



Number BAW 16-042/01/A Replaces: BAW 11-304/3, BAW 11-305/3 and BAW 11-306/3	  BDA Agrément® BAW 16-042/01/A	Category External Cavity Walls
Date 2016.05.31		Phase Assessment
Project number 14-G-0099		Subject Insulated cavity closers
Validity See www.bda.nl		
Products	Cavi-Mate, Easi-Close and Type-R	
Manufacturer (Certificate holder)	Yorkshire Building Services (Whitwell) Ltd. The Craggs Industrial Park Morven Street UK-S80 4AJ Creswell Derbyshire S80 4AJ, UK	T.: +44 (0) 1909 721662 F.: +44 (0) 1909 721442 I.: www.ybsinsulation.com E.: technical@ybsinsulation.com
Description	PVC cavity closer, to be built in at the construction stage. The connected extruded polystyrene (XPS), expanded polystyrene (EPS) or rock fibre (MWR) core can be cut to fit any cavity up to 300 mm.	
Scope (use)	Cavity closure to provide a damp-proof barrier and thermal insulation as installed around masonry external cavity wall opening provisions such as windows and door sets, including checked and rebated reveals.	
Summary of certificate	This certificate covers the following: <ul style="list-style-type: none"> • Conditions of use • Frame of reference, including relevant codes of practice, standards and reports • Independently verified product characteristics • Quality control • Annual verification procedure • Points of attention for the specifier and specific details • Installation procedure • Compliance with Building Regulations 	
Major points of assessment	<p>Thermal performance aspects (sections 1.2 & 7.4) The basic property of Cavi-Mate, Easi-Close and Type-R concerns the thermal performance. The minimum thermal resistances have been calculated for the minimum paths as defined in BRE Information Paper IP 8/08².</p> <p>Condensation and water penetration risk (section 7.5) The performance of Cavi-Mate, Easi-Close and Type-R with regard to interstitial condensation, surface condensation and water penetration has been considered.</p> <p>Behaviour in relation to fire (section 7.6) An insulated external cavity wall system using Cavi-Mate, Easi-Close and Type-R can be designed to meet the UK requirements.</p> <p>Durability (section 7.7) Cavi-Mate, Easi-Close and Type-R are stable, rot-proof and durable and will remain effective as an insulant for the life of the building in which they are installed.</p>	
Statement	It is the opinion of the Kiwa BDA Expert Centre Building Envelope (ECBE) that Cavi-Mate, Easi-Close and Type-R are fit for their intended use, provided they are specified, installed and used in accordance with this Certificate.	
Version 01	<p style="text-align: center;">Kiwa BDA Expert Centre Building Envelope (ECBE)</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> BDA Group Avelingen West 33 P.O. Box 389 4200 AJ Gorinchem, The Netherlands +31 (0)183 66 96 90 </div> <div style="width: 45%;"> Kiwa Ltd. Unit 5 Prime Park Way Prime Enterprise Park Derby, DE1 3QB, United Kingdom +44 (0)7718 57 05 64 </div> </div> <p style="text-align: center;">Copyright© 2016 Kiwa BDA www.kiwa.co.uk/bda</p>	Page 1 of 8 pages

