No-Burn Plus Spray Seal Guidelines

August 15, 2024

Overview

No-Burn Plus Spray Seal has significant advantages over other assembly systems due to the ability of the No-Burn Plus Spray Seal to provide fire resistance and act as a water control layer, air control layer and a vapor control layer. The No-Burn Plus Spray Seal replaces typical “water resistive barriers” such as building wraps, building papers and fluid applied coatings with a single application coating that also provides fire resistance. This significantly simplifies constructability.

No-Burn Plus Spray Seal meets the building code requirements (IRC, IBC) of an “air barrier” material and when coupled with sheathing meets the requirements of an “air barrier assembly”. Additionally, when coupled with sheathing it meets the building code requirements (IRC, IBC) for water control of “water resistive barriers (wrb’s)”.

No-Burn Plus Spray Seal is also vapor semi-impermeable allowing it to control inward vapor drive from reservoir claddings as well as allowing for outward drying – it is a “vapor throttle” which reduces vapor flow in both directions without completely stopping vapor flow.

Walls

The No-Burn Plus Spray Seal when applied over wood based sheathings provides fire resistance and equivalency to fire retardant treated wood (FRTw).

Controlling Water

The most common residential wall is a wood frame wall with wood based sheathing. The wood based sheathing has a water control layer installed on its exterior surface. A cladding is installed over this water control layer. An air gap is provided between the cladding and the water control layer to provide drainage of rainwater that penetrates the cladding. The water control layer is typically a building paper or housewrap or a sheet water resistive barrier (Figure 1).

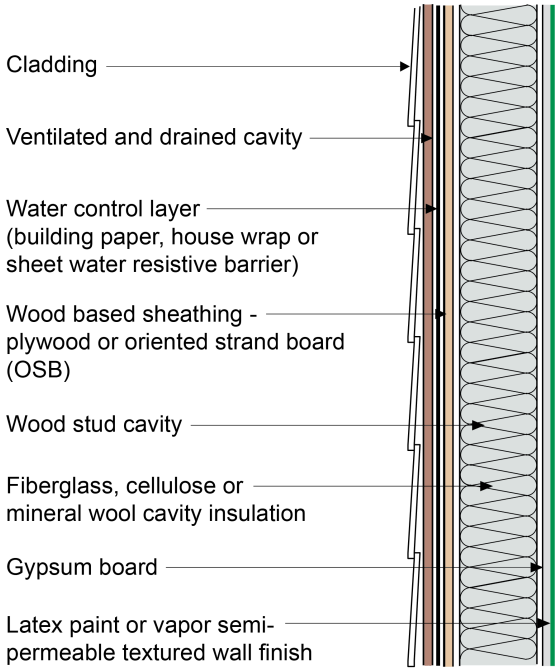

Figure 1: Common residential wall using building paper or housewrap or a sheet water resistive barrier.

Replacing the water control layer with a spray applied coating such as No-Burn Plus Spray Seal (Figure 2) turns the wood based sheathing into a water control layer. Taping of the joints of the wood based sheathings is not required.

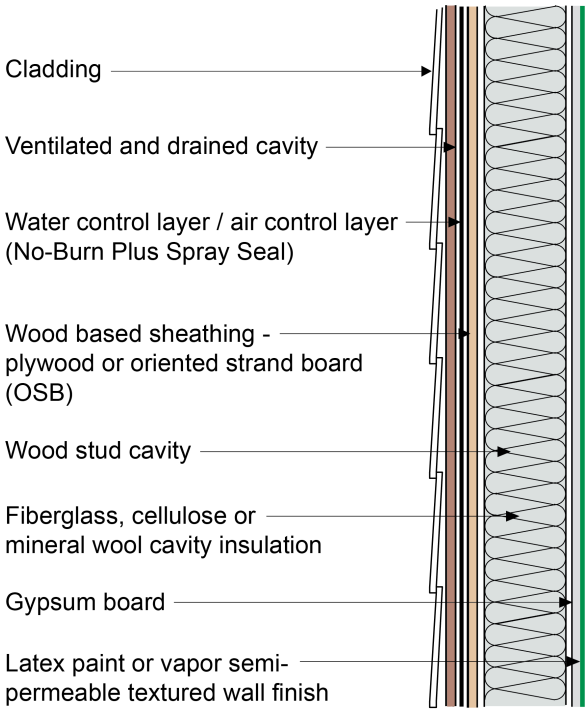

Figure 2: No-Burn Plus turns the wood based sheathing into a water control layer.

