

No.: SDHG1407009972FT

FOSHAN YUSHI FURNITURE CO. LTD SHUINAN INDUSTRIAL AREA, SHATOU JIUJIANG TOWN, NANHAI FOSHAN CITY, GUANGDONG, CHINA

The following sample(s) was / were submitted and identified on behalf of the client as:

Sample Description	:	OFFICE CHAIR
Style / Item No.	:	YS-0806H
Manufacturer	:	FOSHAN YUSHI FURNITURE CO., LTD.
Supplier	:	FOSHAN YUSHI FURNITURE CO., LTD.
Sample Receiving Date	:	Jul.01, 2014
Sample Resubmission Date	:	Jul.22, 2014
Test Performing Date	:	Jul.01, 2014 to Jul.30, 2014

### Test Result Summary

Test(s) Requested	Result(s)
ANSI/BIFMA X5.1:2011 (Type I, III)	PASS

#### Summary:

1. For further details, please refer to the following page(s).

Signed for and on behalf of SGS-CSTC Co., Ltd.

2 m

Bill Wang Approved signatory





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No.: SDHG1407009972FT

Date: Jul.30, 2014

### **TESTS AND RESULTS**

#### Test Conducted:

ANSI/BIFMA X5.1:2011 General-Purpose Office Chairs - Tests.

#### **General Test Condition:**

The following test program was conducted in a laboratory environment maintained at  $15^{\circ}$  to  $25^{\circ}$  and  $50\%\pm5$  RH. The sample was individually tested after conditioning in the test environment for at least 24 hours prior to conducting the test.

The complete detailed procedures may be found in the referenced specification and are only summarized herein.

#### No. of Sample:

5 pieces (Sample 1, 2, 3, 4, 5 + additional bases, casters). For more sample information and pictures, please refer to the following page.

Chair Type: Type I, III. For the classification of types, please refer to Annex A.

Test	Test Description and Requirements	Test Results	
	Safety, Durability and Structural Adequacy		
5	Backrest Strength Test - Static - Type I		
5.4.1	<b>Functional Load</b> There shall be no loss of serviceability to the chair when 890 N (200 lbf.) is applied to the backrest at the specified position for one (1) minute. With the backrest at its back stop position, apply a force that is initially 90 degrees $\pm$ 10 degrees to the plane of the backrest. The force is not intended to be maintained at 90 degrees $\pm$ 10 degrees throughout the loading of the backrest.	PASS	
5.4.2	<b>Proof Load</b> There shall be no sudden and major change in the structural integrity of the chair, loss of serviceability is acceptable, when 1334 N (300 lbf.) is applied to the backrest at the specified position for one (1) minute. With the backrest at its back stop position, apply a force that is initially 90 degrees ± 10 degrees to the plane of the backrest. The force is not intended to be maintained at 90 degrees ± 10 degrees throughout the loading of the backrest.	PASS	
6	Backrest Strength Test - Static - Type II & III		
6.4.1	<b>Functional Load</b> There shall be no loss of serviceability to the chair when 667 N (150 lbf.) is applied to the backrest at the specified position for one (1) minute. With the backrest at its back stop position, apply a force that is initially 90 degrees $\pm$ 10 degrees to the plane of the backrest. The force is not intended to be maintained at 90 degrees $\pm$ 10 degrees throughout the loading of the backrest.	PASS	