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ECBE
Chairman

Authorization: Chris van der Meijden, MSc



BDA Group
Technical Director

<p>1 Conditions of use</p>	<p>1 Application The assessment and certification of Cavi-Mate, Easi-Close and Type-R relate to the use of the products in dwellings and buildings with similar temperature and humidity conditions and correctly installed external cavity walls, which have been designed and constructed in accordance with the relevant clauses of BS 5628³. Cavi-Mate, Easi-Close and Type-R shall not be exposed to organic solvents or plasticisers. components shall not remain permanently exposed.</p> <p>2 Assessment Kiwa BDA Expert Centre Building Envelope (ECBE) has assessed the thermal performance of the products according to BRE Information Paper IP 8/08². Also Robust Construction Details¹⁵, BS EN 845-1¹⁶, factory and job visits¹⁸ and NHBC Standards, Chapter 6.1 External masonry walls¹⁹ have been considered.</p> <p>3 Installation It is recommended that the quality of installation and workmanship is controlled by an independent competent inspector. This inspector can be either a qualified employee of the specifier or a qualified employee of a consulting engineer. The products shall be installed strictly in accordance with the instructions of the Certificate holder and the requirements of this Certificate.</p> <p>4 Geographical scope The validity of this document is limited to England, Wales, Scotland and Northern Ireland, with due regard to section 10. Regulations.</p> <p>5 Validity The purpose of this BDA Agrément[®] is to provide for well-founded confidence to apply in the described applications and according to approved specifications. According to the BDA Guideline - BDA Agrément^{®1} the validity of this document is therefore three years after the official date of issue, published on www.bda.nl. Following this the validity can be extended every three years after positive review.</p>
<p>2 Frame of reference</p>	<ol style="list-style-type: none"> 1. BDA Guideline - BDA Agrément[®]: 2014 2. BRE Information Paper IP 8/08:2008 Determining the minimum thermal resistance of cavity closers 3. BS 5628 Part 3:2005 Code of practice for the use of masonry: materials and components, design and workmanship 4. BS 5250:2011 Code of practice for control of condensation in buildings 5. BS-EN 13164:2012 Thermal insulation products for buildings - Factory made products of extruded polystyrene foam (XPS) - Specification 6. BS-EN 13163:2012 Thermal insulation products for buildings - Factory made products of expanded polystyrene foam (EPS) - Specification 7. BRE Report No. 265290 Thermal assessment of four types of cavity closer, 2010.08.26 8. Declaration of Performance No. PT-10-000 FIBRAN xps FABRIC, 2013.07.01 9. Declaration of Performance No: UK-WER-0041 Rockwool, 2013.07.01 10. BRE Certificate 157/11, November 2011 11. Cavi-Mate EPS Window Former/Locator & Cavity Closer, YBS Document 178 V4, February 2011 12. Type-R Rigid General Purpose Cavity Closer System, YBS Document V1 03/2012 13. BS 6515:1984 Specification for polyethylene damp-proof courses for masonry 14. BS 6203:2003 Guide to fire characteristics and fire performance of expanded polystyrene materials (EPS and XPS) used in building applications 15. Robust Construction Details:2001 Limiting thermal bridging and air leakage: Robust construction details for dwellings and similar buildings. 16. BS EN 845-1:2013 Specification for ancillary components for masonry. Ties, tension straps, hangers and brackets 17. BS EN 14188-2:2009 Joint fillers and sealants. Specifications for cold applied sealants 18. BDA Report 14-G-0099 Factory visit and job inspections, 2015.02.27 19. NHBC Standards, Chapter 1, Technical Requirement R3 and Chapter 6.1 External masonry walls <p>Remark: in the text of this document reference is made to these sources by adding the relevant reference number in superscript</p>
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3 Independently verified product characteristics related to critical functions^{*)}

^{*)} The critical functions which apply to this section are the behaviour in relation to thermal insulation and durability, as mentioned in R3(a) of the NHBC Standards¹⁹

