CERTIFICATE OF APPROVAL
No CF 10015

This is to certify that, in accordance with
TS00 General Requirements for Certification of Fire Protection Products
The undermentioned products of

SAPPHIRE BALCONIES LTD

11 Arkwright Road, Reading, Berkshire
RG2 0LU, United Kingdom

TEL: 0344 88 00 553

Have been assessed against the requirements of the Technical Schedule(s) denoted below and are approved for use subject to the conditions appended hereto:

CERTIFIED PRODUCT	TECHNICAL SCHEDULE
StubGuard a component part of linear joint seals used as cavity barrier seals	**TS 39 Fire Resisting Cavity Barrier Systems**

Signed and sealed for and on behalf of Warringtonfire Testing and Certification Limited

Paul Duggan
Certification Manager

Issued:	**3rd October 2024**
Next audit test due:	**3rd October 2027**
Audit Test Frequency:	**3 years**
Valid to:	**2nd October 2029**

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1. This certification is provided to the client for their own purposes and we cannot opine on whether it will be accepted by Building Control authorities or any other third parties for any purpose.

Linear joint seals used as closed state cavity barrier seals in accordance with BS EN 1366-4: 2021

This Certificate of Approval relates to the fire resistance performance of Sapphire Balconies Ltd StubGuard; a component part of linear joint seals, used as closed state cavity barrier seals, when used in the following application.

- Installed horizontally between concrete to concrete/masonry, or masonry to masonry twin leaf cavity wall substrates.
  Note. StubGuard has been tested with fire from below only.

This approval uses the Integrity and Insulation criteria defined in BS EN 1366-4:2021.

This approval relates to the use of StubGuard, a component part of linear joint seals, used as closed state cavity barriers seals, when fitted horizontally between concrete or masonry (twin leaf cavity wall) substrates of a density ≥670kg/m^3. The concrete or masonry twin leaf substrates must be designed to provide fire resistance performance equal to or greater than the specific integrity and insulation performance for each StubGuard and cavity barrier combination given within this certificate. The concrete/masonry twin leaf cavity walls shall be capable of providing adequate support to the seal for the full required period of fire resistance.

StubGuard is a horizontal barrier designed to encase Sapphire Balconies Ltd G25 type projecting steel stubs. The G25 stubs are fixed to one side of twin leaf substrate walls with a SBL-TB25-A2 thermal break block and Rockwool (product details held on file by Warringtonfire and Sapphire Balconies Ltd) rock fibre insulation on threaded bar with stainless steel nuts, stud connectors and washers. They are typically located at a floor zone where horizontal cavity barriers are required. StubGuard is therefore a component part of a cavity barrier system, however this certificate only covers the StudGuard system and its interaction with a range of cavity barrier types and not the combined horizontal barrier system as a whole, see reasoning given below. StubGuard has been tested in conjunction with specific cavity barriers (listed within this certificate). The certification only relates to the fire resistance performance of StubGuard when interacting with G25 stubs and with the tested cavity barriers. This certificate does not certify the specific cavity barriers tested or provide any factory production control (FPC) assurance that these will perform as originally tested. The suitability for use of the specific cavity barriers referenced herein is outside the scope of this certificate. This should be checked and confirmed with the project design team and the cavity barrier manufacturer.

The width of the StubGuard is limited to 300mm and is provided in a range of sizes to suit different G25 steel stub 'I' beam section sizes and to accommodate varying thicknesses and the varying location options of the specifically tested cavity barriers on the vertical edges of the StubGuard.

The detailed scope is given in the range of applications, design parameters and Approval Matrix sections included in this certificate. This matrix shows the approved performance for horizontal applications for each StubGuard variation and its corresponding cavity barrier. It states the likely Integrity and Insulation performance if they were to be tested as linear joint seals, used as closed state

cavity barrier seals, in accordance with BS EN 1366-4:2021 in conjunction with the same cavity barriers as shown and originally tested.

Schematic drawings of the two StubGuard types are shown within this document with the corresponding design parameter details.

