Exterior Insulation & Finish Systems

BASF Wall Systems; proven to perform in any environment
An Introduction to EIFS

BASF Construction Chemicals’ Exterior Insulation and Finish Systems (EIFS) are highly decorative, multi-layered insulating and protective finish systems for exterior walls. EIFS are the only exterior wall covering that insulates and provides weather protection in a selection of shapes, colours and textures that can replicate almost any architectural style or finish material, or stand by itself as an architectural feature. Our EIFS are:

- **E** environmentally friendly
- **I** insulating and therefore energy saving
- **F** flexible in design
- **S** sustainable

**50 Year Success Story**

In the late 1950’s two significant inventions started the success story of Exterior Insulation and Finish Systems: expanded polystyrene and synthetic plaster. In 1950 BASF patented expandable polystyrene, the basic raw material for expanded polystyrene (EPS) boards. Since then Styropor® EPS has become synonymous for energy-saving construction.

EIFS were designed to meet the demand of the European construction market for retrofitting of solid masonry walls. When EIFS are applied on existing structures it improves the appearance and provides a cost effective insulation option to any type of structure.

EIFS became popular in the United States during the 1970’s when the oil embargo created a surge in interest in high energy efficiency wall systems. Over the past three decades EIFS have become the first choice for commercial building cladding in North America, with more than 20,000,000 m² installed every year. The primary benefits that EIFS offer are:

- Energy efficiency
- Aesthetics
- Unlimited Design flexibility
Energy Efficiency

About one third of global energy demand is consumed by private households. Up to 60% of this energy is used for space heating and air conditioning. In 2002 the buildings sector contributed to 21% of global CO₂ emissions. Therefore reducing the amount of electricity consumed by a building will help to reduce its carbon footprint as well as energy costs, which in turn leads to a more sustainable future.

Exterior Insulation
The insulation of buildings is widely seen as the most effective way to improve the energy efficiency of a structure. The external location of the insulation puts the insulation in the best place: as far towards the outside (where the temperature fluctuates) as possible. It can also cover the structure completely without any thermal breaks. This allows the wall structure to act like a cold/heat sink reducing the energy needed to maintain a constant indoor temperature (Fig 1).

Exterior Insulation offers many benefits; internal comfort levels are improved year-round, the costs of heating and cooling can be reduced on average by 30-55%, and condensation on walls and ceilings is virtually eliminated.

In an ongoing US Government wall cladding study, EIFS (with a 10cm EPS board) have been rated as the best performing wall system in terms of moisture management whilst maintaining superior thermal insulation performance.

The temperature gradient through an EIFS wall, note how the wall structure remains cool.
Aesthetics - Create a Feeling

Different colours, textures and shapes are all around us, nature provides us with an infinite variety of these elements and inspires us to create imaginative and eye catching structures in which to live, work, rest and play.

Colours affect our emotions and can make structures stand out or blend into their surroundings. Different finishes and textures can give character and style to a building, i.e. antique, modern, metallic or stone-like. Architectural features add interest to a structure. Senergy Wall Systems offer the design flexibility to create almost any feature; from graceful arches and columns to cornices and intricate mouldings.
The Power of Colour
Everyone feels differently about colours, this is why we offer hundreds of colours as well as unlimited custom colour options to choose from. Colour samples should be viewed in natural light and on site if possible for final colour decisions. Our Colour Logic process helps ensure accurate colour matching and consistency.

Texture
Our architectural textures are inspired both by nature and historical stuccos, providing surfaces with depth and richness. Our popular finishes range from the elegance of Fine and Classic “ridged” textures to more expressive coarse, stippled and stone finishes. Hand trowelled finishes give the opportunity for rich and unique textures and patterns.

Design Flexibility
Specially designed details are hand crafted utilizing expanded polystyrene (EPS) insulation boards. Light weight and responsive to sculpting, EPS gives the freedom to create shapes and details impossible or too expensive to produce with other claddings.
EIFS from BASF Wall Systems are a symbiosis of style and function, they are multi-layered systems composed of:

- Adhesive and optional secondary weather barrier.
- Insulation board
- Base Coat
- Reinforcing mesh
- Finish

**Insulation Board**
Expanded polystyrene is by far the most common insulation material for walls. The insulation board is adhesively and/or mechanically attached to the substrate and therefore serves as an exterior insulating layer. An optional secondary weather barrier provides additional protection against moisture and air infiltration.

