

# EMECO INDUSTRIES INC

## TEST REPORT

**SCOPE OF WORK**

ANSI/BIFMA X5.1-2017 GENERAL PURPOSE OFFICE CHAIRS testing on Navy Officer Side Chair

**REPORT NUMBER**

104637655GRR-002

**ISSUE DATE**

24-May-2021

**PAGES**

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## TEST REPORT FOR EMECO INDUSTRIES INC

Report No.: 104637655GRR-002

Date: 24-May-2021

P.O.: NA

### SECTION 1

#### CLIENT INFORMATION

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**SECTION 2****SUMMARY AND CONCLUSION**

Date Received: 22-April-2021 and 13-May-2021

Dates Tested: 22-April-2021 to 20-May-2021

**DESCRIPTION OF SAMPLES**

Part Description: Navy Officer Side Chair

Condition of Samples: New, packaged

Number of Samples Received: Three (3)

**WORK REQUESTED/APPLICABLE DOCUMENTS**

ANSI/BIFMA X5.1-2017 GENERAL PURPOSE OFFICE CHAIRS

Intertek quote Qu-01159714

Reference report 104637655GRR-001

**CONCLUSION**

| ID | TEST   | RESULTS    |
|----|--|------------|
| 2  | 6. Backrest Strength Test - Static - Type III                | CONFORMING |
| 3  | 7. Drop Test Dynamic   | CONFORMING |
| 3  | 10. Seating Durability Tests – Cyclic                        | CONFORMING |
| 2  | 11. Stability Tests (Front and Rear)                         | CONFORMING |
| 1  | 15. Backrest Durability Test – Cyclic – Type II and Type III | CONFORMING |
| 1  | 17. Leg Strength   | CONFORMING |
| 2  | 24. Structural Durability Test - Cyclic                      | CONFORMING |

**SAMPLE DISPOSITION**

All samples were returned to the customer.

**TEST REPORT FOR EMECO INDUSTRIES INC**

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**Test Equipment:**

| ASSET #   | EQUIPMENT                 | CALIBRATION DATE | CALIBRATION DUE |
|-----------|---------------------------|------------------|-----------------|
| 138012    | Scale/0-1,000#            | 09/01/2020       | 09/01/2021      |
| 138039.1  | Weight Bag                | VBU              | VBU             |
| 138039.2  | Weight Bag                | VBU              | VBU             |
| 138148    | Digital Protractor        | 12/21/2020       | 12/21/2021      |
| 138279    | 100Lb. Force Gauge        | 12/29/2020       | 12/29/2021      |
| 138427    | 1000Lb. Load Cell         | 10/12/2020       | 10/12/2021      |
| 130900.24 | Stopwatch                 | 06/17/2020       | 06/17/2021      |
| 138325    | Back Durability Machine   | VBU              | VBU             |
| 138325.4  | Load Cell Back Durability | 08/25/2020       | 08/25/2021      |
| 138345    | 3 Station Seat Impact     | VBU              | VBU             |
| 138916.2  | Timing Box                | VBU              | VBU             |
| 138394    | Static load Station       | 08/26/2020       | 08/26/2021      |
| 138394.1  | 1,000lb Load Cell         | 08/26/2020       | 08/26/2021      |
| 138519    | Graduated Rule 48"        | 12/28/2020       | 12/28/2021      |
| 138338    | Controller Durability     | VBU              | VBU             |
| 138338.1  | Load Cell                 | 07/09/2020       | 07/09/2021      |
| 138338.2  | Load Cell                 | 07/09/2020       | 07/09/2021      |

**SECTION 3****6. BACKREST STRENGTH TEST – STATIC – TYPE III:**

Date Received: 13-May-2021  
Date Tested: 27-April-2021  
Location Tested: Intertek Kentwood, MI

**DESCRIPTION OF SAMPLES:**

Part Description: Navy Officer Side Chair

**TEST PROCEDURE:**

Test Method: Per ANSI/BIFMA X5.1-2017 Test No. 6:

Functional Load: 150 lbf.  
Proof Load: 225 lbf.

Number of Samples Tested: One (1)

**ACCEPTANCE CRITERIA:**

Per ANSI/BIFMA X5.1-2017 Test No. 6:

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 product. Loss of serviceability is acceptable.