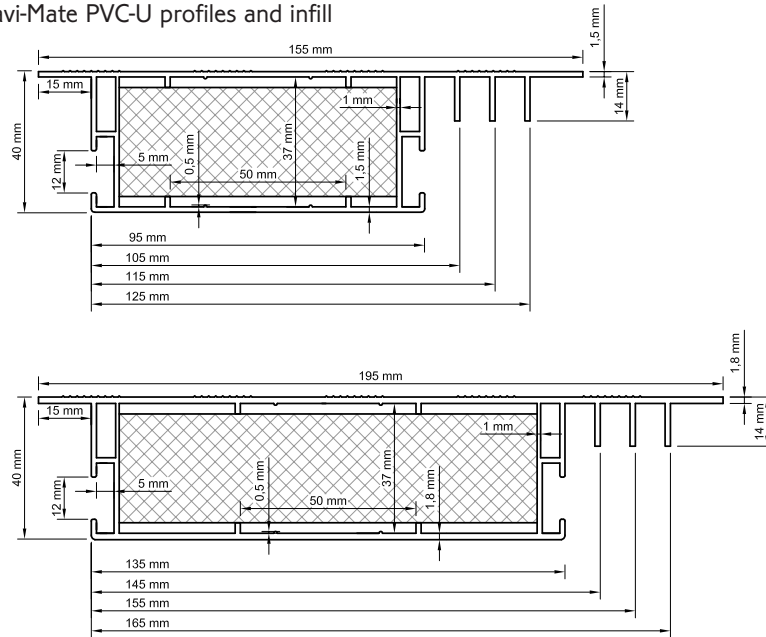
General

- profiles : continuous rigid PVC-U extrusions
- infill : FIBRAN (XPS)⁸, Rockwool (MWR)⁹ or Springvale (EPS)¹⁰
- thermal conductivity (λ_{10}) XPS⁸ (30 mm) : 0,034 (W.m⁻¹.K⁻¹)
- (38 mm) : 0,035 (W.m⁻¹.K⁻¹)
- EPS White¹⁰ : 0,038 (W.m⁻¹.K⁻¹)
- EPS Silver¹⁰ : 0,032 (W.m⁻¹.K⁻¹)
- MWR⁹ : 0,035 (W.m⁻¹.K⁻¹)
- nominal length Cavi-Mate : 3 - 6 (m)
- Easi-Close & Type R : 2,4 (m)
- nominal width : infill can be cut to fit any cavity up to 300 (mm)

Cavi-Mate

- infill : 35 mm EPS
- sub frame profiles in 2 sizes (see Figure 1)

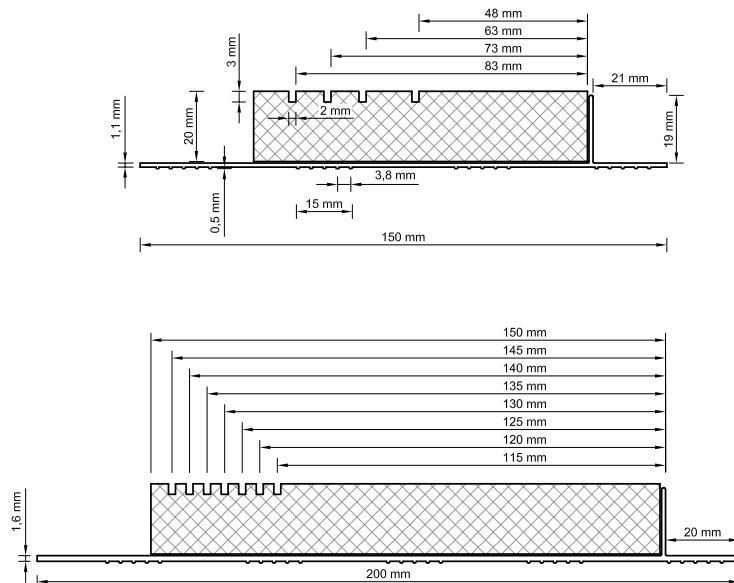
Figure 1 - Cavi-Mate PVC-U profiles and infill



Easi-Close

- infill in 12 sizes (see Figure 2) : 20 mm XPS, EPS Silver or MWR
- sub frame profiles in 2 sizes (see Figure 2)

