

# CERTIFICATE OF CONFORMITY

This product Certificate is issued under Section 269 of the Building Act 2004 for:

## Allied Concrete READY Floor



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<p><b>Product Description</b></p> <p>Allied Concrete READY Floor is steel fibre reinforced concrete for the construction of NZS 3604 concrete slab-on-ground with combined foundations and specific design commercial / industrial concrete floor slabs-on-ground.</p> <p>Allied Concrete READY Floor is a concrete flooring system that contains integral reinforcement in the form of steel fibres. It exceeds the minimum strength class 20 MPa FL 1.5/1.0 as referenced from NZS 3101.1 :2006 and NZS 3101.2:2006.</p>
<p><b>Product purpose and use</b></p> <p>Allied Concrete READY Floor has been assessed for the following uses:</p> <ul style="list-style-type: none"> <li>for residential floor slabs with combined foundations for houses within the scope of NZS 3604:2011, built on good ground as defined by NZS 3604:2011, including Amendment 11 to NZBC Acceptable Solution B1/AS1; and,</li> <li>as commercial and/or industrial concrete slabs-on-ground from 100 mm to 150 mm thick, on soil with a modulus of subgrade reaction of <math>k &gt; 30</math> kPa/mm.</li> </ul> <p>Allied Concrete READY Floor is not suitable for soils that are expansive or prone to liquefaction or differential settlement.</p> <p><b>Steel Fibres</b></p> <p>The steel fibres used as reinforcing for Allied Concrete READY Floor are Dramix® READY fibres manufactured by Bekaert. They are nominally 60 mm long with a diameter of 0.75 mm. Each end of each fibre has a hook. The steel is low carbon with a tensile strength of 1225 MPa. The fibres have a bright steel finish.</p> <p><b>Concrete</b></p> <p>The concrete grade for use with Allied Concrete READY Floor is 20 MPa, 25 MPa or 30 MPa, manufactured in accordance with NZS 3104:2003 including Amendment 2.</p>
<p><b>Certificate holder</b></p> <p>Allied Concrete Ltd.                  PO Box 1104, Invercargill 9840, New Zealand                  35 Inglewood Road, Invercargill 9810, New Zealand                  Tel: .03 2171600 , call free number 0800 4 255433</p>

<b>CodeMark Certification Body</b>		29/10/2013	27/11/2014	29/10/2016	GM-CM30046-Rev B
Global-Mark Pty Ltd, Suite 4.07, 32 Delhi Road, North Ryde NSW 2113, Australia <a href="http://www.Global-Mark.com.au">www.Global-Mark.com.au</a>	Herve Michoux Managing Director	Date of issue	Last update	Date of next re-certification	Certificate Number

The purpose of construction site audits is to confirm the practicability of installing the product; and to confirm the appropriateness and accuracy of installation instructions. In issuing this certificate, Global-Mark has relied on the independent expert and/or laboratory advise or reports. This certificate is issued by Global-Mark Pty Limited, an independent certification body accredited by the product certification accreditation body (JAS-ANZ) appointed by the Chief Executive of the Ministry of Business Innovation and Employment under the Building Act 2004. The Ministry of Business Innovation and Employment does not in any way warrant, guarantee, or represent that the building method or product the subject of this certificate conforms with the New Zealand Building Code, nor accept any liability arising out of the use of the building method or product. The Ministry of Business Innovation and Employment disclaims, to the extent permitted by law, all liability (including negligence) for claims of losses, expenses, damages, and costs arising as a result of the use of the building method(s) or product(s) referred to in this certificate. This Certificate may only be reproduced in its entirety.

It is advised to check that this Certificate of Conformity is currently valid and not withdrawn, suspended or superseded by a later issue by referring to the Ministry of Business Innovation and Employment website, <http://www.mbie.govt.nz/> New Zealand Building Code (NZBC) references the Building Code in force at the time of issuing the product certificate.

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### Compliance with the New Zealand Building Code (NZBC):

- **Clause B1 STRUCTURE:** Performance B1.3.1, B1.3.2 and B1.3.4. Allied Concrete READY Floor meets the requirements for loads arising from self-weight, imposed gravity loads, earthquake, wind, differential movements and time dependent effects including creep and shrinkage. [i.e.B1.3.3 (a), (b), (f), (h), (m) and (q)].
- **Clause B2 DURABILITY:** Performance B2.3.1 (a) not less than 50 years. Allied Concrete READY Floor meets this requirement.
- **Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. Allied Concrete READY Floor meets this requirement.

### Subject to the following conditions and limitations:

1. Maintaining the validity of BRANZ Appraisal No. 810 (2012) Allied Concrete READY Floor.

### Design and Installation Conditions:

#### 1. General

The soil that the slab is to be poured on must be "good ground" as described by NZS 3604:2011. For specific engineering design the modulus of subgrade reaction,  $k$ , must be greater than 30 kPa/mm.

