



Teflon®, GenX and PFAS

1. Fluoropolymers, recognizable by brand names like Teflon®, Polyflon®, Neoflon®, Dyneon®, Hyflon®, Algoflon® and Fluon®, are indispensable in many industrial and consumer applications.
2. Fluoropolymers enable the essentials of modern life today and will provide solutions for the future. They are used in aerospace computers and processors, hydraulics and fuel systems. These innovative automotive applications improve fuel efficiency and reduce emissions in automobiles. They provide various components of renewable energy installations and materials that help lower energy consumption and foster environmental safety in the chemical and power sectors. In the technology space, they are used in the cellphones, smart tablets and 5G. They are essential components in computer server farms that allow almost every industry on earth to store and share data electronically. In medical applications, they reduce the risk of equipment failures, infections and unnecessary medical procedures. Catheters, breathing tubes, some pharmaceuticals and other critical medical necessities require Fluoropolymers for their creation. For many of the applications, there are no readily available replacements.
3. To produce Teflon® and other fluoropolymers, a soap-like processing aid is needed to act as a surfactant. GenX is one example of a fluoropolymer polymerization aid (PPA). Other companies use different PPAs that are created using similar chemistry to GenX.
4. GenX is a so called PFAS, a perfluoroalkyl substance. PFAS are a subset of fluorinated substances, a combination of carbon and fluorine. Substances that meet the definition of PFAS, thousands by some estimates, have a variety of physical and chemical properties, health and environmental profiles, uses and benefits.
5. If GenX is not used to create Teflon®, the applications and products named above cease to exist, unless GenX is replaced by another PFAS in the production process. See Annex I for other PFAS similar to GenX used by major manufacturers.
6. Any regulation of GenX would, therefore, have to apply to all other PFAS used in the polymerization of fluoropolymers as well. GenX can't be singled out. Else there would not be a level playing field and identical situations would be treated differently.
7. Any PFAS regulation, however, needs to keep in mind that until there is a better alternative in the market, PFAS are indispensable to create the products and applications mentioned above.
8. Further, it is important to segment PFAS into categories and classes using clear, specific and descriptive terms. Fluoropolymers, like Teflon®, are not bioavailable, bioaccumulative or subject to long range transport and meet accepted regulatory assessment criteria to be considered as polymers of low concern. See Annex II for PFAS segmentation.

Annex I

Examples of short-chain polymer polymerization aids (PPAs) registered for use by commercial fluoropolymer manufacturers.

Substance Name	CAS No.	Publicly Available Reference
Perfluoro[(2-ethyloxy-ethoxy)acetic acid], ammonium salt	908020-52-0	EFSA, EFSA Panel on food contact materials. Scientific opinion on the safety evaluation of the substance, perfluoro[(2-ethyloxy-ethoxy)acetic acid], ammonium salt, CAS No. 908020-52-0, for use in food contact materials. EFSA J 2011a;9(6):2183. http://dx.doi.org/10.2903/j.efsa.2011.2183 https://echa.europa.eu/documents/10162/c02d54df-dc17-482d-af8d-011fe51abffc https://echa.europa.eu/registration-dossier/-/registered-dossier/4729/1
3H-perfluoro-3-[(3-methoxypropoxy)propanoic acid], ammonium salt (aka ADONA)	958445-44-8	Gordon SC. Toxicological evaluation of ammonium 4,8-dioxa-3H-perfluorononanoate, a new emulsifier to replace ammonium perfluorooctanoate in fluoropolymer manufacturing. Regul Toxicol Pharmacol 2011;59(1):64–80. http://dx.doi.org/10.1016/j.yrtph.2010.09.008 https://echa.europa.eu/documents/10162/e33aeff8-0210-488c-98ac-d8993af21e8a https://echa.europa.eu/registration-dossier/-/registered-dossier/2602
Perfluoro acetic acid, α -substituted with the copolymer of perfluoro-1,2-propylene glycol and perfluoro-1,1-ethylene glycol, terminated with chlorohexafluoropropoxy groups	329238-24-6	EFSA, EFSA Panel on food contact materials. Scientific opinion on the safety evaluation of the substance perfluoro acetic aci... EFSA J 2010;8(2):1519. http://dx.doi.org/10.2903/j.efsa.2010.1519
Acetic Acid, 2,2-difluoro-2-[[2,2,4,5-tetrafluoro-5-(trifluoromethoxy)-1,3-dioxolan-4yl]oxy]-, ammonium salt (1:1)	1190931-41-9	Difluoro{[2,2,4,5-tetrafluoro-5-(trifluorometho... - Registration Dossier https://echa.europa.eu/registration-dossier/-/registered-dossier/5331/1

Annex II

