

Comments for Annex XV restriction report on Per- and polyfluoroalkyl substances (PFAS)

AFC Materials welcomes the opportunity to contribute to the public consultation issued by the European Chemicals Agency (ECHA) regarding the restriction proposal of Per- and polyfluoroalkyl substances (PFAS) under Regulation (EC) No. 1907/2006 (REACH).

AFC is a manufacturer of products containing fluoropolymers for high temperature and non-stick solutions, based in the USA. For 35 years, we have built a reputation for manufacturing superior composite materials and providing industry-leading customer service. Our company encompasses 150 employees and has 150 years of management expertise.

Our Company is part of an informal group of six companies¹ that have in common a number of fluoropolymer use applications. However, there is diversity across the companies according to the type of industries each serves; and as such we do not have an industry association to represent us in regulatory matters. Each company is therefore submitting this information individually.

Our comments below follow on from the preliminary comments we submitted on August 14, 2023, 7299d207-74a7-4d22-85bf-b929bd2dafa7 (ECHA reference number) in which we identified a number of uses missing from the restriction proposal, or where a derogation was proposed but under reconsideration. We requested information from our customers on their use of our products containing fluoropolymers² to understand what they use our products for and their views on the impact of using potential alternatives, functionally and economically.

Products manufactured and use application types

One of the key applications of our products is the Commercial Cookware/Food Service Industry. With the help of our customers, we summarized a description of the application, the functional properties required and an explanation on why the fluoropolymer coated fabric is the material of choice in each case. Wherever possible, our customers have provided information on whether alternatives exist and how they compare to the use of fluoropolymers, as well as potential socio-economic impacts should the PFAS restriction include fluoropolymers.

1. Use application: Commercial Cookware/Food Service Industry

This use application is considered by AFC to be missing from the restriction proposal. Although a derogation exists for “industrial food and feed production” and a derogation is marked for

¹ The six companies are: Fothergill Group, Fiberflon, Taconic International, Textiles Coated International, Verseidag-Indutex GmbH and AFC Materials, located in multiple jurisdictions globally, notably the European Union, U.K., U.S.A., Turkey and Australia, with each company serving EU/EEA markets.

² Fluoropolymers are high molecular weight polymers that are structurally characterized by having fluorine atoms directly attached to their carbon-only backbone (Buck et al., 2011). The OECD Fact Card of Major Groups of Per- and Polyfluoroalkyl Substances (January 2022), No.13 on Fluoropolymers provides examples of these sub-groups.

reconsideration for “non-stick coatings in industrial and professional bakeware,” neither of these derogations is adequate for the uses discussed here.

1.1 Description of the product and its use

Quick serve restaurants in food service use FLP-coated cooking aids such as but not exhaustive to: grill sheets, molded trays for high speed accelerated ovens, Clamshell cooking release sheets, and toaster sheets for vertical bun toasters.

All of these items are reusable, with average lifespans of 3-4 weeks. Clean and easy release properties are the most important aspect of these products for quick-serve restaurants (QSRs), as this increases their efficiency. FLPs are also chosen for their inertness, as they do not interact/react/leach with food or anything in contact when used in safe operating conditions (i.e., lower than 550 F).

1.2 Functional properties required in use

The unique properties provided by FLPs in this application are as follows:

- High flexural strength
- Low coefficient of friction
- Chemically inert
- Hydrophobic
- High melting point
- Light weight

1.3 Availability of Alternatives

Current alternatives for FLPs in cooking industry include following:

- Stainless steel
- Ceramic coatings
- Aluminium
- Cast iron
- Silicone
- Porcelain
- Glass

Although sol-gel ceramic cookware is often touted as a safer alternative, this claim is unproven. Sol-gel cookware is deemed safer mainly because it has been studied less. Sol-gel ceramic surfaces are “self-sacrificing” surfaces, which means their coating is released during cooking and ingested along with the food. There is not yet enough evidence or studies to determine conclusively whether ingesting small amounts of silicone oil is harmful to the human body. Furthermore, ceramic cookware may contain lead.

