: information on the choice of castors in relation to the floor surface;	N/A

Explanation of results: OK=passed, Not OK=failed, N/A=not applicable

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