

DINCEL® STRUCTURAL WALLING SYSTEM

PURPOSE

The Dintel® Structural Walling system (Dintel® system) is a permanent formwork for walls and columns which, when filled with ready-mixed concrete, produces an economical, strong and durable structure. It may be used in the construction of vertical, internal and external walls, shear walls, retaining walls, columns, facades, basements, lift shafts, stairwells, swimming pools, storage and detention tanks, culverts and general landscaping walls and fences.

EXPLANATION

The Dintel® system comprises lightweight, rigid, hollow re-engineered PVC panels, floor tracks and specialist components that snap-lock together to form a watertight structure that is then core filled with concrete and steel reinforcement where required by design. It is a time and cost-efficient alternative to the traditional masonry block, pre-cast and concrete formwork.

The PVC components are provided in four thicknesses (110 mm, 155 mm, 200 mm and 275 mm) with the 200 mm having built-in conduits that enable services (excluding plumbing) to be installed after all structural elements have been completed, without the need for chasing.

The Dintel® system reduces concrete cracking by reducing the evaporation time during curing (eliminating plastic shrinkage cracking). The combination of the continued cement hydration process and a reduced water/cement ratio concrete mix results in early tensile and compressive strength capacity and less porous concrete. These characteristics are maintained over time.

It can be finished by adhering an acrylic render, an overlay cladding, or insulation sheet, directly to the Dintel®. The uniform finished polymer surface can also be painted.



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SCOPE AND LIMITATIONS OF USE

Scope	Limitations
Location	
In all wind conditions and seismic zones.	<ul style="list-style-type: none"> ➤ Wall design must, as a minimum, meet requirements of AS/NZS 1170:2002 set. ➤ Concrete and reinforcing design must, as a minimum, meet the requirements of NZS 3101.1&2:2006.
All exposure zones as defined in NZS 3604:2011.	
“Good Ground” as defined in sec. 3, NZS 3604:2011 or an ultimate bearing capacity of 300 kPa.	<ul style="list-style-type: none"> ➤ Excludes compressible ground, expansive soils and ground that may creep, subside or swell 25 mm or more.
Any proximity to a relevant or notional boundary.	
Building	
As a primary wall structure for all building uses.	<ul style="list-style-type: none"> ➤ Wall design must, as a minimum, meet requirements of AS/NZS 1170:2002 set. ➤ Concrete and reinforcing design must, as a minimum, meet the requirements of NZS 3101.1&2:2006.
Below ground retaining walls and water storage tanks.	<ul style="list-style-type: none"> ➤ Maximum of 6 m head of pressure or 58 kPa.
As part of an acoustic wall	<ul style="list-style-type: none"> ➤ The bulk density of the concrete must meet 2,666kg/m³ ➤ The thickness of the wall (concrete and Dintel formwork) must be 155 mm. ➤ Plasterboard may be adhered but: <ul style="list-style-type: none"> • Daub fixing of the plasterboard is prohibited • The plasterboard linings must be in continuous contact with the Dintel wall e.g. using a notched applicatory with continuous glue to the entire wall or sheet ➤ Any plasterboard product may be used.

PERFORMANCE CLAIMS

If designed, installed and maintained in accordance with all Jacobsen requirements, the Dintel® Structural Walling system will comply with or contribute to compliance with the following performance claims:

NZ Building Code clauses	Compliance statement	BASIS OF COMPLIANCE ¹ Demonstrated by
B1 Structure	VERIFICATION METHOD - B1/VM1	
B1.3.1, B1.3.2, B1.3.3 (a), (b), (d), (e), (f), (h), (i), (j), (m) & (q)		<ul style="list-style-type: none"> ➤ Designed to meet AS/NZS 1170 and NZS 3101 [13/11/2012]. ➤ Expert Opinion Nejadi, S. [19/03/2020]. ➤ Samali, B. [February/2011]
B1.3.4 (a), B1.3.7 (a), (b) & (c)		<ul style="list-style-type: none"> ➤ Expert opinion. Bradford, M. [23/07/2014].

USEFUL INFORMATION

For information on the design, installation and maintenance of the Dintel® Construction System and for our warranty refer to www.jacobsens.co.nz/building-systems/.

OTHER CERTIFICATIONS AND APPROVALS HELD BY DINCEL®

- ApprovalMark International. [30/08/2019] *Best Environment Practice Approval*. Certificate No. BEP-PVC 0786.
- ApprovalMark International. [25/02/2021]. ISO 9001:2015 – *Quality Management Systems*. No QMS 00786.