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Test	Test Description and Requirements	Test Results
6.4.2	<b>Proof Load</b> There shall be no sudden and major change in the structural integrity of the chair, loss of serviceability is acceptable, when 1112 N (250 lbf.) is applied to the backrest at the specified position for one (1) minute. With the backrest at its back stop position, apply a force that is initially 90 degrees $\pm$ 10 degrees to the plane of the backrest. The force is not intended to be maintained at 90 degrees $\pm$ 10 degrees throughout the loading of the backrest.	PASS
7	<b>Base Test – Static</b> There shall be no sudden and major change in the structural integrity of the base. The center column may not touch the test platform during the load applications when a force of 11,120 N (2500 lbf.) is applied to the vertical support column, or test fixture that simulates the taper/base interface for one (1) minute. Remove the force, and then apply a second force of 11,120 N (2500 lbf.) for one (1) minute.	PASS
8	Drop Test - Dynamic	
8.4.1	<i>Functional Load Test</i> There shall be no loss of serviceability when a test bag weighing 102 kg (225 lb.) is free fell from 152 mm (6 in.) above the uncompressed seat to the specified position on seat. Remove the bag, and set height to its lowest position and repeat the test for chairs with seat height adjustment features.	PASS
8.4.2	<b>Proof Load Test</b> There shall be no sudden and major change in the structural integrity of the chair. Loss of serviceability is acceptable when a test bag weighing 136 kg (300 lb.) is free fell from152 mm (6 in.) above the uncompressed seat to the specified position on seat. Remove the bag, and set height to its lowest position and repeat the test for chairs with seat height adjustment features.	PASS
9	<b>Swivel Test – Cyclic</b> There shall be no loss of serviceability after 60,000cycles of rotation (360°) at a rate between 5 and 15 rotations per minute under a 113 kg (250 lb.) load on the seat. If the seat height is adjustable set the height to its lowest position, for all chairs, continue the test for an additional 60,000 cycles to a total of 120,000 cycles.	PASS
10	<i>Tilt Mechanism Test – Cyclic</i> There shall be no loss of serviceability to the tilt mechanism after 300,000cycles at a rate between 10 and 30 cycles per minute under a 102kg (225lbs.) load to the center of the seat. <i>Note: This test shall be performed on Type I and Type II chairs with</i> <i>tilting backrests.</i>	PASS
11	Seating Durability Tests – Cyclic	



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Test	Test Description and Requirements	Test Results
11.3	<b>Impact Test</b> There shall be no loss of serviceability to the chair after a test bag weighing 57kg (125lbs.) is free fell from 30 mm (1.2 in.) above the uncompressed seat to the specified position on seat for 100,000 cycles. The drop height and/or seat height shall be adjusted during the test if the drop height changes by more than 13 mm (0.5 in.). The cycling device shall be set at a rate between 10 and 30 cycles per minute. Note: Chairs with less than 44 mm (1.75 in.) of cushioning materials in the seat shall have foam added to bring total cushioning thickness to 50 mm $\pm$ 6 mm (2 in. $\pm$ 0.25 in.). Any additional foam added to the top of the seat shall have a 25% Indentation Force Deflection (IFD) of 200 N $\pm$ 22 N (45 lbf. $\pm$ 5 lbf.). Flexible seat surfaces (i.e., mesh, flexible plastic, etc.) are not considered cushioning materials.	PASS
11.4	Front Corner Load-Ease Test – Cyclic – Off-center After completing the impact test, alternately apply a load of 734 N (165 lbf.) through a 203 mm ± 13 mm (8 in. ± 0.51 in.) diameter loading device at one front corner flush to each structural edge at a rate of 10 to 30 cycles per minute for 20,000 cycles. There shall be no loss of serviceability to the chair.	PASS
12	Stability Tests	
12.3.1	<b>Rear Stability Test for Type III Chairs</b> Place a support fixture made of a 1.5 mm $\pm$ 0.4 mm (0.060 in. $\pm$ 0.015 in.) thick polypropylene, 356 mm (14 in.) wide and 711 mm (28 in.) tall against the chair back so that it approximates the contour of the back. Load the chair with 6 disks (10 kg each). Place the first disk on the seat so it touches the support fixture. As each disk is added to the stack slide it along the lower disk until it contacts the support fixture. Apply a horizontal force to the highest disk. The location of the force application is 6 mm (0.25 in.) from the top of the disk. For chairs with seat height (as measured at the front of the bottom of the lowest disk when all disks are in the chair) less than 710 mm (28.0 in.), calculate the force as follows: • F = 0.1964 (1195 – H) Newton. H is the seat height in mm. • [F = 1.1 (47 – H) pounds force.]. H is the seat height in inches. For chairs with seat height equal to or greater than 710 mm (28.0 in.), a fixed force of 93 N (20.9 lbf.) shall be applied.	PASS



The chair shall not tip over.

