

News Update

Dec 2014
Volume 30-14



PRP
proSeal™
Roof systems

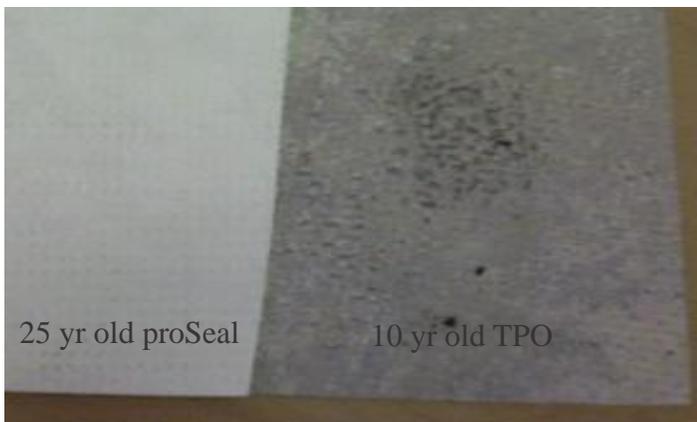
What to use PVC or TPO ?

We are continuously asked why PVC and why not TPO. The answer is quite simply....Proven, Reliable Performance. We openly recognize the market use of TPO's but at what cost. Only slightly cheaper today for the base membranes as they are sold but even that is not really a true comparison as most TPO's produced are 36 to 41 mils thick as compared PVC's as reported by the NRCA (see article) (www.professionalroofing.net/archives/past/nov01/feature2.asp).



Photo's courtesy of RSI

The image above shows a 10 years old failing TPO installation. Due to poor formulation, the membrane has cured (lost its elasticity and hardened) and the expansion / contraction created cracks which now let the water in. This problem can and likely will happen to many TPO installations from various manufacturers. Lack of testing and UL certifications follows many brands of TPO roofs. As its formulation changes too rapidly, many manufactures choose to just ship the product, without proper evaluation. Another problem associated with various TPO roofs is poor weld quality, which causes seams to come apart from each other and allows the wind to lift up the entire sheet, and eventually blowing off parts or the entire roof.



Photo's by RPW

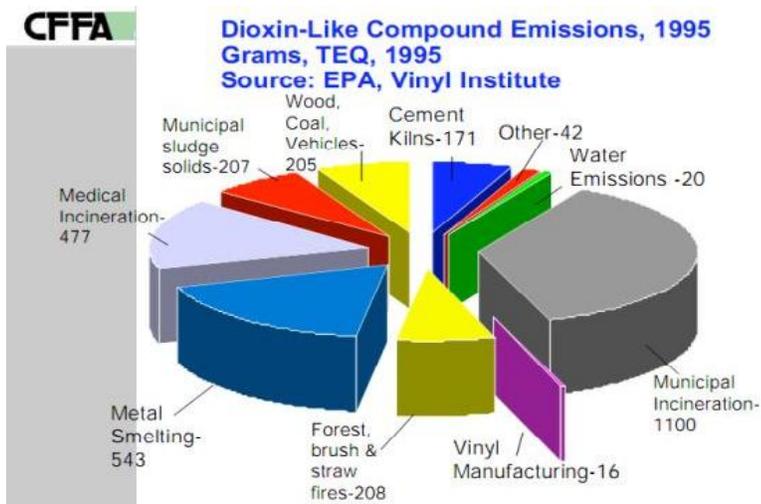
In the relatively short life span 15-20 years of TPO applications we now have seen several new generations of the product development. The numerous reported failures of the first generation during that late 90' and early 2000's brought forth the 2nd generation of TPO with some products are now on their 3rd generation, while PVC's have stood the test of time with formulations remaining unchanged. The Western States Roofing Contractors Association (WSRCA) has an excellent publication on the study of TPO test roofs which shows them having a membrane loss of 1 mil per year. (www.wsrca.com/bookstore)

Chemistry of TPO A basic Thermoplastic Polyolefin compound is inherently inexpensive. TPOs often claim to be internally plasticized and therefore immune to the plasticizer loss associated with conventional PVC roofing membranes. However, additives are required to impart fire resistance properties to the finished membrane. Increased fire resistance not only aggravates cost but also usually yields an inherent susceptibility to UV exposure. Balancing cost with long-term weather-ability and a basic building code life safety requirement such as fire resistance continues to fuel the need for "new and improved" versions. Multiple manufacturers with multiple formulations and variations do yield a multitude of choices. So does a roulette wheel. ASTM is hard at work to provide a standard specification for TPO sheet roofing. Unfortunately, the standard is doomed to be a consensus of evaluations based upon the lowest common denominator among the multitude instead of proven historical performance.

To remain competitive TPO's utilize a cheaper reinforcing scrim which allows water to wick into the interply of the membrane wherever it has been cut. A seam or cut sealant must be used to prevent delaminating of the membrane. One must also remember that it is the top 15 mils of the TPO sheet which has the majority of its weathering protection manufactured into. The balance of the sheet utilizes cheaper components and fillers as a trade off to remain as a so called economical choice. The proSeal membrane using a non-wicking scrim and the top 50% of the product is fully weatherable and the bottom ply contains all the same biocides and flame retardents as the top ply *yet* we continuously hear how PVC roofs fail, crack and poor performance. This was true in part 20 years ago when non reinforced PVC roof systems were available or through improper roof design especially of Looselaid Ballasted roofs. It would appear that the current TPO trend may just be the most expensive roof experiment to conclude whose membrane will not fail.

Numerous reports have been generated noting that PVC roof systems are not environmental complaint due the release of Dioxins. Though all manufacturing process for Vinyl release Dioxins the manufacturing of PVC roof systems and that of vinyls in general have the lowest rate of emissions as shown in the outline produced by the EPA.

As well, PVC roof systems can be recycled up to 99.5% during the life span allowing for only .5% that can not be reused in other products. This is currently not the case for TPO membranes which can not be recycled.



The recent TPO membrane cancellation is not the first time that problems with these roof systems have been experienced in the field. Difficulties with black TPO membranes have also been reported. This is not surprising considering the heat-sensitive nature of TPO compounds. Experience to date with fully adhered TPO membranes also shouts "caution." With a thermal expansion and contraction up to five times higher than reinforced PVC's, fully adhered TPO's theoretically run the risk of de-lamination or insulation facer peel. The quality of the adhesive bond to some TPO membranes has also been questioned. The use of felt-backed TPO is an obvious solution here to ensure improved performances but is an additional cost factor which is typically then rejected.

If you are considering whether to use a PVC or a TPO and are looking for that economical approach you are **NOT** doing so by using a TPO just because of price but more importantly you are participating in a extremely sensitive experiment that has not provided any savings to your client or yourself.

We would suggest that you choose a product from proven performance and reliability which is truly more economical such as the **proSeal roof system**.**Remember it's also your reputation at Risk**

Further information on the performance of TPO can be found on the following web sites
www.rsimag.com/rsi/Columns/TPO-problems-require-a-closer-look/ArticleStandard/Article/detail/6277?searchString=tpo