

Understanding PFAS: Chemistries for Critical Applications

What Are PFAS?

Per- and polyfluoroalkyl substances (PFAS) are a large, diverse family of materials containing strong carbon–fluorine bonds—the strongest in organic chemistry. These bonds give PFAS exceptional durability, resistance to heat and chemicals, and unique performance properties.

PFAS are not all the same

PFAS can be solids, liquids, or gases, and different types have different chemical and physical properties. Those properties are what drive commercial uses and any potential risks they may pose to human health and the environment.

Why PFAS Matter

PFAS enable **performance, safety, and reliability** in critical applications:



- Fire, heat, and chemical resistance
- Non-sticking and non-wetting surfaces
- Low friction and surface tension
- UV radiation resistance
- High-performance dielectric insulation

No other group of materials offers this unique combination of properties.

Fluoropolymers: Low Concern, High Value

Fluoropolymers, a vital subset of PFAS, are:

- Meet criteria for identifying polymers of low concern.
- Stable in the environment and **do not degrade or accumulate in the body.**
- Essential for safe manufacturing and clean technology.

Key Advantages:

- Exceptional chemical and thermal resistance
- Long-lasting durability
- Approved for use in sensitive applications like medical devices

Responsible Care®

As with all chemistries, CIAC members use PFAS technologies in accordance with our Responsible Care® ethic and principles.

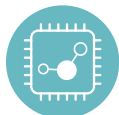
Responsible Care is the flagship program of our industry that ensures our members innovate for safer and cleaner products and processes, and work to continuously improve their environmental, health and safety performance. Launched in Canada in 1985 and now adopted globally and recognized by the United Nations, Responsible Care compels CIAC member-companies to **“do the right thing and be seen to do the right thing.”** This is our commitment to sustainability — delivering results for the betterment of society, the environment, and the economy.



RESPONSIBLE CARE®
Driving Safety & Sustainability

PFAS in Strategic Sectors

PFAS are foundational to the technologies that power our economy, secure our nation, and support the clean energy transition:



Semiconductors & Electronics

- PFAS materials are needed to manufacture chips for smartphones, computers, and EVs.
- Without fluoropolymers, no domestic semiconductor supply chain is possible.



Aerospace & Defense

- Used in satellites, aircraft, and military systems.
- Ensure safety under extreme conditions, preventing fires and malfunctions.



Automotive & Electric Vehicles

- Protect critical battery and electronic components.
- Support progress toward zero-emission goals.



Battery & Energy Storage

- Enable safe, long-lasting lithium-ion batteries.
- Maintain stability under heat and chemical stress, reducing risk of fires.



Clean Energy & Hydrogen

- Used in solar panels, wind turbines, and hydrogen fuel cells.
- Improve efficiency, reliability, and longevity of clean energy systems.



Shipping & Transportation

- Seals, gaskets, and hoses rely on PFAS to prevent leaks and spills.
- Ensure safety when transporting fuels or hazardous goods.



Healthcare & Medical Devices

- Used in catheters, implants, surgical tools, and diagnostic equipment.
- No proven replacements exist for many life-saving applications.



Pharma & Biotech

- Filters, tubes, and other processing equipment to ensure purity and safety
- Withstand rigorous cleaning and sterilization of production equipment

The Case for Science-Based, Targeted Regulation

While PFAS stewardship is essential, overly broad bans risk serious unintended consequences:

Disrupting critical supply chains

Undermining clean energy and sustainability goals

Slowing innovation and competitiveness

With science-based regulation and responsible management, society can continue to benefit from these innovations while protecting health and the environment.