Figure 2 - Easi-Close PVC-U profiles and infill



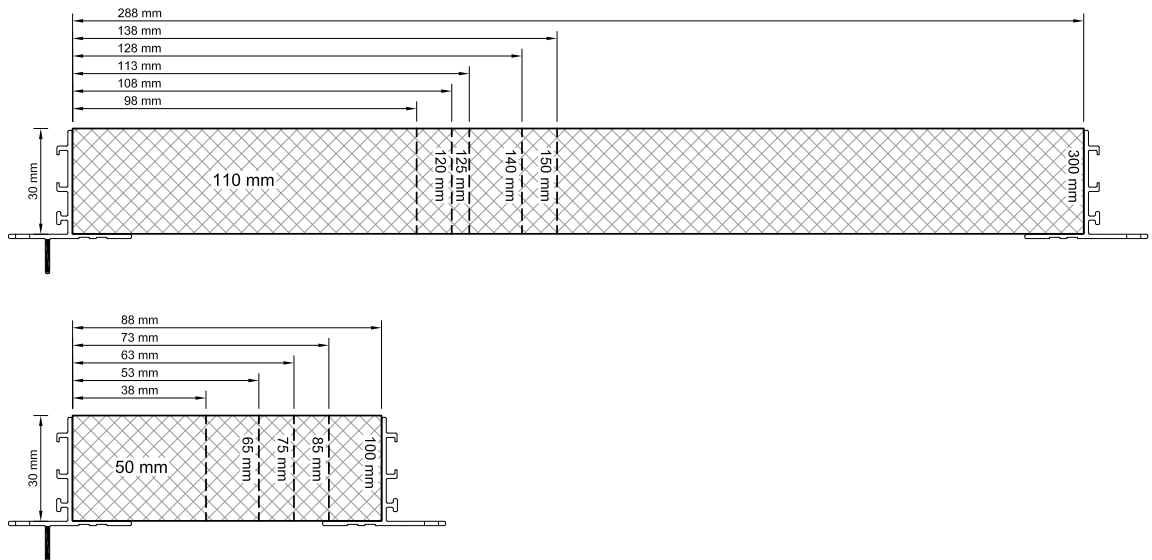
3 Independently verified product characteristics related to critical functions^{*)}
(continued)

Type-R

- infill in 11 sizes (see Figure 3)
- sub frame profile in 1 size (see Figure 3)

: 30 mm XPS, EPS Silver or MWR

Figure 3 - Type-R PVC-U profiles and infill



4 Assessed ancillary items used for critical functions^{*)}
^{*)} See section 3

Cavi-Mate

- YBS polypropylene fixing clips for the connection with masonry jambs and sills.

Type-R

- YBS plastic tie clips, fixed to be to the insulation or directly into the PVC-U profiles to secure the closure to the masonry.

5 Quality control

Cavi-Mate, Easi-Close and Type-R are produced under a Quality Management System, which enables the Certificate holder to demonstrate that the products fulfil the requirements of this Certificate. This means that the following aspects are covered:

- the quality objectives, quality planning, quality manual and control of documents must fully take on board the objective of delivering a product that conforms to the specifications in this Certificate;
- the manufacturer must identify and document the essential requirements that are relevant for the product and the harmonised standards to be used or other technical solutions that will ensure fulfilment of the specifications in this Certificate;
- the identified standards or other technical solutions must be used as design input and as verification that design output as given in a continuous technical consulting service ensures that the specifications in this Certificate will be met;
- the measures taken by the Certificate holder to control production must ensure that the products conform to the identified safety requirements;
- the Certificate holder in its measurement and control of the production process and finished products must identify and use methods which are identified in standards or other appropriate methods to ensure that the specifications in this Certificate are met;
- quality records, such as inspection reports and test data, calibration data, qualification reports of the personnel concerned, must be suitable to ensure the fulfilment of the applicable specifications in this Certificate.

6 Annual verification procedure

In order to demonstrate that the Factory Production Control (FPC) is in conformity with the requirements of the technical specification described in this Certificate, the continuous surveillance, assessment and approval of the FPC will be done in a frequency of at least once per year by or on behalf of ECBE in the form of annual visits to the production location, installed work(s) and installation of work(s) in the UK.

