8/12/14

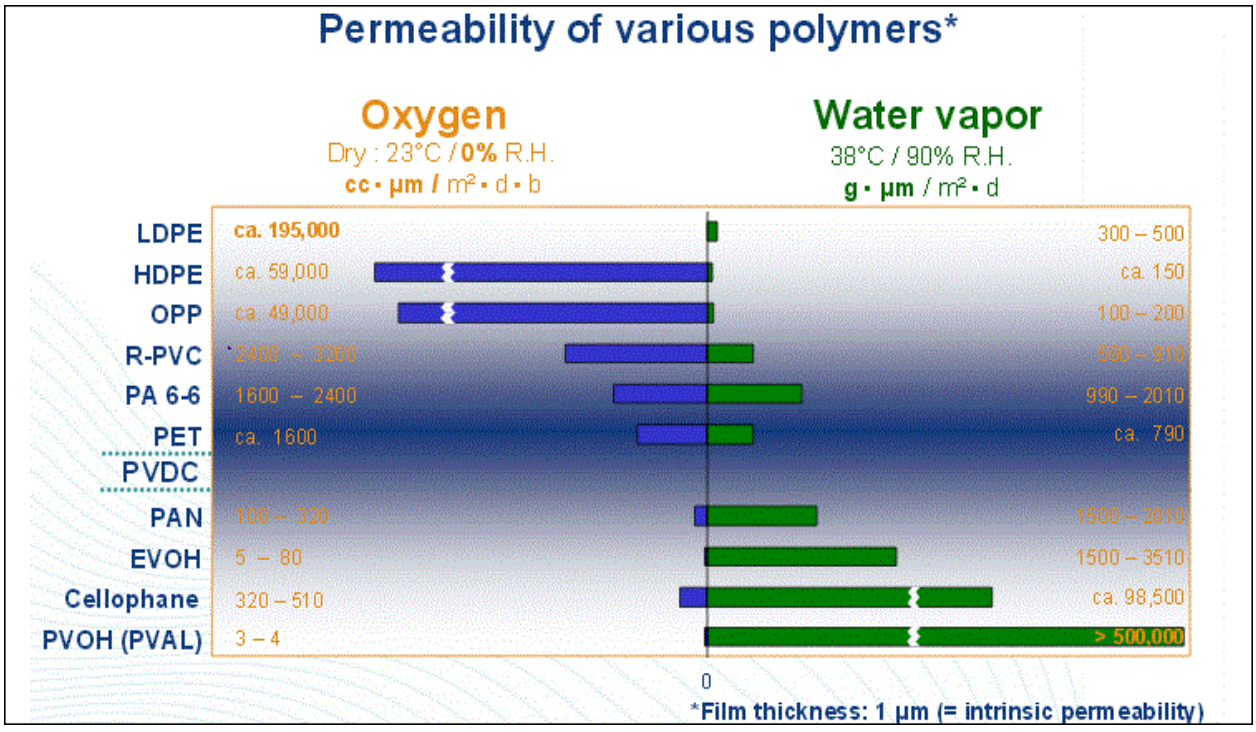
EXCERPTS AND REPRINT: Industry White paper on PVDC moisture Barrier film developments:

In a study of released in late 2005, PVDC was reported to be the leading polymer for use in the development of high performance barrier films.

*Note: PVDC modified film coatings with proprietary breakthrough technology developed in conjunction with Specialty Solutions Manufacturing, is the backbone of the **SlabTight Shield** moisture and gas blocking barrier coating.*

PVDC: New Developments, New Opportunities

Introduction: The information in this presentation will provide basic nd information on the use of PVDC resins and coatings applications. It will also give data on new grades of PVDC resins and latex films.



The graph above illustrates that the PVDC coating allows virtually NO transference of either moisture of gas vapors.

PVDC is different from most other barrier polymers, providing excellent barrier to both oxygen and water vapor, while most other barrier polymers offer just one or the other. The gas barrier properties are unaffected by relative humidity, so performance can be relied on through a wide range of environmental conditions.

Background:

Polyvinylidene chloride (PVDC) resins and coatings have been in use around the world for more than 50 years, with a unique combination of functional characteristics that has found numerous applications. It is available in a variety forms:

•Aqueous dispersions, or latex, for coating on a number of different film and paper substrates,
•Extrudable powders, for monolayer or multilayer films and sheet, and
•Soluble powders, for solvent-based coatings on films.

The unique combination of properties offered by PVDC include
•Protection from moisture loss or gain
•Protection against oxidation
Aqueous PVDC Dispersion
Extrudable PVDC Powder
Soluble PVDC Powder
•Prevention of oil and grease permeation
Excellent transparency and gloss
•Good scratch and abrasion resistance

All PVDC products on the market are actually copolymers of vinylidene chloride (VDC) and other co-monomers.

The relative amount of VDC in the copolymer dictates some key properties. With more VDC, the barrier properties are generally better; with less VDC, flexibility usually improves. However, the amount and type of co-monomer(s), as well as other additives and processing technology used, will influence other properties such as sealing, surface properties, transparency, gloss, coefficient of friction, etc.

New PVDC Developments
Even though PVDC has been around for so many years, new grades of PVDC latex and resins have been introduced in recent years that offer improved barrier vs. standard grades that have been used traditionally.

Reductions in both oxygen and water vapor transmission, rates the ability to offer higher moisture barrier solutions.

PVDC coatings have been used in this application since the late 60s, with duplex (PVDC/PVC) and triplex (PVDC/PE/PVC) structures being the most common ones used

Typical coating weights used include 40, 60, 90 and 120 g/m², with the water vapor transmission rate (WVTR) for a typical 120 g/m² PVDC-coated PVC film being around 0.16 g/m²·d at 40°C and 75% R.H.

Super B PVDC latex now being introduced achieved all of the key targets. WVTR values for 120 g/m² duplex and triplex structures are consistently around 0.08 g/m²·d, which is half that of structures made with traditional PVDC grades. Excellent oxygen barrier is also achieved, with typical OTR values for a 120 g/m² structure at 0.1 cm³/m²·d·bar.

Conclusion: PVDC is well positioned to continue to offer advanced moisture and gas barrier solutions for many years to come.

1: Allied Development Estimates, 2004.
2 Kline & Company – "High-Performance Barrier films USA," 2005.
3: Photo courtesy of Macro Engineering & Technology Inc.
Multi-layer blown film extrusion with PVDC