WRAPSULATE®
FOAM JACKET
by ELASTOCHEM Specialty Chemicals Inc.

A good building enclosure is a lot like a good winter jacket. A good winter jacket protects the wearer from harsh environments. It sheds rain, it insulates against cold temperatures, it cuts the wind, and it allows moisture to dry out so the wearer can remain dry and comfortable. A good winter jacket does all of these things while presenting some desired appearance and providing good durability and value for the owner.

A good building enclosures is a lot like a good winter jacket. The building enclosure separates the interior environment from the exterior environment. It includes the exterior walls, windows, roofs, floors, and other elements that provide climate separation. In many parts of the world people would not be able to comfortably and efficiently go about day-to-day activities without the benefits of the climate separation provided by buildings. In extreme climates people may not be able to survive at all without buildings and the enclosures that define them.

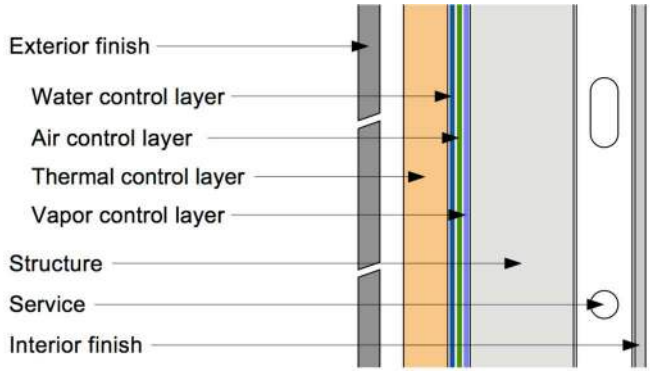
A good building enclosure provides a number of important functions:

1) ***Support*** – It must provide support to resist, transfer, and accommodate all structural loads imposed by the weight of the building fabric and the environment. In older buildings it was common for the structure and other support elements to be integrated in the building enclosure. Many modern buildings separate the support function from the other functions in an effort to achieve higher levels of performance.

2) ***Control*** - The building enclosure must prevent, limit, moderate, allow, or encourage the movement of all mass (i.e. rain, ground water, air, water vapor, pollutants, etc.) and energy (heat, light, sound, fire, etc.) Modern demands for low energy, low environmental impact, highly controlled, ultra-comfortable, low maintenance, and durable space have placed increased focus on the control functions.

3) ***Finish*** - The interior and exterior surfaces are those parts of the building enclosure that people see and come into contact with. They establish the public image for the building. The finishes must meet requirements for appearance, maintenance, durability, etc.

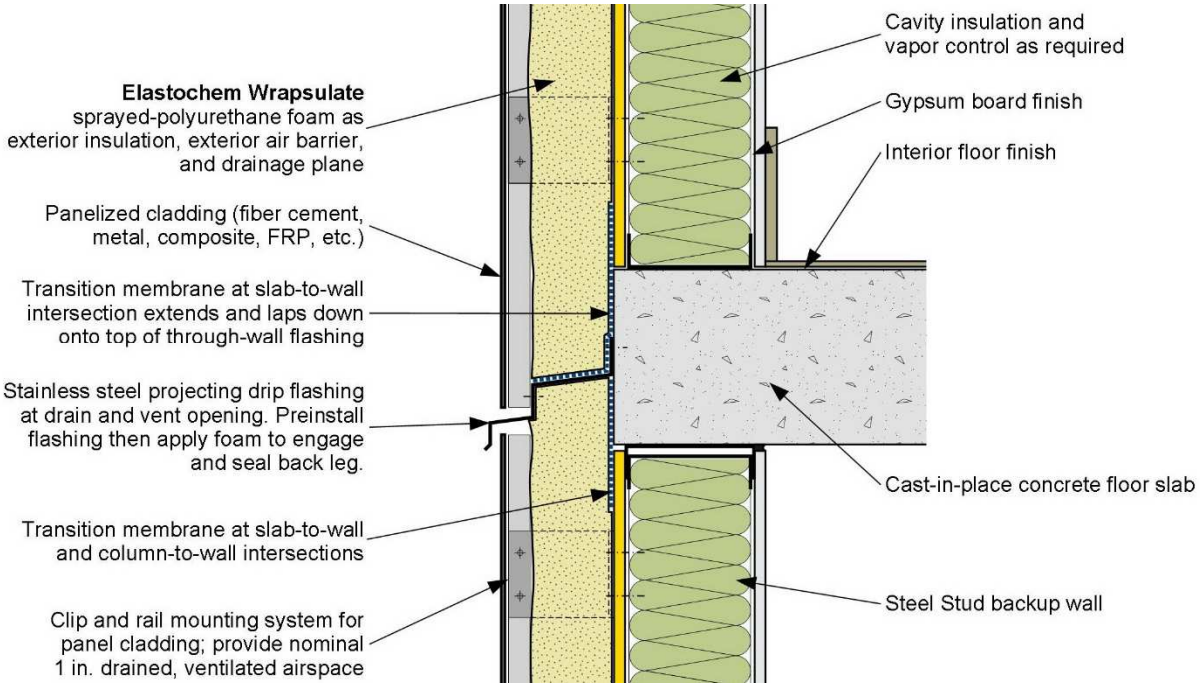
It is increasingly common to see the control layers of a building enclosure wrapped around the structure much like a jacket wraps around a person. The “Perfect Wall” employs this approach. This approach also allows almost any interior and exterior finish to be applied to the building enclosure.



