

Insulation ratings are measured in R-values per inch of thickness. An R-value tells you how well a type of insulation can keep heat from leaving or entering your home. Insulation R-values vary based on the type, thickness and density of the insulation material. Typically, a higher insulation R rating means better climate control and better energy efficiency for your home. A higher insulation R-value usually means a higher price point as well.

For every type and material of insulation, check the R-value per inch of thickness that the manufacturer has listed. In general, the insulation's method of installation can give you an idea of how it compares to other types of insulation.

Here are the installation methods from lowest to highest average R-value per inch:

- Blown-in (or loose-fill) insulation
- Insulation blankets (batts and rolls)
- Spray foam insulation
- Foam board insulation

Note that the material the insulation is made from will change the R-value as well.

if properly installed and maintained, a commercial single-ply membrane roof can last 30 years.

Single-Ply Membranes are sheets of rubber and other synthetics that can be ballasted, mechanically fastened, or chemically adhered to insulation creating a layer of protection on your commercial facility.

While Single-Ply Membrane Roofing is one of the most well-known types of commercial roofing material, there are several types to fit your budget and facility needs.

There are two main types of single-ply membrane commercial roofing: Thermoplastic Polyolefin (TPO) and Ethylene Propylene Diene Terpolymer (EPDM).

They differ in their chemical makeup, how they are installed, and their energy efficiencies.

Crystalline Polymers

1. Have a relatively sharp melting point.
2. Have an ordered arrangement of molecule chains.
3. Generally require higher temperatures to flow well when compared to Amorphous.
4. Reinforcement with fibers increases the load-bearing capabilities considerably.
5. Shrink more than Amorphous, causing a greater tendency for warpage.

6. Fiber reinforcement significantly decreases warpage.
7. Usually produce opaque parts due to their molecular structure.

Amorphous Polymers:

1. Have no true melting point and soften gradually.
2. Have a random orientation of molecules; chains can lie in any direction.
3. Do not flow as easily in a mold as Crystalline Polymers.
4. Shrink less than Crystalline Polymers.
5. Generally yield transparent, water-clear parts.

Zone	Attic	WALLS		Floors	Crawlspace
		2x4	2x6		
7	R49 to R60	R13 to R15	R19 to R21	R25 - R30	R25 to R30
6	R49 to R60	R13 to R15	R19 to R21	R25 - R30	R25 to R30
5	R38 to R60	R13 to R15	R19 to R21	R25 - R30	R25 to R30
4	R38 to R60	R13 to R15	R19 to R21	R25 - R30	R25 to R30
3	R30 to R60	R13 to R15	R19 to R21	R25	R19 to R25
2	R30 to R49	R13 to R15	R19 to R21	R13	R13 to R19
1	R30 to R49	R13 to R15	R19 to R21	R13	R13

The performance range of both amorphous and semi-crystalline polymers varies in relationship to their cost.

