| | | | | |
|---|---|---|---|---|
| **Prüfbericht-Nr.:** *Test report no.*: | **CN22CDD1 001** | **Auftrags-Nr.:** *Order no.*: | 170319291 10 |  |
| **Kunden-Referenz-Nr.:** *Client reference no.*: | N/A | **Auftragsdatum:** *Order date:* | 2022.10.11 | |
| **Auftraggeber:** *Client*: | USI Furniture Limited<br>19/F,No.3 Lockhart Road, Wanchai, HONG KONG. | | | |
| **Prüfgegenstand:** *Test item*: | Office chair | | | |
| **Bezeichnung / Typ-Nr.:** *Identification / Type no.*: | UN2202-2H | | | |
| **Auftrags-Inhalt:** *Order content*: | Mechanical safety test according to client's requirement | | | |
| **Prüfgrundlage:** *Test specification*: | BS 5459-2:2000+A2:2008 (Excluding clause 5)<br>EN 1335-2:2018 (Excluding clause 6) | | | |

| | |
|---|---|
| **Wareneingangsdatum:** *Date of sample receipt*: | 2022.10.11 |
| **Prüfmuster-Nr.:** *Test sample no:* | A003350472-001 |
| **Prüfzeitraum:** *Testing period*: | 2022.10.11 – 2023.01.10 |
| **Ort der Prüfung:** *Place of testing*: | Unit 201, NO.7 Caipin Road, GuangZhou, China |
| **Prüflaboratorium:** *Testing laboratory:* | TÜV Rheinland (Guangdong) Ltd. |
| **Prüfergebnis*:** *Test result**: | Pass |

| | | | |
|---|---|---|---|
| **geprüft von:** *tested by:* | x Tom He<br>Signed by: Tom He | **genehmigt von:** *authorized by*: | x Kingsley<br>Signed by: Kingsley He |
| **Datum:** *Date:* 2023.02.21 | | **Ausstellungsdatum:** *Issue date:* 2023.02.21 | |
| **Stellung** / Position: | Tom He / Test Engineer | **Stellung** / Position: | Kingsley He / Reviewer |

| | |
|---|---|
| **Sonstiges /** *Other*: | Per client's requirement, BS5459 standard according to the maximum bearing 200 kg for testing, EN1335-2 according to the maximum bearing 110 kg for testing |

| | |
|---|---|
| **Zustand des Prüfgegenstandes bei Anlieferung:** *Condition of the test item at delivery*: | Prüfmuster vollständig und unbeschädigt<br>*Test item complete and undamaged* |

| | | | | |
|---|---|---|---|---|
| * Legende: | P(ass) = entspricht o.g. Prüfgrundlage(n) | F(ail) = entspricht nicht o.g. Prüfgrundlage(n) | N/A = nicht anwendbar | N/T = nicht getestet |
| ** Legend:* | *P(ass) = passed a.m. test specification(s)* | *F(ail) = failed a.m. test specification(s)* | *N/A = not applicable* | *N/T = not tested* |

## Anmerkungen
*Remarks*

| | |
|---|---|
| **1** | Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben.<br>Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden.<br><br>*The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.* |
| **2** | Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben.<br><br>*As contractually agreed, this document has been signed digitally only. TUV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TUV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged.* |
| **3** | Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben.<br>Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt.<br><br>*Test clauses with remark of * are subcontracted to qualified subcontractors and descripted under the respective test clause in the report.*<br>*Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.* |
| **4** | Die Entscheidungsregel für Konformitätserklärungen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird.<br><br>*The decision rule for statements of conformity in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report.* |

