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Thermal insulation products — Exterior insulation and finish systems (EIFS) —

Part 3:
Design requirements

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 163, *Thermal performance and energy use in the built environment*, Subcommittee SC 3, *Thermal insulation products*.

A list of all parts in the ISO 17738 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document provides specifications for architects, design professionals and builders on the integration of an exterior insulation and finish system (EIFS) into their projects.

This document is predicated on the selected EIFS assembly being in compliance with the requirements of ISO 17738-1, and system installation in compliance with ISO 17738-2.

The design criteria in this document are based on the principle that the building envelope contains five 'planes-of-control':

— water-shedding barrier;

— water-resistive barrier;

— thermal barrier;

— air barrier;

— vapour barrier.

Each plane-of-control corresponds to an individual function that the cladding assembly is designed to perform. The function of the planes-of-control are:

— Water-shedding barrier: This is designed to deflect rainwater away from the wall surface, thereby minimizing water penetration into the cladding assembly.

— Water resistive barrier: Accepting that some water could find its way behind the cladding, a continuous water resistive barrier is required to protect the substrate. Water that penetrates one cladding component should not be directed to drain behind another. Any water that reaches the water resistive barrier should have a clear drainage path to the exterior of the cladding.

— Continuous thermal barrier: The principle benefit of an EIFS cladding is the continuous thermal barrier installed on the exterior of the structure. Insulation should be adequate to prevent condensation within the wall assembly while meeting requirements for energy use. The designer should detail the thermal barrier to minimize thermal bridging, using ISO 14683 as a guide.

— Air barrier system: Effective thermal and moisture control requires a continuous air barrier system on all faces of the building envelope. With an EIFS, the air barrier function is provided by the water resistive barrier. Details should show connections with other airtight elements and materials within the building envelope.

— Vapour barrier: Where required by environmental conditions, a vapour barrier, may be a component of the EIFS. The vapour barrier might, for example be a vapour-impermeable water resistive barrier or another material in the wall assembly (e.g. polyethylene sheet). The function of the vapour barrier is to minimize water vapour penetrating through materials comprising the wall assembly then condensing on a cold surface where it has limited ability to drain or dry.

This document addresses the minimum number of locations in the wall assembly where the creation of architectural details is essential. When creating EIFS details for a project, the designer should be mindful of how the five planes-of-control within the building envelope are integrated across the various architectural components (e.g. the air barrier of a window functions as a hermetic part of the air barrier system when structurally sealed to the air barrier of the wall).

An important aspect of developing details is to specify materials that meet the function of each plane-of-control. The detail then illustrates how the control planes are connected. A series of illustrations showing sequence of installation and connection could be necessary. Each detail should clearly illustrate how a plane-of-control is integrated with the adjacent element to provide a continuous layer within the building envelope.

Thermal insulation products — Exterior insulation and finish systems (EIFS) —

Part 3: Design requirements

WARNING — The use of this document can involve hazardous materials, operations and equipment. It does not purport to address all the health and safety considerations associated with its use.

1 Scope

This document specifies the design requirements, selection and application of exterior insulation and finish systems (EIFS) for use by building designers, building code officials, product manufacturers and contractors in order to sustain the installed performance and durability of EIFS.

NOTE This document does not address all aspects related to EIFS design, selection and use. A working knowledge of applicable regional building codes and regulations is helpful when working with this document. There could be other considerations for specific installations that are not addressed by this document.

This document contains design requirements for the design and installation of an EIFS as a wall cladding system. The document includes selection of materials that meet the requirements of ISO 17738-1, and installation requirements in accordance with ISO 17738-2 and covers the interfaces between EIFS and other building assemblies and components.

This document refers to adhesively fastened systems, although mechanical fastening could be required in specific circumstances (refer to Annex A). For information on EIFS resiliency, refer to Annex B.

This document does not specify the structural design of the substrate to which the EIFS is attached, nor does it provide design requirements when the installation of EIFS uses mechanical fasteners.

This document is applicable to new and retrofit EIFS installations.

