Test Report

Test Report No.	**2016-12-01-002**		Page 1(12) Rev. 00
Customer	Flokk AS Fridtjof Nansens vei 12 0369 Oslo, Norway		
Customer contact	Product & Brand Concept v/ Christian Eide Lodgaard		
Test item	Håg SoFi		
Test item ID:	SoFi 7300		
Serial No.	5110246729		
Order No.	2016-12-01-002		
Date of receipt.	2017-03-08		
Testing commenced / finished	2017-05-09 / 2017-07-31		
Performing Laboratory.	Flokk AS, Test 275 Sundveien 201 7374 Røros, Norway +47 72 40 72 00		
Accredited by.	Norsk Akkreditering Postboks 155 Bedriftssenter 2001 Lillestrøm +47 64 84 86 00	Valid from: 2013-04-18 Registration No.: Test 275	Valid to: 2018-04-18
Tested according to.	ANSI/BIFMA X5.1-2017		
Test result.	**The test item passed the test specifications**		

Tested by:			**Approved by:**		
2017-08-17	Product tester Christian Andersson		2017-08-17	Quality technician John Anders Spencer	
Date	**Name** **Position**	**Sign.**	**Date**	**Name** **Position**	**Sign.**

Additional information.
The test results refer only to the sample tested.
The test was conducted in order to verify recycled plastic components used to fulfil environmental requirements. Each individual component is listed under description of the test sample.

Abbreviations		
	P	**=Passed**
	F	**=Failed**
	NA	**=Not applicable**
	NT	**=Not tested**

Estimated uncertainty of measurement		
Measurement	**Description**	**Uncertainty (N)**
12.3.1	Rear stability	9,12
12.3.2	Rear stability type I & II chairs	6,84
12.4.2	Front stability	3,37
All relevant	All load cells used during mechanical testing.	<12

The given expanded uncertainty U, is the result of the multiplication of the standard uncertainty u, and coverage factor k=2, which for a normal distribution equals to a probability of ≈ 95%.

Brief description of the test item upon receipt.

Håg SoFi 7300
Office work chair, model Håg SoFi 7300, with upholstered seat and backrest, armrests, height adjustable gas spring, 5 star aluminium base and castors.
Details:

- Ø65mm castors made by Jenp Jou (art.no: 125177)
- 5 star aluminium base (art. No: 126176-1)
- Gas spring from Stabilus type 165mm (art. No: 143211-1A)
- Seat mechanism with seat height, seat depth, tilt resistance and tilt lock levers
- Standard armrests adjustable in height and width.(133552)
- Fixed traverse(168356-1A)
- Parts made from recycled plastic(Rezycom):
    - 113034-Back shell High
    - 113035-Back shell Medium
    - 113043-Seat shell foam carrier
    - 113051-Foam carrier backrest
    - 113061-Fork cover SoFi black
    - 113063-Seat cover outer black



Remarks:
There were no remarks

Standard: ANSI/BIFMA X5.1-2017 General-Purpose Office Chairs - Tests

1 Scope

This standard is intended to provide manufacturers, specifiers, and users with a common basis for evaluating the safety, durability, and structural adequacy of general-purpose office chairs. General-purpose office chairs are normally used in an office environment and may include, but are not limited to those seating styles typically referred to as: executive/management, task/secretarial, side/guest chairs, nesting folding chairs, tablet arm chairs and stools.

This standard describes the means of evaluating general-purpose office chairs, independent of construction materials, manufacturing processes, mechanical designs or aesthetic designs. This standard does not address lounge seating, flammability, surface material durability, cushioning materials, product emissions, or ergonomic considerations.

The standard defines specific tests, the laboratory equipment that may be used, the conditions of tests, and the minimum acceptance levels to be used in evaluating general-purpose office chairs. The acceptance levels and test parameters given in this standard are based on the actual field use and test experience of BIFMA members. Where appropriate, the National Health and Nutrition Examination Survey (NHANES) 2007-2010 study, which indicates the weight of the 95th percentile male is 125 kg (275 pounds), was used in the development of the tests. This does not mean that users with weights above the percentiles referenced cannot safely or comfortably use a chair developed to a given BIFMA standard. (See also Appendix E). The tests were developed with an estimated product life of ten years based on single-shift usage. Product life will be affected by user size/weight, product use, care and maintenance, environment, and other factors, and, as such, product compliance to this standard does not necessarily guarantee a ten-year product life.

The tests in this standard are intended to assess the performance of new products only. They are not intended to assess a product that has been in use.

