

## **IS A VAPOR BARRIER NEEDED FOR A CELLULOSE INSULATED HOME?**

**Regal Industries official position is that no vapor barriers are to be purposely installed in a home insulated with our products.** Refrigerated rooms and indoor swimming pool rooms can be exceptions. Contact us for evaluation of those special circumstances.

In times past when not many homes were air conditioned, a vapor barrier on the “warm side in winter” made more sense than it does today. Practically all homes built now are air-conditioned. In the summertime, there is a vapor pressure difference that wants to force water vapor to the inside of an air-conditioned structure. As a matter of fact, the vapor pressure difference can be as much as 4 times greater for summer than it is for winter. Why stop that water vapor progress at a point inside the wall? A vapor barrier is counter-productive. For normal house construction, the water vapor should be allowed to go through the wall assembly and evaporate on the other side regardless which side that may be. Of course, refrigerated rooms are the exception.

Cellulose insulation has the ability to wick vast amounts of water to the surface where it evaporates. To test this, get a handful of cellulose insulation and wet it into a glob until it drips with water. Lay it on your desk. It will be completely dry in two days. Put a wet glob in a plastic bag and see how fast it dries. Millions of homes have been retrofit insulated with cellulose insulation. They are insulated by blowing cellulose into the cavities through a one-inch diameter hole. No vapor barriers can be installed. Why should new homes be different when it comes to vapor barriers? Most Building Codes require it for all types of building assemblies. Practically all building scientists believe that the prescriptive requirement for vapor barriers is wrong. Not all building assemblies perform the same way in regards to moisture and/or retention. It is just a matter of time until the Building Codes are changed.

The American Society of Heating and Air Conditioning Engineers (ASHACE) and the Department of Energy(DOE) performed tests on 103 homes in the Spokane, Washington area. These homes had no vapor barriers. For many of the homes, the walls and attic were insulated with cellulose insulation. One conclusion of the test was that **no vapor barriers were needed**. The lack of a vapor barrier did not increase condensation or moisture damage. The wicking action of the cellulose was thought to be a factor in providing protection from damage.

The University of Saskatchewan built three houses in 1919. The walls and ceilings were

insulated with **cellulose insulation without any vapor barriers**. (Yes, there was cellulose insulation in 1919.) The National Research Council inspected those homes for moisture damage. One of the houses was completely dismantled and examined. Their conclusions were that the natural back wicking properties and resistance to airflow of **cellulose insulation prevented moisture damage**.

If there is no vapor barrier, will local moisture condensation within the cellulose thermal insulation mass lower the R-value? ASTM-C755 “Selection of Vapor Retarders for Thermal Insulation” addresses that specific issue in Paragraph 5.3.1. “...If the zone where it, (moisture condensation), occurs is thin and perpendicular to the heat flow path, The reduction, (R-Value reduction) is not extreme. **Generally, hygroscopic moisture, (absorbed moisture from the air), in insulation can be disregarded.**”

Regal Industries will fully stand behind any house insulation system put in with our Product as we recommend. But, if it is installed in a manner contrary to our recommendations (that is, with a vapor barrier), that is another matter. Our official position is that **no vapor barriers are to be installed with our Regal Wall system**.