7 Points of attention for the specifier

1. **Delivery**
The cavity closers are delivered to site wrapped in polyethylene film, supplied with a label marked Cavi-Mate, Easi-Close or Type-R, the date of manufacture, dimensions, the number of closers in the wrap, the identity code of the packer and an instruction leaflet, the BDA identification mark and the number of this Certificate.
2. **Wall integrity**
The Cavi-Mate, Easi-Close or Type-R cavity closers must be either fitted into the cavity of the external wall at the point of closure, at a sill or threshold or installed into the cavity as it is raised, using the fixing and positioning clips as described in section 4 and according to the installation instructions of the Certificate holder. The load imposed on and by the wall must be transferred directly to the main structure. Specifically the lintel shall not bear directly onto the closer. The cavity closer shall be continuously supported. The cavity width shall be between 50 mm and 300 mm. See also figures 4 to 7 in section 8.
3. **Weather tightness**
The use of Cavi-Mate, Easi-Close or Type-R obviates the necessity for reveal blocks (see section 8). The product can also be used in checked or rebated reveal details, typically in areas of very severe exposure rating such as Scotland and Northern Ireland, with the outer leave masking the edge of the window jamb, as shown in section 8.

4. **Thermal performance aspects**
 - the building physical behaviour of external cavity wall structures incorporating the products must be analyzed by a specialist; the specialist can be either a qualified employee of the specifier or a qualified consultant or a qualified employee of the Certificate holder. He will check the building physical behaviour of the designed external cavity wall construction and if need be, advice about improvement to achieve final specification;
 - the minimum thermal resistances have been calculated for the minimum paths as defined in BRE Information Paper IP 8/08²; Table 1 summarises the minimum thermal resistance calculated for each closer type; the detailed calculations are given in BRE Report No. 265290⁷ and BDA Agrément[®] BAW 11-304/3;

Table 1 - Calculated minimum thermal resistances

Closer type	Minimum thermal resistance (m ² .K.W ⁻¹)
Cavi-Mate	0,70
Easi-Close XPS, MWR	0,88
Easi-Close EPS Silver	0,93
Type-R XPS, MWR	0,86
Type-R EPS Silver	0,91

- for each type of closer, the minimum thermal resistance of all closers in the dimension range for that type will be no greater than the relevant value from Table 1; hence all closers of the above types pass the minimum thermal resistance requirement of 0,45 m².K.W⁻¹, therefore the product conforms with the requirements of Robust Construction Details¹⁵;
 - the inserted XPS or EPS insulation shall fit tightly (factory fitted) with no air gaps between the insulation and the shell of the closer, apart from the gap due to the profile;
 - the requirement for limiting the heat loss through the building fabric, including the effect of thermal bridging can be satisfied if the U values of the building elements do not exceed the maximum values in the relevant Elemental Methods given in the National Building Regulations of England and Wales (Approved Documents L), Scotland (Technical Standard Regulations 9) and Northern Ireland (Technical Booklet F);
 - typical window and door sets details are given in section 8 of this Certificate.
5. **Condensation and water penetration risk**
 - external walls incorporating the products can adequately limit the risk of interstitial condensation, surface condensation and water penetration when designed in accordance with BS 5250⁴, Robust Construction Details¹⁵ and NHBC Standards Chapter 6.1¹⁹;
 - when installed in accordance with this Certificate the products will provide a convectionfree envelope of high vapour resistance.

7 Points of attention for the specifier
(continued)

6. Behaviour in relation to fire

- the product will not reduce the fire resistance performance of masonry external cavity walls and, within the context of UK Building Regulations, are not required to provide fire resistance when used to close cavities at the top of walls or around openings, when the walls are constructed from two leaves of brick or concrete each at least 75 mm thick (see for example diagram 32 of Approved Document B of England and Wales Building Regulations).
- since the product is combustible, it shall be adequately separated or shielded from heat-producing appliances, incinerators, hearths, fire backs, ash pit surrounds, ductwork for high temperature gasses, flues, chimneys and fire places or recesses.

7. Durability

The products are stable, rot-proof and durable and will remain effective as an insulant for the life of the building in which it is installed, provided that it remains protected within the external wall cavity and is installed in accordance with section 9 of this Certificate. There is no risk for moth or beetle infestation.

