

# FLUOROPOLYMERS ENABLE CHEMICAL PROCESSING INNOVATIONS AND TECHNOLOGIES



The family of chemistries known as fluoropolymers plays a critical role in the chemical processing industry, which transforms raw materials into a wide range of products used in virtually every aspect of our lives. Chemical processing can create extreme conditions in a facility, including corrosion, heat, pressure, and chemical reactions, in which alternative chemistries have not demonstrated function with the same consistent reliability as fluoropolymers.



Chemicals are the backbone of modern industry and the products and services we rely on every day. Fluoropolymers' unique combination of properties helps chemical processors ensure safe, reliable operations and enable innovative solutions across essential, interconnected industries.

## WHY ARE FLUOROPOLYMERS VITAL TO CHEMICAL PROCESSING?

Fluoropolymers possess a unique combination of properties that helps to ensure safe, reliable operations in many critical industrial applications.

✓ **Chemical Resistance**

The strong carbon-fluorine bonds in fluoropolymers' molecular structure provides exceptional resistance to a wide range of chemicals, including acids, bases, and solvents.

✓ **Thermal Stability**

Fluoropolymers have been shown to withstand extreme hot or cold temperatures, which helps ensure they maintain their integrity and performance in environments with significant thermal variations.

✓ **Low Friction**

Fluoropolymers possess a low coefficient of friction, which means they have excellent non-stick characteristics that reduce wear-and-tear on mechanical parts, thus enhancing the efficiency and lifespan of the components.

✓ **Electrical Insulation**

Fluoropolymers are particularly useful in applications where preventing electrical conductivity is critical, such as in wire coatings and electronic components.

✓ **Non-Adhesive Properties**

Fluoropolymers do not easily stick or adhere to other materials, which is advantageous in applications where preventing buildup of residues is important, such as in lined pipes or analytical equipment.

✓ **Environmental Resistance**

Fluoropolymers' superb resistance to factors such as UV radiation, moisture, mold, and weathering make them ideal for outdoor environments where exposure to the elements is a concern.

Fluoropolymers' exceptional high-performance properties are essential in the industrial equipment used to process and manufacture materials safely and efficiently. Use of fluoropolymers within the chemical processing industry include applications in several major component categories.

✓ **Gaskets**

Gaskets are essential for creating leak-proof seals between surfaces, and fluoropolymers' outstanding resistance to chemicals and extreme temperatures helps ensure the integrity of the seal and prevent leaks that could lead to hazardous situations or costly downtime.

✓ **Analytical Equipment**

Fluoropolymers are often used in the construction of analytical equipment, which requires high levels of accuracy and reliability, to help prevent contamination and degradation of the linings of sample containers, tubing, and other components that come into contact with chemicals.

✓ **Lubricants**

Fluoropolymer-based lubricants are highly valued for their superior thermal stability, non-stick properties, and chemical resistance, which help reduce friction, reactions with other substances, and help prevent degradation due to wear and extreme temperatures.

✓ **Lined Pipes**

Industrial pipes used to transport corrosive substances often use fluoropolymer linings to help prevent the chemicals from coming into contact with the pipe's base material, extending their lifespan and helping to ensure the purity of the substances being moved.

Fluoropolymers provide a multitude of benefits to the chemical processing industry, making them ideal for a wide range of critical applications and uses. Fluoropolymers help enhance safety, improve process efficiency, and offer long-term cost savings, making them an invaluable asset to the industry and helping drive innovation and supporting sustainable practices.

[For more information, please click here.](#)