

# Floor covering in a basement

Last Updated: Tuesday, June 1st, 2021, Created: Tuesday, January 27th, 2004

I'm asked a lot about covering a floor in a basement. There are several considerations we need to deal with: the hard and cold concrete and maybe with levelling the floor. Of course we need to pay attention to water, either coming from outside the house or from plumbing spills inside the house since the basement is the bottom line where all water finally stops and that is the reason that real hardwood floors almost always get into trouble when they are installed on a basement floor.

## Foam Insulation

Foam insulation under the slab is the best way to deal with the coldness, done during original construction. If that was not done, then you could put foam and plywood over the slab for both moisture protection and insulation, but that becomes quite expensive. So what do we do in real life? Finishings glued directly to the concrete

Both vinyl flooring and industrial carpets can be glued right to the concrete. This is neither soft nor warm, but it is direct and quick. Water coming from anywhere will cause these floors problems. You could put a floating floor in the basement but because of the high potential for water from somewhere to get to this flooring, you should not use masonite based products but rather what are called engineered flooring made out of a real plywood base and real hardwood top. Even this would get into trouble with a large water spill.

## Leveling an uneven floor

If you have a radically uneven floor, you will need to build a sub-floor. That allows you to level it out, have drainage under the floor and stand off of the concrete. Of course you lose a lot of head room and building a level floor is a big job.

## Drainage Layers

There are a couple of practical alternatives when you don't need to level out a radically un-level floor. First is a full sheet of dimpled plastic called Delta FL that is rolled out over the floor and covered with plywood or OSB at least 7/16" thick, although many people use standard 5/8" T&G subfloor plywood over it. The "dimples" hold the flooring up off of the concrete as a disconnect from the hard concrete and a lot of separation from the cold of the concrete. Perhaps most importantly this sheet provides for unobstructed drainage right under the floor. Understand that these large membranes are usually sealed to themselves, preventing moisture from the concrete from rising up into the floor covering above. However that same sealing will prevent them from draining a plumbing flood or a storm flood through the window. In these cases the water will flow over the assembly until it gets to an unsealed edge or to an open drain.

If your concern is draining major water flow you should consider the TekSill which lets water flow under the walls with or without the Delta FL membrane.

The second option is similar in concept but is sold in 2'x2' pieces that have the dimpled plastic already glued to a piece of OSB that has T&G edges all around and it all fits together like a floor tile. You can use little pieces of of mating plastic as shims for minor dips in the floor. Serveral companies make variations of this, often considered a DIY alternative to the Delta FL sheet, under names like DriCore, SubFlor and DriFlor.

## Moisture protection even when drainage is not needed

The one major difference between these two concepts -- full sheets vs tiled squares, is that Delta FL actually wants you to seal the joints between rolls of the membrane, creating a vapour barrier which protects the wood above. It is true that there is no need to "ventilate" this floor space -- moisture in the form of vapour will go up and down from the concrete, but any liquid will flow to the floor drain. The 2x2 tile format does not provide for creating a vapour barrier under the floor. If there is no real moisture present and you are only using this as an insurance policy against a plumbing flood and hence there is rarely any moisture to migrate through joints, then the tile concept can do the job. On

the other hand, if you need to seal the basement against all gas, such as in Radon remedial work, then you will want to use the rolls.

#### Costs

We did some cost comparisons for a whole range of possibilities for your basement floor. Remember that these prices will be only relative to each other because they were for a given day in a given city in Canadian dollars and prices for each element do vary regionally and with time.

When a contractor rolls out Delta FL for about \$0.76 CAD a square foot, they will usually cover it with 5/8 inch T&G flooring panels, bring this quick sub floor to about \$1.39 CAD a square foot.

Surprisingly, the DIY 2x2 SubFlor version with OSB glued to the plastic came out slightly cheaper at \$1.37 CAD a square foot.

Vinyl and industrial carpet can be glued right to the floor of a dry basement for about \$1.20 CAD a square foot, but they are not warm nor moisture protected.

For \$5.25 CAD a square foot you can get an engineered wood floating floor that goes over a plastic sheet and the foam pad which sit right on the ground. This gives you a little separation from the cold concrete, some protection from moisture coming from below the slab but no protection from a plumbing spill.

If you want to put the carpet or vinyl flooring over the Delta FL, the dimples will show through, so you must use the plywood. That about doubles the cost of these floorings compared to using them right on the concrete but turns them into trouble free flooring.

Here is a nifty money saving trick. With engineered flooring, you can put down the Delta FL without the plywood at about \$0.76 CAD the square foot and the laminate with its foam pad can be put right over it. The wood bridges the dimples. So for very little more than just a floating floor, you get the protection and comfort of Delta FL. This is a very nice way to finish a basement floor.

#### March 2013 -- Structural support

Tom wrote in asking, If you use laminate over Delta FL, can you put heavy objects such as washers, dryers, toilets, whirlpool tubs etc. on top of it or would this eventually crush the Delta FL.

I wasn't sure of the answer so I went to Delta and they said no problem. In fact their answer, including information about recycled plastic and virgin plastic is fascinating - and very educational:

"The DELTA-FL has a compressive strength of 5200 lbs per square foot. This means it can take a lot of weight. So heavy objects like pool tables, washers and dryers or hot tubs are not a problem. This is even less of a concern when any floating floor or plywood is over top because they will further distribute the load.

As an aside, this is one reason why we always use virgin polyethylene when manufacturing DELTA-FL. While recycled membrane will [help] the environment, recycled polyethylene develops stress cracks and cannot stand up to the medium and long term pressures without deformation. Materials that are not durable and have a short life cycle do not meet our goal of sustainability.

Of course, the other reason we use virgin polyethylene in DELTA-FL is that when you use post-consumer recycled material (taken from the curbside household blue box), you cannot control the make up of the material. We use this all the time in our exterior below grade membrane DELTA-MS. These recycled materials can retain the smell of whatever they contained originally, such as laundry soap or bleach. This is unchanged by the manufacturing process. It is not an issue outside on the foundation wall, but it is very undesirable inside in basement living space. This is why you cannot interchange our DELTA-MS with DELTA-FL, even though the specifications and design look otherwise identical.

Another critical issue is the full sealing of the DELTA-FL. It is important to realize that in order for the membrane to act as a vapour barrier, it must be fully sealed. This is the only way that the dampness coming through the basement floor will be kept out of the living space. We are often asked about this. There is no such thing as a ventilated vapour barrier. Concrete does not need to breathe. Ventilation spaces will also allow that moist air to get to the wood or wood composite floor, the layer most susceptible to moisture.

Regards, Peter Barrett, Product Manager, Cosella-Dorcken Products. Inc.

**Keywords:**

Drainage, Hardwood, Carpet, Moisture, Vinyl, Floors, Types, Flood, Laminate, Protection, Water Management, Basement, Water

**Article 1943**

[www.joneakes.com](http://www.joneakes.com)