**Prüfbericht-Nr.: CN22CDD1 001**
*Test report no.:*



## Produktbeschreibung
*Product description*

| | | |
|---|---|---|
| **1** | **Produktdetails**<br>*Product details* | Office chair |
| **2** | **Maße / Gewicht**<br>*Dimensions / Weight* | H x W x D: (1320 ~ 1440) x 720 x 720 ~ 745 mm<br>Weight: 28.24 kg |
| **3** | **Bedienelemente**<br>*Operating elements* | Gas lift, tilting mechanism, adjustable seat surface / headrest / backrest / armrests and castors |
| **4** | **Ausstattung / Zubehör**<br>*Equipment / Accessories* | N/A |
| **5** | **Verwendete Materialien**<br>*Used materials* | Mesh, foam, aluminum and PA plastic |
| **6** | **Sonstiges**<br>*Other* | Test sample(s), as well sample information, description, product details and intended usage was provided by customer. |
| **7** | **Prüfmusterbereitstellung**<br>*Test sample obtaining* | ☒ Sending by customer ☐ Sampling by TÜV Rheinland Group<br>☐ others: |

Pic. 1: Front view

Pic. 2: Side view

Pic. 3: Back view

Pic. 4: Bottom view

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| **BS 5459-2:2000+A2:2008** | | | |
| **Specification for performance requirements and tests for office furniture — Part 2: Office pedestal seating for use by persons weighing up to 150 kg and for use up to 24 hours a day, including type-approval tests for individual components** | | | |
| **1** | **Scope**<br>This part of BS 5459 specifies performance requirements and test methods for the structural safety and stability of office pedestal seating when used by persons weighing up to 150 kg, or when used for up to 24 hours a day, including chairs for use with tables and desks higher than those specified in BS EN 527-1.<br>This Part of BS 5459 also specifies requirements and test methods for type approval of bases, columns, seat actions, back stems and locking devices.<br>NOTE 1 BS EN 1335-2 and BS EN 1335-3 contain requirements and test methods for office pedestal seating which is intended for use for up to 8 hours a day by persons weighing up to 110 kg.<br>This standard does not apply to office visitors' chairs.<br>NOTE 2 Office visitors' chairs are chairs used in the office environment which are not classed as office work chairs and which are used for long or short meetings or consultations, as well as for reading, writing, listening and waiting. | | |
| **2** | **Normative references** | | |
| **3** | **Terms and definitions** | | |
| **4** | **Requirements** | | |
| 4.1 | Durability | | Pass |
| 4.2 | Component durability | | Pass |
| 4.3 | Stability | | Pass |
| 4.4 | Safety | | Pass |
| 4.5 | Type approval of bases, columns, seat actions, back stems and locking devices | | *I* |
| 4.5.1 | General | | N/A |
| 4.5.2 | Seat actions | | N/A |
| 4.5.3 | Columns, bases, back stems and locking devices | | N/A |
| 4.5.4 | Additional requirements for bases with structural components incorporating plastics | | N/A |
| 4.6 | Criteria for failure and safe failure | | *I* |
| **5** | **Marking** | | |
| 5.1 | Complete chairs | Not requested by client | N/T |
| 5.2 | Columns, bases, seat actions, back stems and locking devices | Not requested by client | N/T |
| **Annex A** | **Test methods** | | |
| A.1 | General | | |
| A.2 | Principle | | |
| A.3 | Apparatus | | |
| A.4 | Determination of seat and back loading points | | *I* |
| A.5 | Durability and safety tests | | |
| A.5.1 | Fore-and-aft safety | | Pass |
| A.5.2 | Seat impact | | Pass |
| A.5.3 | Back impact | | Pass |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| A.5.4 | Drop | | Pass |
| A.5.5 | Side-to-side safety | | Pass |
| A.6 | Stability test | | |
| A.6.1 | General | | / |
| A.6.2 | Forward and sideways overturning | | / |
| A.6.2.1 | Forward overturning for all chairs, and sideways overturning for chairs without arms | | Pass |
| A.6.2.2 | Sideways overturning for armchairs | | Pass |
| A.6.3 | Rearward overturning (all chairs) | | / |
| A.6.3.1 | Rearward overturning | | Pass |
| A.6.3.2 | Accidental rearward overturning | | Pass |
| A.6.4 | Rearward overturning of tilting and reclining chairs | | Pass |
| A.7 | Durability of components | | / |
| A.7.1 | General | | Pass |
| A.7.2 | Arm sideways static load | | Pass |
| A.7.3 | Arm downward static load | | Pass |
| A.7.4 | Arm impact | | Pass |
| A.7.5 | Chair swiveling | | Pass |
| A.7.6 | Seat height adjustment | | Pass |
| A.7.7 | Footrest fatigue | | N/A |
| A.7.8 | Durability of controls | | Pass |
| A.7.9 | Locking device fatigue | | Pass |
| A.8 | Type-approval tests for columns, bases, actions, back stems and locking devices | | / |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| / | | | |

