

What is Fluorotechnology?

Spotlight: PFAS & Fluoropolymers

Per- and polyfluoroalkyl substances, often referred to as PFAS or Fluorotechnology, are a diverse group of chemistries characterized by the strong bond between fluorine and carbon. Because of this strong bond, fluorotechnology, including fluoropolymers, provides products with strength, durability, stability and resilience. These properties are critical to the reliable and safe function of a broad range of products that are important for industry and consumers, such as the cellphones, tablets and telecommunications systems we use every day to connect with our friends and family; the aircraft that power the U.S. military; solar panels and turbines critical to alternative energy development; and medical devices and technology that help keep us healthy. Fluorotechnology is vital to enabling our lives in the 21st century.

A Diverse Universe of Chemistries

PFAS include a variety of different chemicals with different properties and characteristics. ***Therefore, the hazard and risk profiles of various PFAS are different.***

Fluoropolymers:

One key type of PFAS in use today is fluoropolymers, a type of specialty material. Because of their physical characteristics, fluoropolymers are not toxic or water soluble. They provide products with a unique combination of attributes—durability, heat and chemical resistance and superior dielectric properties—that allow them to perform under the toughest conditions. Key uses of fluoropolymers include:

- **Automotive:** Gaskets, rings, valves and hoses in the fuel system; wiring and circuit boards; pull cables; shock absorbers and bushings; electric vehicle batteries
- **Aerospace (military and civilian):** High performance navigation and communication antennae; lubricants for wing flap mechanisms and landing gear; fuel-oxygen separation systems
- **Electronics:** Ultra-low contamination semiconductor manufacturing; wafer etching; chemical piping and storage
- **Chemical/Industrial Processes:** Linings for pipes, valves and tanks to prevent corrosion; gaskets in high temperature, high pressure production processes to contain reactive substances
- **Medical/First Responder:** Surgically implanted medical devices (e.g. stents); COVID testing equipment and respirator tubing; catheters and guide wires
- **Building and Construction:** Coating/sheathing for electrical and optical cables; coatings for steel and concrete bridges.



High-Performance Fluorotechnology Delivers Many Important Societal Benefits

Multiple industries depend on high-performance Fluorotechnology, including aerospace, alternative energy, automotive, building and construction, chemicals, pharmaceuticals, electronics, healthcare, oil and gas, outdoor apparel and equipment and semiconductors, just to name a few.

Fluorotechnology is used in a wide array of products and plays a vital role in everything from designing automobiles with lower emissions and improved safety, reliability and fuel-efficiency to manufacturing semiconductors, solar panels and high performance electronics.

Fluorotechnology provides a unique combination of properties that often cannot be replicated with non-fluorinated alternatives.

Fluoropolymers are large, stable, and inert molecules. They are not soluble in water, and they are too large to pass through cell membranes. They provide:

- A wide range of safety and reliability features in industrial processes and manufacturing.
- Environmental and public health benefits in health care and energy.
- Durability and performance in transportation, electronics, and infrastructure.