The certification is only applicable to straight linear joint seals when used as closed state cavity barrier seals, as those considered by BS EN 1366-4:2021 and does not consider corner detailing. The certification only covers the non-loadbearing fire resistance performance of the linear joint seals when used as closed state cavity barrier seals and does not analyse or evaluate the steel stubs structural integrity or consider the distortion effects of any steel components at elevated temperatures when used in practice as a structural balcony support element.

The products are approved on the basis of:

i) Initial type testing.
ii) A design appraisal against TS39
iii) Certification of quality management system in accordance TS00 and TS39.
iv) Inspection and surveillance of factory production control.
v) Audit testing.

This Certificate of Approval is only applicable to masonry and concrete substrates in the applications described above and is based on testing in accordance with BS EN 1366-4:2021. It must also be read in conjunction with CERTIFIRE Technical Schedule TS39, Fire Resisting Cavity Barrier Systems.

General Requirements

The StubGuard shall not be penetrated by services, e.g. pipes or cables.

Approved products, applications, and fire resistance periods

This certificate approves the StubGuard product range of applications detailed below and stated within the design parameters and approval matrix tables subject to the installation of the products being carried out in accordance with the manufacturer's installation instructions.

The Certificated scope for the Sapphire Balconies Ltd StubGuard, a component part of linear joint seals used as closed state cavity barrier seals has been derived from fire resistance testing in accordance with BS EN 1366-4:2021. For specific installation and construction details the following test reports should be utilised:

Sampled Test Evidence	Dated
WF521126/R	26/09/2022
WF425097LR Issue 2	25/09/2024
WF503471 /LR Issue 2	22/11/2022
WF544106 Version 3	23/09/2024
WF546007 Version 2	24/09/2024

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StubGuard Linear joint seals used as cavity barrier seals – range of applications, design parameters and Approval Matrix

Application:

This approval relates to the use of StubGuard, a component part of linear joint seals, used as closed state cavity barriers seals, when fitted horizontally between concrete or masonry (twin leaf cavity wall) substrates of a density ≥670kg/m^3. The concrete or masonry twin leaf substrates must be designed to provide fire resistance performance equal to or greater than the specific integrity and insulation performance for each StubGuard and cavity barrier combination given within this certificate. The concrete/masonry twin leaf cavity walls shall be capable of providing adequate support to the seal for the full required period of fire resistance.

Orientation:

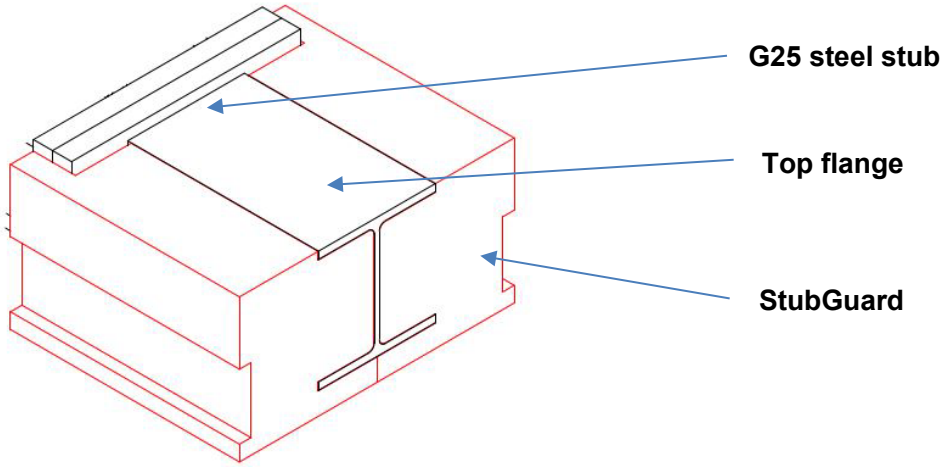
Horizontal

StubGuard linear joint seals used as closed state cavity barrier seals (when installed with the specific cavity barriers listed within this certificate) covered by this approval would be expected to achieve the performance levels stated in the tables below should they be tested between concrete or masonry substrates, as detailed in the application section above and in accordance with BS EN 1366-4:2021.

