

TECHNICAL BULLETIN

To: Architects, Builders, Regulatory Bodies
The Building Agency Technical Team
The Building Agency Sales Team
The Building Agency Approved Applicators

From: Product Development Manager – Technical

Number: SR1:2023

Topic: SIDERISE – Curtain Wall – Movement Matters (reference SIDERISE v1.01.08.23).

This Technical Bulletin will highlight the impact of movement on the fire performance of perimeter firestops at the façade/floor slab interface in curtain walling applications.

Curtain wall facades are constantly subjected to forces that make them deflect and move, impacting on the interaction between the façade and building structure. While buildings are designed to help reduce movement, it is impossible to eliminate it. Buildings are typically built with a gap between the façade and the edge of the floor slab to accommodate this movement.

The factors that influence face and building movement are:

- Wind & Snow Loading
- Floor Slab Deflection
- Temperature Change
- Seismic Sway
- Settlement
- Fire

A curtain wall perimeter firestop is a fire and smoke seal measure installed in the movement gap between the compartment floor façade system to continue the fire resistance of the floor to the rear of the façade and provide vertical compartmentation.

Unlike linear joint seals, which are used between two fixed elements, such as between a load-bearing wall and a concrete floor slab, perimeter firestops must be able to accommodate movement.

ASFP (Association for Specialist Fire Protection) stated in their advisory Note 7, “linear gap seals are not designed to be exposed to the same boundary, restraint, and fixity conditions, movement stresses and fire exposure as curtain wall perimeter firestops, there, carry very different performance and testing requirements” <https://asfp.org.uk/>

It is deemed that only products with a movement capability of 7.5% or greater are suitable for movement joints to allow for both elongation and compression. The ASFP clearly explains the importance of compressibility and durability in its Red Book: “The effectiveness of the firestop will depend on the ability of the curtain wall/cladding system to maintain the compression fit for the duration of the required fire

resistance period. Unless the system is installed pre-compressed and can move to maintain compression, premature failure of the fire-stopping may occur”.

If the firestop cannot withstand the stresses and strains from movement over the life of the building, then gaps will form between the curtain wall and the building structure. The firestop will not be able to maintain its integrity allowing fire to spread vertically through the building envelope, risking lives and property. Refer to the case study “The Presidential Tower, Bangkok” www.upi.com/Archives/1997/02/23/At-least-two-people-were-killed-and-several-others/1510856674000

It is crucial that curtain wall perimeter firestops are tested to the correct standards, which accurately reflect how they will be used and the conditions that will be subjected to. The ability to maintain the performance and recover and flex for reliable integrity and long service life is essential that they are cycle-tested.

SIDERISE is tested to meet the requirements of EN1364-4 and ASTM E2307, which are the most commonly used test standards (EN1364-4 Europe, Middle East, and Asia Pacific, ASTM E2307 USA, Middle East, and Asian Pacific) for curtain wall perimeter firestops that include provisions for movement.

Curtain wall systems are specified for all kinds of projects across the globe due to their high aesthetic value, daylighting potential, and weatherproofing properties. It is vital these systems, and their components, are designed and constructed to allow for façade and building movement, this includes the passive fire protection measures employed on each floor.

The Building Agency can assist you with any other technical questions you may have regarding SIDERISE. Please contact us via email at info@buildingagency.co.nz or refer to www.thebuildingagency.co.nz for more information.