

## BalcoDeck® - DECKING BOARD DEFLECTION TEST REPORT

*System: BalcoDeck® – A Freestanding Aluminum Substructure with Aluminium Deck board*

*Date of Test: 20 October 2025*

*Test Location: Balconette UK*

*Prepared by: Balconette UK*

### 1. Objective

The objective of this test was to assess the deflection performance of the BalcoDeck® freestanding aluminum substructure supporting an aluminium decking board under a 2 kN concentrated load. The test verifies compliance with the serviceability limit state defined in BS 8579:2020, which requires that vertical deflection under service load does not exceed 5 mm for balcony and terrace structures.

### 2. Test Description

**Joist Span:** 600 mm

**Pedestal Spacing:** 600 mm

**Deck Board:** BalcoDeck® Aluminium Deck Board

**Surface:** RAL 7016 Super durable polyester powder coatings (60-90 micron class 2) texture finish

**Slip resistance:** PTV > 60 (dry), > 50 (wet) (BS7976-2) - Low slip potential

**Fixing:** Mechanical press-fit connection

**Supports:** Aluminum decking structure and Aluminum adjustable feet

**Adhesive:** None (self-standing configuration)

Below are the list of equipment used during the test.

- Manual Pump
- Adaptor
- Pressure Gauge
- Hose for Gauge adaptor to Manifold
- Coupler
- Manifolds for Hose Lines
- Hose for Hydraulic Jacks
- Lifting and Pushing Ram for Hydraulic Jacks - 10t - 10 inch Lift minimum
- Load cell with Digital readouts - FL 10K Force Gauge 10000 N x 2 N For push and pull force measurement.
- 50x50 mm Indenter





Figure 1: Showing the test setup assembly

## 2.1 Loading Configuration

**Load Type:** Concentrated load applied

**Load Value:** 2.0 kN

**Load Application Method:** 50 × 50 mm steel indenter applied vertically at mid-span of deck board and joist intersection.

**Measurements:** Deflection recorded at indenter location

## 3. Results

Load (kN)	Deflection (mm)	Limit (≤ 5 mm)	Pass/Fail	Remarks
Unloaded	0.01	-	-	Initial reading
2.015 kN	4.34	5.0	Pass	No visible deformation
Unloaded	0.10 (residual)	-	-	Full recovery after test

## 4. Observations

- Deflection response was linear and fully elastic.
- No slippage, rotation, or pedestal movement observed.
- Minor local compression observed under the 50×50 mm indenter (~0.1 mm).
- Full recovery upon unloading, confirming elastic performance.

## 5. Conclusions

The maximum measured deflection under a 2 kN load was 4.34 mm, which is below the 5 mm limit specified in BS 8579:2020. Therefore, the BalcoDeck® aluminum structure with Aluminium decking board meets the serviceability requirements for Category A - domestic and residential applications. The system exhibits excellent stiffness and stability without adhesives.

## 6. Recommendations

- Maintain joist span ≤ 600 mm and pedestal spacing ≤ 600 mm.
- Ensure consistent pedestal support.
- Inspect deck fixings periodically in most used areas.
- Optional isolation pads may improve vibration damping.

