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**BAW-22-267-P-A-UK**  
**BDA Agrément®**  
**Cut and Bonded Bricks Process**

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### SCOPE OF AGRÉMENT

This BDA Agrément® (hereinafter 'Agrément') relates to Cut and Bonded Bricks Process (hereinafter the 'Process'). The Process involves the cutting of clay bricks<sup>^</sup> (hereinafter 'bricks'), manufactured in accordance with BS EN 771-1, and bonding them together using epoxy-based adhesive to form an angled brick unit as part of an external masonry wall.

<sup>^</sup> outside the scope of this Agrément

### DESCRIPTION

The bricks are cut to the required angle using recycled water-fed machinery and bonded using epoxy-based adhesive in a 3-1 volume ratio (resin and hardener compound). Once the adhesive is mixed, it is then applied to the cut brick face with the two pieces of bricks pressed together to create the required angle and allowed to cure.

### ILLUSTRATION



### THIRD-PARTY ACCEPTANCE

None requested by the Agrément holder.

### STATEMENT

It is the opinion of Kiwa Ltd. that the Process 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



Altheo Mlotha CEng FIMMM MBA  
Business Unit Manager, 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 Process. This Agrément covers the following:

- Conditions of use;
- Production Control, Quality Management System and the Annual Verification Procedure;
- Process components and ancillary items, points of attention for the Specifier and examples of details;
- Installation;
- Independently assessed Process 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 2.2.6.

**Fire performance** - see Section 2.2.7.

**Durability** - see Section 2.2.8.

**UKCA, UKNI and CE marking** - see Section 2.2.9 - the manufacturers of the constituent parts of the Product have 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 Process relates to its use in accordance with this Agrément and the Agrément holder's requirements.

#### 1.1.3 Assessment

Kiwa Ltd. has assessed the Process 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

It is recommended that the quality of the Process is controlled by the Agrément holder.

The Process shall be 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.

#### 1.1.6 Validity

The purpose of this Agrément is to provide well-founded confidence in the Process within the scope described. The validity of this Agrément is as published on [www.kiwa.co.uk/bda](http://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 Process.

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 Process 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 Process. It is intended only as an assessment of safety and fitness for purpose.

### 2.1 PROCESS COMPONENTS AND ANCILLARY ITEMS

The components listed in Table 1 below are integral to the Process.

**Table 1** - Integral components

| Component            | Description  | Specification  |
|----------------------|--|--|
| adhesive             | Brick-Fix 31 A2 Firebond <sup>^</sup><br>Metofix CB-A2 <sup>^^</sup> | grey coloured, 3-1 volume ratio (resin and hardener compound), solvent-free epoxy-based adhesive   |
| bricks <sup>^^</sup> | manufactured in accordance with BS EN 771-1                          | thickness: 0.95 mm<br>application rate: 0.45 kg/m <sup>2</sup><br>density: 1.56 kg/m <sup>3</sup><br>curing process: 24 hours full cure<br>gel time: 60 mins for Brick-Fix 31 A2 Firebond, 60 to 90 mins for Metofix CB-A2<br>freeze-thaw durability rating of F2<br>soluble salt rating of S2<br>European Classification A1, in accordance with BS EN 13501-1 |

<sup>^</sup> this does not infer that the adhesive achieves a reaction to fire classification of A2-s1, d0, in accordance with BS EN 13501-1

<sup>^^</sup> bricks fall outside the scope of this Agrément, but any bricks used during the Process shall comply with the specifications stated in this table

### 2.2 POINTS OF ATTENTION TO THE SPECIFIER

#### 2.2.1 Design

##### 2.2.1.1 Design responsibility

A Specifier may not undertake a project-specific design; they shall co-operate closely with the Agrément holder to agree a project-specific design. The Agrément holder retains full design responsibility unless the design is subsequently modified by others.

The Process of cutting and bonding bricks to the project-specific design can only be undertaken by the Agrément holder.

##### 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 Process.

##### 2.2.1.3 General design considerations

The Process shall be strictly in line with the Method Statement of the Agrément holder and the requirements of this Agrément.

