THOMAS BELL-WRIGHT
INTERNATIONAL CONSULTANTS

IAS ACCREDITED Product Certification Agency

In accordance with IAS accreditation to ISO/IEC 17065
Certification is Hereby Granted

to

Siderise Insulation Limited

Forge Industrial Estate, Maesteg, Bridgend,
CF34 0AH, Wales, United Kingdom

for

Siderise Perimeter Fire Barrier System for Exterior Curtain Walling

Comprising Siderise "CW-FS120" Perimeter Barrier Firestop, Siderise "CW-SI75" Curtain Wall Spandrel Insulation and Siderise "CW-FB" Curtain Wall Fire Board as Mullion Covers

(Test Method: ASTM E2307-20)

(System Designation: CJ-C-S-00994-1)

Which, subject to limitations described on the following pages and continued listing on www.tbwcert.com, complies with Product Certification Scheme *SD06 Fire-Resistive Joints & Perimeter Fire Barrier Materials and Assemblies*

In witness whereof, this Certificate is issued this 28th day of December 2023

THOMAS BELL WRIGHT INTERNATIONAL CONSULTANTS 103038 CERTIFIED

Sandy Dweik
Chief Executive Officer

Nicholas Purcell
Director of Certification

Certificate Number: TBW0600994

Initial registration: December 28, 2023 Issued: December 28, 2023 Expiration: December 27, 2026
File Name: WF007_CRT_SD06RF_CWJ200_Issue 1_(f) Issue 1

Siderise Perimeter Fire Barrier System for Exterior Curtain Walling

Comprising Siderise "CW-FS120" Perimeter Barrier Firestop, Siderise "CW-SI75" Curtain Wall Spandrel Insulation and Siderise "CW-FB" Curtain Wall Fire Board as Mullion Covers

A. Certification is given for the Siderise Perimeter Fire Barrier System for Exterior Curtain Walling, installed in accordance with the manufacturer's installation instructions and subject to the limitations herein, for Fire Resistance performance to test standard ASTM E2307-20 - "Standard test method for determining fire resistance of perimeter fire barriers using intermediate-scale, multi-story test apparatus". The summary of the scope of this Certification is listed in Table 1 below.

Table 1. *Summary of the scope of certification*

System Designation: CJ-C-S-00994-1					
System Details			Fire Test Performance		
Reference	Key Components	Max. Allowable Gap	Rating#	Result	Report reference
Siderise Perimeter Fire Barrier System For Exterior Curtain Walling	Siderise "CW-FS120" Perimeter Barrier Firestop, Siderise "CW-SI75" Curtain Wall Spandrel Insulation and Siderise "CW-FB" Curtain Wall Fire Board as Mullion Covers	200 mm	"F" Rating	Up to 153 Minutes	XB102-1 Rev.01
			"T" Rating	Up to 83 Minutes	
Manufacturer: Siderise Insulation Limited, United Kingdom					

As per Clause 14.2 of ASTM E2307-20

B. Readers of this document should be familiar with Resistance to Fire testing and the requirements of ISO/IEC 17065:2012. The Certification will be listed on www.tbwcert.com while it remains current. This Certification is not valid if it is not so listed.

C. The product is approved on the basis of TBWIC Product Certification Scheme SD06 Fire-Resistive Joints & Perimeter Fire Barrier Materials and Assemblies (Issue 4), which includes pre-test sampling, evidence of performance (as per report reference(s) in Table 1), Technical Verification and Proof of Performance, compliance to Factory Production Control requirements and surveillance & Re-certification Inspection/ Audits.

D. Limitations:

D.1. This certification results from the fire test conducted on the system constructed of specific materials and assembled in a particular manner within a standard supporting construction. Substitution of the tested components, deviation from components' specification or the methods of assembly/application could adversely affect the fire resistance performance and is not permitted.

D.2. The response of the material to heat and flame was measured under controlled conditions in accordance with the requirements of the test standard covered under this certification. The results described in the respective report(s) shall not be used as the sole criteria for fire-hazard or fire-risk assessment of the materials, products, or system assemblies under actual fire conditions.

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D.3. Dynamic movement capabilities/rating of the perimeter firestop system are not covered by this certification.

D.4. This certification covers the performance of the overall system assembly. The individual components comprising the system are not covered as independent or standalone materials.

D.5. The minimum tested separation distance between the spandrel transoms was 1500 mm on-centre. The bottom transom was situated 558 mm below the floor underside. The test assembly was tested in centre spandrel configuration as provided by the test standard.

D.6. Changes to the components' composition, physical and/or chemical specification are prohibited unless otherwise recognised and approved by this Certification.

D.7. The elements of the perimeter fire barrier assembly shall continue to be functional, firmly secured and maintained appropriately (in accordance with the manufacturer's installation instructions) to ensure the fire performance of the system over its useful service life.

D.8. It is recommended that the installation of the fire-resistant assembly be inspected and reviewed by a qualified Third Party for compliance and conformance with the listed system configuration.

D.9. Installation guidance in the manufacturer's document "Siderise CW Quick Ref Instruction ver.2.01, dated February 2023" shall be reviewed in conjunction with specific system configuration details stated hereunder.