ISO 17025 requirements for measurement uncertainty do not apply to this standard.

Note: Large Occupant office chairs are covered by ANSI/BIFMA X5.11; Lounge and Public Seating products are covered by ANSI/BIFMA X5.4; and Educational Seating products are covered by ANSI/BIFMA X6.1. Please check for the latest revision.

Figure 4a - Type I - Tilting Chair

Figure 4b - Type II - Fixed seat angle, tilting backrest

Figure 4c - Type III - Fixed seat angle, fixed backrest

Types of Chairs

TABLE 1 – Test Guide by Chair Type

Section Number	Description	Type I	Type II	Type III
5	Backrest Strength Test - Static - Type I and II	X	X	
6	Backrest Strength Test - Static - Type III			X
7	Drop Test - Dynamic	X	X	X
8	Swivel Test - Cyclic	X	X	X
9	Tilt Mechanism Test - Cyclic	X	X	
10	Seating Durability Test - Cyclic	X	X	X
11	Stability Tests	X	X	X
12	Arm Strength Test - Vertical - Static	X	X	X
13	Arm Strength Test - Horizontal - Static	X	X	X
14	Backrest Durability Test - Cyclic - Type I	X		
15	Backrest Durability Test - Cyclic - Type II and Type III		X	X
16	Caster/Chair Base Durability Test - Cyclic	X	X	X
17	Leg Strength Test - Front and Side Application	X	X	X
18	Footrest Static Load Test - Vertical	X	X	X
19	Footrest Durability Test - Vertical - Cyclic	X	X	X
20	Arm Durability Test - Cyclic	X	X	X
21	Out Stop Test for Chairs with Manually Adjustable Seat Depth	X	X	X
22	Tablet Arm Chair Static Load Test	X	X	X
23	Tablet Arm Chair Load Ease Test - Cyclic	X	X	X
24	Structural Durability Test - Cyclic	X	X	X

Section	Requirements / Remarks	Result
5	**Backrest Strength Test - Static - Type I and II**	
5.1	**Applicability** This backrest strength test shall be performed on Type I and II chairs. For chairs with tilt locks, locking the chair changes the chair type (See Section 4) and must also be tested according to Section 6 in the upright locked position. An additional chair may be used for the Section 6 testing. **Note:** This test does not apply to chairs with backrest height less than 200 mm (7.9 in.).	
5.2	**Purpose of Test** The purpose of this test is to evaluate the ability of the chair to withstand stresses such as those caused by the user exerting a rearward force on the backrest of the chair. **Functional Load** 667 N (150 lbf.) one (1) minute. **Proof Load** 1001 N (225 lbf.) one (1) minute.	P
5.5	**Acceptance Level** **Functional Load** There shall be no loss of serviceability to the chair. **Proof Load** There shall be no sudden and major change in the structural integrity of the chair. Loss of serviceability is acceptable.	
	Remarks	
6	**Backrest Strength Test - Static - Type III**	
6.1	**Applicability** This backrest strength test shall be performed on Type III chairs with backrests greater than 200 mm (7.9 in.) in height.	
6.2	**Purpose of Test** The purpose of this test is to evaluate the ability of the chair to withstand stresses such as those caused by the user exerting a rearward force on the backrest of the chair. **Functional Load** 667 N (150 lbf.) one (1) minute. **Proof Load** 1001 N (225 lbf.) one (1) minute.	P
6.5	**Acceptance Level** **Functional Load** A functional load applied once shall cause no loss of serviceability to the chair. **Proof Load** A proof load applied once shall cause no sudden and major change in the structural integrity of the chair. Loss of serviceability is acceptable.	
	Remarks	
7	**Drop Test – Dynamic**	
7.1	**Applicability** This test applies to all chair types.	
7.2	**Purpose of Test** The purpose of this test is to evaluate the ability of the chair to withstand heavy and abusive impact forces on the seat. **Functional Load** 102 kg (225 lbs.) falling 152 mm (6 in.). For chairs with seat height adjustment features, set height to its lowest position and repeat **Proof Load** Repeat functional load procedure but increase weight of test bag to 136 kg (300 lb.).	P
7.5	**Acceptance Level** **Functional Load** There shall be no loss of serviceability. **Proof Load** There shall be no sudden and major change in the structural integrity of the chair. Loss of serviceability is acceptable.	
	Remarks	