The installation of the cut and bonded bricks (outside the scope of this Agrément) shall be in line with requirements of:

- BS 8000-0;
- BS 8000-3;
- Brick Development Association's 'Good site practice and workmanship';
- PAS 70;
- PD 6697.

Buildings incorporating the cut and bonded bricks shall be designed and constructed in accordance with the relevant Codes and Standards. Bricks shall comply with principles of BS EN 771-1 and PAS 70.

Cut and bonded bricks shall have an angle other than 90 °.

Ancillary components (outside the scope of this Agrément) such as mortar, lintels, wall ties and cavity trays shall be designed and specified in accordance with their respective Codes and Standards.

Bricks shall be blended from a minimum of three packs concurrently to avoid colour banding or patches within the finished brickwork.

##### 2.2.1.4 Project-specific design considerations

Prior to Process commencement, an inspection shall be carried out to:

- determine the type, suitability, and condition of the bricks and adhesive;
- ensure performance declarations are available for the bricks and adhesive, and that relevant requirements are met;
- ensure bricks have no evidence of underlying defects, dampness, efflorescence, lime leaching and mortar staining;
- ensure traceability and identification details of the bricks and adhesive are available.

#### 2.2.2 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.

#### 2.2.3 Installer competence level

The Process shall be 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.

### 2.2.4 Delivery, storage and site handling

The bricks are delivered in suitable packaging bearing relevant identification information (such as production 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 Process commencement and once delivered to site, the bricks and adhesive shall be stored in accordance with the Agrément holder's requirements. Good housekeeping protocols shall be followed to avoid damage.

Care shall be taken during handling to avoid damaging the bricks. Packs shall be opened with sharp band cutting tools, ensuring that chipping, breakages and potential collapse of the pack is avoided.

Once the bricks are stacked at the point of use, they shall be kept covered and protected from weather, whilst bricklaying is not in progress.

### 2.2.5 Maintenance and repair

For advice in respect of repair, consult the Agrément holder.

## Performance factors in relation to the Major Points of Assessment

### 2.2.6 Strength

The cut and bonded bricks can have adequate adhesion strength for their intended use when the Process is carried out in accordance with this Agrément and the instructions of the Agrément holder.

### 2.2.7 Fire performance

Bricks are classified as European Classification A1 without the need for further testing (CWFT), in accordance with European Commission Decision 96/603/EC and BS EN 13501-1.

When bonded using Brick-Fix 31 A2 Firebond or Metofix CB-A2, bricks achieve European Classification A1, in accordance with BS EN 13501-1 - see Section 2.5.1 for more details.

Construction materials, components and associated attachments used in the overall wall construction shall satisfy the requirements of Regulations 7(2) and 7(3) for England and Wales, Regulations 8(3) and 8(4) for Scotland and Regulations 23(2) and 23(3) for Northern Ireland. Designers shall refer to the national Building Regulations for further details.

The fire resistance of walls is based on the occupancy, size and use of a building and shall be a minimum of 30 minutes. It is then specified in 60-minute intervals thereafter.

Cavity fire barriers shall be installed in line with compartment walls and floors, as advised in BRE Report 135 and as required under the national Building Regulations. Materials used for cavity barriers and firestops shall be capable of producing adequate resistance to fire and smoke. Intumescent strips shall be applied on the ventilated side of each fire barrier.

Walls shall be designed and constructed:

- to adequately resist the passage and penetration of fire;
- so that the unseen spread of fire and smoke within concealed spaces in the wall is inhibited.

For detailed conditions of use regarding requirements for supporting wall fire performance, cavity closers and barriers, fire stopping of service penetrations and combustibility limitations for other materials and components used in the overall wall construction, designers shall refer to the relevant national Building Regulations.

### 2.2.8 Durability

The cut and bonded bricks shall have a service life durability equivalent to that of the building into which they are incorporated. The expected lifespan of the building itself shall be at least 60 years.

### 2.2.9 UKCA, UKNI and CE marking

The British and European standard for the bricks is BS EN 771-1.

## 2.3 EXAMPLES OF TYPICAL DETAILS

Diagram 1 - Cutting process of the bricks



Diagram 2 - Cut and bonded bricks



## 2.4 PROCESS

The Process shall be strictly in accordance with the Method Statement of the Agrément holder, the requirements of this Agrément and the requirements of BS 8000-0.

