

# Heat insulating materials list

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Typical R-values are given for various materials and structures as approximations based on the average of available figures and are sorted by lowest value. R-value at 1" gives R-values normalised to a 1 metre (3"ft 3"in) thickness and sorts by median value of the range.

There are many types of insulation in houses. In fact, with all these fiberglasses, batts, foam board, and so on, figuring out which is the best type of insulation can be quite overwhelming. That's why we have created a simplified and structured approach to different types of insulation; supplemented by photos of each insulation type.

Some insulation types are better for walls, others are better for ceilings, and the majority of the characteristics of insulation types come down to structural properties and R-values.

To get a full understanding of insulation materials, we are going to cover all 9 types of insulation used in houses. We are going to go type-by-type to get a good overview. Here is the shortlist of all the types of insulation used in residential properties:

In order to not get lost in all these insulation types, we are going to cover each type of insulation one by one. For each type, we will specify what it is (and include a photo just to illustrate what it looks like), what insulation materials are used, where you can install such insulation (wall, basement, attics, etc.), and what are typical R values.

Basically, we are laying blankets of insulation on our unfinished walls, floors, and even ceilings (in attic or basements). Batt insulation is made out of different materials, including:

R-value of fiberglass batts is very high. You are looking at anywhere from R-2.9 to R-3.8 per inch of different types of batt insulation. High-density batts with compressed fiberglass can reach R-values as high as R-4.3.

We have batt insulation with or without facing. Facing is basically an aluminum foil layer (also kraft paper, or vinyl) that covers the batts. These facing can work as air barriers, radiant barriers (we cover radiant barriers in #6 type below), or vapor barriers.

Pretty much everybody is familiar with batt insulation. The key advantage of this type of insulation is that you can install it yourself (DIY insulation) and it's pretty cheap compared to other types of insulation.

If you want to build a high R-value house insulation, you usually start with concrete block insulation. As with any concrete blocks, these ones are used to build the house foundation and walls. Construction-wise, however, you may determine that the cores of some concrete blocks don't need to provide additional support.

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In that case, you can use concrete blocks that are filled with insulation material; thereby raising the overall wall and foundation R-values during construction.

As about 80% of the total volume of the blocks is air, you can imagine these concrete blocks are very light. They are quite easy to handle, you can shape them with a regular saw to fit the building requirements.

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