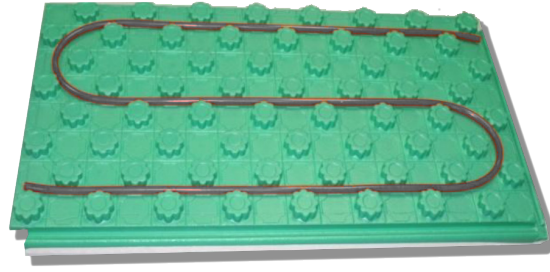


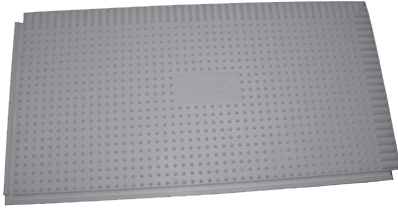
CRETE-HEAT™ Insulated Floor Panel Systems

The Crete-Heat™ Insulated Floor Panel System, is an easily assembled modular board insulation, vapor barrier and PERT tub holding grid that allows for simplified installation of hydronic radiant floor heating systems in basements, garages, main floor slab on grade and above grade installations where concrete or gypcrete is normally used.



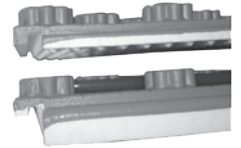
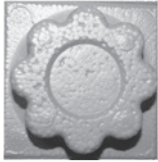
PROPERTIES

The Crete-Heat™ Insulated Floor Panel System is 2 7/8" overall in thickness, with 2" of solid EPS foam providing an R-10. Our retrofit or above grade panel provides 2 1/8" overall in thickness, with 1" of solid EPS foam providing an R-6 with a 23db sound reduction knob on the lower surface. Each interlocking panel covers up to 8 square feet with fasteners for 1/2" and 3/8" radiant tubing. A 10-mil polystyrene film provides the vapor barrier.



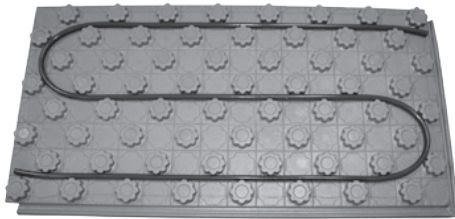
TERMINOLOGY

- Knob: The high spot on the panel that holds the PERT tubing in place.
- Flat: Those areas on the top of the panel that have no knob.
- Tongue: That part of the panel that overlaps and interlocks with the groove.
- Groove: That part of the panel that receives the tongue.



PERT TUBING

Both models of the Crete-Heat™ Insulated Floor Panel System will accommodate both 1/2" and 3/8" and in some cases 3/4" PERT tubing.



TECHNICAL SPECIFICATIONS

All testing was done by Warnok-Hersey's ETL Semko. ETL Semko is an independent laboratory that performs product testing in North America and Europe.

INSTALLATION BASICS

Attending an installation training course on radiant heating is a good idea. There are some fantastic products out there today and by attending a training session you get to learn about them as well as how to do the best job possible for customer. Some states require certification for installers.

The Crete-Heat™ Insulated Floor Panel System Installation

ESTIMATING

- Simply multiply length times width of the structure, say it's 38 X 60 which equals 2280 square feet.
- As the panels are 8 square feet, divide the 2280 by 8 and you get 285 panels required for the job.
- Panels come in bundles of 8 or 12 depending on the thickness of the panel required for the job. You must further divide to determine the number of bundles. Such as $285 / 8 = 35.625$ bundles. Round up to the nearest whole bundle or in this case 36 bundles.

FILL MATERIAL

There are many different materials used as fill in sub-slab radiant heat applications. Crushed limestone, sand and gravel are just a few. Although any material commonly used will work with the panels, sand seems to be the easiest to level.