Design and range of application:

There are two types of StubGuard – open top and enclosed type. This is a reference the StubGuard protection material requirements on the top flange of the steel stubs. Both types may be used with the option wrap detail at the bottom of the backplate. The design parameters for these are shown on pages 6 - 8 of this certificate.

Example of an open top StubGuard fitted to G25 steel stub:



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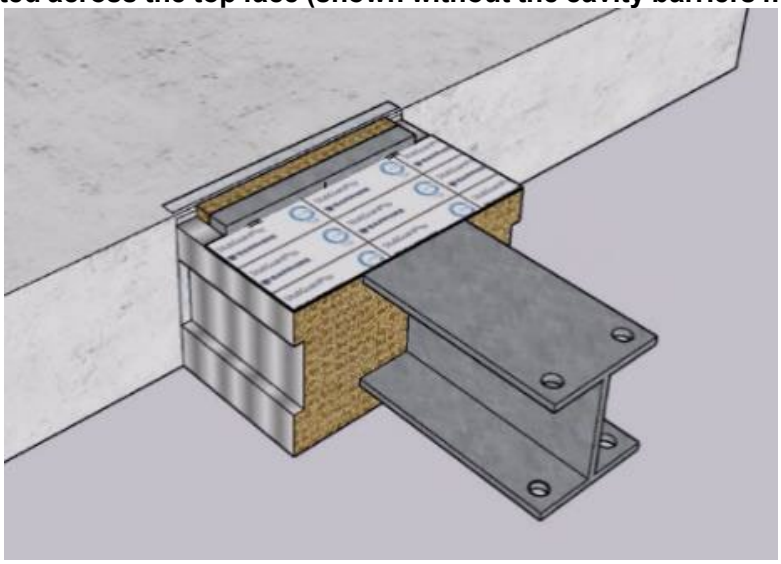
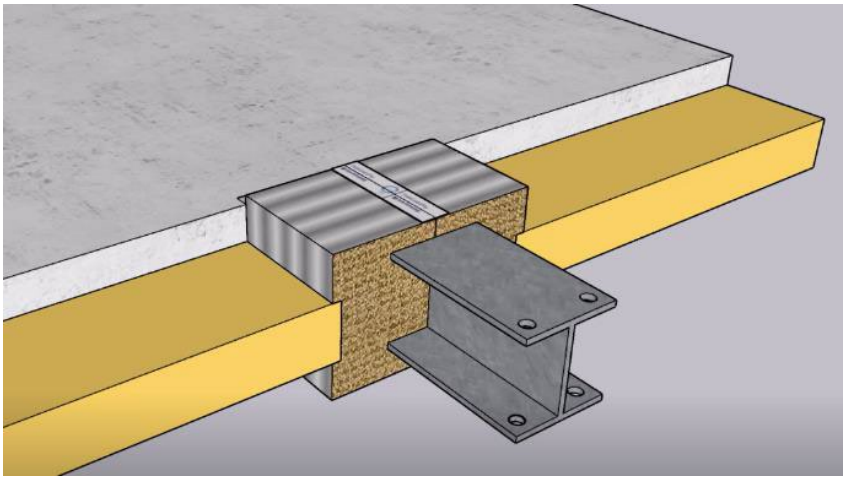
Example of an open top StubGuard fitted to G25 steel stub with 100mm wide Sapphire branded tape fitted across the top face (shown without the cavity barriers fitted either side):



Example of an enclosed type StubGuard fitted to G25 steel stub with 100mm wide Sapphire branded tape fitted over the top joint of the StubGuard (shown with the cavity barriers fitted either side):



The conducted tests covered a range of parameters including the depth and thickness of the 'I' beam, protection of the top and bottom flanges of the 'I' beam and different types of cavity barriers to address the different range of application.