Section	Requirements / Remarks	Result
8	**Swivel Test – Cyclic**	
8.1	**Applicability** This test applies to all chair types with a swivel seat.	
8.2	**Purpose of test** The purpose of this test is to evaluate the ability of the chair to withstand stresses and wear of repeated swivelling. **Test Procedure** 122 kg (270 lbs.) load, 51-64 mm forward of the rotational axis. The chair shall swivel for a total of 120,000 cycles of 360°.	P
8.5	**Acceptance Level** There shall be no loss of serviceability.	
	Remarks	
9	**Tilt Mechanism Test – Cyclic**	
9.1	**Applicability** This test shall be performed on Type I and Type II chairs with tilting backrests.	
9.2	**Purpose of test** The purpose of this test is to evaluate the ability of the tilt mechanism to withstand the fatigue stresses and wear caused by repeated tilting. **Test Procedure** 109 kg (240 lbs.) for a total of 300,000 cycles.	P
9.5	**Acceptance Level** There shall be no loss of serviceability to the tilt mechanism.	
	Remarks	
10	**Seating Durability Tests – Cyclic** **Note:** This is a two-part test. The impact test and front corner load-ease tests must be run sequentially for this evaluation.	
10.1	**Applicability** These tests apply to all chair types.	
10.2	**Purpose of test** The purpose of these tests is to evaluate the ability of chairs to withstand fatigue stresses and wear caused by downward vertical force(s) on the seat.	
10.3	**Impact Test** 57 kg (125 lb.) test bag falling 36 mm (1.4 in.) for a total of 100,000 cycles.	P
10.4	**Front Corner Load-Ease Test – Cyclic – Off-centre** 890 N (200 lbf.) force for a total of 40,000 alternating cycles.	P
10.5	**Acceptance Level** There shall be no loss of serviceability to the chair after completion of both the impact and load-ease tests.	
	Remarks	
11	**Stability Tests**	
11.1	**Applicability** The stability tests shall be performed on all types of chairs. **Note:** Rearward stability tests apply only to chairs with backrests greater than 200 mm (7.9 in. in height as measured with the CMD.	
11.2	**Purpose of test** The purpose of these tests is to evaluate the front and rear stability of chairs.	
11.3	**Rear Stability**	
11.3.1	**Rear Stability Test for Type III Chairs**	P
11.3.1.3	**Acceptance level** The chair shall not tip over.	
11.3.2	**Rear Stability Test for Type I and II Chairs**	P
11.3.2.3	**Acceptance level** The chair shall not tip over.	
11.4	**Front Stability**	P
11.4.4	**Acceptance Level** The chair shall not tip over as the result of the force application.	
	Remarks/Results 11.3.1 Rear stability Type III chair: 194N (Requirement=122N calculated from seat height H=572mm) 11.3.2 Rear stability Type I/II chair: >14 ISO-discs (Requirement min 13 ISO-discs) 11.4 Front stability: 144N (min 20N horizontal force)	

Section	Requirements / Remarks	Result
12	**Arm Strength Test - Vertical – Static**	
12.1	**Applicability** This test applies to all chairs with arms.	
12.2	**Purpose of test** The purpose of the test is to evaluate the ability of a chair and arm to withstand stresses caused by applying vertical forces on the arm(s). **Functional Load** 750 N (169 lbf.), one (1) minute. **Proof Load** 1125 N (253 lbf.), fifteen (15) seconds.	
12.5	**Acceptance Level** **Functional Load** There shall be no loss of serviceability. For a height adjustable arm, failure to hold its height adjustment position to within 6 mm (0.25 in.) from its original set position as the result of the loading is considered a loss of serviceability. **Proof Load** There shall be no sudden and major change in the structural integrity of the chair. For a height adjustable arm, a sudden drop in height of greater than 25 mm (1 in.) does not meet this requirement. Loss of serviceability is acceptable.	P
	Remarks	
13	**Arm Strength Test - Horizontal – Static**	
13.1	**Applicability** This test applies to all chairs with arms.	
13.2	**Purpose of Test** The purpose of this test is to evaluate the ability of the chair to withstand stresses caused by applying outward forces to the arm(s). **Functional Load** 445 N (100 lbf.), one (1) minute. **Proof Load** 667 N (150 lbf.), fifteen (15) seconds.	P
13.5	**Acceptance Level** **Functional Load** A functional load applied once shall cause no loss of serviceability. **Proof Load** A proof load applied once shall cause no sudden and major change in the structural integrity of the unit. Loss of serviceability is acceptable.	
	Remarks	
14	**Backrest Durability Test - Cyclic - Type I**	
14.1	**Applicability** This test shall be performed on Type I Tilting chairs with backrests greater than 200 mm (7.9 in.) in height.	
14.2	**Purpose of test** The purpose of this test is to evaluate the ability of the chairs to withstand fatigue stresses and wear caused by rearward force on the backrest of the chair. **Test procedure** 109 kg (240 lbs.) load on seat, 445 N (100 lbf.) force to the back for a total of 120.000 cycles	P
14.5	**Acceptance Level** There shall be no loss of serviceability.	
	Remarks	

