ENGINEERING EVALUATION:
EKODECK® DESIGNER SERIES DECKING BOARDS, 137MM X 23MM

This document is based on a report from a professional engineer in accordance with Clause A5G3(1)(e) of the National Construction Code 2022 Volumes One, Two & Housing Provisions pursuant to demonstrating that Ekodeck Designer Series, installed in accordance with the requirements detailed below contributes to a building or structure achieving NCC 2022 B1P1(2)(b) & H1P1(2)(b).

Deemed-to Satisfy clauses B1D3(b)(iii) reference AS/NZS 1170.1 for the determination of imposed actions. AS/NZS 1170.1 Table 3.1 provides reference values of imposed floor actions.

In all cases the design and use of Ekodeck® Designer Series must be independently verified, accounting for all relevant performance requirements, including, but not limited to, suitability for the particular application and strength of the supporting structure.

The Ultimate Limit State (ULS) & Serviceability Limit State (SLS) performance of Ekodeck® Designer Series have been verified based on:

- Testing in accordance with the principles of AS/NZS 1170 series at an Accredited Testing Laboratory (Reports 230608005SHF-001, GZHH00510151); and,
- Calculation of design capacities of the Ekodeck® Designer Series by a professional engineer in accordance with AS/NZS 1170.1, Appendix B; and,
- Comparison with the design action effects based on combinations of actions for strength and serviceability for the imposed floor actions provided in AS/NZS 1170.1, Table 3.1.

Ekodeck® Designer Series shall be installed in accordance with Ekodeck® Decking Designer Series / Installation Guide, V6.23 onto supports;

- with minimum bearing width of 45mm; and,
- with minimum support spacing / design concentrated action combinations, of;
  - 450mm/1.8kN, 400mm/2.7kN
- with each board installed over at least two (2) spans.

Ekodeck® Designer Series is suitable for external decking application in accordance with the following AS/NZS 1170.1 Table 3.1 imposed floor actions and maximum support spacings.

Ekodeck® Decking / Designer Series

ENGINEERING EVALUATION

EKODECK® DESIGNER SERIES DECKING SYSTEM Performance to AS/NZS 1170.1:2002. T.3.1

Type of activity / occupancy for part of building or structure	Specific uses	Uniformly distributed actions (kPa)	Concentrated actions (kN)	Max. joist spacing c/c (mm)
A Domestic & residential activities (see also Cat C)				
A1 Self-contained dwellings	General areas, private kitchens and laundries in self-contained dwellings	1.5	1.8	450
	Balconies used for floor type activities in self-contained dwellings: (a) less than 1m above ground level (b) other	1.5	1.5kN/m run along edge	450
	Stairs[2] and landings in self-contained dwellings.	2.0	2.7	400
A2 Other	Balconies used for floor-type activities with community access.	Same as areas providing access but not less than 4.0	1.8	450
B Offices & work areas not covered by elsewhere				
	Balconies used for floor-type activities.	Same as areas providing access but not less than 4.0	1.8	450
C Areas where people may congregate				
C1 Areas with tables	Public, institutional & communal dining rooms & lounges, cafes & restaurants[5]	2.0	2.7	400
C2 Areas without obstacles for moving people	Balconies used for floor-type activities.	Same as areas providing access but not less than 4.0	1.8	450

AS/NZS 1170.1, Table 3.1 Notes - Design and Installation:

(1) for AS/NZS 1170.1 T3.1 domestic & residential activities, 1.8 concentrated action shall be applied over an area not less than 350mm2 (Refer to Note 1, AS/NZS 1170.1:2002, Table 3.1); and, 2.7kN concentrated actions, shall be applied over an area not less than 0.01m2 (Refer to AS/NZS 1170.1:2002, Cl.3.3(b)).

(2) Where a stair tread or landing is structurally independent of the adjoining elements, it shall be capable of withstanding a line load of 2.2kN/m of span of tread or landing. Boards shall be fully supported at stair treads or landings.

(5) Fixed seating is seating where the removal of the seating and the use of the space for other purposes is not likely.

Analysis Notes:

a) ULS strength combination 1.2G+1.5Q.

b) Design governed by serviceability deflection from concentrated action on a single board.

c) SLS deflections for distributed & concentrated actions G+ψQ (ψ=0.7).

d) Recognition & acceptance of deflection is at the discretion of the designer/user. Deflections are limited to; 2.7mm, SPAN/150 for 1.8kN action; 2.7mm, SPAN/132 for 2.7kN action.
e) Floor vibration deflection limited to 2mm for 1.0kN point load & max. support spacing 450mm.
f) Modelled as 2-span continuous beam, each board supported on 3-joists.
g) Mean tested values of MOE and MOR with Material Reduction Factor = 1.1.
h) A Creep Factor of 4.0 is assumed, the long-term deflection from a significant concentrated action can be up to 4-times the short-term deflection and are best located over supports rather than at mid-span of the boards.

The analysis performed covers only those matters and products listed and excludes any other matter or product. The information presented in this report is valid for the shortest of the following periods:

- Until the product/system becomes modified in any way; or
- Until superseded by more recent technical information or by other certification; or
- Until Installation Guide, V6.23 is superseded; or
- Until the particular referenced parts of the NCC are superseded in the NCC or in State or Territory Building Regulations; or
- Until the particular referenced Standards are superseded.