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Test	Test Description and Requirements	Test Results
12.3.2	<b>Rear Stability Test for Type I and II Chairs</b> Place a support fixture made of a 1.5 mm $\pm$ 0.4 mm (0.060 in. $\pm$ 0.015 in.) thick polypropylene, 356 mm (14 in.) wide and 711 mm (28 in.) tall against the chair back so that it approximates the contour of the back. Load the chair with 13 disks. Place the first disk on the seat so it touches the support fixture. As each disk is added to the stack slide it along the lower disk until it contacts the support fixture. If the chair does not tip over and the tilt mechanism does not tilt to its most rearward position (i.e., at its tilt stop) when the disks are placed in the chair, the chair shall also be tested according to 12.3.1 with the chair in the unlocked position.	PASS
12.4	<ul> <li>Front Stability <ul> <li><u>Test Procedure - Alternative A</u> (This alternative may only be used on chairs that do not have a seat surface that will support the stability loading fixture (i.e., mesh, web or strap seat support surfaces))</li> </ul> </li> <li>Apply a vertical load of 600 N (135 lbf.), through a 200 mm (7.87 in.) diameter disk, the center of which is 60 mm (2.4 in.) from the front center edge of the load-bearing surface of the seat. Apply a horizontal force of 20 N (4.5 lbf.) at the same level of the plane of the top of the seat. The force shall be coincident with the side-to-side centerline of the seat.</li> <li><u>Test Procedure - Alternative B</u></li> <li>Apply a vertical load of 600 N (135 lbf.), by means of the front stability loading fixture at a point 60 mm (2.4 in.) from the front center edge of the load-bearing surface of the top of the seat.</li> <li><u>Test Procedure - Alternative B</u></li> <li>Apply a vertical load of 600 N (135 lbf.), by means of the front stability loading fixture at a point 60 mm (2.4 in.) from the front center edge of the load-bearing surface of the chair. Apply a horizontal force of 20 N (4.5 lbf.) at the same level of the plane of the top of the seat.</li> </ul>	PASS
13	Arm Strength Test - Vertical - Static	
13.4.1	<b>Functional Load</b> Apply an initially vertical pull force of 750N (169lbs.) to the load adapter which is 127 mm (5 in.) long and at least as wide as the width of the arm shall be attached to the top of the arm rest structure such that the load will be applied at the apparent weakest point that is forward of the chair backrest, for one (1) minute. 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.	PASS



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Test	Test Description and Requ	lirements	Test Results
13.4.2	<b>Proof Load</b> Apply an initially vertical pull force of 1125N ( adapter which is 127 mm (5 in.) long and at le of the arm shall be attached to the top of the that the load will be applied at the apparent w forward of the chair backrest, for one (1) min There shall be no sudden and major change of the chair. For a height adjustable arm, a su greater than 25 mm (1 in.) does not meet this serviceability is acceptable.	east as wide as the width arm rest structure such veakest point that is ute. in the structural integrity udden drop in height of	PASS
14	Arm Strength Test - Horizontal - Static		
14.4.1	<b>Functional Load</b> Apply an initially horizontal pull force of 445 N adapter which is a loading device or strap, no in.) in horizontal width, shall be attached to th initially applied horizontally to the armrest stru- weakest point (for armrests that pivot in the h load at the pivot point), for one (1) minute in the A functional load applied once shall cause no	ot greater than 25 mm (1 the arm so that the load is ucture at the apparent norizontal plane, apply the the outward direction.	PASS
14.4.2	<b>Proof Load</b> Apply an initially horizontal pull force of 667 N adapter which is a loading device or strap, no in.) in horizontal width, shall be attached to th initially applied horizontally to the armrest stru- weakest point (for armrests that pivot in the h load at the pivot point), for one (1) minute in the A proof load applied once shall cause no sud the structural integrity of the unit. Loss of service	ot greater than 25 mm (1 the arm so that the load is ucture at the apparent horizontal plane, apply the the outward direction. Iden and major change in	PASS
15	<b>Backrest Durability Test - Cyclic - Type I</b> A weight of 102 kg (225 lb.) shall be secured Apply a 445 N (100 lbf.) total force to the bac position at a rate between 10 and 30 cycles p For chairs with backrest widths less than or e the height of the loading point, apply the load 120,000 cycles. For chairs with backrest widths greater than 4 height of the loading point, apply the load to t cycles + 20,000 cycles at the position 102 mr vertical centerline + 20,000 cycles at the posi- left of the vertical centerline There shall be no loss of serviceability. <i>Note: With the backrest at its back stop positi</i> <i>initially 90 degrees ± 10 degrees to the plane</i> <i>is not intended to be maintained at 90 degrees</i> <i>throughout the loading of the backrest.</i>	in the center of the seat. krest at the specified ber minute. equal to 406 mm (16 in.) at to the backrest for 406 mm (16 in.) at the the backrest for 80,000 m (4 in.) to the right of the ition 102 mm (4 in.) to the <i>ion, apply a force that is</i> of the backrest. The force	PASS

