

A red tag-shaped logo with the letters 'PKN' in large white font and 'Product Knowledge Network' in smaller white font below it. A brown string is tied around the top left corner of the tag.

PKN
Product Knowledge Network

*Everything you need to know
about nonstick-coated
houseware products — FREE.*

What is a fluoropolymer?

Introduction

A fluoropolymer is a polymer that contains molecules of carbon and fluorine. They are high-performance plastic materials used in harsh chemical and high-temperature environments, primarily where a critical performance specification must be met. They are used by defense-related industries and in automotive, aerospace, electronics and telecommunications. They are also used in many consumer products. For nonstick coatings used on cookware and small appliances, it is the fluoropolymer that makes the nonstick coating "nonstick".

Fluoropolymers were discovered in 1938 by Dr. Roy J. Plunkett while working on Freon® (for the DuPont Corporation). He accidentally polymerized tetrafluoroethylene and the result was PTFE (polytetrafluoroethylene, commonly known by its DuPont brand name "Teflon®"). PTFE turned out to have the lowest coefficient of friction of any known solid material. It also has a very low "surface energy" (which is what gives cookware coatings the nonstick feature), and possesses the quality of being inert to virtually all chemicals.

Examples of fluoropolymers:

- PTFE (polytetrafluoroethylene)
- PFA (perfluoroalkoxy)
- FEP (fluorinated ethylene-propylene)

What are fluoropolymers used for?

Fluoropolymers are thermoplastics, which simply means that at some point energy (in most cases, heat, which is why the prefix "thermo") is used to achieve the final form.

Typical uses for fluoropolymers include wire insulation for computer networks, semi-conductor manufacturing equipment, and automotive fuel



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hoses. About 85 percent of fluoropolymers are used in industrial applications like these. The other 15 percent are used in consumer products such as nonstick cookware, bakeware, small electrics and weather- and chemical-protective fabrics.

Because of their unique qualities (which include great strength, versatility, durability and heat resistance), fluoropolymers improve the performance and safety of such things as aircraft and automobiles, reduce risk of fire in high-rise buildings, and reduce air, water, industrial and automotive pollution.

For nonstick coatings, because of their low surface energy, foodstuffs can't "wet" the surface of the nonstick coating. An everyday example of this is wax on a car's exterior paint. When unwaxed, a drop of water will wet the painted surface, spread out and cling. Once waxed, the water drop can no longer wet the paint and will form a bead instead. Because of the low surface energy the wax imparts, the water bead can now easily roll off the waxed paint.

PTFE can easily withstand the temperatures associated with everyday cooking (remember, it has already been cured onto the pan at temperatures over 800°F/425°C!). And it is inert to virtually all chemicals, including the harshest dishwasher detergents. So it is the fluoropolymer in nonstick coatings that ultimately provides easy release and easy cleanup of foodstuffs, reducing the need for oils and butter - which means healthier cooking and saving time in the kitchen.

This information has been created by the Retail Marketing Team at Whitford. The Product Knowledge Network (PKN) offers you everything you need to know about nonstick-coated housewares products — all for FREE.

For more information, contact us at retail@whitfordww.com, visit us online at productknowledge.com or scan this QR code.



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