Based upon the test results given in the reports listed on page 3 of this certificate, the range of application of the product can be given as:

- Different Sapphire Balconies Ltd G25 type steel stubs with steel 'I' beam specifications (specifically listed in the approval matrixes below) ranging from 152mm to 254mm in height and a range of steel thickness, provided that the height of the StubGuard is correctly manufactured to cover the depth of the section and provide the required flange protection.
- The cavity gap width is limited to a maximum of 300mm.
- The certification only relates to StubGuard and its interaction with the tested cavity barriers listed below. This certificate does not certify the specific cavity barriers tested or provide any FPC assurance that these will perform as originally tested.

StubGuard design parameters

StubGuard is a made to order product that is manufactured from CNC cut mineral wool fibre sections which are wrapped in reinforced aluminium foil (product details held on file by Warringtonfire and Sapphire Balconies Ltd), The adhesive used to bond the CNC cut mineral wool sections together must be either Chemique Adhesives Protek 220 or Axil 1678. Sapphire Balconies Ltd branded 100mm wide bright silver 50-micron polypropylene foil tape is supplied with the product which must be fitted over the top face of the StubGuard or joint once the product is fitted on site.

The following design parameter tables and drawings must be used to manufacture the StubGuard product for specific applications.

Note. These design parameters are not applicable for Siderise XFS120 and AIM Fire barrier slab cavity barriers for 120 minutes integrity and 120 minutes insulation. These have additional requirements stated in the approval matrix section.

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KEY	Dimension detail	Value / Parameter
A	Overall StubGuard projection size (concrete face to inside of façade)	300mm maximum (Cut to cavity size +5mm/-0mm to ensure compression fit)
B1	Internal StubGuard cutout to cover backplate width	Backplate width +2mm
B2	Internal StubGuard cutout to cover backplate height	Backplate height +2mm
B3	Internal StubGuard cutout to cover backplate depth	Backplate & thermal break zone +2mm
C	StubGuard material beside backplate up to cavity barrier notch	13mm (15mm from side of backplate)
D	Notch cover over cavity barrier	15mm minimum
E1	Underside of backplate to underside of StubGuard	20mm minimum
E2	Underside of beam to underside of StubGuard	20mm minimum
F1	Top of backplate to top of StubGuard	Back plate can project above (or 15mm minimum cover if StubGuard designed to project above backplate)
F2	Top of beam to top of StubGuard	StubGuard top flush with top of beam (or 15mm minimum cover required if top of StubGuard designed to project above beam)
G1	Top of cavity barrier notch to top of StubGuard	0mm (i.e. no notch at top)
G2	Cavity barrier notch height	5mm smaller than specifed cavity barrier to ensure compression fit
G3	Underside of cavity barrier to underside of StubGuard	20mm minimum (ensuring cavity barrier to slab position is within its' certified state)
G4	Underside of cavity barrier to top of StubGuard	162mm minimum
H	Beam profile	Use either: 152UC23, 152UC30, 152UC37, 203UB25, 203UB30, 254UB25, 254UB28
J	Underside of StubGuard to underside of concrete slab	Condition 1: 0mm minimum if StubGuard bears direct to concrete slab
		Condition 2: -100mm maximum (i.e. StubGaurd projects below concrete slab line) - refer to StubGuard wrap detail

G2 will be applicable for the following cavity barriers where a full notch is present in the vertical edge of the StubGuard:
Siderise XFS120
Rockwool SP120
Rockwool SP FireStop EN
PFC Corofil CCFS - 82mm thick
PFC Corofil CCFS – 100mm thick
Hilti CP674 unvented
AIM Fire Barrier Slab
Mayplas – MP556 Firestop slab