8 Specific details

Figure 4 - Typical detail Cavi-Mate check reveal

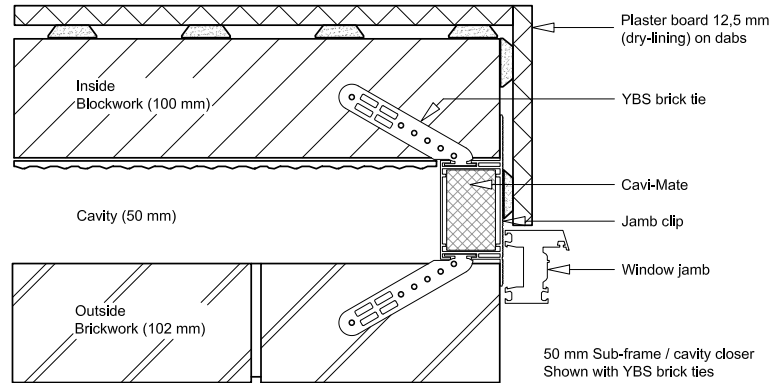


Figure 5 - Typical detail Cavi-Mate Standard Robust reveal

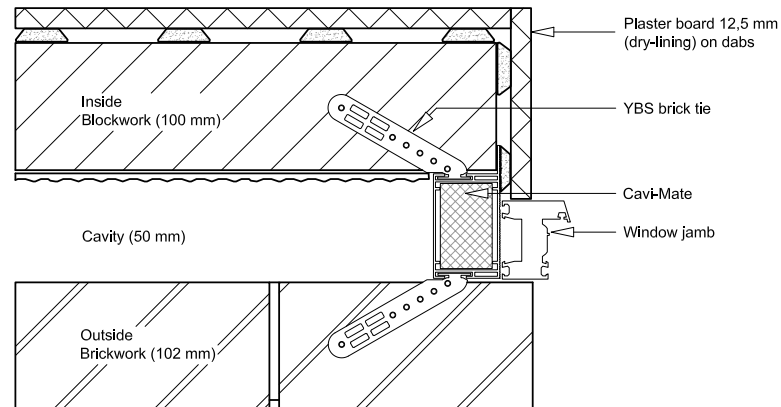


Figure 6 - Typical detail Easi-Close reveal

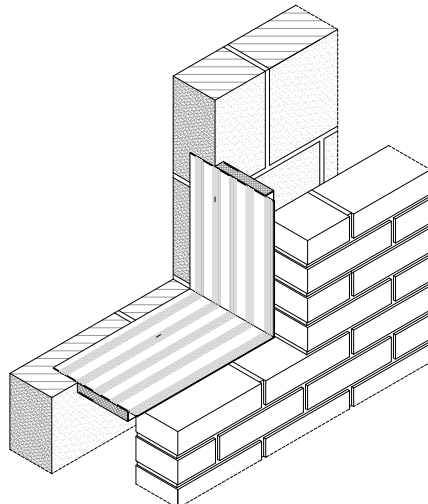
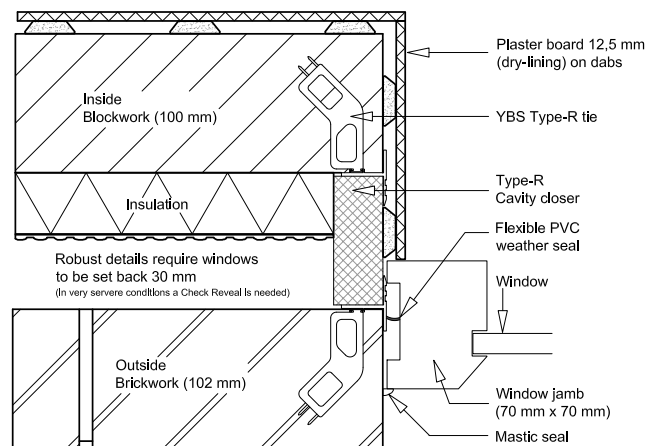


