

## Understanding How Insulation Works -

When installing or maintaining insulation in your home, either in your walls, attic, or crawlspace, you should understand how the insulation works and which type is best for your home. Besides new construction, where architects generally design and plan for certain types of insulation ahead of the actual construction, updating and refitting your home with the most efficient insulation possible can have benefits you will see and feel immediately.

Before continuing, these are the most common types of insulation found in a home (there are many additional types of insulation as well):

- Fiberglass batts or rolls, commonly used for unfinished walls, floors and ceilings, fitted between studs, joists and beams.
- Foam block or board, can be installed on outside of walls (new construction) or inside (existing homes). Used for unfinished walls, including foundation walls, often used during new construction or major renovations. Also useful for unvented, low-slope roofs (cathedral ceilings, etc).
- Concrete blocks, often found in foundation walls.
- Loose-fill, blown in. Hard to access places, large open spaces.
- Spray foam, foam-in-place. Unfinished attic floors, enclosed existing walls.
- Structural insulated panels. Roofs for new construction.

Each type of insulation will have a different calculated “R-Value”. R-Value measures heat transfer by conduction, convection, and radiation, the “capacity of an insulation material to resist heat flow”. The higher the R-Value, the greater the insulating power.

What you see:		What it probably is	Depth (inches)	Total R-value
Loose fibers	light-weight yellow, pink, or white	fiberglass	_____	=2.5×depth
	dense gray or near-white, may have black specks	rock wool	_____	=2.8×depth
	small gray flat pieces or fibers (from newsprint)	cellulose	_____	=3.7×depth
Granules	light-weight	vermiculite or perlite	_____	=2.7×depth
Batts	light-weight yellow, pink, or white	fiberglass	_____	=3.2×depth

There are charts and simple calculation options online to determine the R-Value of your home’s existing insulation material, the above chart is an example. As an Oregon Certified Home Inspector, determining and reporting the type, condition and measuring the depth of insulation is a required portion of my inspection of a home.

While materials and types of insulation may differ, their R-Value measurements can remain consistent. This allows for a certain R-Value to be reached, even if different types insulation must be installed in different parts of the home. Cost and installation, air leakage, accessibility, new or existing construction, these are some of the factors one must consider when determining which type of insulation is best for their home.

Improper installation and issues with air leakage are considered to be the most common defects discovered during a typical home inspection. R-Values can only be achieved if insulation is installed according to the manufacturers recommendations, and attention is paid to sealing joints, seams and cracks in the home.



If you have questions regarding your home's insulation, or would like to request an inspection, please contact me today. Need a second opinion, or further evaluation regarding a Home Energy Score? I can provide a detailed report regarding the different systems of your home which currently have or should be insulated and air sealed.

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