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Test	Test Description and Requirements	Test Results
16	<ul> <li>Backrest Durability Test - Cyclic - Type II and III</li> <li>A weight of 102 kg (225 lb.) shall be secured in the center of the seat.</li> <li>Apply a 334 N (75 lbf.) total force to the backrest at the specified position at a rate between 10 and 30 cycles per minute.</li> <li>For chairs with backrest widths less than or equal to 406 mm (16 in.) at the height of the loading point, apply the load to the backrest for 120,000 cycles.</li> <li>For chairs with backrest widths greater than 406 mm (16 in.) at the height of the loading point, apply the load to the backrest for 80,000 cycles + 20,000 cycles at the position 102 mm (4 in.) to the right of the vertical centerline + 20,000 cycles at the position 102 mm (4 in.) to the left of the vertical centerline.</li> <li>There shall be no loss of serviceability.</li> <li>Note: With the backrest at its back stop position, apply a force that is initially 90 degrees ± 10 degrees to the plane of the backrest. The force is not intended to be maintained at 90 degrees ± 10 degrees to the plane of the backrest.</li> </ul>	PASS
17	Caster/Chair Base Durability Test - Cyclic	
17.1	<b>Caster/Chair Base Durability Test for Pedestal Base Chairs</b> No loss of service after 2,000cycles over a hard surface with 3 obstacles and 98, 000cycles over a smooth hard surface without obstacles under a 113kg (250lbs.) load at a rate of 10 ± 2 cycles per minute. Test stroke is 762mm (30in.) minimum. The caster should not separate under 22N (5lbs.) pulling force in line with the caster stem after the cycling test.	PASS
17.2	Caster / Chair Base Durability Test for Chairs with LegsNo loss of service after 2,000cycles over a hard surface with 2obstacles and 98, 000cycles over a smooth hard surface withoutobstacles under a 113 kg (250 lb.) load on the seat at a rate of $10 \pm 2$ cycles per minute. Test stroke is 762mm (30in.) minimum. The castershould not separate under 22N (5lbs.) pulling force in line with thecaster stem after the cycling test.	/ Not applicable
18	Leg Strength Test - Front and Side Application	
18.3.2.1	<ul> <li>Front Load Test- Functional Test The loading device shall be attached to the chair so that an initially horizontal force is applied inward and parallel to the front-to-rear axis of the chair, between 13 mm (0.5 in.) and 38 mm (1.5 in.) from the bottom of a leg. A force of 334N (75lbf.) is applied to each front leg individually for 1 minute. Functional load(s) applied once in each direction shall cause no loss of serviceability. Note: For chairs with casters, apply the load to the chair leg, but not more than 13 mm (0.5 in.) from the point of caster attachment (bottom of the leg). The load shall be applied to the apparent weakest point of the leg. Where the apparent weakest point is the left or right edge of the leg, apply the load so that it is no greater than 25 mm (1.0 in.) from the edge. </li> </ul>	/ Not applicable