The design philosophy for Allied Concrete READY Floor slabs is for the direct transfer of wind, gravity and earthquake loads from the structure to the ground. Allied Concrete READY Floor slabs are not designed to resist other actions or to accommodate differential settlements of the ground beyond 25 mm over a horizontal distance of 6 m. Hence expansive and liquefaction prone soils, that could impart large lateral loads, and greater differential settlements are outside the scope of this Appraisal.

Degradation of exposed fibres at exterior concrete surfaces will occur, and these degraded exposed fibres will be removed by weathering. This degradation is non-structural and will not affect the overall durability provision of the NZBC for these concrete structures, however corrosion products at the surface may be created as a result of the steel fibres corroding. Allied Concrete READY Floor may not be suitable where decorative, exposed aggregate or architecturally sensitive concrete is specified.

#### 2. Structure

##### NZS 3604: 2011 Floor Slabs

Allied Concrete READY Floor can be used for constructing concrete slab-on-ground floors for buildings within the scope of NZS 3604:2011. Where the foundations are constructed with Allied Concrete READY Floor, they must be poured integrally with the slab. The dimensions of the floor and foundations must be as described in NZS 3604:2011, Figure 7.13 (B) or 7.15 (B), for the concrete slab-on-ground with combined foundations, except that there is no need for the steel mesh and reinforcing bars.

The minimum depth of Allied Concrete READY Floor foundations below cleared ground level shall be 200 mm as specified by NZS 3604:2011, Paragraph 3.4.2. The inner face of the foundation shall slope up to the underside of the integral floor slab at an angle of approximately 45°, as shown in NZS 3604:2011, Figure 7.13 (B).

The dimensions of slab thickenings under internal loadbearing walls must be as described in NZS 3604:2011, Section 7.5.11, except that there is no need for additional reinforcing.

Shrinkage control joints must be made by saw cuts at maximum 6 metre centres. Saw cutting of Allied Concrete READY Floor should be carried out within 24 hours after placement, or as soon as the concrete surface can endure the saw cutting process. It is recommended that shrinkage control joints extend from re-entrant corners. Where this is not practical supplementary steel in accordance with NZS 3604:2011, Clause 7.5.8.6.4 (b) must be used.

##### Other Concrete Slabs

For buildings subject to specific design, Table 1 gives the maximum loads for different slab thicknesses for Allied Concrete READY Floor.

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Table 1: Maximum Loads

Floor Thickness (mm)	Maximum Loads		
	Tonne/axle	Tonne/point	Tonne/m <sup>2</sup>
100	1.2	0.3	0.3
120	3.0	1.0	1.5
130	3.5	1.5	2.0
140	4.0	2.0	2.5
150	6.0	3.0	3.0

Thickness up to 200mm may be used provided the allowable loads do not exceed what is shown in Table 1, or specific design is required.

Allied Concrete READY Floor commercial / industrial ground floor slabs should be detailed following industry best practice, such as but not limited to:

- isolating slabs from beams or internal columns;
- local reinforcing at re-entrant corners; and
- incorporating free movement joints with dowels, where necessary, to transfer slab loads across joints.

### 3. Serviceability

Allied Concrete READY Floor is expected to have a serviceable life equal to that of standard concrete floors and slabs. Degradation of exposed fibres at exterior concrete surfaces will occur, and these degraded exposed fibres will be removed by weathering. This degradation is non-structural and will not affect compliance with B2.3.1(a) for these concrete structures.

There is no minimum cover requirement to the steel fibres in Allied Concrete READY Floor. Satisfactory cover to any supplementary steel incorporated in the concrete must be maintained.

### 4. Installation Information

The steel fibre reinforced concrete used for Allied Concrete READY Floor is batched at plants that are certified under the New Zealand Ready Mixed Concrete Association Plant Audit Scheme.

The concrete for Allied Concrete READY Floor must be placed, finished and cured in accordance with the requirements of NZS 3109:1997 including Amendment 2.

### 5. Installation Conditions

Installation of Allied Concrete READY Floor shall be carried out by:

- A Licensed Building Practitioner with experience in concrete floor installation; or,
- By competent tradespersons with an understanding of concrete floor installation.

Where the installation relates to a residential building, and where the installer is not a licensed building practitioner; installation will be supervised by a licensed building practitioner. This licensed building practitioner will then complete and sign the Restricted Building Work memorandum.

The installer shall also comply with all relevant technical information relating to the products use, including information contained within the Allied Concrete READY Floor Technical Literature entitled 130918 Allied READY floor brochure V3 and 130227 READY Floor Placing and Finishing V1 as well as the BRANZ Appraisal.

**End of record.**