

Ask Jon Eakes

Crawl Space Moisture Barriers

Last Updated: Wednesday, October 5th, 2022, Created: Monday, September 5th, 2005

Hi Jon and Crew... I am in the process of putting down vapour barrier in my crawl space (what a chore). Two questions: 1) Should I bring in sand or similar material to level out the dirt floor? It has heaves due to natural pitch of the land of up to three feet in various areas. I am thinking that level is best. 2) Should I consider a dehumidifier and/or small fan to add to the minimizing of humidity. There is a growing mold problem in the house (especially on antique furniture) that is driving my wife mad!
Warton, Ontario.

----- Any exposed soil in a basement or crawl space should be covered with a vapour barrier as a rather incredible quantity of moisture can rise from the soil into the house. Even soil that appears to be dry can be a conduit for moisture. My most remarkable example was when we undertook this task in a downtown Montreal triplex where the first floor apartment was extremely humid. Even before we had covered the entire crawl space with plastic, the humidity had plummeted 15% in the apartment above. This is so important that it is now a general recommendation that in the coastal areas of BC it is recommended to install a vapour barrier and no crawl space ventilation, as there the ventilation is bringing in more moisture than it is taking out and the plastic prevents most of the moisture from entering from the soil.

The good news is that it is relatively easy to do.

First, this vapour barrier does not necessarily need to be sealed, nor perfect. Here we are fighting evaporation. Whatever percentage of the soil that is covered with plastic is the percentage of evaporation that will be stopped. If you miss little spots or have joints in the plastic, it is not like a bucket of water that will eventually all leak out. Here if you cover 90% of the soil, you will stop 90% of the evaporation and reduce humidity in the house from this source by 90%. (There are other sources of humidity, but this is often the most important.) I recommend that you simply pile rocks or scraps of wood over the edges of the plastic to keep it in place. Overlap it about a foot where you have two pieces of plastic, and cut it out around obstructions and posts without trying to be a perfect seamstress.

Should the ground be perfectly leveled out or slopped? Generally we don't bother at all. The only importance this could have is if there is an accumulation of water from above, rain water or a plumbing leak. The water will accumulate on the plastic and will need to be drained. If it all accumulates in one low spot, that makes it easier to do.

Should the plastic be covered with sand or gravel? This is often recommended but is not necessary. The only reason to put a covering over the plastic is to allow you to walk on it and not tear it apart. In a crawl spaced that is rarely used, I prefer to simply place some boards over the plastic that allow you to walk or crawl to whatever you need access to, like water valves. The rest can remain simply plastic. If you use the space for storage, arrange somehow to not damage the plastic.

What plastic should be used? The plastic should be 6mil thick, as is polyethylene designated as a vapour barrier for general construction. You want to use plastic this thick or thicker for the simple reason that it can take abuse better than cheaper plastics. You will find a choice between transparent or black. Here it is a question as to your attitude towards bugs. Bugs which like moisture will accumulate under the plastic, and stay there in the moisture. If you use transparent plastic, you will see them. If you use black plastic, you will not see them. Both collect bugs.

There are now some commercial services, primarily Basement Systems Inc. which have lots of local franchises. In Quebec it is Systems Sous-Sol Quebec. They line dirt floor basements or crawl spaces with a thick white vinyl cover that is totally sealed to the concrete walls and at any overlaps. It is the best job, but rather expensive compared to the 6 mil poly DIY installation. A significant reduction in humidity can be accomplished without going to this extreme - but totally sealed is the best. One of the primary advantages of leveling the soil and installing a thick vinyl is that the area becomes clean

useable storage.

Keywords:

Mold, Moisture, Crawl Space, Humidity, Vapour Barrier, Damp Proof, Moisture Barrier, Mildew, Membrane

Article 2061

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