Controlling Airflow

Controlling airflow is a necessary requirement for a functional and durable building. Airflow carries moisture that impacts a materials long-term performance (serviceability) and structural integrity (durability). Airflow also affects building behavior in a fire (spread of smoke and other toxic gases, supply of oxygen), indoor air quality (distribution of pollutants and location of microbial reservoirs) and thermal energy use. One of the key strategies in the control of airflow is the use of an air control layer (“air barrier”).

Air control layers (“air barriers”) are systems of materials designed and constructed to control airflow between a conditioned space and an unconditioned space. The air barrier system is the primary air enclosure boundary that separates indoor (conditioned) air and outdoor (unconditioned) air.

Air control layers (“air barriers”) also typically define the location of the pressure boundary of the building enclosure. Air control layers (“air barriers”) should be:

- Impermeable to air flow
- Continuous over the entire building enclosure
- Able to withstand the forces that may act on them during and after construction
- Durable over the expected lifetime of the building

No-Burn Plus Spray Seal when applied over wood based sheathings meets these requirements. No-Burn Plus Spray seal acts as an air control layer (“air barrier”) (Figure 3).

Locating the air control layer (“air barrier”) on the exterior of the assembly provides significant advantages due to the ease of installation and the lack of detailing issues related to intersecting partition walls and service penetrations.

An additional advantage of exterior air barrier systems is the control of wind-washing that an exterior air seal provides with insulated cavity frame assemblies.

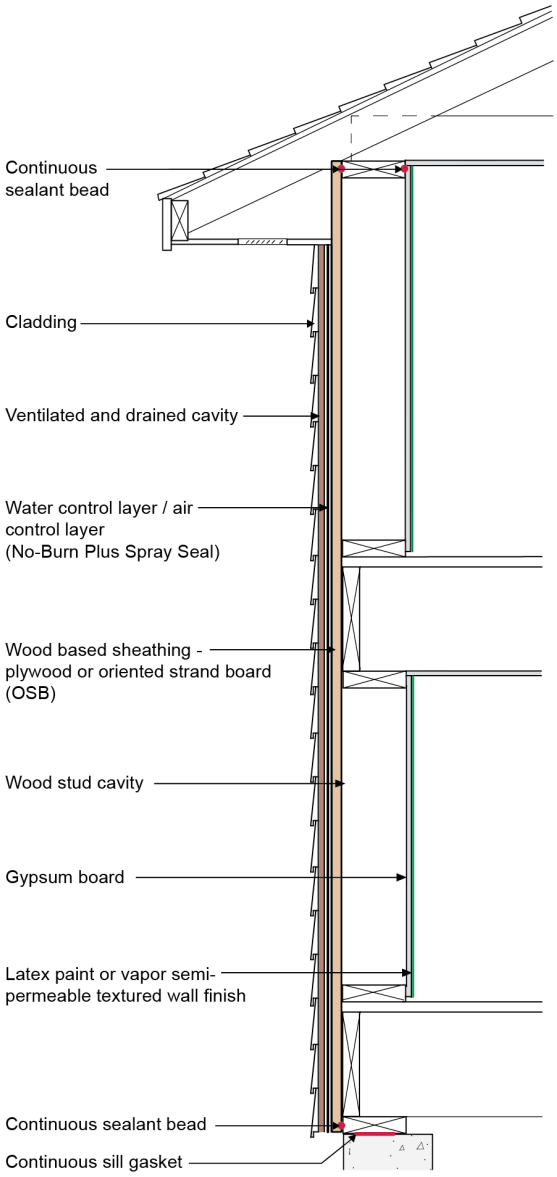

Figure 3: No-Burn Plus turns the wood based sheathing into an air control layer.