2 Normative reference

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 7345, *Thermal performance of buildings and building components — Physical quantities and definitions*

ISO 9229, *Thermal Insulation — Vocabulary*

ISO 17738-1, *Thermal insulation products — Exterior insulation and finish systems — Part 1: Materials and systems*

ISO/ 17738-2, *Thermal insulation products — Exterior insulation and finish systems (EIFS) — Part 2: Installation*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 7345, ISO 9229, ISO 17738-1, ISO 17738-2 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
environmental separator
above grade wall separating the interior and exterior environments

4 Materials

All of the EIFS specified for a project shall be tested for compliance with the requirements of ISO 17738-1. There shall be no alterations or substitution of the EIFS materials to be used in the EIFS assembly.

5 Design criteria

This document contains requirements for the design of exterior insulation and finish systems (EIFS) as a wall cladding system. Provisions for the functional aspects of the water shedding barrier, water resistive barrier, thermal control layer, resistance-to-air-movement and vapour movement are covered as functions of a wall assembly.

6 Design requirements

As a minimum, project design drawings, details, and specifications shall clearly indicate details of interfaces and joints, including flashings, required to maintain continuity of the water shedding barrier (lamina), the water resistive barrier assembly (WRBA), air barrier assembly and the vapour barrier assemblies at the following building locations:

a) foundation walls;

b) window and door sills;

c) window and door heads;

d) window and door jambs;

e) adjacent dissimilar cladding systems;

f) building envelope penetrations, such as exhaust boxes, signs, guard anchors or mechanical equipment;

g) joints intended to drain water;

h) intersecting balustrades;

i) roof-to-wall interfaces;

j) above roofing (penthouses and return walls);

k) roof parapets and overhangs; and

l) balconies.

The minimum thickness of thermal insulation board shall be 50 mm. Exceptionally, a minimum thickness of 30 mm of thermal insulation board shall be permitted behind an aesthetic reveal as measured from the base of the reveal and the deepest point of the geometrically-defined drainage cavity (GDDC) pattern.

Project specifications shall stipulate that EIFS is installed in accordance with ISO 17738-2.

Project specifications shall require confirmation that the specified EIFS and connecting materials are compatible.

7 Substrate design requirements

EIFS shall only be used on a substrate and back-up structure that has been designed to possess adequate strength and rigidity to support:

a) the EIFS cladding,

b) lateral loads (typically wind),

c) any other structural loads that are an inherent part of the building design.

Where EIFS is to be installed on an existing building, the structural adequacy of the building and proposed substrate shall be determined. Appropriate reinforcement and/or remedial measures to provide acceptable structural integrity shall be designed and implemented, where necessary, prior to installing the EIFS.

8 Water-shedding barrier

The design of the EIFS cladding shall minimize water penetration into the drainage cavity.

EIFS design shall redirect any water that reaches the water resistive barrier assembly (WRBA) to the exterior face of the cladding.

Windows, doors and claddings adjacent to the EIFS and their interfaces with the EIFS shall be designed to prevent water from draining behind the EIFS.

EIFS mouldings projecting out from the wall's vertical plane shall a minimum 1:2 slope to ensure that water drains from the surface, unless:

a) EIFS moulding is protected by metal flashing or other durable material; or

b) there is an overhang in close proximity above the EIFS moulding. (Close proximity is considered to be a vertical distance between the top of the EIFS moulding and the underside of the overhang of not more than one quarter of the horizontal eave overhang.)

NOTE The presence of surface texture will influence the ability of a surface to drain.

The bottom surfaces of horizontal aesthetic reveals shall provide a minimum outward positive slope of 1:2 for shedding of precipitation.

Where manufacturer's installation instructions recommend steeper slopes or additional protection of horizontal surfaces, the manufacturer's installation instructions for projection limitations and flashing requirements shall be followed.

9 Water-resistive barrier assembly

The specified EIFS and water barrier assembly shall be compatible with the substrate.

Where the EIFS liquid applied water resistant barrier (LA-WRB) is also the air barrier material, the air barrier continuity and the incorporation of the rain penetration control measures shall meet the requirements in Clause 11.

The water resistive barrier assembly shall be designed to control water that penetrates the cladding. It shall:

— be continuous with the water resistive barrier of windows, doors and adjacent cladding assemblies;

— prevent water from penetrating into the interior space;

— provide a clear path for water to drain by gravity;

— incorporate flashing that will direct water out of the drainage cavity and beyond the face of the cladding below; and

— not drain into adjacent cladding assemblies.