Figure 7 - Typical detail Type-R check reveal



<p>9 Installation procedure</p>	<p>1 General</p> <ul style="list-style-type: none"> - the cavity closers are delivered to site wrapped in polyethylene film, supplied with a label marked Cavi-Mate, Easi-Close and Type-R, the date of manufacture, dimensions, the number of closers in the wrap, the identity code of the packer and an instruction leaflet, the BDA identification mark and the number of this Certificate; - installation of and additional products should be in accordance with the Certificate holder's instructions and current good building practice; - during installation care must be taken to avoid damaging of the products; should damage occur, the products should be replaced. <p>2 Storage and site handling</p> <ul style="list-style-type: none"> - the plastic wrapped cavity closers must be stored on a firm, level and dry base, stacked near to horizontal, away from excessive heat, no more than ten high and be fully supported so that they do not distort by twisting or bowing; - for additional weather protection, black polyethylene sheeting or similar opaque material should be used if the cavity closers are to be stored outside for a period of seven days or more; - the cavity closers are easily handled on site and they may be readily cut or trimmed with a fine toothed saw, should this be necessary; to prevent inhalation of sawn particles all relevant health and safety precautions shall be observed; reasonable precautions should be taken to prevent damage to the closers before, during, or subsequent to installation; - the insulation infill should be protected from weather; in particular, closers should not be exposed to an open flame, or other ignition sources; the advice presented in BS 6203¹⁴ should be followed; - closers must be handled with care and be secured if outside in windy conditions; they must not be punctured, split, deformed or unduly impacted before use nor must they be directly exposed to any plastics material incorporating plasticizers or to volatile organic solvents. <p>3 Installation</p> <ul style="list-style-type: none"> - the work should be so programmed that the cavity closers are left exposed for the minimum time; - the cavity closers must not be in direct contact with hot pipes or exposed top continuous working temperatures in excess of 75 °C; the cavity closers must be separated from any subsequent not applied materials, such as asphalt, timber battens or similar; - Cavi-Mate, Easi-Close and Type-R cavity closers must be fitted into the cavity of the external wall at the point of closure, at a sill or threshold or installed into the cavity as it is raised; the closers must be square and plumb and tight with either leaf, but the leaves must not exert pressure such that they distort the closers; - the completed cavity surface of any cavity wall, within which the cavity closers are to be installed, must be adequately smooth, flat and true in accordance with the appropriate Clause of BS 5628: Part 3³; - the deviation in plane should be not greater than 5 mm under a 3 m straight steel edge, and the wall must be constructed in accordance with BS 5628: Part 3³; - where it is intended to make the external perimeter joint between the outer masonry leaf and the completed window or door set, weather tight this must be achieved by sealing it with a proprietary neutral curing silicone sealant to BS EN 14188-2¹⁷ backed, if the joint gap is open at the back, with polyethylene foam backing rod or a PVC flexible foam tape; the instructions of the sealant manufacturer must be followed, in particular regarding the need for any prior cleaning of the surfaces or for the use of a suitable primer; in Scotland, Northern Ireland and areas of very severe exposure, where checked reveals are typically used, these joints must be sealed; - the internal reveal must be dry lined on plaster dabs to mask the insulation clip or internal leaf extrusion, and not plastered (see section 8 of this Certificate). <p>4 Maintenance</p> <ul style="list-style-type: none"> - no maintenance of the cavity closers is necessary provided that they remain installed strictly in accordance with the requirements of this Certificate and of the manufacturer; - the Certificate holder must continue to provide a technical consulting service. 	
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<p>10 Regulations</p>	<p>1 Requirements: The Building Regulations (England and Wales) (as amended)</p> <ul style="list-style-type: none"> - B3(4) Internal fire spread (structure) - There are no requirements for fire resisting cavity closers around window openings in masonry wall constructions of two leaves of brick or concrete each at least 75 mm thick (see Approved Document B Diagram 32); - C2 Resistance to weather and ground moisture - the cavity closers can adequately resist the passage of moisture to the underlying structure, provided the wall is constructed in accordance with BS 5628: Part 3³ and the requirements of this Certificate; advice is given in Approved Document C supporting these Regulations; - J3 