

## How to Use Vapor Barriers Under Slabs

Vapor barriers are routinely used to prevent the migration of water through a concrete slab to interior areas. While there are many circumstances that require the use of a vapor barrier, when used unnecessarily or improperly, they can create problems.

### When to Use a Vapor Barrier

- When a sealer, coating, or other impermeable surface treatment will be applied to the slab surface.
- When stored merchandise or machinery must be protected from moisture damage.
- When moisture-sensitive flooring or flooring adhesives will be used.

### When Not to Use a Vapor Barrier

- When sites are well drained and below the water table (try using compacted granular fill at least 6 inches thick in place of a vapor barrier).
- If the soil stays relatively dry year round (with no irrigation, heavy sprinkling, or heavy rainfall).

### Common Problems Caused by Vapor Barriers

Vapor barriers restrict the movement of bleed water, allowing it to migrate in one direction only. This one-way upward migration can cause a host of problems:

- Slab warping and curling.
- Drying shrinkage cracking.
- Popouts.
- Soft, dusting surfaces.
- Surface blistering and scaling.

### Recommended Practices

If you feel your site conditions require a vapor barrier, try some of the following suggestions.

- Place at least a 6-inch thick layer of sand on the polyethylene sheeting. Be sure to keep the subgrade low enough to accommodate this extra thickness.
- Use a concrete mixture with a minimum cement mixture of 5-1/2 sacks per cubic yard.
- Reduce bleeding by small amounts of air entrainment, approximately 3 – 5 %. Use a minimum of 5-1/2 % for exterior concrete.
- Use concrete with the lowest possible slump.
- Use an accelerator, if possible, to minimize uneven settling.
- Reduce the cement's water content with a water-reducing admixture.
- Properly moist cure the slab to prevent surface drying, which may cause the slab to curl.