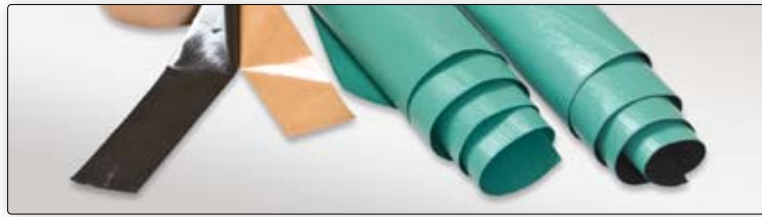


# **BARRIER-BAC**

IntePlus® XF FILM



Solving The Problem Of  
Vapor Barrier

Peel Adhesion With Technology



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# WHITE PAPER

# The Beginning of the Problem...

Following passage of the 1998 legislation which eliminated use of solvent based adhesives for attaching in door commercial floor coverings, new problems arose in the flooring industry due to moisture vapor migration through concrete slab-on-grade. While still in use, the solvent based adhesives provided topical protection from moisture migration. However, new water based adhesives, which replaced the solvent based adhesives, were sensitive to moisture coming through concrete slab-on-grade in the form of moisture vapor transmission. Moisture reaching the top of the slab often resulted in re-emulsification of water based adhesives as well as causing significant damage to sensitive flooring systems.

## Development of a Solution

Research, focused on finding a solution to this issue, resulted in the development of ASTM E 1745-96, test methods for evaluating a vapor barrier membrane used in contact with earth. This method, now updated to ASTM E 1745-09, uses a number of test methods to evaluate the performance of vapor barrier membranes including the water vapor moisture transmission rate and several other physical performance characteristics related to the environmental stability of these materials. Also, to avoid rapid degradation of the vapor barrier membrane, once placed beneath concrete slab-on-grade, producers of these moisture vapor barrier products determined that only by using virgin polyolefin resins in the manufacturing could long performance life span be added to these products. Therefore, general consensus in the industry led to development



◀ Wesley Brown Field House project Annapolis, MD.

◀◀ A Hospital Project, Dallas, TX VBC-350 and void forms were used together in this project.

*Barrier-Bac has developed VBC-350 – a moisture vapor barrier which uses mechanical bonding to achieve superior peel adhesion strength.*

of minimum standards for the physical performance of vapor barrier membranes used beneath concrete slab-on-grade.

Once these performance and composition characteristics were determined and established, and products were made available to the design and construction industries, the problems seemed to be solved. However, over time, it has become clear that in areas where shifting soils or sub-grade settlement occurs, smooth surfaced vapor barriers can become detached from the bottom of concrete slab-on-grade. This detachment of the vapor barrier from the bottom of the concrete slab can lead to the formation of “pockets” or puddle areas in the space between the vapor barrier surface and the concrete slab. Condensation of moisture contained within the slab collects in these pockets and eventually forms pools of moisture which can then migrate upward through the slab to adversely affect the flooring system.

## A New Class of Product

To address the issue of vapor barrier separation from the bottom of concrete slab-on-grade, some products have been developed to incorporate concrete peel adhesion to their physical characteristics. ASTM D 903 has been used as the preferred method of testing peel adhesion of vapor barrier to concrete slab. One method of achieving peel adhesion is by using an adhesive which is applied to the upper surface of the vapor barrier material: the adhesive is activated by moisture absorbed from the concrete during the pour. Adhesive methods of this type have produced vapor barrier peel adhesion

▶ A Hospital Project,  
Dallas, TX

▶▶ Wesley Brown Field  
House project, Naval  
academy, Annapolis,  
MD.



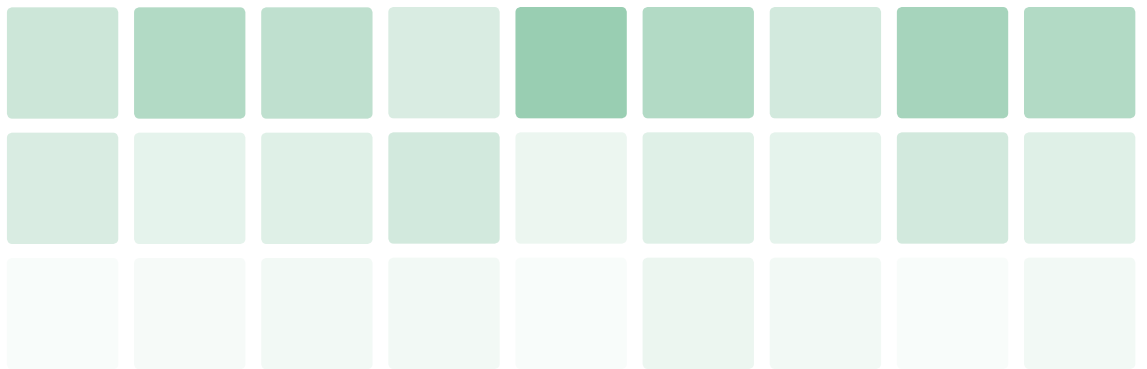
*When placing VBC-350 with geo-textile fabric facing concrete pour, the peel adhesion to concrete is up to 8 lbs /in.*

## ... Problem Solved!

to concrete up to 4.5 lb/in. Another way of achieving peel adhesion to concrete is by way of a mechanical bond. The Barrier-Bac Division of the Inteplast Group, Ltd. has developed VBC-350, a moisture vapor barrier for application beneath concrete slab-on-grade which uses mechanical bonding to achieve superior peel adhesion. VBC-350 utilizes a 16 mil ASTM E 1745-09 Class A vapor barrier membrane that is laminated to a polypropylene non woven fabric. The concrete pour is made onto the non-woven fabric side of the composite, the polypropylene fibers lock into the concrete, and superior peel adhesion is accomplished. ASTM D 903 test results of the peel adhesion to concrete resulting when using VBC-350 have shown average peel adhesion strength of 8 lb/in, twice the peel adhesion strength of adhesive bonding methods.

### Conclusion

By integrating mechanical bonding properties into the VBC-350 vapor barrier, the Barrier-Bac Division of the Inteplast Group, Ltd. has made available a proven system that will provide long term protection to sensitive flooring systems. Proper installation of VBC-350 vapor barrier beneath concrete slab-on-grade will prevent separation of the vapor barrier from the slab and provide durable long term protection to sensitive flooring systems.



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