MOVEMENT AND MOISTURE CONTROL

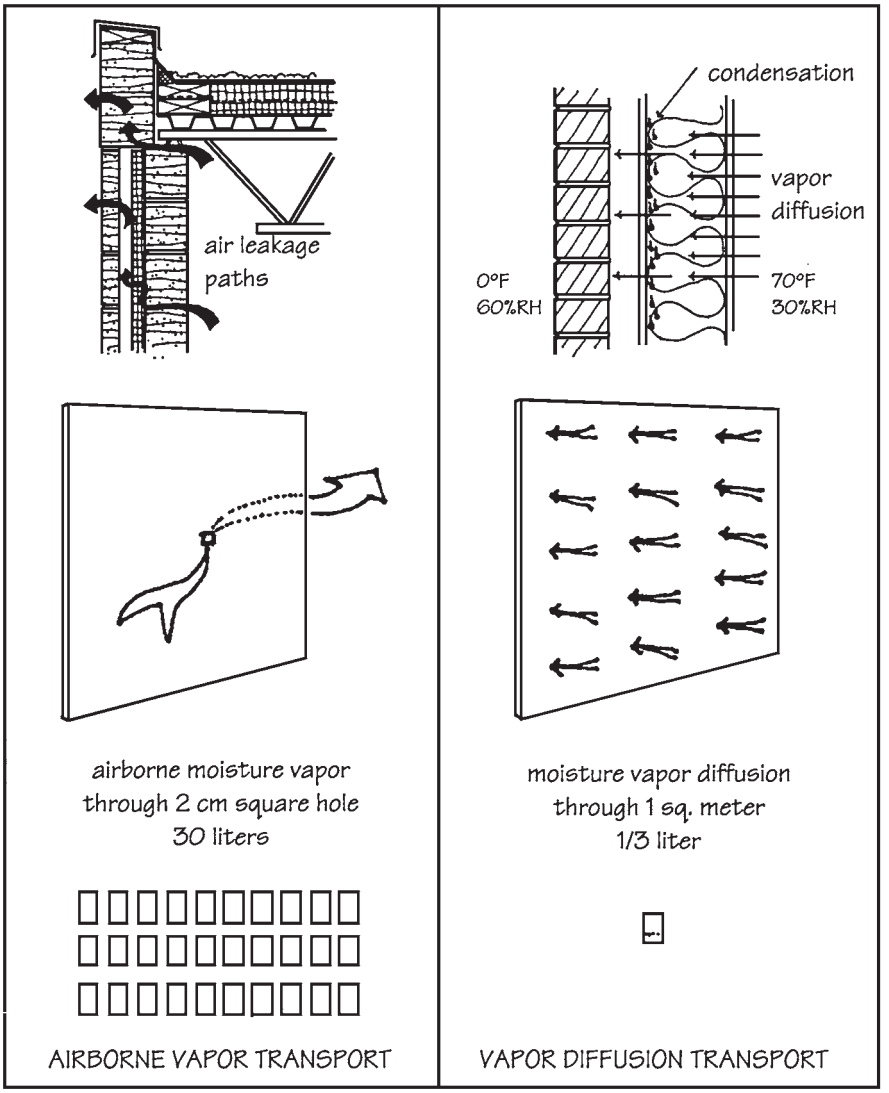

Figure 9-56 A much larger quantity of water vapor is transported through the building envelope by air leaks than by diffusion. (*From R. L. Quirouette,* The Difference between a Vapor Barrier and an Air Barrier, *National Research Council of Canada, Ottawa, 1985; and Canadian Homebuilder's Association,* Builder's Manual, *CHBA, Ottawa, 1994.*)

surface-water absorption in concrete masonry water penetration. Some paint films and various other coatings are impervious to vapor flow and, if placed on the wrong side of the wall, can trap moisture inside the masonry unit. Local climatic conditions must be evaluated in determining the direction of vapor flow.

Applied coatings must be carefully selected on the basis of their permeability. Inadvertent use of an impermeable or low-permeance surface finish on the cold side of a wall can create problems that are difficult and expensive to correct. A heavy paint film will prevent some rainwater from entering a wall but, more significantly, it will impede the escape of moisture entering the wall from other sources. Water may enter through pores in materials, partially filled mortar joints, improperly flashed copings, sills, parapet walls,

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defective sealant joints and so on, through capillary contact with the ground, or through any number of other means. Moisture escapes from a wall in only two ways: (1) through continuous cavities with flashing and weep holes, and (2) by evaporation at the wall face (breathing). Low-permeance coatings (or a buildup of multiple coating layers) may blister or delaminate from both interior and exterior surfaces under certain circumstances (*see Fig. 9-57*).

There are numerous types of paint suitable for masonry walls, including cement-based paints, water-thinned emulsions, fill coats, solvent-thinned paints, and high-build textured acrylic coatings. In selecting a paint finish system, there are several things to consider. Paint products that are based on drying oils may be attacked by free alkali from the units or mortar. Alkaline-resistant paints and primers are recommended to prevent this, or the masonry must fully cure before painting. Surface conditions must also be considered, and preparations suitable to the selected finish made. Efflorescence must be removed from a masonry surface and observed for recurrence prior to painting. New masonry must not be washed with acid cleaning solutions if paint is to be applied. If low-alkali portland cement is not used in the mortar, it may be necessary to neutralize the wall with a 2- to 3½-lb/gal solution of zinc chloride or zinc sulfate and water. Existing masonry must be cleaned of dirt, mold, moss, mildew, and other contaminants. Walls must be wetted before any cleaning solution is applied, and thoroughly rinsed afterward to prevent unfavorable paint reactions or chemical contribution to efflorescence.

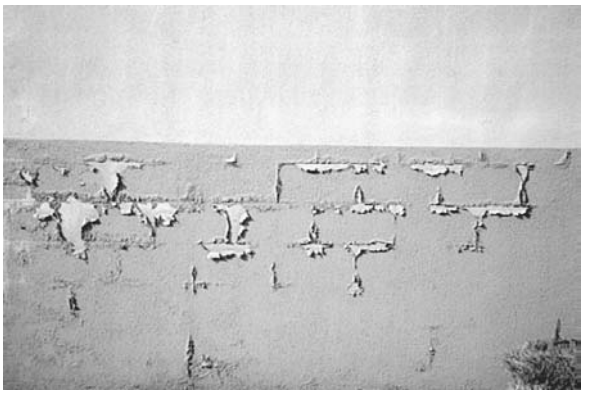

Figure 9-57 Vapor permeance of coatings affects moisture movement through walls and can inhibit evaporation or the wall's ability to "breathe."

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