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BAF-23-269-P-A-UK
BDA Agrément®
Void-Tek
Collapsible Void Former



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SCOPE OF AGRÉMENT

This BDA Agrément® (hereinafter 'Agrément') relates to Void-Tek (hereinafter the 'Product'). The Product is a collapsible void former used below suspended concrete slabs to support wet concrete until it is cured, protecting the concrete structure from the effects of ground heave by forming a permanent void. The Product is for use in new residential and non-residential buildings.

DESCRIPTION

The Product consists of folded polypropylene sections bonded together to produce a collapsible void structure. The Product is designed to be delivered with a collapsed thickness of 25 mm and is installed in situ to the required thickness of the void former. The Product is 1.2 m wide by 2.4 m long. It is formed from an 8 mm thick red-coloured top sheet, a 4 mm thick white-coloured bottom sheet and 6 mm thick white-coloured fins.

ILLUSTRATION



THIRD-PARTY ACCEPTANCE

None requested by the Agrément holder.

STATEMENT

It is the opinion of Kiwa Ltd. that the Product is safe and fit for its intended use, provided it is specified, installed and used in accordance with this Agrément.

Craig Devine
Operations Manager, Building Products

Alpheo Mlotha CEng FIMMM MBA
Head of Operations, Building Products

SUMMARY OF AGRÉMENT

This document provides independent information to specifiers, specialists, engineers, building control personnel, contractors, installers and other construction industry professionals who are considering the safety and fitness for purpose of the Product. This Agrément covers the following:

- Conditions of use;
- Production Control, Quality Management System and the Annual Verification Procedure;
- Product components and ancillary items, points of attention for the Specifier and examples of details;
- Installation;
- Independently assessed Product characteristics and other information;
- Compliance with national Building Regulations, other regulatory requirements and Third-Party Acceptance, as appropriate;
- Sources.

MAJOR POINTS OF ASSESSMENT

Strength - see Section 2.2.7 - the Product has adequate strength to withstand a load implied by up to 500 mm thickness of wet concrete during construction and will collapse when reaching the specified failure load from the effects of ground heave.

Durability - see Section 2.2.8 - the Product shall have a service life durability equivalent to that of the building into which it is incorporated.

UKCA, UKNI and CE marking - see Section 2.2.9 - the Agrément holder has responsibility for conformity marking, in accordance with all relevant British and European Product Standards.

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1 GENERAL CONSIDERATIONS

1.1 CONDITIONS OF USE

1.1.1 Limitations

This Agrément has been prepared in accordance with the mandatory requirements defined in the relevant Kiwa Technical Requirement. Some information in this Agrément is provided for guidance or reference purposes only; this information falls outside the scope of the Technical Requirement.

1.1.2 Application

The assessment of the Product relates to its use in accordance with this Agrément and the Agrément holder's requirements.

1.1.3 Assessment

Kiwa Ltd. has assessed the Product in combination with relevant test reports, technical literature, the Agrément holder's quality plan, DoPs and site visit, as appropriate.

1.1.4 Installation supervision

The quality of installation and workmanship shall be controlled by a competent person who shall be an employee of the installation company (hereinafter 'Installer').

The Product shall be installed strictly in accordance with the instructions of the Agrément holder and the requirements of this Agrément.

1.1.5 Geographical scope

The validity of this document is limited to England, Wales, Scotland and Northern Ireland, with due regard to Section 3 of this Agrément (CDM, national Building Regulations and Third-Party Acceptance).

1.1.6 Validity

The purpose of this Agrément is to provide well-founded confidence to apply the Product within the scope described. The validity of this Agrément is as published on www.kiwa.co.uk/bda.

1.2 PRODUCTION CONTROL AND QUALITY MANAGEMENT SYSTEM

Kiwa Ltd. has conducted an audit of the Agrément holder and determined that they fulfil all their obligations in relation to this Agrément in respect of the Product.

The initial audit demonstrated that the Agrément holder has a satisfactory Quality Management System (QMS) and is committed to continuously improving their quality plan. Document control and record-keeping procedures were deemed satisfactory. A detailed Production Quality Specification (PQS) has been compiled to ensure traceability and compliance under the terms of this Agrément.

1.3 ANNUAL VERIFICATION PROCEDURE - CONTINUOUS SURVEILLANCE

To demonstrate that the Product conforms with the requirements of the technical specification described in this Agrément, an Annual Verification Procedure has been agreed with the Agrément holder in respect of continuous surveillance and assessment, and auditing of the Agrément holder's QMS.

2 TECHNICAL ASSESSMENT

This Agrément does not constitute a design guide for the Product. It is intended only as an assessment of safety and fitness for purpose.

