EU Consultation for submitted restrictions under consideration
Comments for Annex XV restriction report
Per- und Polyfluoralkyl Substances (PFAS)

Non-Confidential comments

Textile Machinery

Specific Information Requests

6. Missing uses – Analysis of alternatives and socio-economic analysis:

Sector and uses
Sector: Textile machinery; machinery equipment for the textile industry
use: fluoropolymer and PFPE applications in machines produced by the sector

Components made from fluoropolymers (FP) and PFPE are essential functional parts in several types of machines used in the textile industry:

- Textile machines for the production of textile materials (for the production of material for clothing, home textiles and technical textiles), e.g. machines for chemical fibre and filament production, twisting machines, machines for nonwovens production, dyeing machines, impregnating machines, drying machines
- Pressure vessels for thermochemical treatment of textile recycling material in order to enable circular economy
- Fully automatic chemical dispensing systems (used in various industries apart from textile industry: chemical, pharma, food)
- Heat recovery systems for reduction of need for fossil fuel based thermal process energy
- Wastewater treatment technology

FP and PFPE are used in textile machinery due to their temperature, pressure and chemical resistance and sliding properties

- as sealing materials to maintain function, reduction of maintenance and prevent leakage,
- as construction and coating materials for components to ensure energy efficiency of machines, material efficiency of components (reduction of wear) and highest fabric quality of processed textiles,
- as part of lubricants: Lubricants with PTFE or PFPE are indispensable when used at high temperatures and in harsh conditions,
- in electrical components as part of drive and controlling to protect them against chemicals and high temperatures

The sliding properties of PTFE components play a particularly important role in machines for nonwovens, dyeing machines and textile dryers, for example. This is particularly the case with water-saving dyeing machines and machines designed for flexible processing of different materials and carrying out different finishing processes. Both are among the core competencies of European manufacturers.

PTFE has been evaluated as "polymer of low concern". PTFE has been shown to be chemically stable, non-toxic, non-bioavailable, non-water soluble and non-mobile[2]. Furthermore, Henry et al. (2018) declare all fluoropolymers to be polymers of low concern (for these reasons, fluoropolymers are also approved, for example, as materials for food contact or in medical technology). In addition, fluoropolymers are used in textile machines in most cases inside the machines. They are replaced (spare parts case) or disposed of (dismantling of the machine) by skilled personnel.

On the one hand, FP in textile machines do not have any significant impact on the environment and people. On the other hand, there are no technically and economically feasible alternatives at EiF. Therefore, the use of FP in textile machines should be out of the scope of the PFAS regulation. If this will not be agreed, a transition period of 18 months and a 12-year derogation is necessary (i.e. until 2040).

[2] Henry, B. J; Carlin, J. P; Hammerschmidt, J. A; Buck, R. C; Buxton, L W.; Fiedler, H.; Seed, J.; Hernandez, O. A Critical Review of the Application of Polymer of Low Concern and Regulatory Criteria to Fluoropolymers. Integr. Environ. Assess. Manage. 2018, 14 (3), 316-334.

a) The annual tonnage and emissions and type of PFAS associated with the relevant use.

Due to their price, FP and PFPE are only used in textile machines where it is absolutely necessary.

For information about components, that are used in textile machines, please see the confidential attachment.

b) The key functionalities provided by PFAS for the relevant use

In addition to the key functionalities mentioned at the beginning, there are further reasons for the relevant use in dyeing machines, for example, with regard to sustainable textile production:

- PTFE semi-finished products ensure there a sliding and gentle contact with the textile fabric in ecologically important treatments with very little water and process chemicals. In the past, machines were flooded with so much water that the fabric floated during the process and there was no need for PTFE surfaces. By developing resource-saving and ecological processes, the use of water, energy and chemicals could be reduced by about 2/3.
  For example, in applications with little water (low filling level), the PTFE fabric slide is used to treat sensitive fabrics with high running smoothness, low abrasion in temperature ranges up to 140°C. Without the PTFE fabric slide, such an application would not be possible; much more water would be required for the sliding film.
- For a functioning circular economy, highly flexible textile machines are required that can process the recycled materials as gently as possible.

