

In order to understand the comparability of these two systems we have to summarize the characteristic of these two ultra-durable polymers.

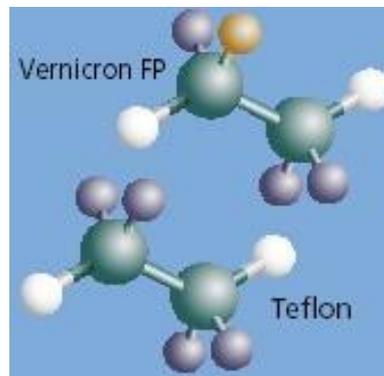
PVDF stands for Polyvinylidene Fluorid which is based on a Kynar 500 or Hylar 5000 resin which has to be blended with 50 % for plain colors or 30 % for metallic colors with an acrylic powder.

Developed 40 years ago, PVDF stands for long- term colour and gloss retention and resistance to chalking.

PVDF coatings are always at least 2-coat systems (primer and top coat) for plain colors and 3 to 4 coat systems (primer, top coat, clear coat) for metallic colors. Due to the fact that PVDF is an emulsion, the direct adhesion to the substrate is insufficient and has to be guaranteed by a primer. The porosity caused by the blending of PVDF leads also to a lack of adhesion with metallic colors wherefore metallic colors always have to be protected by a clear coat.

Fluoropolymer (FP) coatings have been developed in early 1980 basing on the good experiences made with PVDF and with the goal to improve it. The Fluoropolymer is a FEVE polymer (= Fluoroethylene Vinyether) which comes from the same family and therefore has a similar molecular structure as PTFE (Polytetrafluoroethylene). PTFE is better known under the brand name of Teflon and stands for a hard and very abrasion resistant material.

Following picture shows the similarity of the molecular structure between Vernicron FP (=Fluoropolymer) and PTFE:



The fluorine part is responsible for the durability of the molecule and is also protecting the weaker Vinylether which is needed for the properties like transparency, gloss and flexibility. As the FP resin is not a blend like PVDF there is a very strong linkage between the fluorine and the carbon atom wherefore it is very difficult to brake this linkage and no “zipper effect” can occur.

The surface is very repellent against e.g. dust, soil etc. due to a very low surface tension. This property is promoted today with different kinds of coatings under the aspect of “easy to clean”.

The FP is also extremely resistant against acids and bases, oils etc.

In the Journal of Architectural Coatings (issue Feb/March 2006, page 42 ff.) you can find a special report “Going with the Fluoro” with following apt quotation:

- “Fabricated metal panels finished with these types of coatings have been used for a host of commercial and institutional buildings, and no clear their apparent has emerged to vie with Fluoropolymers for the title of king of factory- applied coatings for aluminum and steel exterior cladding.”
- “... time tested resin system known as PVDF as well as the more specialized FEVE resin type, ... Coatings based on FEVE resins are reported to boast higher gloss and brighter color capabilities...”
- “Fluoropolymers provide the longest color life and chalk resistance of any coating technology in the industry.” (Gary Altavilla, PPG Industries Inc.)
- “... but boast a broader palette of colors and a wider gloss range than PVDF versions – 10 % to 85 % for FEVE as opposed to the 25 % - 38 % range of PVDF...”



Advantages of Fluoropolymer coatings

- **Ideal for steel and aluminum**
Two coatings on steel (with primer), one coating on aluminium.
- **Air-drying and oven-drying**
Temperature requirements for oven-drying types < 180 °C (for Coil Coating max. 232 °C), why thermally separated profiles, welded structures and sheet metals can be coated without danger of twisting or the additional processing expenditure.
- **Gloss; all possibilities from matte to glossy**
- **Small limitation of colors**
All colors are possible except of a few in the range of yellow, orange and red.
- **High variety of special effects, metallic and anodize colors**
- **High dirt repellency and antigraffiti resistance**
VERNICRON® is not thermoplastic and therefore suitable for extremely high temperature variations. Thanks to its hard and chemical resistant surface, dirt and graffiti's can easily be removed
- **High cleaning intervals**
Depending on the location, the cleaning intervals are between 2 and 6 years.