2.1 PRODUCT COMPONENTS AND ANCILLARY ITEMS

2.1.1 Components included within the scope of this Agrément

The components listed in Table 1 below are integral to the use of the Product.

Table 1 - Integral components

Product		Assembled thickness	Free void created	Weight	Safe load	Fail load	Maximum thickness of concrete	Plasticity index
Void-Tek	VT-100 14/18	140 mm	100 mm	5.2 kg/m ²	14 kN/m ²	18 kN/m ²	500 mm	20-40
	VT-150 14/18	185 mm	150 mm					40-60

The following components may be used in conjunction with the Product:

- Void-Tek Tape - a polythene extruded matt cloth tape installed between the joints of Void-Tek sheets to protect concrete grout loss during placement.

2.1.2 Ancillary items falling outside the scope of this Agrément

The following ancillary items detailed in this Section may be used in conjunction with the Product, but fall outside the scope of this Agrément:

- Void-Tek Central Fin;
- Void-Tek Interlock Fin;
- Void-Tek Pile Collar;
- Void-Tek SP - 1.2 m x 2.4 m.

2.2 POINTS OF ATTENTION TO THE SPECIFIER

2.2.1 Design

2.2.1.1 Design responsibility

A Specifier may undertake a project-specific design, in which case it is recommended that the Specifier co-operates closely with the Agrément holder. The Specifier or Installer is responsible for the final as-built design.

2.2.1.2 Basis of design

The characteristics detailed in the section titled 'Major Points of Assessment' shall be considered during the use of the Product.

2.2.1.3 General design considerations

The Product is used beneath suspended structural concrete slabs to create a void which allows ground heave to occur without adversely affecting the integrity of the concrete.

In addition to typical structural design requirements, the concrete floor structure must be designed to accommodate the maximum upward forces of clay heave which are transferred through the Product.

The Product is confined within the ground-floor structure; therefore, it will not contribute to the development stages of a fire or present a smoke or toxic hazard.

The Product shall not be used on the vertical faces of concrete foundations.

Use of the Product below the groundwater table, or on grounds where hazardous gases may be present, is outside the scope of this Agrément.

2.2.1.4 Project-specific design considerations

The project-specific design shall:

- be determined by the Specifier;
- take into account the requirements of the relevant national Building Regulations - see Section 3.2;
- take into account the service life durability required - see Section 2.2.8.

No pre-installation survey is required.

2.2.2 Applied building physics (heat, air, moisture)

A Specialist shall check the hygrothermal behaviour of a project-specific design incorporating the Product and, if necessary, offer advice on improvements to achieve the final specification. The Specialist can be either a qualified employee of the Agrément holder or a suitably qualified consultant (in which case it is recommended that the Specialist co-operates closely with the Agrément holder).

2.2.3 Permitted applications

Only applications designed according to the specifications given in this Agrément are permitted. In each case, the Specifier and Installer shall co-operate closely with the Agrément holder.

2.2.4 Installer competence level

The Product shall be installed strictly in accordance with the instructions of the Agrément holder and the requirements of this Agrément.

Installation can be undertaken by competent persons experienced in this type of work.

2.2.5 Delivery, storage and site handling

The Product is delivered in suitable packaging bearing relevant identification information (such as the Product name, production identification date or batch number, the Agrément holder's name, etc.) and, where applicable, the BDA Agrément® logo incorporating the number of this Agrément.

Prior to installation, the Product shall be stored in accordance with the Agrément holder's requirements. Good housekeeping protocols shall be followed to avoid damage.

Particular care shall be taken to:

- avoid exposure to direct sunlight for extended periods of time;
- avoid exposure to high or low temperatures for extended periods of time;
- avoid exposure to rain and frost;
- store the Product away from sources of ignition.

2.2.6 Maintenance and repair

Once installed, the Product does not require regular maintenance as it is confined within the ground-floor structure. For advice in respect of repair during installation, consult the Agrément holder.

Performance factors in relation to the Major Points of Assessment

2.2.7 Strength

The Product is designed to support up to 500 mm of wet concrete during construction, at a safe load of 14 kN/m² for a period of 16 hours with compression limited to less than 5 mm deflection. The Product is designed to collapse at a fail load of 18 kN/m² due to the effects of ground heave.

2.2.8 Durability

The Product shall have a service life durability equivalent to that of the building into which it is incorporated. The expected lifespan of the building itself shall be at least 60 years.

