



### CONCRETE BLISTERS

Blisters are small hollow bumps, usually no more than an inch in diameter, that form under a dense troweled skin of mortar about one-eighth of an inch thick. Theories vary as to why this condition occurs. Some experts believe that incidental air pockets rise in sticky concrete (concrete that has a higher cement content or excessive fine sand) and becomes trapped under a dense surface skin produced by troweling. Another theory is that bleed water rises and forms a pocket under the skin. After the water has been reabsorbed into the underlying concrete, it leaves behind a void that protrudes above the surface.

#### Why Blisters Occur

- A cool sub-grade results in the concrete at the bottom setting more slowly than concrete at the surface, which allows pockets of air to become trapped under the surface skin.
- Concrete is sticky from a high cement content or excessive fine sand.
- Entrained air is used, or is higher than normal, so that the surface is ready to finish earlier.
- Excessive use of a jitterbug or vibrating screed, resulting in a thick mortar layer on top.

#### What to Do About It

- Do not seal the surface before air or bleed water has had a chance to escape. Be cautious with concrete surfaces that seem ready to trowel before expected to be. Concrete should be placed, straight edged and floated as quickly as possible without working up an excessive layer of fat, then covered with polyethylene sheeting or wet burlap to minimize evaporation. Delay finishing as long as possible.
- Use of an accelerator or heated concrete can help prevent blistering in cool weather by promoting even settling throughout the depth of the slab.
- Don't place concrete directly on polyethylene sheeting.