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Test	Test Description and Requirements	Test Results
18.3.2.2	<ul> <li>Front Load Test- Proof Test</li> <li>The loading device shall be attached to the chair so that an initially horizontal force is applied inward and parallel to the front-to-rear axis of the chair, between 13 mm (0.5 in.) and 38 mm (1.5 in.) from the bottom of a leg. A force of 503N (113 lbf.) is applied to each front leg individually for 1 minute.</li> <li>Proof load(s) applied once each direction shall cause no sudden and major change in the structural integrity of the chair. Loss of serviceability is acceptable.</li> <li>Note: For chairs with casters, apply the load to the chair leg, but not more than 13 mm (0.5 in.) from the point of caster attachment (bottom of the leg). The load shall be applied to the apparent weakest point of the leg. Where the apparent weakest point is the left or right edge of the leg, apply the load so that it is no greater than 25 mm (1.0 in.) from the edge.</li> </ul>	/ Not applicable
18.4.2.1	Side Load Test- Functional Test The loading device shall be attached to the chair so that an initially horizontal force is applied inward and parallel to the front-to-rear axis of the chair, between 13 mm (0.5 in.) and 38 mm (1.5 in.) from the bottom of a leg. A force of 334N (75lbf.) is applied to each front and rear leg individually for 1 minute. Functional load(s) applied once in each direction shall cause no loss of serviceability. Note: For chairs with casters, apply the load to the chair leg, but not more than 13 mm (0.5 in.) from the point of caster attachment (bottom of the leg). The load shall be applied to the apparent weakest point of the leg. Where the apparent weakest point is the left or right edge of the leg, apply the load so that it is no greater than 25 mm (1.0 in.) from the edge.	/ Not applicable
18.4.2.2	Side Load Test- Proof Test The loading device shall be attached to the chair so that an initially horizontal force is applied inward and parallel to the front-to-rear axis of the chair, between 13 mm (0.5 in.) and 38 mm (1.5 in.) from the bottom of a leg. A force of 503N (113 lbf.) is applied to each front and rear leg individually for 1 minute. Proof load(s) applied once each direction shall cause no sudden and major change in the structural integrity of the chair. Loss of serviceability is acceptable. Note: For chairs with casters, apply the load to the chair leg, but not more than 13 mm (0.5 in.) from the point of caster attachment (bottom of the leg). The load shall be applied to the apparent weakest point of the leg. Where the apparent weakest point is the left or right edge of the leg, apply the load so that it is no greater than 25 mm (1.0 in.) from the edge.	/ Not applicable
19	Footrest Static Load Test - Vertical	



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Test	Test Description and Requirements	Test Results
19.4.1	<b>Functional Load</b> Apply a force F1 of 445 N (100 lbf.) uniformly along a 102 mm (4 in.) distance along the footrest but not greater than 51 mm (2 in.) from the outside edge at the apparent weakest point of the structure for one (1) minute in the vertical downward direction. If the footrest adjusts in height relative to the seat and allows for a force application 180 degrees (on the opposite side of the chair) from the primary force application, maintain force F1 and apply an additional force F2 of 445 N (100 lbf.) to the footrest at the opposing position for an additional one (1) minute. The F2 force shall also be applied uniformly along a 102 mm (4 in.) distance along the footrest but not greater than 51 mm (2 in.) from the outside edge. If applicable, remove force F2, increase the force F1 to 200 lbf. for one (1) minute. There shall be no loss of serviceability or sudden loss of footrest height.	/ Not applicable
19.4.3	<b>Proof Load</b> Apply a force of 1334 N (300 lbf.) uniformly along a 102 mm (4 in.) distance along the footrest but not greater than 51 mm (2 in.) from the outside edge at the apparent weakest point of the structure for one (1) minute in the vertical downward direction. The load applied once shall cause no sudden and major change in the structural integrity of the unit. Loss of serviceability is acceptable.	/ Not applicable
20	<b>Footrest Durability Test - Vertical – Cyclic</b> A 890 N (200-lbf.) force shall be applied uniformly along a 102 mm (4 in.) distance along the footrest but not greater than 51 mm (2 in.) from the outside edge at the apparent weakest point of the structure. When the weakest position is not obvious, several load application positions may be necessary to properly test the product. If the footrest moves more than 25 mm (1 in.) within the first 500 cycles, discontinue testing. If the footrest moves throughout the remainder of the test, reset it to its original position when it is within 12 mm (0.5 in.) from its lowest position. The force shall be applied and removed 50,000 cycles at a rate between 10 and 30 cycles per minute. 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.	/ Not applicable
21	<b>Arm Durability Test – Cyclic</b> Simultaneously apply a force of 400 N (90 lbf.) to each arm initially at a 10 degrees $\pm$ 1 degree angle. The arm loading device must follow the arm as it deflects or pivots. The force shall be applied and removed for 60,000 cycles at a rate between 10 and 30 cycles per minute. The arm loading device should distribute the load over a length of 100 mm (4 in.) on the arm pad. Center of load shall not be applied more than 25 mm (1.0 in.) in from the inside edge of the arm pad.	PASS

There shall be no loss of serviceability to the chair.



