

# Test Report

Report No.: 104848-3



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**Item:** Model: **3412 Plan Chair – The test also covers Plan Chair 3413**

Type:	Chair				
Depth:	505 mm	Width:	415 mm	Height:	765 mm
Weight:	6.18 kg				
Materials:	Steel tube frame and laminated veneer seat/back				

**Sampling:** The test material was sampled by the client and received at the Danish Technological Institute 07-03-2023.

**Method:** ANSI/BIFMA X5.4-2020 American National Standard For Office Furnishings – Public and Lounge Seating

**Period:** The testing was carried out from 13-03-2023 to 20-04-2023.

**Result:** Model **3412 Plan Chair** fulfils the requirements of ANSI/BIFMA X5.4-2020  
Individual results appear from Appendix 1.

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

**Terms:** Accredited testing was carried out in compliance with international requirements (EN/ISO/IEC 17025:2005) and in compliance with Danish Technological Institute's General Terms and Conditions regarding Commissioned Work accepted by Danish Technological Institute. The test results apply to the tested products only. This report may be quoted in extract only if the laboratory has granted its written consent.

**Date/place:** 20-04-2023, Danish Technological Institute, Wood and Biomaterials, Taastrup

**Signature:** Test responsible

Co-signatory



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## Testing of Model: 3412 Plan Chair

### ANSI/BIFMA X5.4

Test		Result										
5	Backrest Strength Test – Horizontal – Static (backrest height: >200 mm)											
	Functional load: 667 N x 1 min. Proof load: 1112 N x 10 sec.	Passed										
6	Backrest Strength Test – Vertical – Static (backrest thickness. >50 mm)											
	Functional load: 890 N x 1 min. Proof load: 1334 N x Min. 10 sec.	N/A										
7	Backrest Durability Test – Horizontal – Cyclic											
	Seat constant load: 109 kg Force on back: 334 N x 120,000 cycles	Passed										
8	Backrest Durability Test – Vertical – Cyclic (backrest thickness: >50 mm)											
	Force on back: 890 n x 10,000 cycles	N/A										
9	Arm Strength Test – Horizontal – Static (all units with arms)											
	Functional load: 445/592 N x 1 min. inward + outward Proof load: 667/890 N x 10 sec. inward + outward	N/A										
10	Arm Strength Test – Vertical – Static											
	Functional load: 890/750 N x 1 min. Proof load: 1135/1125 N x Min 10 sec.	N/A										
11	Arm Durability Test for Multiple Seating Units – Horizontal – Cyclic											
	Force on arm: 445 N x 50,000 cycles	N/A										
12	Arm Durability Test for Multiple Seating Units – Vertical – Cyclic											
	Force on arm: 667 N x 10,000 cycles	N/A										
13	Arm Durability Test for Single Seat Units – Angular – Cyclic											
	Force on (each) arm: 400 N x 60,000 cycles	N/A										
14	Seating Durability Test – Cyclic											
	Impact test back: 57 kg x 100,000 cycles (Weight in seat(s) not being tested: 109 kg)	Passed										
15	Drop Test – Dynamic											
	Functional load: 102 kg impact test bag – drop from 152 mm Proof load: 136 kg impact test bag – drop from 152 mm	Passed										
16	Leg Strength Test											
16.3	Front Load Test											
	Functional load: 334 N x 1 min. Proof load: 503 N (max. 667 N) x Min. 10 sec.	Passed										
16.4	Side Load Test											
	Functional load: 334 N x 1 min. Proof load: 503 N (max. 667 N) x Min. 10 sec.	Passed										
17	Unit Drop Test – Dynamic											
	<table><tr><th>Unit weight</th><th>Drop height</th></tr><tr><td>&lt;45 kg (100 lbs)</td><td>180 mm (7.1 in.)</td></tr><tr><td>45—90 kg (100-200 lbs)</td><td>120 mm (4.7 in.)</td></tr><tr><td>90-136 kg (200-300 lbs)</td><td>60 mm (2.4 in.)</td></tr><tr><td>&gt;136 kg (300 lbs)</td><td>N/A</td></tr></table>	Unit weight	Drop height	<45 kg (100 lbs)	180 mm (7.1 in.)	45—90 kg (100-200 lbs)	120 mm (4.7 in.)	90-136 kg (200-300 lbs)	60 mm (2.4 in.)	>136 kg (300 lbs)	N/A	Passed
Unit weight	Drop height											
<45 kg (100 lbs)	180 mm (7.1 in.)											
45—90 kg (100-200 lbs)	120 mm (4.7 in.)											
90-136 kg (200-300 lbs)	60 mm (2.4 in.)											
>136 kg (300 lbs)	N/A											

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## Testing of Model: 3412 Plan Chair

Test		Result
<b>18</b>	<b>Caster/Unit Base Durability Test – Cyclic</b>	
	Seat constant load: 122 kg On surface with obstacles: 500 cycles On surface without obstacles: 25,000 cycles Pull force on caster: 22 N x 1 min	N/A
<b>19</b>	<b>Swivel Test – Cyclic</b>	
	Seat constant load: 122 kg 90° rotation x 120,000 cycles	N/A
<b>20</b>	<b>Tilt/rocker/glider Mechanism Test – Cyclic</b>	
	Seat constant load: 109 kg Back tilt: 200,000 cycles	N/A
<b>21</b>	<b>Stability Tests</b>	
<b>21.3</b> <b>21.4</b> <b>21.5</b>  <b>21.6</b>	Rear stability: 6 discs (non-tilting unit) 13 discs (tilting unit) Force on back: $F = 0.1964 (1195-H)$ (H = seat height in mm)  Front stability: Units <36.3 kg: Seat load: 600 N-pull force 20 N Units >36.3 kg: Pull force: 142 N-45° angle	Passed
<b>22</b>	<b>Tablet Arm Load Ease Test – Cyclic</b>	
	25 kg x 100,000 cycles	N/A
<b>23</b>	<b>Tablet Arm Load Test – Static</b>	
	68 kg downward x 1 min.	N/A
<b>24</b>	<b>Structural Durability Test – Side-to-Side - Cyclic</b>	
	Seat constant load: 109 kg Push/pull force: 334 N x 25,000 cycles	Passed
<b>25</b>	<b>Cycle Test for Recliners – Backrest and/or Legrest Mechanism Durability</b>	
	Backrest constant load: 56 kg Seat constant load: 56 kg Legrest constant load: 12 kg Legrest + back: 25,000 cycles each	N/A
<b>26</b>	<b>Legrest Strength Test – Static Load</b>	
	Seat constant load: 112 kg/56 kg Load on legrest: 13.6 kg (no retraction)	N/A
<b>27</b>	<b>Footrest Static Load Test for Stools – Vertical</b>	
	Functional load: 445 N x 1 min (in <b>two</b> opposite directions) Proof load: 1334N x 10 sec.	N/A
<b>28</b>	<b>Footrest Durability Test for Stools – Vertical Cyclic</b>	
	Force on footrest: 890 N x 50,000 cycles	N/A

N/A – Not applicable

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## **Testing of Model: 3412 Plan Chair**

### **Photo**