**Base Coat and Reinforcing Mesh**
On top of the insulation board a layer of cementitious polymer modified base coat is applied, in which an alkaline resistant, reinforcing fibre glass mesh is fully embedded. Four levels of impact resistance are available, each meeting the ASTM Standard E 2486 – 06.

**Finish Coat**
Based on 100% acrylic binder technology the finish coat can be trowel or spray applied onto the base coat. This final layer provides a durable, crack and weather resistant surface giving the system its final stylish appearance.

In September 1999 the 155mph hurricane Floyd ripped through the Bahamas, toppling 30-foot trees and ripping roofs from homes. The Atlantis Resort and Casino, clad with 40,000m² of Senerflex® remained unscathed.
<table>
<thead>
<tr>
<th>System</th>
<th>Components</th>
<th>Uses</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Senerflex® Classic PB</strong></td>
<td>Adhesive</td>
<td>• High-rise</td>
<td>• Design flexibility</td>
</tr>
<tr>
<td>Primary barrier</td>
<td>+ EPS Insulation Board</td>
<td>• Low-rise</td>
<td>• Aesthetic appeal</td>
</tr>
<tr>
<td>Moisture control</td>
<td>+ Reinforced Base Coat</td>
<td>• New and retrofit construction</td>
<td>• Adhesively applied system to meet most wind-load requirements</td>
</tr>
<tr>
<td></td>
<td>+ 100% acrylic polymer Finish</td>
<td>• In all climates</td>
<td>• Energy savings</td>
</tr>
<tr>
<td><strong>Senerflex® Secondary</strong></td>
<td><strong>Weather Barrier Design</strong></td>
<td><strong>Senerflex® Classic PB</strong></td>
<td>• Exceptional durability</td>
</tr>
<tr>
<td>Primary and secondary barrier</td>
<td></td>
<td>+ Senershield trowel-applied or Senershield-R roller-applied secondary weather barrier</td>
<td>• Low maintenance</td>
</tr>
<tr>
<td>Moisture control</td>
<td></td>
<td>+ Senerflash 9 at flashed openings and Senerflash 4 or Flexguard 4 at sealed sheathing joints</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td><strong>Uses</strong></td>
<td><strong>Benefits</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• When secondary weather barrier is desired</td>
<td>• All the benefits of Classic PB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Added protection of the sheathing is desired</td>
<td>• Cost-effective, added level of protection of sheathing and cavity against moisture and air infiltration</td>
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<tr>
<td></td>
<td></td>
<td>• An air barrier is desired</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Adhesive attachment is required to meet wind-load requirements.</td>
<td>• Increased energy efficiency</td>
</tr>
<tr>
<td><strong>Senerflex® Channelled</strong></td>
<td>Senerflex® Classic PB</td>
<td><strong>Adhesive Design</strong></td>
<td></td>
</tr>
<tr>
<td>Rainscreen</td>
<td>+ Vertical ribbons of adhesive on insulation board for evacuation of incidental moisture.</td>
<td><strong>Uses</strong></td>
<td><strong>Benefits</strong></td>
</tr>
<tr>
<td></td>
<td>+ Senershield trowel-applied or Senershield-R roller-applied secondary weather barrier</td>
<td>• When a rainscreen or moisture drainage wall system is desired</td>
<td>• All the benefits of Classic PB</td>
</tr>
<tr>
<td></td>
<td>+ Senerflash 9 or 22.9cm Sheathing Fabric at flashed openings and Senerflash 4, 10.2cm Sheathing Fabric or Flexguard 4 at sealed sheathing joints</td>
<td>• To satisfy other local/regional code issues related to drainage.</td>
<td>• Cost-effective, added level of protection of sheathing and cavity against moisture and air infiltration</td>
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<td></td>
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<td><strong>The trowel pattern of the adhesive creates evacuation channels between the secondary barrier and the insulation board to allow exit of incidental moisture.</strong></td>
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