Alkalinity and its Consequences for floor adhesives and most flooring material

In the presence of moisture, alkalinity is always an integral part of concrete or other cement based materials. The degree to which alkalinity exists depend largely on the composition of the cement used for construction.

Primarily responsible for high alkalinity levels are highly soluble metal oxides such as Potassium and Sodium Hydroxides. Calcium hydroxide also contributes to alkalinity, but often to a lesser extent.

It is not unusual to find alkalinity levels of up to pH 13-14 contained in floor-blister water (condensate) on top of water vapor driven concrete substrates.

It is almost impossible to pre-determine alkalinity levels in moisture vapor driven concrete because vapor has the ability to leach Potassium /Sodium ions out of the cement paste to carry them to the concrete surface where these ions accumulate in the surface condensate underneath a flooring /coating system with low vapor permeability. Even so called low alkaline cements (< .60%) can create pH levels in osmotic blister water in excess of pH 13. One cannot rely on surface carbonation to drop alkalinity levels to below pH 10 (maximum acceptable pH levels for most floor adhesives) because moisture vapor will eventually increase alkalinity levels far in excess of what floor adhesives can tolerate.

Therefore, any moisture mitigation system *must* have the ability to be totally unaffected by alkalinity levels of up to pH of 14 to protect alkaline sensitive adhesives and floor coverings long term. Cured adhesives are not negatively affected by moisture only; extensive tests revealed that well cured adhesives showed no sign of damage when exposed to moisture only. However, when alkalinity was increased to levels exceeding pH 10 to pH 12 extensive softening and eventually severe damage resulted, clearly indicating that alkalinity is "the enemy".