

Log Home R-Value

One of the most common questions we are asked is:

What is the R-value of a log home?

By the book, the R-value of a log home is not very high - a 6 inch thick log wall will generally yield a formal R-value below R-10. However, the technique used to evaluate the R-value is based on measuring the heat transfer through a material. Solid wood literally absorbs heat within its cellular structure, so it should be apparent that its performance in such tests would be low.

However, wood has one major benefit that affects its energy efficiency that is not accounted for using the standard R-value rating system- thermal mass. In a sense, a solid log wall acts like a thermal battery, storing heat and slowly releasing it over time as temperatures drop. The thicker the log wall, the bigger this battery effect will be.

This is an oversimplified view of things, but it may explain why, for decades, log home owners have reported low heating and cooling bills, and good air quality. The fact that wood has this thermal storage capability must be considered when evaluating the energy efficiency of a log wall system, not just its R-value.

Beyond the R-value of a log, there are many important factors to deal with when making a any kind of home energy efficient. For example:

- designing the home to respect maximum glass surface areas
- designing for solar gain where possible
- choosing good quality windows and doors, preferably low-e/argon gas
- ensuring that all joints are properly caulked and sealed
- ensuring that vapour barriers are installed in accordance with best practices
- selecting proper sealing compounds (chinking, acoustic sealer, caulking, foam)
- following a rigorous inspection process to ensure quality workmanship

Ensuring that a log home is airtight and energy efficient is no different from any other form of construction. Special attention must be paid to corners, joints, window and door openings, mechanical service openings, and structural points.

Attention to these elements, more than anything, will affect the energy efficiency and air quality of your home in a beneficial manner.

If you would like to read more about the insulating characteristics of wood, check out this web page:

http://www.cmhc-schl.gc.ca/en/burema/gesein/abhose/abhose_ce21.cfm