**Table A.1 — Summary of tests**

| Clause no. | Test description | Test parameters | |
|---|---|---|---|
| **A.5.1** | Fore-and-aft safety | Seat load $V_1$: | |
| | | for chairs with full back inclination, $\theta$, of 75° or less | 1 500 N × sin $\theta$ |
| | | for other chairs | 1 400 N |
| | | Back load $H_1$: | |
| | | for chairs with full back inclination, $\theta$, of 75° or less | 1 500 N × cos $\theta$ |
| | | for other chairs | 400 N |
| | | Load applied to front edge $V_2$ | 1 400 N |
| | | Maximum number of cycles | 500 000 |
| **A.5.2** | Seat impact | Drop height | 350 mm |
| **A.5.3** | Back impact | Drop height | 330 mm |
| | | Angle | 48° |
| **A.5.4** | Drop | Drop height: | |
| | | for leg length < 200 mm | 250 mm |
| | | for leg length ≥ 200 mm | 450 mm |
| **A.5.5** | Side-to-side safety | Downward vertical load | 1 200 N |
| | | Maximum number of cycles | 250 000 |
| **A.6.2.1** | Forward overturning for all chairs, and sideways overturning for chairs without arms | Downward vertical force | 600 N |
| | | Horizontal force | 20 N |
| **A.6.2.2** | Sideways overturning for armchairs | Downward vertical force on seat | 250 N |
| | | Downward vertical force on arm | 350 N |
| | | Horizontal force | 20 N |
| **A.6.3.1** | Rearward overturning | Downward vertical force on seat | 600 N |
| | | Overturning force $F$: | |
| | | for chairs with $h \geq 720$ mm | 80 N |
| | | for chairs with $h < 720$ mm | 285.7 [1−($h$/1 000)] N |
| **A.6.3.2** | Accidental rearward overturning | See **A.6.3.2** | |
| **A.6.4** | Rearward overturning of tilting and reclining chairs | 13 discs | |
| **A.7.2** | Arm sideways static load | Outward horizontal force | 600 N |
| **A.7.3** | Arm downward static load | Downward vertical force | 1 200 N |
| **A.7.4** | Arm impact | Angle | 48° |
| **A.7.5** | Chair swivelling | Downward vertical force | 1 200 N |
| | | Number of cycles | 100 000 |
| **A.7.6** | Seat height adjustment | Downward vertical force | 1 200 N |
| | | Number of cycles | 10 000 |

**Table A.1 — Summary of tests** *(continued)*

| Clause no. | Test description | Test parameters | |
|---|---|---|---|
| **A.7.7** | Footrest fatigue | Downward vertical force | 1 200 N |
| | | Number of cycles | 200 000 |
| **A.7.8** | Durability of controls | Force | 100 N |
| **A.7.9** | Locking device fatigue | Back load $H_1$ | (see **A.5.1**) |
| | | Number of cycles | 500 000 |
| **A.8** | Type approval of columns, bases, actions, back stems and locking devices | See Tables A.3 to A.7. | |