Controlling Vapor Flow

Where reservoir claddings – claddings that absorb and store rainwater such as brick veneers, stone veneers and stucco – are installed over vapor permeable water control layers and plywood which is vapor permeable – inward vapor drive can be an issue (Figure 4). No-Burn Plus Spray Seal acts as a "vapor throttle" to reduce inward vapor flow. Note that No-Burn Plus Spray Seal is not a "vapor barrier" and as such still allows outward vapor drying in a controlled manner (Figure 5). No-Burn Plus Spray Seal is vapor semi-impermeable, and it reduces vapor flow in both directions without completely stopping vapor flow.

Exterior Conditions
Temperature: 80°F
Relative humidity: 75%
Vapor pressure: 2.49kPa

Conditions within Cavity:
Temperature: 100°F
Relative humidity: 100%
Vapor pressure: 6.45kPa

Interior Conditions
Temperature: 75°F
Relative humidity: 60%
Vapor pressure: 1.82kPa

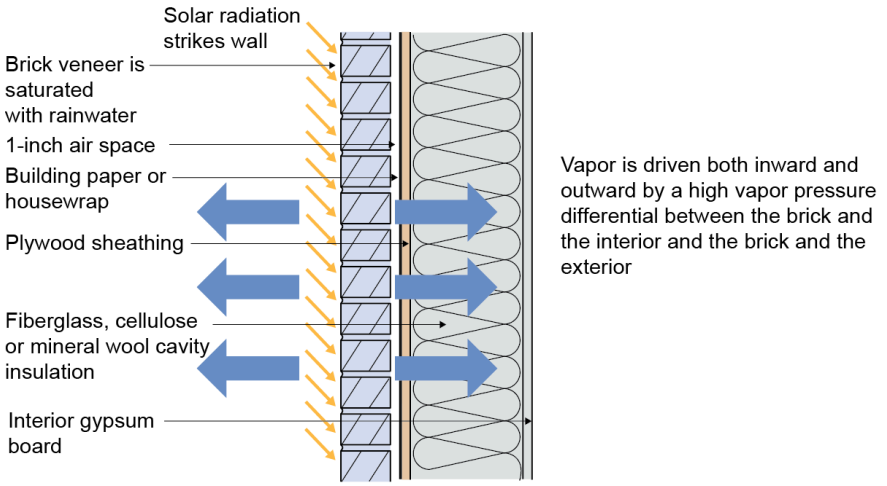

Figure 4: Reservoir claddings – claddings that absorb and store rainwater – inward drive.

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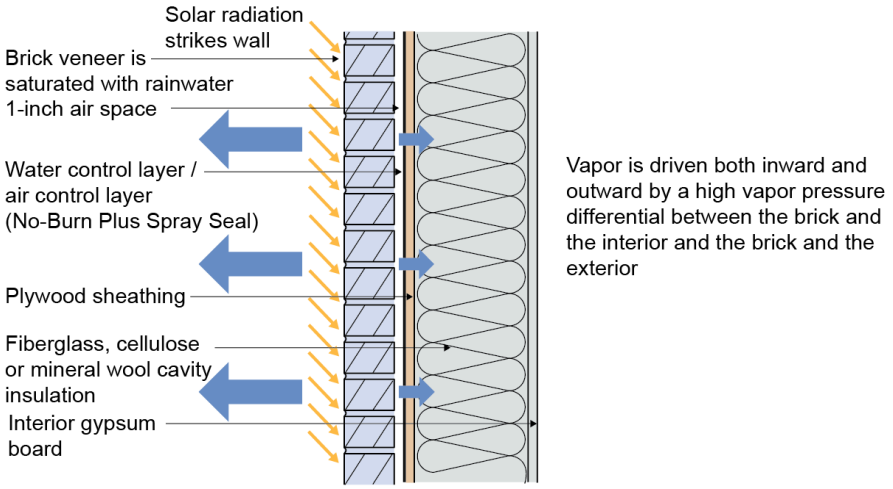

Figure 5: No-Burn Plus Spray Seal acts as a “vapor throttle” to reduce inward vapor flow.

Conclusion

No-Burn Plus Spray Seal meets the building code requirements (IRC, IBC) of an “air barrier” material and when coupled with sheathing meets the requirements of an “air barrier assembly”. Additionally, when coupled with sheathing it meets the building code requirements (IRC, IBC) for water control of “water resistive barriers (wrb’s)”.

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