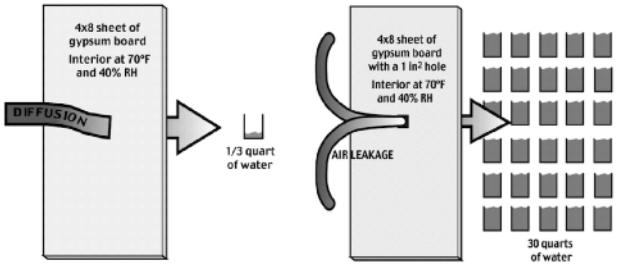
HYBRID WALLS
Understanding the Science

Thermodynamics 101: Warm air migrates to cold air. High pressure migrates to low pressure. High moisture migrates to low moisture. Gravity and air promote drainage and drying.

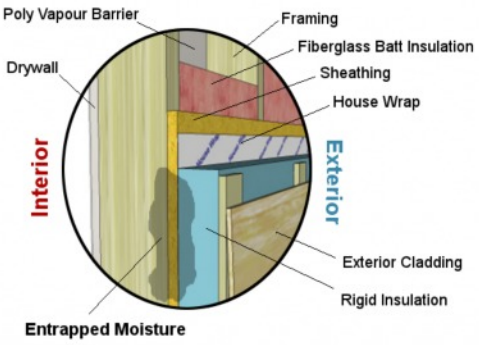


Is a poly vapour barrier required on the inside of walls?

The most misunderstood building science topic is the requirement of a poly vapour barrier on the interior side of framed wall assemblies. Top building experts agree, careful air sealing, not vapour barriers are the key to keeping moisture out of wall cavities. Air movement accounts for more than 98% of all water vapor movement in building cavities. A poly vapor barrier can be substituted with primers or paint.

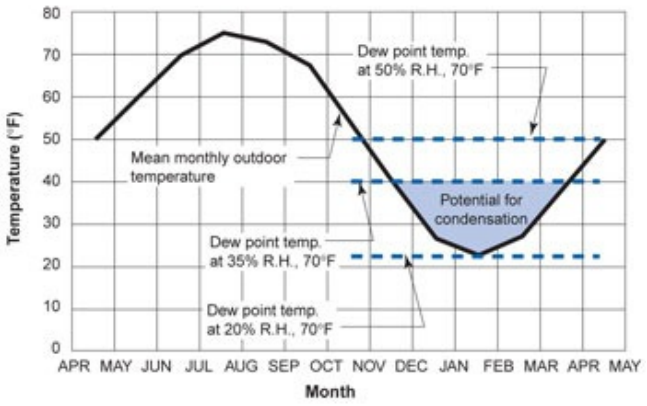
What is a double vapour barrier and why is it a potential problem?

Poly installed between drywall and studs with flat rigid foam installed on the outside. Flat rigid foam, tight against a flat substrate impedes a walls ability to dry to the outside. Simultaneously, a poly vapor barrier impedes its ability to dry to the inside. High density and foil faced foam restricts drying more than low density foam. The inability for the wall to drain and dry creates an environment for mold and material degradation. Wet walls significantly reduce effective thermal performance.



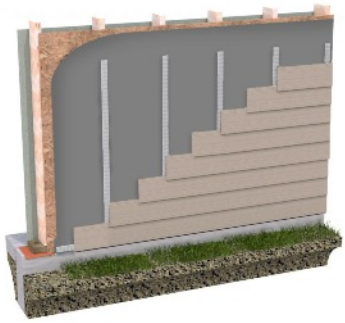
Can flat rigid foam be installed safely on the outside of cavity insulated walls?

Yes, but building materials should be dry before insulation is installed. Joints should be taped and sealed. Uncontrolled air leaks increase the potential for moisture problems. To prevent condensation within framed wall cavities, a thick layer of foam is required. Why? Because thicker insulation will help maintain the temperature within the cavity above the dew point. The thicker the insulation the better. Contractors must be diligent when detailing and installing.



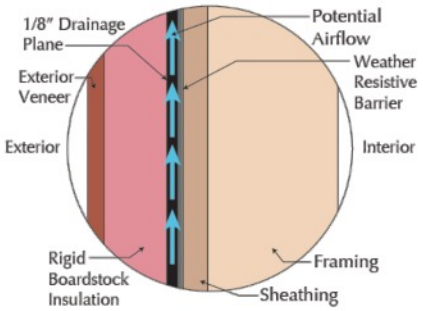
What is a rain screen and why is it important?

A rain screen is a larger air space/gap than a drainage gap. It is typically created by adding wood or steel furring between the substrate or rigid insulation and the exterior cladding. A rain screen drains bulk water to the outside and enhances drying of cladding materials and insulation. To allow for maximum air circulation (drying), a rain screen is open at the top and bottom.



What is a drainage plane and why is it important?

A drainage plane is a small 3 to 5 mm (1/8” to 3/16”) vertical air gap between rigid foam and the substrate. Gravity forces bulk water down and outward. At the same time, air circulation (convection) within the gap promotes drying of the substrate and insulation. A drainage (air) gap mitigates the potential for mold and material degradation. There is no double vapour barrier with a free-air drainage gap.



What are engineered perforations and why are they important?

Think of the perforations as a back up valve for the drainage gap. When the drainage air gap is holding more moisture/vapour than its potential, excess vapor will migrate through the perforations into the foam panel. When the gap begins to dry, the vapor in the the foam will migrate back to the air gap. Some folks refer to the movement of moisture back and forth as “breathing”.

Why should I consider Solar Dry (SDI) for my Buildings?

- **Solar Dry is a science based insulation technology.** Results of studies by RDH Building Science Laboratories, Morrison Hershfield, Built Environments and Intertek/ATI were instrumental in the design and development of SDI.
- **5 Solutions - 1 Application.** WRB, rain screen, continuous insulation, drainage and drying plane - all in one.
- **Lightweight and resilient.** Intuitive, fast and easy to install. Up to 6 inches thick. No itch. Promotes a healthy living environment.
- **Lean Construction technology.** Low overall material and labour cost.
- **Fire tested to CAN/ULC-S101.** Up to and including six stories - wood frame.
- **Low Embodied Energy.** EPS achieves an A+ summary rating across the majority of critical environmental performance matrices.
- **Reduced moisture** liability for Designer and Contractor.