### 2.4.1 Preparation

The following works shall be undertaken before commencement of the Process:

- a Works Order Sheet shall be in place with project-specific identification details and requirements;
- the recycled water-fed machine shall be set up prior to cutting and shall be checked regularly during the operation to ensure consistent quality;
- cracked or chipped bricks shall be discarded.

### 2.4.2 Outline installation procedure

Detailed installation procedures can be found in the Agrément holder's Method Statement.

The outline procedure is as follows:

- bricks are cut to the required dimensions and angles, as per the Work Order Sheet;
- cut bricks are placed on designated pallets with project-specific reference information;
- bricks are bonded together using the specified epoxy-based adhesive, as detailed in the Work Order Sheet; adhesive is applied in a 3-1 volume ratio (resin and hardener compound), in line with the manufacturer's recommendations;
- the adhesive is weighed on calibrated digital scales to ensure correct weight ratio, and is mixed until a constant no streak grey colour is achieved;
- the adhesive is applied to the cut brick face and the two pieces of bricks are pressed together to create the required cut and bonded angle;
- bonded bricks are placed either upright or flat to cure for a minimum of 12 hours in temperature-controlled rooms.

### 2.4.3 Finishing

The following finishing is required on completion of the Process:

- any excess adhesive from the jointed bricks shall be removed to leave a neat joint line between the two bricks;
- a visual inspection shall take place on all cut and bonded bricks to ensure the Process is completed successfully.

## 2.5 INDEPENDENTLY ASSESSED PROCESS CHARACTERISTICS

### 2.5.1 Fire performance

| Test             | Standard      | Component   | Result |
|------------------|---------------|---|--------|
| reaction to fire | BS EN 13501-1 | bricks bonded using Brick-Fix 31 A2 Firebond <sup>1</sup> | A1     |
|                  |               | bricks bonded using Metofix CB-A2 <sup>2</sup>            |        |

<sup>1</sup> 215 mm by 102 mm by 65 mm angled bricks formed by cutting the bricks and bonding the two cut pieces with epoxy grey adhesive Brick-Fix 31 A2 Firebond, < 1 mm thick, 8 g per brick, over 75 % of the cut face area application rate, gel time 60 minutes, 24 hours full cure

<sup>2</sup> 215 mm by 102.5 mm by 65 mm angled bricks formed by cutting the bricks and bonding the two cut pieces with epoxy grey adhesive Metofix CB-A2, 0.95 mm thick, 0.45 kg/m<sup>2</sup> application rate, 1.56 g/cm<sup>3</sup> density, gel time 60 to 90 minutes, 24 hours full cure

### 2.5.2 Durability

| Test                         | Standard    | Component | Result |
|------------------------------|-------------|-----------|--------|
| freeze-thaw resistance       | BS EN 771-1 | bricks    | F2     |
| active soluble salts content |             |           | S2     |



### 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

Not applicable.

#### 3.3 THIRD-PARTY ACCEPTANCE

None requested by the Agrément holder.

### 4 SOURCES

- BS EN ISO 9001:2015 Quality management systems. Requirements
- BS EN 771-1:2011+A1:2015 Specification for masonry units. Clay masonry units
- BS EN 13501-1:2018 Fire classification of construction products and building elements. Classification using data from reaction to fire tests
- BS 8000-0: 2014+A1:2024 Workmanship on construction sites. Introduction and general principles
- BS 8000-3:2020 Workmanship on construction sites. Masonry. Code of practice
- Brick Development Association 'Good site practice and workmanship':2023
- European Commission Decision 96/603/EC: Commission Decision of 4 October 1996 establishing the list of products belonging to Classes A 'No contribution to fire' provided for in Decision 94/611/EC implementing Article 20 of Council Directive 89/106/EEC on construction products
- PAS 70:2003 HD clay bricks. Guide to appearance and site measured dimensions and tolerance
- PD 6697:2019 Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2

**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 Process 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 | August 2024 |
|          |                       |           |          |             |
|          |                       |           |          |             |
|          |                       |           |          |             |

### 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 Process specification or constituent elements/components after initial publication of this BDA Agrément®.

For full terms and conditions, refer to Kiwa Ltd.