10 Thermal barrier

The designer shall include an effective thermal control layer that meets the objectives of the building owner. The designer shall specify the thickness of the thermal insulation to meet all design objectives.

An effective thermal control layer design includes consideration of thermal bridges which are calculated in accordance with ISO 14683.

The design shall require a minimum 50 mm thickness for the thermal insulation board. Where aesthetic reveals are cut into the insulation board, a minimum thickness at the base of the reveal shall be 30 mm.

If the EIFS incorporates a GDDC, the thickness of the thermal insulation board shall be increased by the depth of the GDDC to maintain the minimum board thickness of 50 mm or 30 mm behind an aesthetic reveal.

Any patterns or drainage grooves cut into the back of the insulation shall not reduce this minimum thickness requirement.

11 Air barrier assembly

An air barrier assembly shall be designed and detailed.

Where the EIFS WRBA or other materials are intended to provide the air barrier function, the designer or builder shall identify the materials, accessories and components comprising the air-leakage control layer (air barrier assembly) and shall detail their integration into the air barrier system in the wall assembly.

12 Vapour barrier

The designer shall consider the materials used in the vapour barrier assembly and their interaction with the environments on both side of the wall assembly. Where water vapour transmission is deemed to need control, the designer shall design and detail a water vapour control layer.

13 Fire protection

The selected EIFS shall be designed within the parameters of the system's fire test reports.

The selection of EIFS requires consideration of building height, limiting distances and whether or not the building is sprinklered.

When the thermal insulation board is foam plastic, the design of the thickness of the thermal insulation board shall be within the limitations of the fire tested wall assembly, inclusive of any architectural profiles or EIFS mouldings.

EIFS designs containing foam plastic thermal insulation board, shall not be used at locations on the building where a service temperature is in excess of +65 °C.

EIFS are noted for the potential to create three-dimensional features by carving the thermal insulation board and finishing. The designer or builder should be aware of limitations on foam insulation thickness due to fire resistance and exposures that may require flashing.

NOTE 1 Framing can be used to create larger profiles without excessively increasing insulation thickness and to provide structural support for flashing.

NOTE 2 Service temperatures in excess of +65 °C can occur in proximity to chimneys, heater vents, steam pipes, and materials of a dark colour that absorb solar radiation. Dark-coloured EIFS and EIFS in proximity to reflective surfaces can also experience temperatures in excess of +65 °C due to the absorption of solar radiation by the EIFS finish.

14 Impact resistance

The design shall anticipate where high impact loads occur and shall:

a) incorporate a higher impact resistance EIFS; or

b) incorporate physical means of protection to prevent the impact.

NOTE 1 The impact resistance of EIFS can be improved by providing heavier and/or additional layers of reinforcing mesh, as well as providing a thicker base coat at areas where impact damage is more probable to occur. The manufacturer's installation instructions can be consulted for system-specific methods.

NOTE 2 Physical means of protection include the use of bollards, parking barriers and similar structural elements.

15 Hygrothermal performance

If the EIFS-clad wall assembly includes other layers of thermal control, the wall shall be designed to minimize the potential for condensation and/or moisture accumulation.

Notwithstanding any hygrothermal evaluation, the thickness of the foam plastic thermal insulation board shall be within the limitations of the fire-tested assembly, inclusive of any architectural profiles or EIFS mouldings.

Control of vapour diffusion shall take into consideration the combination of all components in the wall assembly.

The design of EIFS shall consider the air leakage characteristics of the wall assembly where mass transport of water vapour leads to potential condensation.

16 EIFS terminations and interface gaps

16.1 Terminations

Design of the thermal insulation board edges at EIFS terminations shall be treated in accordance with the requirements of ISO 17738-2.

Where EIFS is installed above projecting building elements (such as roofs, balconies, or other horizontal elements), the bottom edge of the EIFS shall be terminated a minimum of 50 mm above such projecting building elements.

A clearance of at least 200 mm shall be maintained between the EIFS termination and finished grade.