Section	Requirements / Remarks	Result
15	**Backrest Durability Test - Cyclic - Type II and III**	
15.1	**Applicability** This test shall be performed on Type II and III chairs. **Note:** This test does not apply to chairs with backrest height less than 200 mm (7.9 in.).	
15.2	**Purpose of Test** The purpose of this test is to evaluate the ability of the chairs to withstand fatigue stresses and wear caused by rearward force on the backrest of the chair. **Test procedure** 109 kg (240 lbs.) load on seat, 334 N (75 lbf.) force to the back for a total of 120.000 cycles	P
15.5	**Acceptance Level** There shall be no loss of serviceability.	
	Remarks	
16	**Caster/Chair Base Durability Test – Cyclic**	
16.1	**Caster/Chair Base Durability Test for Pedestal Base Chairs**	
16.1.1	**Applicability** This test applies to pedestal base chairs with casters.	
16.1.2	**Purpose of Test** The purpose of this test is to evaluate the ability of the chair base and casters to withstand fatigue stresses and wear caused by moving the chair back and forth. **Test procedure** 122 kg (270 lbs.) load on seat. For a total of 100.000 cycles	P
16.1.5	**Acceptance Level** There shall be no loss of serviceability. No part of the caster shall separate from the chair as a result of the application of the 22 N (5 lbf.) force.	
	Remarks	
16.2	**Caster/Chair Frame Durability Test for Chairs with Legs**	
16.2.1	**Applicability** This test applies to chairs with legs and casters.	
16.2.2	**Purpose of Test** The purpose of this test is to evaluate the ability of the chair frame and casters to withstand fatigue stresses and wear caused by moving the chair back and forth. **Test procedure** 122 kg (270 lbs.) load on seat. For a total of 100.000 cycles	
16.2.5	**Acceptance Level** **Durability cycling** There shall be no loss of serviceability. **Caster Retention** There shall be no loss of serviceability. No part of the caster shall separate from the chair as a result of the application of the 22 N (5 lbf.) force.	NA
	Remarks	

Section	Requirements / Remarks	Result
17	**Leg Strength Test - Front and Side Application**	NA
17.1	**Applicability** This test applies to all chairs with legs, including leg bases.	
17.2	**Purpose of Test** The purpose of this test is to evaluate the ability of legs to withstand horizontal forces.	
17.3	**Front Load Test** **Functional load** 334 N (75 lbf.), one (1) minute. **Proof load** 503 N (113 lbf.), one (1) minute.	
17.4	**Side Load Test** **Functional load** 334 N (75 lbf.), one (1) minute. **Proof load** 503 N (113 lbf.), one (1) minute.	
17.5	**Acceptance Level - Front and Side Load Tests** **Functional Load** Functional load(s) shall cause no loss of serviceability. **Proof Load** Proof load(s) shall cause no sudden and major change in the structural integrity of the chair. Loss of serviceability is acceptable.	
	Remarks	
18	**Footrest Static Load Test – Vertical**	NA
18.1	**Applicability** The footrest static load test shall be performed on all chairs with a footrest feature and a seat height equal to or greater than (or can be adjusted to) 610 mm (24 in.).	
18.2	**Purpose of Test** The purpose of this test is to evaluate the ability of the footrest to withstand static loading stresses.	
18.4.1	**Static Load Test – Functional Load** 445 N (100 lbf.), one (1) minute. Increase force to 890 N (200 lbf), one (1) minute. Or, 445 N (100 lbf.), one (1) minute. Maintain force F1 and apply force F2 445 N (100 lbf.), one (1) minute at the opposing side. Remove F2 and increase force to 890 N (200 lbf), one (1) minute.	
18.4.2	**Acceptance level** There shall be no loss of serviceability or sudden loss of footrest height.	
18.4.3	**Static Load Test – Proof Load** 1334 N (300 lbf.), one (1) minute.	
18.5	**Acceptance level** The load applied once shall cause no sudden and major change in the structural integrity of the unit. Loss of serviceability is acceptable.	
	Remarks	
19	**Footrest Durability Test - Vertical – Cyclic**	NA
19.1	**Applicability** The footrest durability test shall be performed on all chairs with a footrest feature and a seat height equal to or greater than (or can be adjusted to) 610 mm (24 in.).	
19.2	**Purpose of Test** The purpose of this test is to evaluate the ability of the footrest to withstand stresses that occur as a result of repetitive loading. **Test procedure** 890 N (200 lbf.) for a total of 50,000 cycles.	
19.5	**Acceptance level** There shall be no loss of serviceability. Adjustable footrests that move more than 25 mm (1 in.) in the first 500 cycles shall be considered to have lost their serviceability.	
	Remarks	