PERFORMANCE CLAIMS CONTINUED

NZ Building Code clauses	BASIS OF COMPLIANCE ¹	
	Compliance statement	Demonstrated by
B2 Durability B2.3.1 (a), B2.3.2 (a)	ACCEPTABLE SOLUTION -B2/AS1 VERIFICATION METHOD -B2/VM1	<ul style="list-style-type: none"> ➤ Concrete meets the requirements of NZS 3101 (refer para. 3.1.1). ➤ Use of uPVC referenced in G12/AS1 and G13/AS1.
C3 Fire affecting areas beyond the fire source C3.4 (a), C3.5, C3.6, C3.7 (b, c),	VERIFICATION METHOD -C/VM2	<ul style="list-style-type: none"> ➤ CSIRO Tested to AS/NZS 1530.4:2014 [19/12/2019]. ➤ Expert opinion. Warringtonfire [22/10/2019]. ➤ Warringtonfire. Meets material group no. 1S. [05/04/2019]. ➤ BRANZ Type Test. ISO 5660:2002. [01/11/2019]. ➤ Expert Opinion. omnii. Evidence of Suitability Report. [28/02/2020].
C4 Movement to a place of safety C4.5,		
C6 Structural Stability C6.2 (a), C6.3		
E2 External Moisture E2.3.2	ALTERNATIVE SOLUTION	<ul style="list-style-type: none"> ➤ CSIRO tested to ASTM E 514-03, AS/NZS 2904:1995, ASTM E 96/M. [22/03/2010].
F2 Hazardous Building Materials F2.3.1	ALTERNATIVE SOLUTION	<ul style="list-style-type: none"> ➤ CETEC. Emission Test Certificate to ASTM. D5116-97 [14/11/2007]. ➤ TUV SUD PSB. Singapore. [01/12/2015].
G6 Airborne and impact sound G6.3.2	ALTERNATIVE SOLUTION	<ul style="list-style-type: none"> ➤ PKA Acoustic Consulting. Dincel 155 mm NZ Acoustic Opinion. [24/11/2020]. ➤ Acoustic Opinion. Day Design. Report no. 5880-1.1R Rev C. [12/02/2018]. ➤ Acoustic Opinion. Day Design. Report no. 5880-3.1R Rev B. [23/01/2018]. ➤ Acoustic Opinion. Day Design. Report no. 5880-4.1R Rev B. [12/02/2018].

1. The Compliance Statement is the pass holder's statement that they have met their obligations under s14G(2) of the Building Act 2004.

SOURCES OF INFORMATION

- Nejadi, S. [19/03/2020]. *Engineering Certificate of Conformity*. University of Technology, Sydney.
- Bradford, M. [23/07/2014] *Certification of Structural System*. UNSW Global. Reference: J084829.
- Samali, B. [February 2011] *Analyses and Testing of Dincel® Wall System to Severe Earthquake Loads*. accessUTS PTY Ltd.
- Dincel® Construction System Pty. Ltd. [05/04/2014] *3S Structural Engineering Design Manual*. Revision 5.
- TUV SUD PSB. Singapore [01/12/2015] *Evaluation of Toxic Fumes Generated From Material Sample During Burning*. Test report no. 7191127129-CHM15-TSL_CR2.
- Freitag, S., Gaimster, R., Cook, D. 'NZ Standards for Concrete Materials and Construction: 2012 Status'. *The New Zealand Concrete Industry Conference 2012*. Claudelands, Hamilton, 11-13 October 2012.
- Dincel® Construction System [09/2019] *Construction Manual for Designers and Builders*.
- CSIRO [19/12/2019] *Fire Resistance performance of Dincel® Form concrete filled wall system in accordance with AS 1530.4-2014*. Assessment no. FCO-2674.
- CSIRO [11/2019] *Fire Resistance performance of Dincel® Form concrete filled wall system in accordance with AS 1530.8.2-2018*. Assessment no. FCO-2725.
- CSIRO. [22/03/2010] *Assessment of DCS walling system*. Report no. 5091. Rev B.
- Warringtonfire [05/04/2019] *Classification of a wall and ceiling lining in accordance with AS ISO 9705:2003 (R2016)*. Report no. RTF180310. REF R1.0.
- Warringtonfire. [22/10/2019] *Influence of Dincel® polymer webs on the overall fire resistance performance*. Job no. FAS190305.
- BRANZ. [01/11/2019]. *ISO 5660:2002, Parts 1 & 2. Reaction to fire tests – Heat release rate, smoke production rate*. Report no. FH11975-001.
- Consulting Enterprises in Technology (CETEC). [14/11/2007] *ASTM D5116-97: Determination of Organic Emissions from Indoor Material/Products*. Certificate CV071106.
- Day Design Pty. Ltd. [23/01/2018] *Acoustic Opinion. Dincel® 200 mm Wall System*. Report 5880-3.1R Rev B.
- Day Design Pty. Ltd. [12/02/2018] *Acoustic opinion. Dincel® 110 mm Wall Systems*. Report no. 5880-1.1R Rev C.
- Day Design Pty. Ltd. [12/02/2018] *Acoustic opinion. Dincel® 155 mm Wall Systems*. Report no. 5880-4.1R Rev B.
- Parry-Jones J. [24/11/2020] *Dincel 155 mm NZ Acoustic Opinion*. No. PKA100JBS RO1v1 PKA Acoustic Consulting
- McGuigan, D. 'The Building Code System and a Future Direction for Standards that Support the NZ Concrete Industry'. *Concrete NZ Conference 2019*.
- Omnii Consulting Fire Engineers. [28/02/2020]. *Evidence of suitability report*. Project no. 7147101. Rev F.

2. Sources of information also include the Building Act 2004 and its regulations, including the Building Code (Schedule 1 of the Building Regulations 1992), Acceptable Solutions and Verification Methods, and relevant cited standards.

Scan or click this QR code for a full download of Compliance Documentation for this pass™.

www.jacobsens.co.nz/building-systems



VERSION:	DATE:	Signed on behalf of Jacobsens:
<i>Note: Uncontrolled in printed format.</i>		
NAME:	Warren Drinkwater	By signing this pass™ the signatory confirms that, in respect of the subject of this pass™, the company has met their s14G obligations under the Building Act 2004.
POSITION:	GM Business Development Manager	