A minimum clearance of 13 mm shall be provided around openings or penetrations that are to receive sealants.

A minimum clearance of 20 mm shall be provided at terminations adjacent to other claddings that are to receive sealant.

The interface at terminations with other cladding systems and/or cladding components shall maintain continuity of the water resistive barrier assembly (WRBA) to prevent moisture penetration inwards from the plane of the liquid applied water resistant barrier (LA-WRB).

EIFS at parapets shall be designed to include structural blocking to accommodate the proper support of flashing.

16.2 Expansion joints

Expansion joints shall be carried through the EIFS to accommodate expansion and contraction of building materials due to thermal changes, moisture, wind, gravity, vibration and seismic activity and shall be used where:

a) expansion joints occur in the substrate;

b) the substrate material or structure changes;

c) significant structural movement can occur;

d) deflections that might be in excess of L/240 are expected; and

e) the floor line occurs in wood frame construction (or where vertical shrinkage is expected to occur based on the construction of the wall).

NOTE Expansion joints might not be required at the floor line when using engineered wood beams depending on the expected shrinkage of the beam. Refer to the manufacturer of the engineered wood beam for design information on the beam.

A minimum clearance of 20 mm shall be provided between EIFS terminations for expansion joints that are to receive sealants. Consult the sealant manufacturer's installation instructions regarding selection of the specific sealants for use with EIFS.

The locations of expansion joints shall be detailed on the building elevations provided in the design drawings.

Expansion joints shall be wide enough to accommodate the expected movement without stress, deformation or binding of the EIFS.

An aesthetic reveal in the EIFS shall not be considered an expansion joint.

Annex A
(informative)

Design considerations for mechanical fasteners

Performance requirements of mechanically-fastened EIFS are beyond the scope of this document; however, it is acknowledged that in specific cases the use of mechanical fasteners may be required as the primary method of attachment and/or as supplement to adhesive attachment.

In such cases it is recommended that the EIFS, in addition to meeting the requirements of this document for individual components, should be evaluated for suitability based on the following criteria:

a) corrosion resistance properties of fasteners;

b) moisture sensitivity of substrate;

c) pull-out strength of fasteners;

d) effect of penetration of the liquid applied water resistant barrier (LA-WRB) by the fasteners;

e) wind load resistance according to the requirements of ISO 17738-1.

In cases where mechanical fasteners are used:

1) The type of mechanical fasteners utilized (e.g., metal screws or power-driven pins) should be in accordance with the manufacturer's installation instructions.

2) Mechanical fasteners shall be corrosion resistant. As a minimum, mechanical fasteners should be hot-dipped galvanized.

3) Mechanical fasteners should be used with non-metallic washers. The size of the washer should be sufficiently large to adequately distribute the force of the fastener such that damage to the underlying thermal insulation board is prevented under design wind loads.

4) Mechanical fasteners should be installed sufficiently closely together in both the vertical and horizontal directions to prevent pull-off under design wind loads.

NOTE In some instances, it could be necessary to decrease the spacing between framing members to allow the installation of additional fasteners.

5) Mechanical fasteners should be installed into framing that has the strength to support the fasteners under design wind loads, except where wind load testing conducted in accordance with ISO 17738-1:2017, Annex G, has demonstrated that mechanical fasteners that fully penetrate plywood or OSB sheathing board can prevent pull-off under design wind loads.

Where mechanical fasteners are to be used, the type, penetration depth, horizontal and vertical spacing of the mechanical fasteners, and the type and size of washer to be used, should be specified.

Annex B
(informative)

EIFS resiliency

Resiliency can be understood as the capacity of a building to continue to function and operate under extreme and/or unscheduled conditions, such as extreme temperatures, increased precipitation and wind events. As the built environment is now encountering effects of global climate change, building design and building systems need to adapt to optimize building resiliency. One method of measuring the resiliency of a building is a concept known as 'passive survivability', which is the period that occupancies can maintain liveable conditions in the absence of power and heating fuel.

EIFS is widely accepted as a high-performing building envelope system for controlling heat transfer through the building envelope. EIFS provide continuous insulation and the ability to minimize thermal bridging, since insulation is outbound of the building structure and the use of mechanical attachment is typically not required. When these performance attributes are coupled with maximum allowable external thermal insulation, the system is well suited for climate adaptive design and passive survivability strategies.