The Classic “Perfect” Wall

Numerous materials and solutions exist to satisfy the most basic control functions in these wall assemblies. The water control layer prevents water from penetrating the building. It is common to provide a continuous waterproof drainage plane and gap to direct water down, and out of the enclosure assembly. The air control layer prevents air from leaking through the assembly. Air barrier materials are connected to create a continuous air barrier system. The thermal control layer limits the movement of heat through the enclosure assembly. It is increasingly common to see requirements for continuous insulation and careful design to minimize or eliminate thermal bridges. Depending on the assembly, building use, and climate, the vapor control layer(s) may be selected to limit, moderate, or encourage the flow of water vapor through the assembly. In colder, northern climate regions, a proven strategy is to limit the vapor diffusion into the wall on the indoor side of the assembly and encourage vapor diffusion out of the wall on the outdoor side. This approach permits moisture to dry quickly during the fall, winter, and spring seasons.

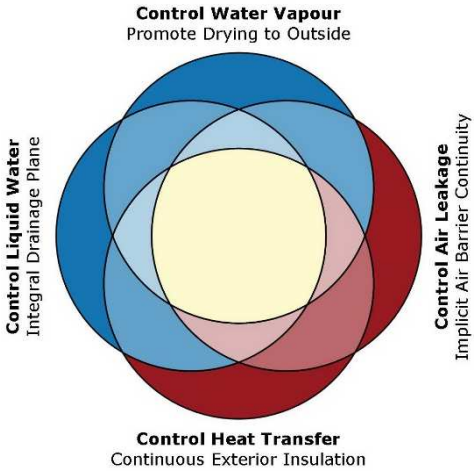
Some materials and systems are conceived to satisfy several of the control functions at once. Elastochem’s Wrapsulate Insulation System is one such product.



Conceptual Drawing of Elastochem's Wrapsulate Foam Jacket in a Split-Insulated Institutional / Commercial Wall Assembly

Wrapsulate is a new, CCMC approved, 1 pcf water-blown, open-cell spray polyurethane foam insulation. Wrapsulate combines some of the physical traits of other products that are already familiar in the construction industry. However, it is also unique in that it is an open-cell spray polyurethane foam that can be used in exterior applications.

When used in an exterior application, Wrapsulate creates a "Foam Jacket" around the building structure. That foam jacket provides ***all four*** of the basic control functions required of the building enclosure.



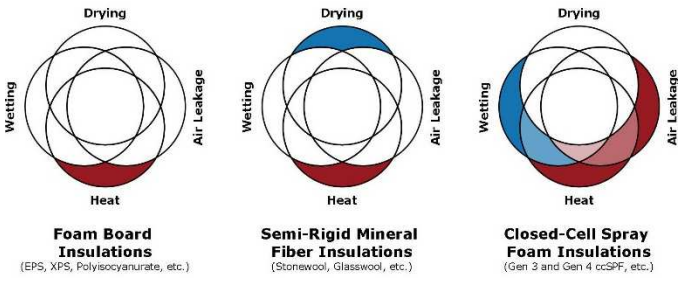
Wrapsulate Foam Jacket Satisfies All Four Basic Control Functions

Wrapsulate provides the water control layer. The material's surface rapidly sheds water. The body of the foam does not readily wick water and it is resistant to water penetration under head pressures. Wrapsulate foam creates a continuous drainage plane over the surface of the assembly.

Wrapsulate acts as the thermal control layer. Wrapsulate is a water-blown foam insulation that provides competitive thermal resistance with the lowest possible Ozone Depletion and Global Warming Potentials (lowest ODP and GWP). Wrapsulate foam creates a continuous insulation layer over the building.

Wrapsulate provides a seamless fully-adhered air barrier at thicknesses over 1.5 in. The foam aggressively bonds to most substrates, sealing small holes an cracks, to create a continuous air barrier system that is integral with the thermal control layer.

Wrapsulate encourages drying of the wall assembly. The product has a relatively high water vapor permeance so, while air cannot move through it, water vapor can diffuse, facilitating drying of any built-in or incidental moisture, just like high quality outdoor gear.



Other Exterior Insulations Only Satisfy Some Control Functions