| **EN 1335-2:2018** Office furniture – Office work chair – Part 2: Safety requirements | | | |
|---|---|---|---|
| **4** | **Safety requirements** | | |
| 4.1 | General | | Pass |
| 4.2 | Shear and squeeze points | | / |
| 4.2.1 | Shear and squeeze points under influence of powered mechanisms | | Pass |
| 4.2.2 | Shear and squeeze points during use | | Pass |
| 4.3 | Sequence of testing | | / |
| 4.4 | Stability tests and requirements | Refer to below result(s) | / |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | When tested according to Table 1, the seating shall not overturn.<br>**Table 1 — Stability tests and parameters**<br>**Tests** / **Reference** / **Loads and cycles** / **Test parameters**<br>1. Corner stability / EN 1022:2018, 7.3.3 / Force F1, N; Cycle / 300; 1<br>2. Forward overturning / EN 1022:2018, 7.3.1 / Force F1, N; Force F2, N; Cycle / 600; 20; 1<br>3. Forward overturning for chairs with footrests / EN 1022:2018, 7.3.2 / Force F1, N; Force F2, N; Cycle / 1100; 20; 1<br>4. Sideways overturning for chairs without arm rests / EN 1022:2018, 7.3.4 / Force F1, N; Force F2, N; Cycle / 600; 20; 1<br>5. Sideways overturning for chairs with arm rests / EN 1022:2018, 7.3.5.1 and 7.3.5.2 / Force F1, N; Force F2, N; Force F3, N; Cycle / 250; 350; 20; 1<br>6. Rearwards overturning for chairs without back rest inclination and for chairs with adjustable backrest inclination that can be locked / EN 1022:2018, 7.3.6 / Force F1, N; Force F2, N; Cycle / 600; 0,2857*(1000-H [a]); 1<br>7. Rearwards overturning for chairs with back rest inclination / EN 1022:2018, 7.4 / Number of Discs; Cycle / 13; 1<br>[a] H = height of the loaded seat above the floor in millimetres. | | |
| / | 1. Corner stability | | Pass |
| / | 2. Forward overturning | | Pass |
| / | 3. Forward overturning for chairs with footrests | | N/A |
| / | 4. Sideways overturning for chairs without arm rests | | N/A |
| / | 5. Sideways overturning for chairs with arm rests | | Pass |
| / | 6. Rearwards overturning for chairs without back rest inclination and for chairs with adjustable backrest inclination that can be locked | | Pass |
| / | 7. Rearwards overturning for chairs with back rest inclination | | Pass |
| 4.5 | Structural safety requirements<br>The structural safety requirements are met when the requirements according to 5.2 are fulfilled. | Refer to clause 5.1 & 5.2 | / |
| **5** | **Strength and durability** | | |
| 5.1 | General | Refer to below result(s) | / |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | Table 2 — Test sequence and parameters | | |

| Tests | Reference | Loads and cycles | Test parameters |
|---|---|---|---|
| 1. Combined seat and back static load test | EN 1728:2012, 7.3 | Seat force F1, N<br>Back rest force F2, N<br>Cycles | 1600<br>560<br>10 |
| 2. Seat front edge static load test | EN 1728:2012, 7.4 | Force, N<br>Cycles | 1600<br>10 |
| 3. Foot rest static load test | EN 1728:2012, 7.8 | Force, N<br>Cycles | 1300<br>10 |
| 4. Seat and back durability | EN 1728:2012, 7.9 | Step 1:<br>Force, N, at point A<br>Cycles<br>Step 2:<br>Force, N, at point C<br>Force, N, at point B<br>Cycles<br>Step 3:<br>Force, N, at point J<br>Force, N, at point E<br>Cycles<br>Step 4:<br>Force, N, at point F<br>Force, N, at point H<br>Cycles<br>Step 5 [a]:<br>Force, N, at point D and G<br>Cycles | <br>1 500<br>120 000<br><br>1 200<br>320<br>80 000<br><br>1 200<br>320<br>20 000<br><br>1 200<br>320<br>20 000<br><br>1 100<br>20 000 |
| 5. Armrests durability | EN 1728:2012, 7.10 | Force, N<br>Cycles | 400<br>60 000 |
| 6.1 Armrest downward static load test – central [b] | EN 1728:2012, 7.5 | Force, N<br>Cycles | 750<br>5 |
| 6.2 Armrest downward static load test – central [c] | | Force, N<br>Cycles | 900<br>5 |

[a] In derogation to EN 1728:2012, 7.2.5 and 7.2.8, the loading point D shall be 150 mm to the right of point A and the loading point G shall be 150 mm to the left of point A.
[b] This test shall be carried out before the stability tests.
[c] This test shall be carried out after the stability tests.