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Test	Test Description and Requ	Test Results	
22	<b>Out Stop Tests for Chairs with Manually Adjustable Seat Depth</b> A stranded metallic cable or equivalent shall be attached to the most rigid point of the vertical centerline of the seat. The opposite end of the cable shall extend in line forward from the seat and in line with the plane of the seat movement to a pulley and then downward to an attached weight of 25 kg (55 lb.). Place the seat in its most rearward position and restrain. Place a 74 kg (163 lb.) rigid mass in the center of the seat. The seat with the hanging weight shall be held at its most rearward position, then released, permitting it to move forward rapidly and impact the out stops. Repeat this procedure for a total of 25 cycles. There shall be no loss of serviceability to the unit.		PASS
23	<b>Tablet Arm Chair Static Load Test</b> Apply the load through a 203 mm $\pm$ 13 mm (8.0 in. $\pm$ 0.51 in.) diameter area 25 mm (1 in.) from the edge of the surface at its apparent weakest point. Apply a load of 68 kg. (150 lb.) at the location described in 23.2 b) for one (1) minute and remove the load. 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.		/ Not applicable
24	<b>Tablet Arm Chair Load Ease Test – Cyclic</b> A 343 N (77 lbf.) force applied through a 203 0.51 in.) diameter area centered on the writin total of 100,000 cycles. The cycling device sl rate of 14 ± 6 cycles per minute. There shall to the chair and/or tablet arm.	mm $\pm$ 13 mm (8.0 in. $\pm$ ng area of the tablet, for a nall be set to operate at a	/ Not applicable

### Annex A: Classification of Chair Types

- **Type I. Tilting chair:** A chair with a seat that tilts with a counterbalancing force. Chairs of this type are typically referred to as synchro-tilt, center-tilt, knee-tilt.
- Type II. Fixed seat angle, tilting backrest: A chair that provides a fixed seat angle with a tilting backrest.
- **Type III. Fixed seat angle, fixed backrest:** A chair that provides a fixed seat angle with a fixed backrest. This may include chairs with legs, including sled base chairs.

#### Remark:

- In this report, the results of clause 7 & 9 (only for sample B) were quoted from the test report No. SDHG1407009973FT because of the client's claim that the components related were identical to the one of the test report No. SDHG1407009973FT.
- 2. For the sample information and pictures, please refer to the following page.



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#### SAMPLE INFORMATION AND PICTURES

Weight: Sample A: 20.35 kg; Sample B: 20.55 kg;

Overall Dimensions: Sample A: 700 mm L x 580~620 mm W x 1160~1290 mm H; Sample B: 700 mm L x 580~620 mm W x 1100~1230 mm H;

**Other Dimensions:** Sample A: base radius 340 mm, base weight 1.80 kg; Sample B: base radius 350 mm, base weight 2.05 kg.



Sample as Received



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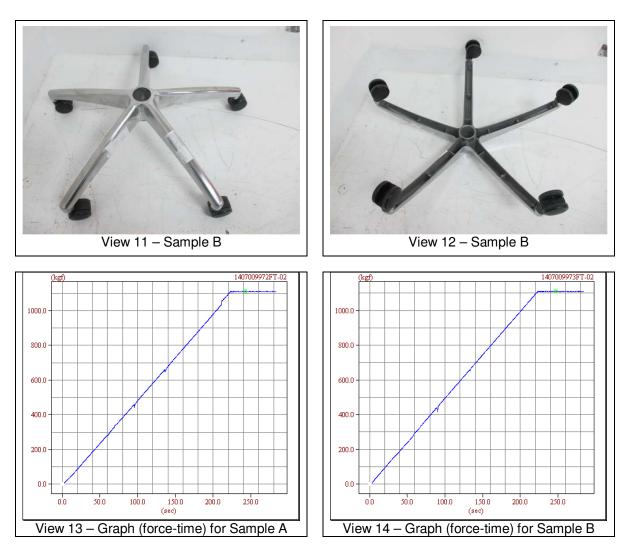
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\*\*\*End of Report\*\*\*



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