**RESULTS:**

| SAMPLE ID | STATIC LOAD | RESULTS    |
|-----------|-------------|------------|
| 2         | 150 lbf.    | Conforming |
|           | 225 lbf.    | Conforming |

The submitted sample **met** the acceptance criteria of the test described above. Refer to the following page for photograph.



**Backrest Strength Test – Static**

**7. DROP TEST – DYNAMIC:**

Date Received: 13-May-2021  
Date Tested: 20-May-2021  
Location Tested: Intertek Kentwood, MI

**DESCRIPTION OF SAMPLES:**

Part Description: Navy Officer Side Chair

**TEST PROCEDURE:**

Test Method: Per ANSI/BIFMA X5.1-2017 Test No. 7:  
Functional Load: 225 lbs.  
Proof Load: 300 lbs.  
Drop Height: 6"

Number of Samples Tested: One (1)

**ACCEPTANCE CRITERIA:**

Per ANSI/BIFMA X5.1-2017 Test No. 7:

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 product. Loss of serviceability is acceptable.

**RESULTS:**

| SAMPLE ID | DROP WEIGHT               | RESULTS    |
|-----------|---------------------------|------------|
| 3         | Functional Load: 225 lbs. | Conforming |
|           | Proof Load: 300 lbs.      | Conforming |

The submitted sample **met** the acceptance criteria of the test described above. Refer to the following page for photograph.



**Drop Test – Dynamic Functional**





**Drop Test – Dynamic Proof**

**10. SEATING DURABILITY TESTS – CYCLIC:**

Date Received: 22-April-2021 and 13-May-2021  
 Date Tested: 22-April-2021 to 20-May-2021  
 Location Tested: Intertek Kentwood, MI

**DESCRIPTION OF SAMPLES:**

Part Description: Navy Officer Side Chair

**TEST PROCEDURE:**

Test Method: Per ANSI/BIFMA X5.1-2017 Test No. 10:

Test No. 10.3 Impact Test  
 Bag Diameter: 16"  
 Bag Weight: 125 lbs.  
 Number of Cycles: 100,000  
 Height of Drop: 1.4"  
 Cycles per Minute: 10 to 30

Test No. 10.4 Front Corner Load-Ease Test – Cyclic – Off-center  
 Bag Diameter: 8"  
 Bag Weight: 200 lbs.  
 Number of Cycles Required: 20,000 to each Front Corner  
 Number Cycles: 10 to 30

Number of Samples Tested: One (1)

**ACCEPTANCE CRITERIA:**

Per ANSI/BIFMA X5.1-2017 Test No. 10:

There shall be no loss of serviceability to the chair after completion of both the Impact and Load Ease Tests. If applicable, the chair base (center structure) shall not touch the test platform as a result of the impact loads.

**RESULTS:****IMPACT TEST**

| SAMPLE NO.            | CYCLES  | RESULTS    |
|-----------------------|---------|------------|
| 3 – Baltic Birch Seat | 100,000 | Conforming |