G4 will be applicable for the following cavity barrier:
Arc Cavity Stop CSS300

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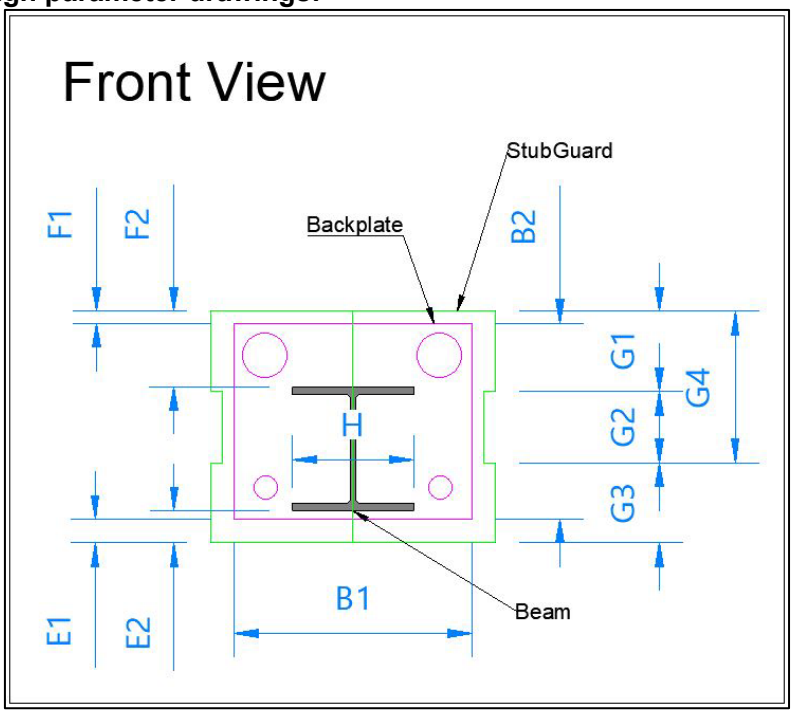
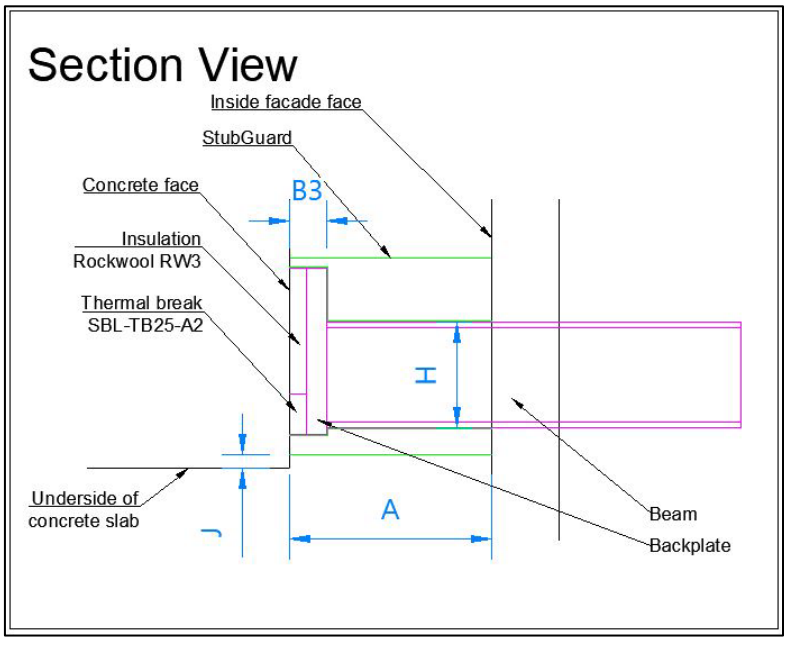
StubGuard design parameter drawings:





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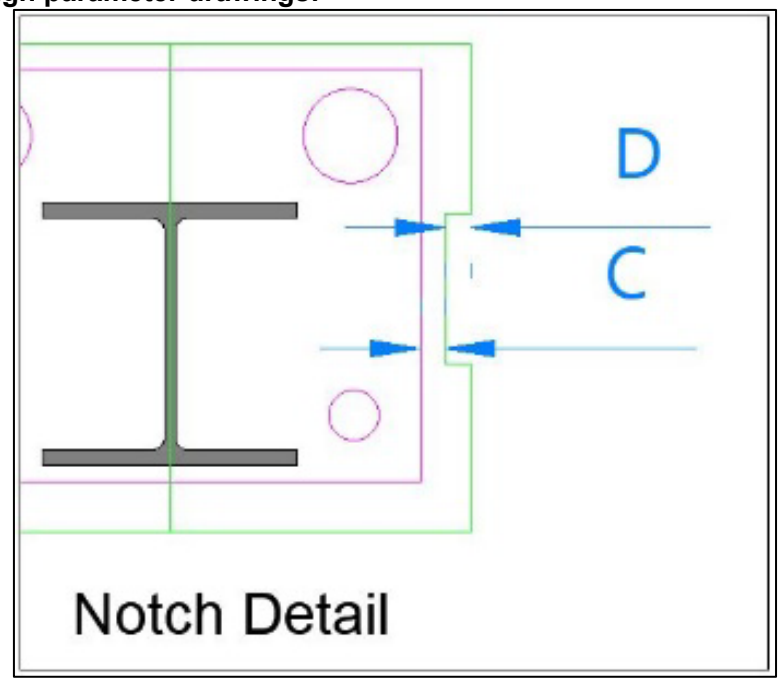
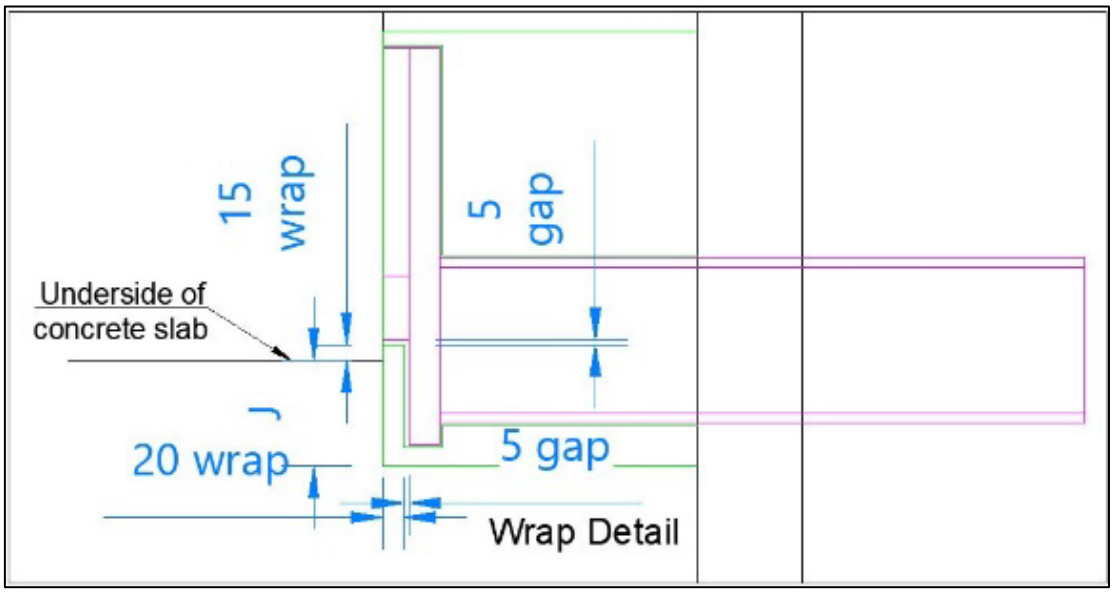
StubGuard design parameter drawings:





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Approval Matrix

The certification only relates to the fire resistance performance of StubGuard when interacting with G25 stubs and with the tested cavity barriers. This certificate does not certify the specific cavity barriers tested or provide any factory production control (FPC) assurance that these will perform as originally tested. The suitability for use of the specific cavity barriers referenced herein is outside the scope of this certificate. This should be checked and confirmed with the project design team and the cavity barrier manufacturer.