Protection of the building from heat-producing appliances - in order to comply with this Regulation the cavity closers must be adequately separated or shielded from a chimney, flue, fireplace recess, heat-producing appliance or hearth; the separations recommended, where appropriate, are detailed in Approved Document J supporting these Regulations, to which reference must be made; - L1 Conservation of fuel and power - the edges of an opening in a wall, formed using the cavity closers, can be designed and constructed to provide an adequate thermal resistance and no undue condensation risk, interposed at the point of closer between the inner and outer external wall leaves, when designed in accordance with BS 5250⁴, Robust Construction Details¹⁵ and NHBC Standards Chapter 6.1¹⁹; - Regulation 7 Materials and workmanship – Cavi-Mate, Easi-Close and Type-R cavity closers are manufactured from suitably safe and durable materials for their application and can be installed to give a satisfactory performance. <p>2 Requirements: The Building (Scotland) Regulations (as amended)</p> <p>2.1 Regulations 8 (1) Durability of materials and workmanship</p> <ul style="list-style-type: none"> - Cavi-Mate, Easi-Close and Type-R cavity closers are manufactured from acceptable materials and are considered to be adequately resistant to deterioration and wear under normal service conditions, provided they are installed in accordance with the requirements of this Certificate. <p>2.2 Regulation 9 Building Standards Construction</p> <p>Section 2 Fire</p> <ul style="list-style-type: none"> - Cavities - Cavi-Mate, Easi-Close and Type-R closure meet the “short fire resistance”(E30) requirements for cavity closers around window opening (see 2.4.1) in respect to masonry cavity walls; it is assumed that any lintel over the top of the opening will provide adequate fire protection. <p>Section 3 Environment</p> <ul style="list-style-type: none"> - 3.10 Precipitation - The cavity closers are resistant to the passage of water, but they must be continuous with any adjacent damp-proof membrane; - 3.15 Condensation - the edges of openings in a wall, formed using the cavity closers in accordance with the requirements of this Certificate and of BS 5250⁴, can be designed and constructed to comply with these Standards; - 3.17 Combustion appliance installations generally - A wall, incorporating the cavity closers can be designed and constructed to comply with these Standards, provided that they are isolated from the flue of a gas-fired, or solid fuel, or oil-fired heat-producing appliance by a separation; they must be adequately separated from a fire place opening, recess, hearth or flue pipe, or from any heat-producing appliance. <p>Section 6 Energy</p> <ul style="list-style-type: none"> - 6.2.1. Conservation of fuel and power: the building fabric - external cavities incorporating the Cavi-Mate, Easi-Close and Type-R cavity closers interposed at the point of closer between the inner and outer external wall leaves, can be designed and constructed to meet current ‘U-value’ requirements; - 6.2.4. Limiting the effect of thermal bridging at junctions and around openings. The infill insulation assists in reducing the effect of thermal bridging by reducing potential local paths of high heat loss. <p>3 Requirements: The Building Regulations (Northern Ireland) (as amended)</p> <ul style="list-style-type: none"> - B2 Fitness of materials and workmanship - Cavi-Mate, Easi-Close and Type-R cavity closers are manufactured from materials which are considered to be suitably safe and acceptable for use as cavity closers for an external wall; - C4 Resistance to ground moisture and weather - where the cavity closers are installed within an external cavity wall, that wall can be designed and constructed so as to prevent the passage of moisture or water vapour through it; advice is given section 9; - C5 Condensation - the edges of openings in a wall, built using the cavity closers in accordance with the requirements of this Certificate and BS 5250⁴, can be designed and constructed to prevent any harmful effect from moisture in the form of interstitial condensation; - E6 Internal fire spread: structure - There are no requirements for fire resisting cavity closers around window openings in masonry wall constructions (see D.6.8a and D.10.2); - F2 Building Fabric - External walls, incorporating the Cavi-Mate, Easi-Close and Type-R cavity closers interposed at the point of closer between the inner and outer external wall leaves, can be designed and constructed to meet current ‘U-value’ requirements; - L2 Heat-producing appliances and associated constructions - a wall, incorporating the cavity closers can be designed and constructed to comply with these Regulations, provided that they are isolated from the flue of a gas-fired, or solid fuel of oil-fired heat-producing appliance or an incinerator; they must be adequately separated from a chimney or fireplace recess, from a flue pipe, from a hearth or from the appliance. 	
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