DUPONT®

Tedlar®

polyvinyl fluoride film

Summary of Product and Performance Guide for *Tedlar*® PVF Film in the Flexible Sign and Awning Market

Tedlar® polyvinyl fluoride (PVF) film has a unique balance of properties that makes it an ideal surfacing material for demanding outdoor applications. *Tedlar*® film is weather resistant, chemically inert, and flexible over a wide temperature range. *Tedlar*® film stands up well to atmospheric pollutants and resists acid rain attack and mildew. Moist airborne dirt does not adhere to *Tedlar*® film. The primary benefit of *Tedlar*® film is that once it becomes dirty, its initial appearance can be restored easily without harsh chemicals.

Vinyl Fabrics Surfaced with *Tedlar*® PVF Film

Manufacturers have a good deal of flexibility in fabricating a vinyl fabric surfaced with *Tedlar*® PVF film. The addition of a clear, UV-screening *Tedlar*® film on top of either an ink or a pigmented vinyl are two common methods used to add color to a base vinyl fabric. Another option is the addition of a pigmented *Tedlar*® film to the base vinyl fabric.

Colored *Tedlar*® film and clear UV-screening *Tedlar*® film protect the materials underneath them in different ways. The pigments in colored *Tedlar*® film act as natural blockers to UV and visible light and are quite durable. Because the clear films do not contain pigments, they rely on special UV-absorbing additives to initially block harmful UV light from affecting the film and the adhesive. The UV absorber additives in clear *Tedlar*® film are not permanent. Over a period of time they are slowly depleted, allowing destructive light to pass through the film. Delamination and embrittlement of clear *Tedlar*® film mark the end of useful laminate life. Studies have indicated that this time period is extremely dependent on the construction of the vinyl fabric laminate and the exposure conditions. It is important to select the appropriate *Tedlar*® film for the intended exposure conditions.

Performance Factors

Overall performance of a vinyl fabric material surfaced with *Tedlar*® PVF film is dependent on the quality and compatibility of the laminate materials and the consistency of the process used to manufacture the product. *Tedlar*® *film will not improve the performance of a laminate manufactured with materials that are inadequate for the system.* To prevent laminate discoloration and delamination of film, it is critical that the components of the vinyl fabric laminate be stable in the intended environment. The inks, vinyls, and adhesives must be thermally stable and resistant to both UV light and visible light. The adhesive must also be hydrolytically stable because the fabrics will be subjected to moisture. Accelerated weathering of fabric samples has proven to be an effective method for evaluating performance of vinyl fabrics surfaced with *Tedlar*® film.

Performance of a vinyl fabric material surfaced with *Tedlar*® PVF film is also dependent on the thermal history and intensity of light radiation that the laminate is exposed to. Ambient temperature, moisture, exposure location, exposure angle, exposure direction, and color are variables that can impact the useful life of a flexible sign or awning material. High temperatures, close proximity to the equator, horizontal surfaces, and dark colors each constitute harsh exposure conditions.

Proper design of a flexible vinyl fabric surfaced with *Tedlar*® film can enhance the product's performance and prevent field issues such as discoloration of the laminate and delamination of film from the laminate. Recommended design criteria can be found in the document "Product and Performance Guide for *Tedlar*® PVF Film in the Flexible Sign and Awning Market." This document also contains a more in-depth discussion on the contents of this bulletin.

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