E. System details

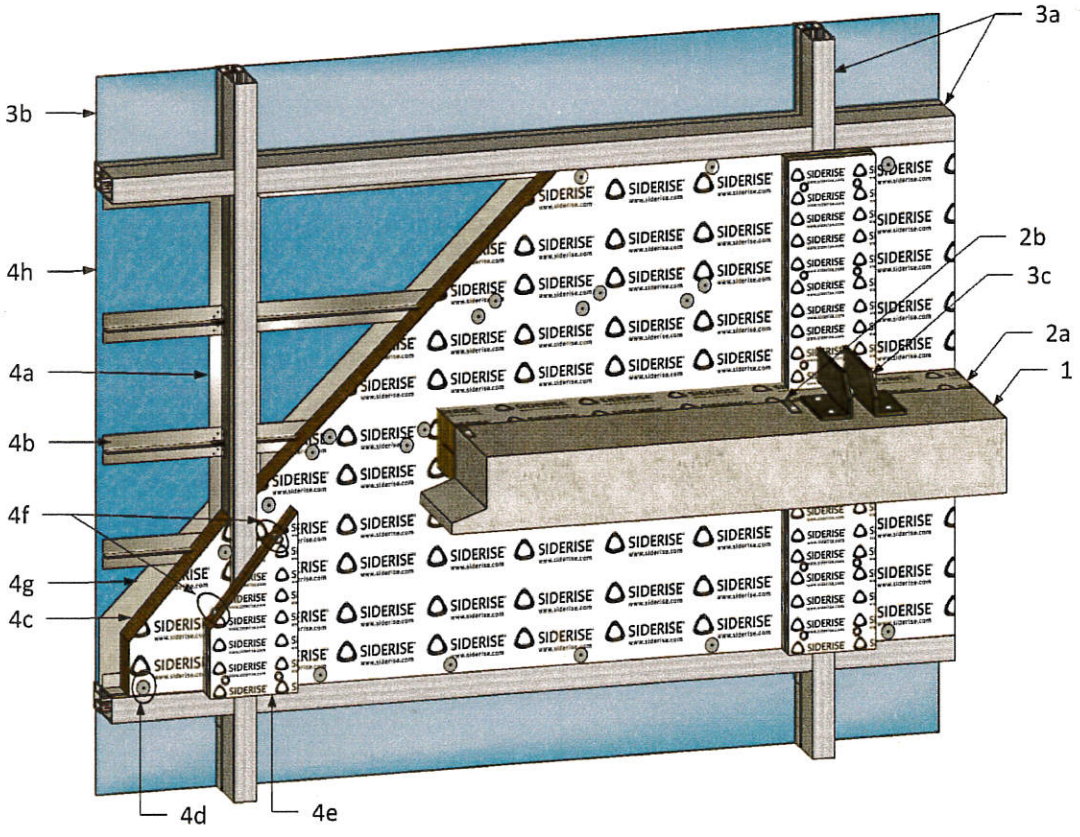

Figure 1: *System details – spandrel area*

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1. Floor Assembly
   Steel reinforced normal-weight concrete, density 2200-2600 kg/m^3 and minimum thickness 203 mm, with a Fire Resistance rating equal to or greater than the maximum ratings stated in Table 1.

2. Perimeter Fire Barrier System
   2a. Perimeter Fire Barrier
   Material: Pre-compressed stonewool lamella core with integral foil facing on top and bottom sides
   Reference: "Siderise CW-FS120" Perimeter Barrier Firestop
   Nominal Density: 75 kg/m^3
   Dimension: 240 × 120 x 1200 mm (Width × thickness x section length)
   Application: Sections of perimeter fire barrier shall be cut to oversize width, which shall be then compressed by a minimum of 20% of the joint width and tightly packed into the perimeter safing slot. Maximum joint width shall not exceed 200 mm, measured from the slab edge to interior surface of the spandrel assembly. Fixing brackets (Item 2b) shall be used for securing the barrier in position. Butt joints shall be firmly sealed and secured using Siderise "RFT 120" aluminium jointing tape 120 mm wide applied to the unexposed side.

   2b. Fixing Bracket
   Description: Galvanised steel bracket with factory-cut notches
   Reference: "B195"
   Dimension: 320 x 25 x 1 mm (total length x width x thickness)
   Application: The bracket shall be bent into "Z" shape with the short leg fixed on the floor using steel M6.3 × 45 mm slotted-hex head concrete screws, while the longer leg shall impale Item 2a at mid-thickness and penetrate at least 75% of its installed width. The brackets shall be located at 300 mm from ends and spaced at 600 mm centres (maximum).