Section	Requirements / Remarks	Result
20 20.1 20.4	**Arm Durability Test – Cyclic** **Purpose of test** The purpose of this test is to evaluate the ability of the chair armrests to withstand stresses that occur as a result of repetitive loading that can be imposed on the armrest structure. Loading of this type is the result of using the armrests as a support when getting into or out of the chair. **Test procedure** 400 N (90 lbf.) for a total of 60,000 cycles. **Acceptance level** There shall be no loss of serviceability to the chair.	P
	Remarks	
21 21.1 21.4	**Out Stop Tests for Chairs with Manually Adjustable Seat Depth** **Purpose of Test** The purpose of this test is to evaluate the ability of the seat slide out stops to withstand excessive impact forces that may result from user adjustment of the seat depth. **Note:** This test does not apply to chairs where seat depth adjustments must occur with the user out of the chair. **Test procedure** 74 kg (163 lb.) mass on seat, 25 kg (55 lb.) mass pulling the seat forward using a pulley for a total of 25 cycles. **Acceptance Level** There shall be no loss of serviceability to the unit.	NA
	Remarks	
22 22.1 22.4	**Tablet Arm Chair Static Load Test** **Purpose of Test** The purpose of this test is to evaluate the ability of the unit equipped with a tablet arm or other attached auxiliary writing/laptop surface to withstand stresses caused by vertical loading. **Test procedure** 68 kg. (150 lb.), one (1) minute **Acceptance Level** The load applied once shall cause no sudden and major change in the structural integrity of the chair. After performing the test, the tablet arm must allow egress from the unit; other losses of serviceability are acceptable.	NA
	Remarks	
23 23.1 23.4	**Tablet Arm Chair Load Ease Test – Cyclic** **Purpose of Test** The purpose of this test is to evaluate the durability of the tablet arm chair to withstand cyclic loading of the tablet. **Test procedure** 25 kg (55 lbs.), for a total of 100,000 cycles. **Acceptance Level** There shall be no loss of serviceability to the chair and/or tablet arm.	NA
	Remarks	

Section	Requirements / Remarks	Result
24	**Structural Durability Test - Cyclic**	NA
24.1	**Applicability** This test applies to chairs that do not swivel. It does not apply to chairs with casters or products with seat heights greater than 24 inches.	
24.2	**Purpose of Test** The purpose of this test is to evaluate the ability of the unit to withstand fatigue stresses and wear caused by side-to-side forces on the structural frame. **Test procedure** 109 kg (240 lbs.) load on seat, 334 N (75 lbf.) force to the frame for a total of 25.000 cycles	
24.5	**Acceptance Level** There shall be no loss of serviceability.	
	Remarks	

End of test report

Annex I – Photo documentation


No.5


No.6


No.7

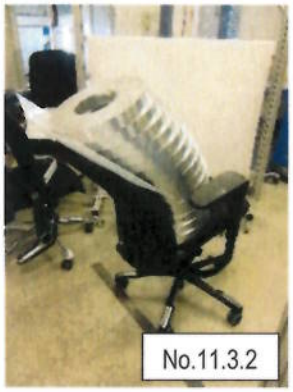

No.8


No.9

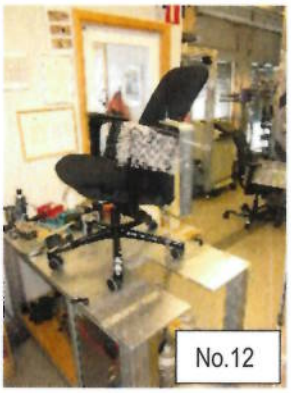

No.10.3


No.10.4


No. 11.3.1


No.11.3.2


No.11.3.3


No.12


No.13


No.14


No.15


No.16


No.20