



A hole in the vapor barrier the size of a 5/8" stake hole will allow more moisture through that hole and will create a localized failure in a moisture sensitive floor.



The specifications call for a visqueen or polyethylene sheet 6-10 mils thick for our slab on grade vapor barrier/retarder, which is to be placed under a sand blotter course. The specifications also call out for several different flooring materials for the on-grade slab, including VCT, carpet, and ceramic tile. Is this specification okay for the SOG vapor barrier/retarder? Does the product specified conflict with any other specification section, material installation requirements, or even code requirements we have on our project? There is a lot of items to consider for this very important component when it comes to the product type and installation location. It's not our job to question the specifications, however, we must make sure that these products are coordinated with all products being installed, as identified in the typical Contract. The answers are found in several locations throughout the specifications, manufacturer installation requirements, and code standards. This Quality Bulletin summarizes this information for your understanding and use.

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Codes and other standards that affect the SOG vapor barrier/retarder material and location:

- ACI 302.1R, ACI 302.2R, ACI 360R, ASTM E1643, ASTM E1745, & ASTM F710, as well as the manufacturer requirements for the flooring being installed.

Location of the SOG vapor barrier/retarder—according to ACI 302.1R, ACI 302.2R, & ACI 360R:

- If we have a moisture sensitive floor such as VCT, sheet goods, epoxy, carpet, etc. we should be placing the vapor barrier/retarder directly under the SOG per ACI 302.1R & ACI 302.2R.
- If we are installing concrete SOG with out a moisture sensitive floor, however, the building enclosure will not be installed until after the pour...place the vapor barrier/retarder directly under the SOG.

What does the Flooring Manufacturer require:

- Most material data references ACI, ASTM E1643, ASTM E1745, & ASTM F710 to be followed.

What are the requirements of ASI 302.1R & 3.2.2R, ASTM E1643, ASTM E1745, & ASTM F710:

- Perm rating of at least 0.1 perms
- Minimum thickness of 0.010" (10 mil)
- Puncture resistance of 13.6#ft/in (Class C), 30#ft/in (Class B), or 45#ft/in (Class A) as per ASTM E154, test method B.
- Class A puncture resistance is generally needed for a vapor barrier/retarder to be placed on stone, such as CA-6.
- Tensile strength of 475g (Class C), 1,700g (Class B), or 2,200g (Class A) as per ASTM D1709.
- Lap joints 6" or as instructed by the manufacturer.
- Seal laps with manufacturer's recommended adhesive and or pressure sensitive tape.
- Seal to foundation walls, seal around penetrations.
- Use concrete brick type reinforcing bar supports or provide a 6"x6" protective pad under chairs.
- Repair damage by a minimum 6" overlap in all directions.
- Installation as described above is required per code, regardless of specifications.**

Does 6mil, 10mil, or even 15mil polyethylene or visqueen meet the standards?

- Polyethylene/Visqueen typically will NOT meet the standards of ASTM 1745 for Class A, B, or C.
- The thicker poly (10mil) might have the perm rating needed, however...
- It does not have the puncture resistance necessary to withstand construction traffic.
- It can get brittle and decompose over time.

What should Pepper Construction recommend based on the facts?

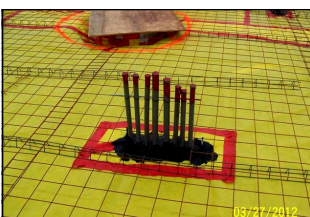
- A 15 mil multi-layer, virgin resin material, Class A, that meets or exceeds ASTM 1745.
- A 10 mil is marginally acceptable if there will not be a lot of traffic prior to the pour or rebar in the slab.
- The use of manufacturer mastic at penetrations. This will improve labor time and overall quality.

Approximate drying time of concrete with a vapor barrier based on water/cement ratio?

- Over the years, the flooring industry has come up with a "rule of thumb" which states that the time necessary for normal weight concrete floors to reach an acceptable moisture content is: 1 month of drying for each inch of concrete when subjected to ideal conditions (*enclosed building with tempered air at 70°F/50%RH*). Lightweight concrete is typically greater...
 - The concrete floor will "re-wet" until proper environmental conditions are met.
 - This is true for SOG with a vapor barrier and metal deck construction.
 - A Quality Bulletin outlining the drying time of slab based on time/w/c ratio and RH will follow soon.



We should never use polyethylene for a slab on grade vapor barrier.



This is a good use of the manufacturer's mastic material at penetrations.

If your project specifications specify a non-compliant vapor barrier/retarder, please suggest the correct material and include this Technical Bulletin as back-up...or Contact the Director of QM for assistance.