LEVELING

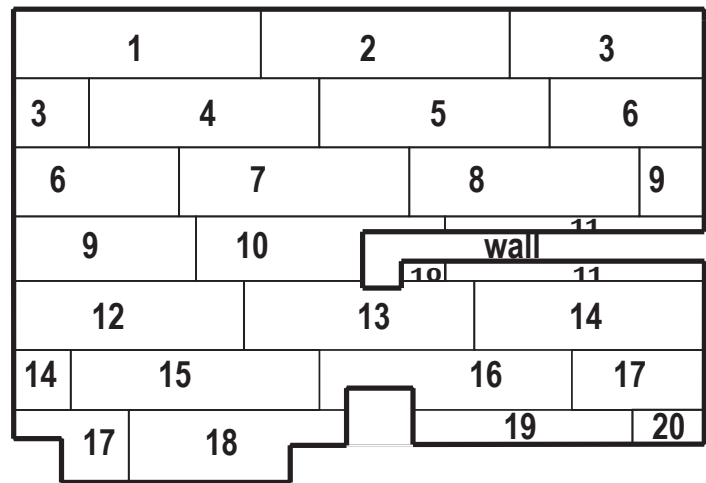
Fill material should be leveled as close to $\pm 1/4"$ as is reasonable. One of the benefits of using the panel is that the 2' x 4' panels will float independently of the surrounding panels thereby eliminating broken foam boards and trip hazards. You can also level as you go if you feel comfortable with the beginning grade of your fill material.

DETERMINING THE LAYOUT

Rectangular structures offer no real challenges in determining which direction you will work in laying the panels. If one of the dimensions is evenly divisible two or four, work along that dimension.

Structures with irregular exterior walls will require you to think a little about how best to proceed.

Assuming the top of the drawing is North, Keeping cuts to a minimum should be your primary concern. The west to east dimension is 11 feet. The north-south dimension is 13 feet. In general, starting at the upper left-hand corner of the room is preferred as the panels work best left to right as you would read words on a page. In the above illustration the numbers reflect the panel used with the proper layout to minimize waste.



GETTING STARTED

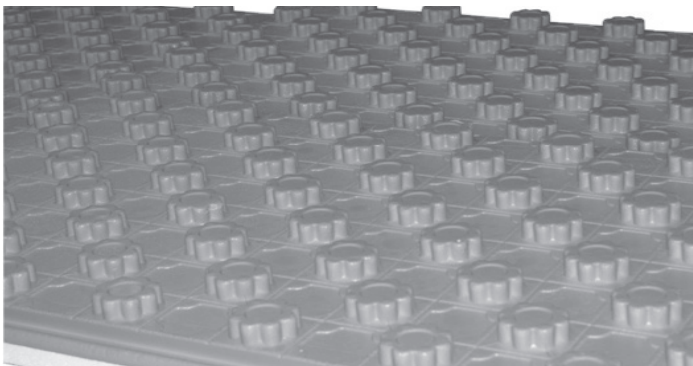
Using a box cutter or key hole saw, cut the tongue portion of the interlock off of the 4' dimension going along the north wall as well as the tongue portion that will butt up against the west wall.

- Doing this ensures that you get a tight fit next to the wall with a solid 2" of foam and eliminates any air gap.
- The grooves of the panels should always be at the bottom of the 4' dimension and to the right on the 2' dimension.
- Place the panel with the 4' length along the north wall and the cut end of the 2' length against the west wall.
- Successive panels to be placed in this row now only need the tongue along the 4' dimension trimmed.
- Place trimmed panels so that they interlock along the 2' dimension.
- Continue placing trimmed panels until you get to the east wall. You will most likely need to cut the final panel in this row to fit it in place.

CUTTING THE PANELS

Cutting full panels is very easy. Simply score the top of the panel at the length you want and then flip it foam side up and hit the panel on the ground and it will break along the score line. The smaller the panel piece the harder this becomes. This is when you will use your keyhole saw.

Take the remainder of the panel that was cut in the previous step and return to where you began the first row. Place the cut panel from the previous row as the first panel in the second row and so on. The reason for the preceding step is twofold. First, we want to make sure that we stagger the joints where panels come together to avoid common seams. Second, we want to minimize waste.



NOTE: The panels are divided into 3" squares. Each square either contains a knob or a flat and they alternate every other square. When placing the first panel of a new row you must check to verify that from row to row, this alternating sequence of knob-flat-knob-flat is not interrupted. Otherwise it could cause difficulties when laying the PERT tube later on.