3. Stick Curtain Wall Assembly
   3a. Framing – Mullion and Transom Profiles
   3b. Framing shall be composed of hollow aluminium extruded transom and mullion profiles, minimum 52 x 100 x 2.2 mm (width x depth x wall thickness), rigidly reinforced at T junctions using compatible connector profiles, brackets, and sealant as per the instructions of the curtain wall manufacturer. Joints in successive modules of the framing shall be reinforced with a stiff rectangular hollow steel section sleeve of minimum wall thickness 4 mm, inserted into the mullion cavity and extending by 395 mm into the mullion on either side of the joint. The sleeve shall be fastened to each mullion using 3 Nos. M4.8 x 32mm pan head tapping screw nominally spaced at 25 mm from the edges of the joint and 175 mm centres. The joint shall be filled using silicone sealant.Curtain Wall Vision Glass
   32 mm thick Double Glazed Unit composed of two 6 mm thick heat-soaked toughened glass panes separated by a 20 mm thick air interlayer. The glazing panes shall be firmly secured to the curtain wall frame using EPDM rubber gaskets, intumescent pads, aluminium support cleats and pressure plates, as per the instructions of the curtain wall manufacturer.

   3c. Curtain Wall Fixing Bracket
   10 mm thick rigid structural-grade steel brackets, used in pairs, with one leg (base), measuring 230 x 120 mm (width x length), anchored to the floor slab using M8 x 75 mm bolts and the other leg securely fastened to the curtain wall as per the instructions of the curtain wall manufacturer.

4. Spandrel Assembly
   4a. Inner Framing Angle
   Description: Galvanised steel "L" section angle
   Grade: ASTM A653M, CS Type B, Z275
   Dimension: 65 x 50 x 1.5 mm (Leg 1 x Leg 2 x thickness)

Application: Fastened using M4.3 x 16mm stainless steel pan-head self-tapping screws located at 300 mm centres. The angles shall be also welded at corner junctions.

4b. Stiffener
Description: Galvanised steel stiffener made from twin-welded "L" section angles
Dimension: 25 x 40 x 1.5 mm (Leg 1 x Leg 2 x thickness) per "L" section
Grade: ASTM A653M, CS Type B, Z275
Application: 3 nos. of stiffeners fixed at 400 mm from the top and bottom spandrel transoms, and successively spaced between 300 – 348 mm centres. The ends of each stiffener shall be fixed to the jambs of the framing angle (Item 4a) using 2 sets of galvanised steel cleats 25 x 20 x 1.5 mm (Leg 1 x Leg 2 x thickness) at each end and fastened using 1 stainless steel rivet M3 x 8 mm per leg. A further 2 nos. of these stainless steel rivets shall be used to fasten Item 4b to Item 4a from each end where they overlap.

4c. Spandrel Insulation
Description: Stone mineral wool board with foil facing on one side
Reference: Siderise "CW-SI75" Curtain Wall Spandrel Insulation
Thickness: 75 mm (-3.2, +6.4 mm)
Density: 128 kg/m^3 ± 10%
Standard Size: 1200 x 2000 mm (width x length)
Application: Insulation boards shall be cut to size and friction fitted within the spandrel framing using galvanised steel fasteners (Item 4d). Joints between insulation boards shall be sealed using Siderise "RFT 120" aluminium jointing tape. Joints shall be positioned clear of the slab edge location. A surface slit shall be made to accommodate Item 4b on the non-foil-facing side (exterior).

4d. Insulation Fasteners
Description: Galvanised steel insulation pins
Reference: "Siderise Cupped Head Insulation Pins"
Dimensions: Base - Ø30 x 1.5 mm (Diameter x thickness)
Pin - 75 x 2mm (Length x thickness)
Application: Shall be welded to Item 4a and 4b within 100 mm from the ends and spaced at 300 mm centres.

4e. Mullion Cover
Description: Stone mineral wool board with foil facing on one side
Reference: "Siderise CW-FB" Curtain Wall Fire Board
Thickness: 25 mm (-3.2, +6.4 mm)
Density: 160 kg/m^3 ± 10%
Application: Two layers of minimum 200 mm wide mullion protection covers shall be used to cover the exposed mullion profiles. Siderise "RFT 120" aluminium jointing tape, 120 mm wide, shall be used to protect and seal the cut edges of the board.

4f. Mullion Cover Fasteners
Description: Stainless steel spiral screw
Reference: "Siderise Spiral Fastener"
Dimension: Ø40 x 40 mm and Ø65 x 65 mm
Application: Ø40 x 40 mm and Ø65 x 65 mm shall be used to secure the inner layer and outer layer (Item 4e), respectively. Screws shall be spaced along the vertical edges of Item 4e at 250 mm centres.

4g. Galvanised Steel Backpan
Description: Pre-formed galvanised steel backpan
Grade: ASTM A653M, CS Type B, Z275

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Dimension: 1.5 mm thick with 30 mm flanges

Application: The flanges of the backpan shall be fastened to the transom and mullion profiles using stainless steel pan head self-tapping screws of size M4.3 x 16 mm located at 50 mm from the corners and spaced 300 mm centres.

4h. Curtain Wall Spandrel Glass

Single-pane glazing unit composed of 10 mm thick heat-soaked toughened glass. The glazing panes shall be firmly secured to the curtain wall frame using EPDM rubber gaskets, intumescent pads, aluminium support cleats and aluminium pressure plates, as per the instructions of the curtain wall manufacturer.

F. Approved Manufacturing Location

Forge Industrial Estate, Maesteg,
Bridgend, CF34 0AH,
Wales, United Kingdom