**FRONT LOAD EASE**

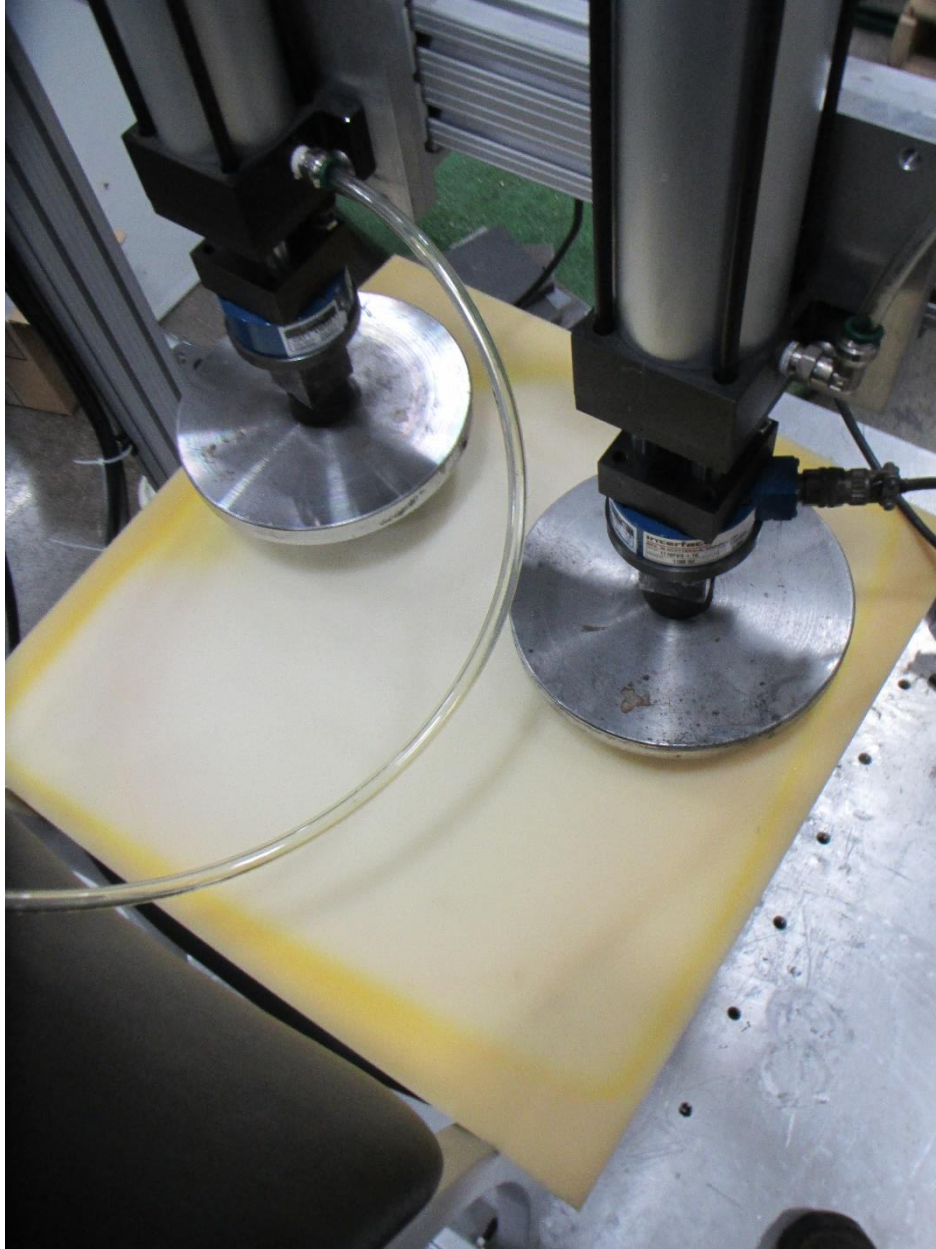
| SAMPLE NO.            | CYCLES             | RESULTS    |
|-----------------------|--------------------|------------|
| 3 – Baltic Birch Seat | 20,000 EACH CORNER | Conforming |

The submitted sample **met** the acceptance criteria of the test described above.

Refer to the following pages for photographs.



**Impact Test – Sample 3**



**Load Ease Test – Sample 3**



**11. STABILITY TESTS (FRONT AND REAR):**

Date Received: 22-April-2021  
 Date Tested: 22-April-2021  
 Location Tested: Intertek Kentwood, MI

**DESCRIPTION OF SAMPLES:**

Part Description: Navy Officer Side Chair

**TEST PROCEDURE:**

Test Method: Per ANSI/BIFMA X5.1-2017 Test No. 11:  
 All of the chair's adjustable features shall be set for the most unstable conditions.

Chair Type: III

Test No. 11.3 Rear Stability

|                |           |                     |
|----------------|-----------|---------------------|
| Weight in Seat | Type I:   | 286 lbs. (13 disks) |
|                | Type II:  | 286 lbs. (13 disks) |
|                | Type III: | 132 lbs. (6 disks)  |

Test No. 11.4 Front Stability

|                   |          |
|-------------------|----------|
| Alternative:      | N / A    |
| Vertical Load:    | 135 lbs. |
| Horizontal Force: | 4.5 lbf. |

Number of Samples Tested: One (1)

**ACCEPTANCE CRITERIA:**

Per ANSI/BIFMA X5.1-2017 Test No. 11:

Rear Stability: The force to tip shall not be less than:  
 Type I: Chair must not tip over  
 Type II: Chair must not tip over  
 Type III: [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.

Front Stability: The chair shall not tip over as the result of the force application of 4.5 lbf.