The following tables list the approved StubGuard range of applications:

StubGuard G25 range - For use with Sapphire Balconies Ltd G25 type steel stubs with SBL-TB25-A2 thermal break and Rockwool (product details held on file by Warringtonfire and Sapphire Balconies Ltd) insulation fitted in conjunction with the cavity barrier options listed below:

- **Siderise XFS120 – 120mm thick**

Specification of the steel I beam of the G25 stub	Maximum cavity gap width (mm)	Maximum integrity (minutes)	Maximum insulation (minutes)
152UC23	300	120	120*
152UC30	300	120	120*
152UC37	300	120	120*
203UB25	300	120	120*
203UB30	300	120	120*
254UB25	300	120	120*
254UB28	300	120	120*

*This may only be used with StubGuard's made with a minimum of 60mm thickness of bottom flange protection (E2 in the design parameter section) and a minimum of 45.6mm thickness of top flange protection (F2 in the design parameter section). It is not approved for the wrap detail option.

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StubGuard G25 range - For use with Sapphire Balconies Ltd G25 type steel stubs with SBL-TB25-A2 thermal break and Rockwool (product details held on file by Warringtonfire and Sapphire Balconies Ltd) insulation fitted in conjunction with the cavity barrier options listed below:

- **AIM Fire Barrier slab – 100mm thick**

Specification of the steel I beam of the G25 stub	Maximum cavity gap width (mm)	Maximum integrity (minutes)	Maximum insulation (minutes)
152UC23	300	120	120**
152UC30	300	120	120**
152UC37	300	120	120**
203UB25	300	120	120**
203UB30	300	120	120**
254UB25	300	120	120**
254UB28	300	120	120**

**This may only be used with StubGuard's made with a minimum of 55mm thickness of bottom flange protection (E2 in the design parameter section). It is not approved for the wrap detail option.

StubGuard G25 range - For use with Sapphire Balconies Ltd G25 type steel stubs with SBL-TB25-A2 thermal break and Rockwool (product details held on file by Warringtonfire and Sapphire Balconies Ltd) insulation fitted in conjunction with the cavity barrier options listed below:

- **Rockwool SP FireStop EN – 90mm thick*****

Specification of the steel I beam of the G25 stub	Maximum cavity gap width (mm)	Maximum integrity (minutes)	Maximum insulation (minutes)
152UC23	300	120	120
152UC30	300	120	120
152UC37	300	120	120
203UB25	300	120	120
203UB30	300	120	120
254UB25	300	120	120
254UB28	300	120	120

*** This may only be used with StubGuard's made with a minimum of 30mm thickness of bottom flange protection (E2 in the design parameter section). It is not approved for the wrap detail option.

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StubGuard G25 range - For use with Sapphire Balconies Ltd G25 type steel stubs with SBL-TB25-A2 thermal break and Rockwool (product details held on file by Warringtonfire and Sapphire Balconies Ltd) insulation fitted in conjunction with the cavity barrier options listed below:

- **Siderise XFS120 – 120mm thick**
- **Aim Fire Barrier slab - 100mm thick**
- **Rockwool SP120 - 90mm thick**
- **Rockwool SP FireStop EN – 90mm thick**
- **PFC Corofil CCFS - 100mm thick**
- **PFC Corofil CCFS - 82mm thick**

Specification of the steel I beam of the G25 stub	Maximum cavity gap width (mm)	Maximum integrity (minutes)	Maximum insulation (minutes)
152UC23	300	120	60
152UC30	300	120	60
152UC37	300	120	60
203UB25	300	120	60
203UB30	300	120	60
254UB25	300	120	60
254UB28	300	120	60

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StubGuard G25 range - For use with Sapphire Balconies Ltd G25 type steel stubs with SBL-TB25-A2 thermal break and Rockwool (product details held on file by Warringtonfire and Sapphire Balconies Ltd) insulation fitted in conjunction with cavity barrier options listed below:

- **Hilti CP674 unventilated – 75mm thick**
- **Mayplas MP556 Firestop slab – 75mm thick**

Specification of the steel I beam of the G25 stub	Maximum cavity gap width (mm)	Maximum integrity (minutes)	Maximum insulation (minutes)
152UC23	300	120	30
152UC30	300	120	30
152UC37	300	120	30
203UB25	300	120	30
203UB30	300	120	30
254UB25	300	120	30
254UB28	300	120	30

StubGuard G25 range - For use with Sapphire Balconies Ltd G25 type steel stubs with SBL-TB25-A2 thermal break and Rockwool (product details held on file by Warringtonfire and Sapphire Balconies Ltd) insulation fitted in conjunction with the cavity barrier option listed below:

- **Arc Cavity-CSS300 – 200mm thick**

Specification of the steel I beam of the G25 stub	Maximum cavity gap width (mm)	Maximum integrity (minutes)	Maximum insulation (minutes)
152UC23	300	120	15
152UC30	300	120	15
152UC37	300	120	15
203UB25	300	120	15
203UB30	300	120	15
254UB25	300	120	15
254UB28	300	120	15

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StubGuard installation details and gap stability limitations

Installation and fixing

The StubGuard products are supplied pre-cut to suit specific Sapphire Balconies Ltd G25 steel 'I' beam sections. StubGuard products are approved only for use with the steel beam assemblies documented within this certificate and within the size ranges given. They must be slotted around the steel beam assembly and the two parts of the StubGuard should be sealed with the supplied Sapphire Balconies Ltd branded bright silver 50-micron polypropylene labelled tape which should be fitted as detailed within the installation instructions.

The design approval of the Sapphire Balconies Ltd G25 steel stub assemblies themselves are outside the scope of this certificate and should be designed by a competent engineer, however the 'I' beam should be welded to the endplate all around and the steel beam assembly should be suitably through fixed to support construction with the correct size SBL-TB25-A2 thermal break block with Rockwool (product details held on file by Warringtonfire and Sapphire Balconies Ltd) rock fibre insulation above on threaded bar with stainless steel nuts, stud connectors and washers. The Rockwool (product details held on file by Warringtonfire and Sapphire Balconies Ltd) rock fibre insulation and SBL-TB25-A2 thermal break block should be sandwiched between the back of the back-plate and the supporting construction.

The cavity barriers which interact with the StubGuards should be tightly fitted into the side notch of the StubGuard with no gaps. Where a full notch is present in sides of the StubGuard, this is 5mm smaller than the cavity barrier thickness to allow a tight fit with 5mm of compression. Where only a bottom notch is present, 5mm compression is not required. For the required cavity width compression between the twin leaf cavity wall substrates, the specified cavity barrier manufacturers' installation instructions shall be followed. The cavity barriers should be constructed and installed in accordance with the recommendations of the specific product manufacturer. However, the first fixing/bracket should be at no more than 225mm away from the point of interaction between the StubGuard and the cavity barrier. This certificate does not certify the specific cavity barriers tested or provide any FPC assurance that these will perform as originally tested.

Jointing

All joints between the StubGuard and the cavity barriers shall be straight butt joints and shall be fitted so that they are a tight fit, without any gaps.

Gap stability

The concrete/masonry twin leaf cavity walls shall be capable of providing adequate support to the seal for the full required period of fire resistance.

The certification is only applicable to straight linear joint seals, as those considered by BS EN 1366-4: 2021 and does not consider corner detailing.

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The approval relates to ongoing production of StubGuard. Products and/or their immediate packaging are identified with the manufacturer's name, the product name or number, the CERTIFIRE name or name and mark, together with the CERTIFIRE certificate number (i.e. No. CF 10015) and application where appropriate.

Further Information

Further information regarding the details contained in this certificate may be obtained from SAPPHIRE BALCONIES LTD (Tel: 0344 88 00 553).
Further information regarding CERTIFIRE certification and other approved products can be obtained from CERTIFIRE (Tel: 01925 646777).
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