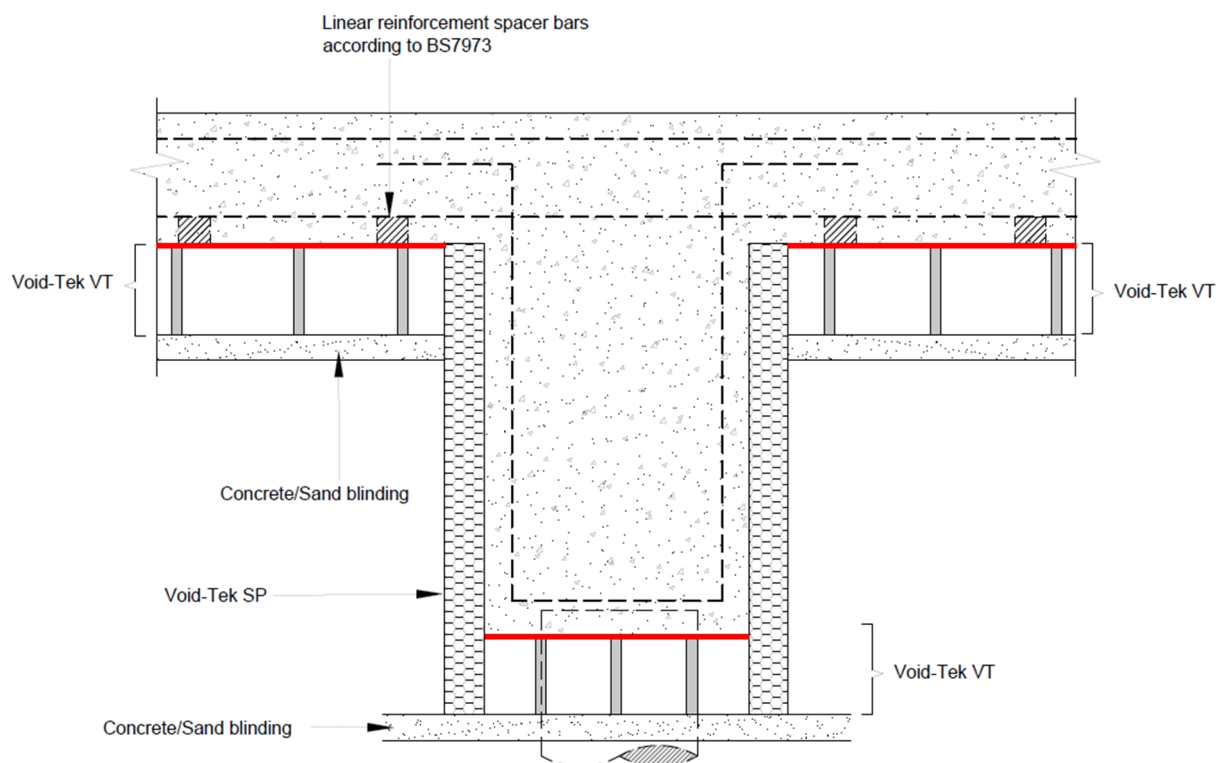
Once installed, the Product is not susceptible to damage from environmental conditions normally encountered in the UK.

2.2.9 UKCA, UKNI and CE marking

There is no relevant Product standard for the Product.

2.3 EXAMPLES OF TYPICAL DETAILS

Diagram 1 - Typical arrangement



2.4 INSTALLATION

The Product shall be installed strictly in accordance with the instructions (hereinafter 'Installation Manual') of the Agrément holder, the requirements of this Agrément and the requirements of BS 8000-0.

2.4.1 Project-specific installation considerations

No pre-installation survey is required.

2.4.2 Preparation

The following works shall be undertaken before installing the Product:

- the sub-base shall be well compacted and flat, with no excessive surface undulations, and blinded with a layer of concrete.

2.4.3 Outline installation procedure

Detailed installation procedures can be found in the Agrément holder's Installation Manual.

The outline procedure is as follows:

- deploy the Product by lifting the top sheet upwards;
- ensure the interlocking hinged flaps unfold to lock the Product in its final position;
- if required, cut the Product using a Stanley knife parallel to the long edge, such that the Product is no less than 500 mm wide, to fit the profile of the formwork;
- if the hinged interlocking flap has been removed during the above cutting process, insert a pre-taped Void-Tek Central Fin at the appropriate location in conjunction with the Void-Tek Interlock Fin to secure the rigidity of the Product;
- lay reinforcement spacer blocks parallel to the long edge, to ensure the point loading is distributed along the length of the Product;
- butt Products together and seal in the joint between them using Void-Tek tape, to ensure no grout loss occurs during concrete pour.

2.4.4 Finishing

The following finishing is required on completion of the installation:

- pour concrete on top of laid Product, with a maximum wet concrete thickness of 500 mm.