Ceramic pots and pans get their nonstick surface from a nanoparticle-sized silicone-based coating on the surface of the pan. The irregularity of the spacing of these particles increases the ceramic coated pan's cooking surface area, making it rough and, thus, leaving areas where the surface does not touch the food. While this means there is a lessened chance of food sticking, this also means food doesn't receive

heat where it doesn't touch the cooking surface. As a result, ceramic coated Cookware will not heat quickly and evenly.

The very same nanoparticles responsible for these pots and pans' inefficient heat distribution are also behind ceramic cookware's disappointing durability and status as not dishwasher or metal utensil safe. The rough surface increases friction on the pan, leading to quicker and easier wear and tear on the ceramic coated surface. Although high-quality ceramic coated cookware is available at a premium price, most ceramic cookware products are not clad, meaning they are more prone to warping and won't heat up well or retain that heat.

One possible downside of stainless steel is that it may leach heavy metals into food. This is more likely if acidic foods are cooked in a stainless-steel pot for a long time. Stainless steel can contain iron, chromium, and nickel, the latter having no nutritional benefit in the body. Nickel has also been linked to adverse health effects, including sensitization to allergic (contact) dermatitis in some people.

When cooking on very high heat for a long time, a small amount of aluminium metal may seep into food. Aluminium pans are also not induction compatible.

1.4 Socio-economic impacts

If fluoropolymers can no longer be used in this application, all the current equipment that uses FLP products will have to be phased out, generating large amounts of heavy metal waste. Additionally, the purchase of replacement cookware that works without FLPs will be a significant cost for restaurants. 3-5 years of development will be required for newer equipment and lines along with 6-8 months of training and qualifications. Investment would be end-user dependent and based on their ability to invest. Some of the smaller players in the industry would be forced out, considering the large technical overhaul/burden to develop everything from scratch.

By removing FLPs and using alternative materials in the food service industry, prices of food/service will go up and restaurants will no longer offer quick serve options. For professionals involved in the food industry, a PTFE coating is a cost-cutting vehicle. PTFE-coated cookware provides reusability, easy cleaning, and handling. This results in quicker uptime, less downtime, as well as energy savings described in the following sections.

Some of the operations where a flexible cookware/aid is required to function will be obsoleted as all the alternatives have a limitation of being rigid/solid. FLP coated on fiberglass gives flexibility and ease to handle at any angle, orientation, or surface. Flexibility is a key requirement for a lot of cooking equipment using moving belts (belting) to cook and move food. One of the many examples is a top loader continuous bun toaster which uses PTFE coated contact belts that transfer heat (cook) and move buns from top (uncooked) to bottom tray (cooked).

1.5 Other impacts

- **Safety:** FLP cookware rapidly dissipates heat (tray) compared to metals or ceramics which absorbs the heat and remains hot (retention) for longer time leading to possible skin burns when handling and an increased risk of fire.
- **Adequate functioning of society:** Every quick serve restaurant in the EU would use FLPs in their commercial cookware for its benefits listed in section 1. It helps them run efficiently and operate at lower cost which benefits the lower income section of the society.

1.6 Impact of a fluoropolymer restriction on EU policy areas

- **Decarbonization:** To replace FLPs, alternative solutions would require a lot of metal mining and processing which will contribute heavily towards air and particulate pollution. A lot of replacements of FLPs rely on using renewable sources of energy. The majority of potential alternatives are metals or natural ores which require more energy to process from their natural occurring forms to their usable forms. For example, mining, purification, casting, lamination etc. are very heavy energy usage activities and traditionally rely on renewable sources of energy to operate.
- **Circularity:** Alternate options are inefficient compared to FLP as metal absorbs microwaves and hence leads to longer cook times. AFC conducted an internal study with one of our quick serve restaurants (QSR) partners where molded PTFE cups were compared to an aluminium tray for cooking eggs. Eggs were cooked 15-20% faster in the PTFE cups compared to the aluminium tray that the QSR was currently using. This was due to the PTFE's less microwave absorbent nature compared to metals, allowing for all the energy being directed to food resulting in significant annual energy savings.