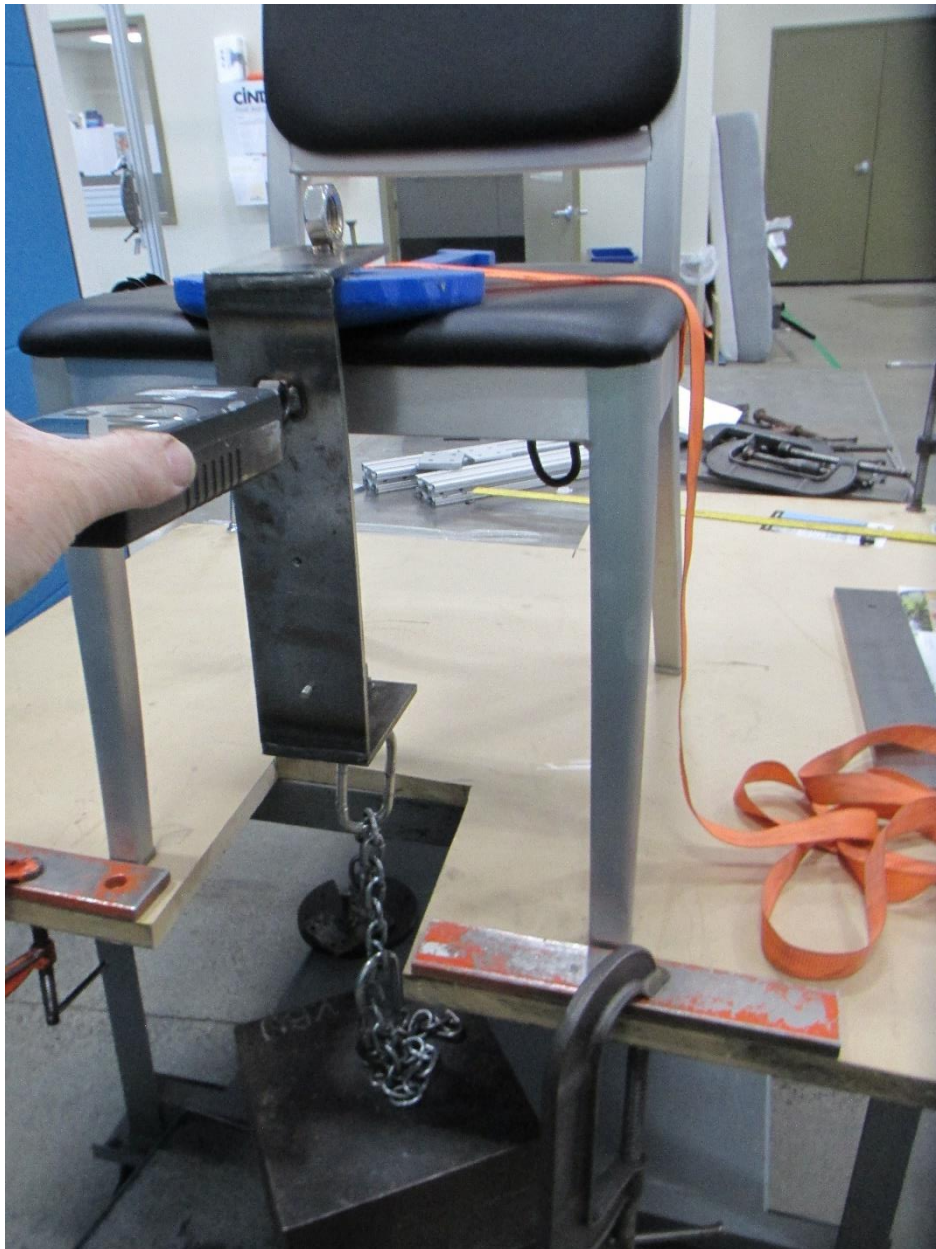
**RESULTS:**

| SAMPLE ID | SEAT HEIGHT | FRONT STABILITY  | REAR STABILITY   | RESULTS    |
|-----------|-------------|------------------|------------------|------------|
| 2         | 17-1/2"     | 20.4 lbf. to tip | 50.1 lbf. to tip | Conforming |

The submitted sample **met** the acceptance criteria of the test described above. Refer to the following pages for photographs.