2.5 INDEPENDENTLY ASSESSED PRODUCT CHARACTERISTICS

2.5.1 Strength

Test		Test Method	Result	
			VT-100 14/18	VT-150 14/18
Fatigue test	Residual deflection	Vinci test method ST8996_MS_Rev01	< -1 mm	< -2 mm
24-hour simulated reinforcement load	Maximum residual deflection		-1.8 mm	-1.4 mm
16-hour hold uniformly distributed load (hereinafter 'UDL') and collapse test	Safe load		14 kN/m ²	
	Maximum deflection		-1.14 mm	-3.86 mm
UDL crushing test	Failure load		18 kN/m ²	
	Maximum thickness of compressed former		36.15 mm	36.65 mm

3 CDM, NATIONAL BUILDING REGULATIONS AND THIRD-PARTY ACCEPTANCE

3.1 THE CONSTRUCTION (DESIGN AND MANAGEMENT) REGULATIONS 2015 AND THE CONSTRUCTION (DESIGN AND MANAGEMENT) REGULATIONS (NORTHERN IRELAND) 2016

Information in this Agrément may assist the client, principal designer/CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

3.2 THE NATIONAL BUILDING REGULATIONS

In the opinion of Kiwa Ltd., the Product, if installed and used in accordance with Section 2 of this Agrément, can satisfy or contribute to satisfying the relevant requirements of the following national Building Regulations.

This Agrément shall not be construed to confer the compliance of any project-specific design with the national Building Regulations.

3.2.1 England

The Building Regulations 2010 and subsequent amendments

- A2(a) Ground movement - the Product contributes to the building's stability from being impaired by expansion of clay soils
- Regulation 7(1) Materials and workmanship - the Product is manufactured from suitably safe and durable materials for their application, and can be installed to give a satisfactory performance

3.2.2 Wales

The Building Regulations 2010 and subsequent amendments

- A2(a) Ground movement - the Product contributes to the building's stability from being impaired by expansion of clay soils
- Regulation 7(1) Materials and workmanship - the Product is manufactured from suitably safe and durable materials for their application, and can be installed to give a satisfactory performance

3.2.3 Scotland

The Building (Scotland) Regulations 2004 and subsequent amendments

3.2.3.1 Regulation 8(1) Durability, workmanship and fitness of materials

- The Product is manufactured from suitably safe and durable materials for their application and can be installed to give a satisfactory performance

3.2.3.2 Regulation 9 Building Standards - Construction

- 1.1(b)(c) Structure - the Product contributes to the building's stability from being impaired by expansion of clay soils
- 7.1(a) Statement of sustainability - the Product can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard

3.2.3.3 Regulation 12 Building Standards - Conversions

- All comments given under Regulation 9 also apply to this Regulation, with reference to Schedule 6 of The Building (Scotland) Regulations 2004 and subsequent amendments, clause 0.12 of the Technical Handbook (Domestic) and clause 0.12 of the Technical Handbook (Non-Domestic)

3.2.4 Northern Ireland

The Building Regulations (Northern Ireland) 2012 and subsequent amendments

- 23(1)(a)(i)(iii)(iv)(b)(i) Fitness of materials and workmanship - the Product is manufactured from suitably safe and durable materials for their application and can be installed to give a satisfactory performance
- 30 Stability - the Product contributes to satisfying the relevant requirements of this Regulation

3.3 THIRD-PARTY ACCEPTANCE

None requested by the Agrément holder.

4 SOURCES

- BS EN ISO 9001:2015 Quality management systems. Requirements
- BS 8000-0:2014 Workmanship on construction sites. Introduction and general principles
- VINCI Technology Centre test method ST8996_MS_Rev01

Remark - Apart from these sources, technical information and confidential reports have been assessed; any relevant documents are in the possession of Kiwa Ltd. and are kept in the Technical Assessment File of this Agrément. The Installation Manual for the Product may be subject to change; contact the Agrément holder for the clarification of revisions.

5 AMENDMENT HISTORY

Revision	Amendment description	Author	Approver	Date
-	First issue	A Chapman	C Devine	November 2023

6 CONDITIONS OF USE

This Agrément may only be reproduced and distributed in its entirety.

Where a National Annex exists in respect of a BS EN (or other) standard, its use is deemed mandatory wherever the original standard is referenced.

Kiwa Ltd. has used due skill, care and attention in the preparation of this BDA Agrément®.

Whilst all due diligence has been used, no liability or warranty is extended by Kiwa Ltd.

The Agrément holder is responsible for advising Kiwa Ltd. immediately if there is a variation to the Product specification or constituent elements/components after initial publication of this BDA Agrément®.

For full terms and conditions, refer to Kiwa Ltd.