| | | | |
|---|---|---|---|
| | 1. Combined seat and back static load test | | Pass |
| / | 2. Seat front edge static load test | | Pass |
| / | 3. Foot rest static load test | | N/A |
| / | 4. Seat and back durability | | / |
| / | Step 1: Force at point A | | Pass |
| / | Step 2: Force at point C & point B | | Pass |
| / | Step 3: Force at point J & point E | | Pass |
| / | Step 4: Force at point F & point H | | Pass |
| / | Step 5: Force at point D and G | | Pass |
| / | 5. Armrests durability | | Pass |
| / | 6.1 Armrest downward static load test – central (before the stability tests) | | Pass |
| / | 6.2 Armrest downward static load test – central (after the stability tests) | | Pass |
| 5..2 | Requirements<br>The strength and durability requirements are fulfilled when, after testing in accordance with Table 2:<br>a) there are no fractures of any member, joint or component;<br>b) there is no loosening of joints intended to be rigid; and<br>c) the chair fulfils its functions after removal of the test loads. | Refer to above result(s) of clause 5.1 | / |
| 5.3 | Rolling resistance test and requirements | | Pass |

| **Absatz** *Clause* | **Anforderungen - Prüfungen /** *Requirements - Tests* | **Messergebnisse – Bemerkungen/** *Measuring results - Remarks* | **Ergebnis** *Result* |
|---|---|---|---|
| | The rolling resistance test shall be carried out after the stability (according to Table 1) and after the strength and durability tests (according to Table 2). The unloaded chair shall be tested for rolling resistance according to EN 1728:2012, 6.30 and shall fulfil the following requirements:<br>a) the castors shall be of identical construction;<br>b) the rolling resistance shall be ≥ 12 N. | | |
| **6** | **Information for use**<br>Information for use shall be available in the language of the country in which the product will be available to the end user. It shall contain at least the following details:<br>a) information regarding the intended use;<br>b) information regarding possible adjustments;<br>c) instruction for operating the adjusting mechanisms;<br>d) instruction for the care and maintenance of the chair;<br>e) information for chairs with seat height adjustments with energy accumulators that only trained personnel may replace or repair seat height adjustment components with energy accumulators;<br>f) information on the choice of castors in relation to the floor surface. | Not requested by client | N/T |
| **7** | **Test Report** | | |
| / | **Annex A (informative) Loads, masses and cycles for functional tests – Suggested loads, masses and cycles**<br>Tests included in Table A.1 are not safety tests but may be useful for testing functions of the chair.<br>If the functional tests listed in Table A.1 of Annex A (informative) are carried out, they can be carried out on a separated sample.<br>The suggested loads, masses and cycles in this informative Annex are based upon use for 8 h a day by persons weighing up to 110 kg.<br>**Table A.1 — Loads, masses and cycles for functional tests** | Refer to below result(s) | / |

| Tests | Reference | Loads and cycles | Test parameters |
|---|---|---|---|
| 1. Arm rest downward static load test – front | EN 1728:2012, 7.6 | Force, N<br>Cycles | 450<br>5 |
| 2. Arm rest sideways static load test | EN 1728:2012, 7.7 | Force, N<br>Cycles | 400<br>10 |
| 3. Swivel test | EN 1728:2012, 7.11 | Masse $M_1$, kg<br>Masse $M_2$, kg<br>Cycles | 60<br>35<br>120 000 |
| 4. Foot rest durability | EN 1728:2012, 7.12 | Force, N<br>Cycles | 900<br>50 000 |
| 5. Castor and chair base durability | EN 1728:2012, 7.13 | Masse M1, kg<br>Cycles | 110<br>36 000 |

| | | | |
|---|---|---|---|
| 1 | Arm rest downward static load test – front | | N/A |
| 2 | Arm rest sideways static load test | | N/A |
| 3 | Swivel test | | N/A |
| 4 | Foot rest durability test | | N/A |
| 5 | Castor and chair base durability | | Pass |

*** End of test report***