**Rear Stability**



**Front Stability**

**15. BACKREST DURABILITY TEST – CYCLIC – TYPE II AND TYPE III:**

Date Received: 22-April-2021  
Date Tested: 22-April-2021 to 26-April-2021  
Location Tested: Intertek Kentwood, MI

**DESCRIPTION OF SAMPLES:**

Part Description: Navy Officer Side Chair

**TEST PROCEDURE:**

Test Method: Per ANSI/BIFMA X5.1-2017 Test No. 15:

Backrest Width: 15  
Number of Cycles Required: 120,000  
Center Pull Location: 120,000  
Force Applied to Chair Back: 75 lbf.  
Load in Seat: 240 lbs.  
Cycles per Minute: 10 to 30

Number of Samples Tested: One (1)

**ACCEPTANCE CRITERIA:**

Per ANSI/BIFMA X5.1-2017 Test No. 15:  
No structural breakage or loss of serviceability.

**RESULTS:**

| SAMPLE ID | PULL LOCATION | CYCLES  | RESULTS    |
|-----------|---------------|---------|------------|
| 1         | Center Pull   | 120,000 | Conforming |

The submitted sample met the acceptance criteria of the test described above. Refer to the following page for photograph.





**Backrest Durability Test – Cyclic**

**17. LEG STRENGTH TEST – FRONT AND SIDE APPLICATION:**

Date Received: 22-April-2021  
 Date Tested: 24-April-2021  
 Location Tested: Intertek Kentwood, MI

**DESCRIPTION OF SAMPLES:**

Part Description: Navy Officer Side Chair

**TEST PROCEDURE:**

Test Method: Per ANSI/BIFMA X5.1-2017 Test No. 17:

Test No. 17.3

Functional Load: 75 lbf. (Load Each Leg)  
 Proof Load: 113 lbf. (Load Each Leg)

## Front to Rear Leg Application:

Test No. 17.4

Functional Load: 75 lbf. (Load Each Leg)  
 Proof Load: 113 lbf. (Load Each Leg)

## Side Load Application:

Number of Samples Tested: One

**ACCEPTANCE CRITERIA:**

Per ANSI/BIFMA X5.1-2017 Test No. 17:

Functional Load: No structural breakage or loss of serviceability, including stacking if applicable.

Proof Load: No sudden and major change in the structural integrity of the product. Loss of serviceability is acceptable.

**RESULTS:**

| SAMPLE ID | LOAD APPLICATION           | FUNCTIONAL | RESULTS    | PROOF    | RESULTS    |
|-----------|----------------------------|------------|------------|----------|------------|
| 1         | Side to Side (Rear Side)   | 75 lbf.    | Conforming | 113 lbf. | Conforming |
|           | Side to Side (Front Side)  | 75 lbf.    | Conforming | 113 lbf. | Conforming |
|           |                            |            |            |          |            |
|           | Front to Rear (Left Side)  | 75 lbf.    | Conforming | 113 lbf. | Conforming |
|           | Front to Rear (Right Side) | 75 lbf.    | Conforming | 113 lbf. | Conforming |

The submitted sample met the acceptance criteria of the test described above. Refer to the following pages for photographs.



**Leg Strength Test – Front Load**



**Leg Strength Test – Side Load**

**24. STRUCTURAL DURABILITY TEST – CYCLIC:**

Date Received: 22-April-2021  
Date Tested: 26-April-2021 to 27-April-2021  
Location Tested: Intertek Kentwood, MI

**DESCRIPTION OF SAMPLES:**

Part Description: Navy Officer Side Chair

**TEST PROCEDURE:**

Test Method: Per ANSI/BIFMA X5.1-2017 Test No. 24:

Load in Seat: 240 lbs.  
Force Applied: 75 lbf.  
Number of Cycles Required: 25,000  
Cycles per Minute: 20 ± 10 cycles per minute

Number of Samples Tested: One (1)

**ACCEPTANCE CRITERIA:**

Per ANSI/BIFMA X5.1-2017 Test No. 24:  
There shall be no loss of serviceability.

**RESULTS:**

| SAMPLE ID | CYCLES | RESULTS    |
|-----------|--------|------------|
| 1         | 25,000 | Conforming |

The submitted sample **met** the acceptance criteria of the test described above. Refer to the following page for photograph.






**Structural Durability Test – Cyclic**

**SECTION 4**

**REVISIONS MADE TO TEST REPORT:**

| DATE        | REVISION DESCRIPTION | REVISED BY      | REVISED BY  |
|-------------|----------------------|-----------------|---|
| 24-May-2021 | Initial release.     | Lynwood Pearson |  |
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