

WITH EXTERIOR INSULATION -- DO I USE BUILDING PAPER? DO I CAULK THE JOINTS?

Last Updated: Thursday, March 28th, 2013, Created: Thursday, October 14th, 1999

An incredible number of exterior insulation jobs are done wrong and do not follow the building codes requirements regarding the use of building paper. This can lead to immediate water problems inside the wall (rain penetration or condensation) or less evident long term decay. Building paper (more properly called "Sheathing Paper") is added to a wall for the purpose of keeping rain and wind that penetrates the siding from reaching the inside of the wall. At the same time it protects the wall from rain and wind it must be able to let humidity (humidity that we failed to stop with the inside vapour barrier and inside air sealing) escape towards the outdoors. That is, it must breath. (search keyword "walls" for the title "WHAT DOES IT MEAN TO SAY A WALL MUST BREATHE?") Do not use "Roofing Paper" on walls as it does not breath enough. Use "Sheathing Paper" that is labeled -- "Breather Type". The guy at the store will often say that it makes no difference. He's wrong. There are new "House Wraps" like Tyvek and Tyvar that, although more expensive than traditional sheathing paper, are becoming the standard precisely because they stop water, have very few joints and breath very well. The rain, wind and breathing functions of sheathing paper are carefully defined by building codes. Exterior insulation must help these functions or at least not interfere with them. Manufactures of almost all the types of exterior insulation half-heartedly recommend putting the required one layer of sheathing paper over their insulation before the siding. In renovation jobs, very few people do it at all and very few inspectors complain. Hard statistics on damage resulting from the absence of the sheathing paper are not yet available but lets look at the reasoning behind good practices for each insulating material. If exterior insulation has square butt joints between sheets, then rain and wind can get past the insulation into the wall. If it has lapped or tongue and groove edges all around each sheet then it will block the rain and most of the wind. If it is made of a material that cannot breath (two low a permeability), then breathing must be allowed through the joints although cold wind could also enter there.-- Fiberglass exterior insulation panels (GlassClad) are covered with a good waterproof, windproof and breathing type paper (Tyvek, the same as the housewrap) but they have square butt joints. All the joints should be sealed with special tape that will stick to the Tyvek. Now it is acceptable to leave off the sheathing paper (actually it's already there as the facing on the insulation) IF all the joints and cut edges are sealed with this plastic tape. The joints are now waterproofed and windproofed while the panels themselves will breath.-- Expanded Polystyrene panels (bead board) come in a variety of shapes and sizes. The panels themselves will breath a bit, enough to allow moisture to escape from the walls directly through the panels like the GlassClad. Often people caulk the joints of bead board rather than putting sheathing paper over the wall. They think they are doing a super job but hidden underneath the new siding the job will be falling apart. Bead board panels expand and contract so much that within a couple of months the caulking will crack, leaving pathways for rain and wind to penetrate the wall. Don't waste caulking on the joints. If the panels have square butt joints -- definitely add a layer of sheathing paper. If they have all around lapped or tongue & groove joints, it "might" work if the required layer of sheathing paper is left off, but "no problems yet" does not mean that there will be no problems in the future.-- Extruded Polystyrene (both blue and pink) panels in general are considered vapour barriers and moisture will not breath though the panels. (There is one exception to this that I will talk about later called CladMate.) For many years most of these panels were 2 feet x 8 feet, were installed horizontally and the ship-lapped joints were not sealed to allow for moisture escape. Because of these open joints, they should definitely be covered with a sheathing paper or better yet a house wrap. In the US these panels are made 4 ft x 8 ft and more and more 4x8 foam sheets are finding their way into Canada. If they are thick enough to represent an important part of the walls insulation, they will keep the inside

of the wall warm enough that there will probably be no problems. US practices of putting large 4x8 sheets of 1/2 inch thick foam could create problems in the Canadian climate, especially if there is already good insulation in the wall. The dew point is too far inside the wall. To counter this problem (real or perceived) Dow Styrofoam created a special Canadian product called CladMate. Its main characteristic is that this foam has a permeability rating of more than one, which means it is not classified as a vapour barrier. In fact, this product, with tapes cut edges and properly nailed half lapped joints has been certified as an air barrier -- eliminating the need for a sheathing paper and saving money. But this only applies to the specific product called CladMate and not to other Styrofoam insulations. Personally I would not experiment with this question on my own house. With the exception of GlassClad or Clad Mate, used with special sheathing tape to seal cut edges, I would always follow the code and add one layer of sheathing breather type paper (or better yet but more expensive Tyvek or other housewrap) over exterior insulation before the siding.

Keywords:

Walls, Insulation, House Wrap, Sheathing

Article 843

www.joneakes.com