

Fluoropolymers: Why They Are Used in Coatings

Summary from Unova Products UK

Fluoropolymer coatings, especially those based on FEVE technology (PnF Fluoropolymer Pool Coating), are valued because they offer strong long-term protection.

1. Self-cleaning Properties

Fluoropolymer coatings have a low surface energy, which means water tends to bead and run off. Dirt and airborne contaminants are less likely to stick, and rain or washing can help keep the surface cleaner. This can also make it harder for moss, mildew and grime to build up.

2. Anti-corrosive Performance

These coatings form a strong barrier that helps stop water, chlorides and other corrosive materials from getting through the film. This is important in harsh environments, including around swimming pools where moisture and chemicals are always present.

3. Long-term Durability

Fluoropolymer coatings are also known for lasting well over time because they resist:

UV damage – helping the surface keep its colour and gloss in strong sunlight.

Chemical attack – standing up well to salts, pollutants and harsh conditions.

Wear and abrasion – coping better with wind-blown grit, debris and general exposure.

Clearing Up Environmental Concerns

Much of the criticism comes from the fact that fluoropolymers are grouped under the PFAS umbrella. However, that grouping does not tell the full story.

1. Low Bioavailability

Unlike some of the more harmful PFAS materials, fluoropolymers are generally not known for building up in living organisms in the same way. This makes them a different category of concern from substances such as PFOA and PFOS.

2. Longer Life Can Mean Less Waste

One of the strongest arguments in favour of fluoropolymer coatings is durability. If a coating lasts far longer before needing replacement, that can mean less repainting, less waste, fewer emissions from maintenance work and lower long-term material use.

3. Regulatory Review

High molecular weight fluoropolymers used in specialist coatings have been subject to testing and review under safety frameworks such as REACH. The article also points out that these coatings do not contain PFOA or PFOS, which are among the best-known chemicals of concern.

Fluoropolymers Are Not the Same as All PFAS

Treating all PFAS as though they are identical can be misleading.

A better way to look at it is this: one broad chemical family can contain both harmful and useful substances. The key issue is not the family name alone, but the actual behaviour, risk and application of the specific material being used.

That is why fluoropolymers used in high-performance coatings should be assessed on their own merits, not simply dismissed because of the larger category they sit within.

Why Some Countries Take a Different View

The article suggests that the UK may be taking a more selective approach to fluoropolymers rather than supporting blanket restrictions.

That may be because fluoropolymer coatings offer a combination of performance, durability and corrosion protection that is hard to match. Until a safer and equally effective alternative is proven, regulators may see value in allowing their continued use in certain specialist applications.

Economic and industrial factors may also play a role, particularly where these coatings help protect important infrastructure and support jobs.

Medical Uses Show Their Value

Fluoropolymers are not only used in coatings. They are also used in medical and surgical settings where cleanliness, strength and chemical stability matter.

For example, they may be used on:

- surgical instruments, where smooth easy-clean surfaces are important
- implants and prosthetics, where durability and flexibility are needed
- tubing and catheters, where chemical inertness is valuable

These uses do not automatically prove they are risk-free in every setting, but they do show that fluoropolymers are often seen as stable, useful materials in demanding applications.

Balanced and Responsible Use of Fluoropolymer Coatings

For Australians concerned about fluoropolymer coatings in swimming pools, the main point is this: not all PFAS-related materials should be judged as though they are the same.

Certain PFAS substances deserve close scrutiny. But fluoropolymer coatings used for protective purposes may offer strong benefits, including durability, chemical resistance and a longer service life, with a lower risk profile than many people assume.

That does not mean concerns should be ignored. It means the discussion should be balanced, evidence-based and specific to the actual product being used.

In short, broad fear around PFAS should not automatically be applied to every fluoropolymer coating. For pool applications and other demanding environments, the real question is whether the specific coating is fit for purpose, properly assessed and used responsibly.

And from A&I Coatings Australia

FEVE coatings are: (as per used in PnF Fluoropolymer Pool Coatings)

What makes FEVE different from PFAS? FEVE coatings are:

- Chemically inert
- Insoluble in water
- Non-bioaccumulative
- Non-toxic

Do FEVE coatings release fluorinated chemicals over time? No. Independent testing and long-term use data show that FEVE coatings:

- Do not release fluorinated compounds during use
- Remain stable throughout their lifespan
- Do not contaminate water, soil, or air when used correctly

Is FEVE environmentally safe? Yes. FEVE has been shown to be:

- Non-toxic to aquatic and mammalian life
- Non-bioaccumulative
- Free from endocrine-disrupting activity

This makes FEVE suitable for applications where **durability, safety, and environmental responsibility** are essential.

Once applied, FEVE forms a **stable, crosslinked film** that does not break down into smaller fluorinated compounds. This means it does not leach, migrate, or pose environmental risks during its service life.

By Way of Summary

Teflon-based (fluoropolymer/FEVE) pool coatings are less toxic than traditional paints.

Fluoropolymer coatings are highly stable, technically inert and non-toxic. Even under harsh conditions PTFE does not dissolve in water. End of life coatings do not break down into chemical compounds, instead they flake-off in solid pieces which are removed by the pool filter. **PnF Fluoropolymer** is designed to ensure pool water remains safe and clean much longer and is more effective than traditional pool paints.