EIFS provide a highly effective, passive environmental separator function by controlling heat transfer outbound of other wall system components, such as the substrate assembly. The insulation used in EIFS also provides for a relatively stable thermal insulation value, over both time and service temperatures. Controlling heat flow and other hygrothermal behaviour considerations outbound of wall system components, using condition tolerant materials, improves the assembly's overall ability to adapt to changes in the exterior environment while maintaining interior conditions. This adaptability limits climate sensitivities by decreasing the influence of the exterior environment over interior conditions. When designing for resiliency, adaptability is a critical consideration in view of less predictable exposure conditions. For example, a project's location at the time of design and construction may be a predominant heating environment, but in 10 years the number of heating degree days may decrease or be highly variable from year to year.

This function, in addition to other passive design measures, can also extend the period of time that a building's enclosure strategy can maintain interior building temperatures at a habitable/comfortable level when active systems (e.g. mechanical heating systems) are not functional through unscheduled disruptive events such as prolonged outages of electrical power or fuel supply. During a hazardous event, EIFS can maintain other control functions such as air leakage, vapour diffusion and protection from precipitation.

EIFS maintains its function and that of the exterior wall after a major weather event, or the gradual effects of climate change.

Control of air leakage through the building envelope is a critical performance requirement of a passive survivability strategy. EIFS can provide this air leakage control function when the EIFS' water resistive barrier (WRB) also serves as the air barrier. This approach is the preferred approach since the WRB is well protected and fully supported by a substrate and is usually not exposed to in-service damage. The number of penetrations to seal is reduced, and continuity across floors and interior partition walls is more easily achieved. Where drainage beneath window and doorsills is required, achieving proper air seals requires attention to design achievability and installation practice. In such cases, the air barrier shall be installed in such a manner that it extends around and seals to the inside surface of the penetrating component.

EIFS has capacity to control increased environmental loads, i.e. precipitation and wind resulting from climate change

Rainwater penetration control – The following is supplemental information to Clauses 8 and 9.

The water-resistive barrier system combined with the drainage gap created by the adhesive and/or the geometrically defined drainage cavity of the thermal insulation allows for drainage of incidental water to the exterior of the cladding. The WRBA shall be designed to redirect any water that reaches the WRB to the exterior. Drainage at sub-sill window flashing is to be source drained to the exterior at the window and not behind the EIFS. Rainfall data reflected in regional climate data and the building codes should inform designers but should not be seen as basis for relaxing design requirements expressed in Clause 8, or the building code. For example, regions of low annual rainfall, may have intense 24 h rain events. Designs are intended to prevent ingress within the wall assembly and the interior. That is, allowance should be made in the design to account for severe rain events over the buildings service life, while also considering drying potential of the EIFS. Locations with high moisture indices have been shown to benefit from increased exterior insulation in addition to the integration of proper deflection strategies. Allowance for bi-directional drying may also be prudent. Designers should consider the application of the 4 Ds:

a) Deflect – majority (>95 %) of water should be deflected away from the building and potential ingress locations (e.g. head flashings with end-dams over windows).

b) Drain – water that penetrates beyond the exterior plane of protection, should have ability to drain back to the exterior.

c) Dry – moisture within the wall assembly should have ability to dry before accumulation level exceeds the tolerance of the effected material.

d) Durable – materials are to be fit for the given purpose and tolerant of expected moisture and other environmental exposure loads.

At no time should a design be reliant on a strategy where dependency exceeds the material or design's capacity to deliver. While perhaps less prescriptive than the sizing of a structural beam, rain penetration control is best realized through limiting dependencies on individual wall elements and ensuring redundancy of design. For example, dependency on weatherization provided at sealed joints can be reduced through the use of two-stage sealed joints (i.e. rainscreen joints); this is further reduced through the presence of a continuous second plane of protection applied over a moisture tolerant sheathing and incorporated into a wall thereby maximizing the drying potential whilst providing appropriate distribution of thermal resistance to the wall assembly.