If the flat-knob-flat sequence is interrupted when beginning a new row, simply cut three more inches of the panel off. This will get the sequence back in proper order. Now it is simply a matter of repeating these steps until you have installed the The Crete-Heat™ Insulated Floor Panel System throughout the entire area to be heated.

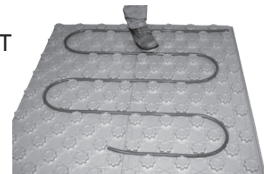
It is a good idea to go back after each couple of rows and walk along the interlock area of the panels to ensure that the panels are locked together.

INSTALLING THE PERT TUBING

- Place the PERT tube in the panel at the required separation points per the specifications of the HVAC designer. Installing the PERT should be a one person job using an uncoiler to hold the PERT tubing.



- The only tip about making the PERT installation easier is that when making a turn, ensure the PERT is fully seated in the knobs before beginning or continuing a run.



- Other than ensuring the PERT is securely in the panel when making a corner, installation is as simple as walking the tube into place.

SPACING THE PERT

It is extremely easy to ensure that your runs are properly spaced. Simply count the number of knobs and flats and multiply by 3 to get your 6,9,12-inch spacing.

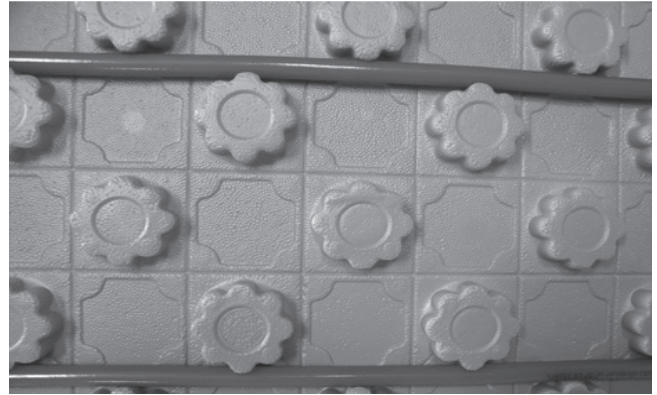
CONCRETE PLACEMENT

One of the many benefits of the Crete-Heat™ Insulated Floor Panel System is that the PERT tubing is below the working surface of the foam. So if the installer is not the same person placing the concrete you don't have to worry about the crew walking on the PERT tubing during the pour. The tube is less likely to pop up nor is it going to be kicked out of place or rolled over with a wheelbarrow full of concrete. Concrete is placed and finished in the same manor as on any other job. Wire mesh and rebar can be laid directly on top of the panels if it is required.



NEED MORE REASONS TO BUY?

- Tremendous labor savings. One-person PERT installation frees up others for other jobs or to reduce overhead labor costs.
- PERT tube spacing is exactly on 3" increment centers. No more "close enough".
- No taping required
- Minimal waste
- Marked 3" increments make for ease of exact cutting.
- No more balky staplers to fail you

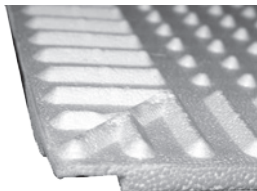


WHY BUY?

The Crete-Heat Insulated Floor Panel System does the job of three items: the foam, the vapor barrier and the staples or zip ties. This means less items to estimate and remember to purchase and take to the job site or run out of.

Panels come in bundles of 8 or 12 depending on the thickness of the panel required for the job. Easy to move around the site and store. Panels have been placed in UV protected bags to protect the panels during storage outdoors. No more getting blown around by the wind while handling 4' X 8' sheets and having to find a large rock to weigh them down.

- 4' X 8' sheets are cumbersome to handle.
- Create trip hazards where sheets meet because they don't lay flat or interlock.
- Tube sits on top of sheet creating trip hazard and is susceptible to damage from foot or equipment traffic.



And while we're at it

Talking about keeping it simple.

With other methods an error in placing a run means damaged foam, wasted staples and a lot of wasted labor. With the Crete-Heat Insulated Floor Panel System you simply pull the tube up, place it where you need it and walk it back in. Minimal added labor costs and no damaged, unusable product or components!

The Crete-Heat™ Insulated Floor Panel System is very easy to use and strong. It reduces the inventory you have to purchase making life easier for everyone involved with the project.