Transition membranes and materials – A transition membrane is defined as a component of the WRB system that maintains continuity of the WRB at joints and openings in the substrate that cannot be bridged with the liquid applied water resistant barrier (LA-WRB).

To ensure that the secondary line of moisture protection is complete, the WRB shall be made continuous at: openings, penetrations and joints in the substrate, expansion joints, flashing, junctures with fenestration or other walls systems, and junctions with roofing membranes (ISO 17738-2:2019, 8.2). LA-WRB materials typically have limited ability to span cracks and expansion joints. As such, there is a need for sheet transition membranes (e.g. fabric-faced waterproofing membrane products) and/or fluid applied flashing materials with special mesh reinforcement and able to maintain continuity of the WRBA. The manufacturer provides installation details to be used in conjunction with the LA-WRB over joints at floor levels, over rigid flashings, and substrate expansion joints. The selection of the product is dependent on the expected joint movement and joint size.

Drainage and flashing – EIFS are to be designed to minimize moisture ingress beyond the outmost layer (first plane of protection) and prevent penetration into the wall assembly. Flashings, overhangs and other deflection details are to direct water away from the wall surface. Should incidental moisture penetrate the first plane of protection, the continuous second plane of protection (the WRBA and drainage cavity) prevents ingress into the interior space. Moisture within the EIFS is tolerated until effectively directed to the exterior plane or is dissipated through drying mechanisms.

The drainage cavity/gap is created in one of four ways:

1) adhesive ribbons (typical cavity depth of 2-3 mm); or

2) proprietary geometric definition of the thermal insulation board (to provide a 10 mm capillary break); or

3) a combination of 1 and 2, or

4) incorporation of drainage mediums/mats in mechanically secured systems.

Geometrically-defined thermal insulation board has grooves or other shapes cut out of the insulation to provide channels for the drainage of water; the drainage space thus created is referred to as a geometrically-defined drainage cavity.

Pressure moderation – EIFS can be enhanced by compartmentalization to pressure moderate the air gap and limit air movement and wind-washing at building corners. Pressure moderation and limited air flow is achieved by compartmentalizing the air gap at the following locations:

— roof level,

— underside of balconies,

— window sills and jambs,

— floor-line expansion joints,

— building corners, and

— by limiting air flow at weep openings of horizontal drainage joints.

Termination strategies for compartmentalization, prevention and/or limiting of air exchanges behind the insulation, preservation of R-value and mitigation of condensation are typically proprietary. However, common to effective system design and installation is the avoidance of cavity 'ventilation'. That is ensuring that pathways (separate entry and exit points at opposing system boundaries) that allow for unchecked air exchanges/ventilating behind the cladding are not present. Rather, the installation is 'vented' through limited and discrete openings at the base of a compartment that serve as both air entry and moisture exist points. This single boundary vent strategy has been shown to preserve the effectiveness of the insulation whilst allowing for the evacuation of incidental water that reaches the second plane of protection. Whereas the termination strategy across proprietary systems may vary, these variations should be seen as nuanced differences between a common strategy of system compartmentalization and rain penetration control.

Wind load and impact damage resistance – EIFS meets wind load resistance loads as defined in regional building codes.

Extreme weather events can result in projectiles that can cause impact damage to EIFS. While such events may be rare for most areas, impact resistance of EIFS can be increased by use of heavier and/or additional layers of reinforcing mesh in tandem with a thicker base coat for exposed wall areas. Such fortification of EIFS lamina may be appropriate for post-disaster buildings, or project locations where hazardous climate events (extreme hail, hurricanes force winds, etc.) are predicted to occur. The manufacturer's installation instructions should be consulted for system-specific methods and impact resistance values.

Adaptation and transformation – A resilient building should have capacity for adaptation and transformation. Adaptability can be defined as the capacity of a building to be used for multiple uses and in multiple ways over the life of the building or accommodate changes in exposure conditions.

EIFS can be used to help repurpose a building and to retrofit/rehabilitate existing building claddings, often without having to remove and dispose of the original cladding.

EIFS can be easily maintained over its service life with minimal disturbance to building occupants or operations. Existing buildings with EIFS can be thermally upgraded by installing a second EIF system over the existing.