More detailed justifications why FP and PFPE are indispensable components in textile machines are given in the confidential attachment.

c) The number of companies in the sector estimated to be affected by the restriction

The planned ban on the use of FP and PFPE in textile machinery would jeopardize the competitiveness of companies in that EU industry sector as well as the technological sovereignty and security of supply of the EU textile industry.

The estimated numbers of companies are given in the confidential attachment.

d) The availability, technical and economic feasibility, hazards and risks of alternatives

For many years, the core competencies of German textile machinery have included energy and resource efficiency as well as machines and processes for the production of textile materials that meet the highest quality standards. This applies not only to materials for the production of apparel and home textiles, but also to technical textiles as well as machines for textile recycling, wastewater treatment, heat recovery and chemical dosing systems.

To be able to offer this performance level to customers in the EU and worldwide, the use of FP and PFPE for certain machines and processes is necessary to ensure quality and efficiency in the textile industry (as explained above and in the confidential attachment).

There are limited alternatives to the use of FP and PFPE with considerable disadvantages:

- Possible alternatives for PTFE suffer from the fact that they are always inferior in at least one performance property, such as temperature resistance, temperature range or availability. This goes with early replacement needs, additional energy consumption and loss of quality of the processed textile material.
- Inconsistent and unreliable long-term mechanical integrity of other materials than PTFE do not meet the requirements of the textile industry (e.g. high velocities, the required long service life, high flexibility in production processes). Other design solutions – if even possible – would be associated with less flexibility and higher costs. Both cannot be considered as an alternative.
- For FKM, too, there are yet no alternatives in terms of their chemical and thermal resistance; they are not expected even in the medium term.
- Since PTFE and FKM are some of the most expensive materials, they are used in textile machinery only where there is a technical necessity.

e) For cases in which **alternatives are not yet available**, information on the status of R&D processes for finding suitable alternatives, including the extent of R&D initiatives in terms of time and/or financial investments, the likelihood of successful completion, the time expected to be required for substitution (including any relevant certification or regulatory approvals) and the major challenges encountered with alternatives which were considered but subsequently disregarded.

It is hoped that new materials and coatings will come onto the market in the next few years so that textile machinery manufacturers will be able to use them for some components as alternative material. Qualification of alternative materials for FP and PFPE requires extensive testing and even longer trials for component testing and application engineering. However, regarding parts like for example seals, shut-off flaps and valves no alternatives are in sight.

i. the type and magnitude of costs associated with substitution

If the EU were to implement the complete ban on all PFAS substances planned in the near future without exceptions for the textile machinery industry, textile machinery manufacturers would be faced with a great deal of additional work in R&D and application technology in the short term. The efforts in R&D have already risen sharply due to the supply chain problems caused by the Corona crisis and the Ukraine war, and still remain high. The additional effort required for material qualification, testing and trials would lead to a drastic increase in R&D costs which cannot be borne by customers. One company estimated that costs would roughly double due to higher staffing levels required for R&D and technical center. Also in view of the non-given risk of PTFE, the application of FP and PFPE in the textile machinery branch should be exempted from the PFAS regulation. At least, the predominantly medium-sized textile machinery industry in Germany (and Europe) should be granted a longer transition period for the realization of these R&D tasks.

ii. the time required for completing the substitution process

In addition to a transition period of 18 months, a 12-year derogation is necessary (i.e. until 2040). A transition period of 18 months is too short to develop alternatives for the required PFAS applications in the textile machinery industry. A period of several years is already required to test possible alternatives for functionality, safe application and textile-technological conditions of use.
A possible conversion to other materials requires various certification processes (e.g. for pressure vessels). These certifications can only be tackled by the suppliers after successful testing in textile machinery.

iii. information on possible differences in functionality and the consequences for downstream users and consumers

Differences in functionality as explained under d).
The service life of the parts varies depending on the type of machine and the textile processes carried out by the operator.

f) **information on the socio-economic impacts for companies**
If available, please provide the annual value of EU sales and profits of the relevant sector, and employment numbers for the sector.

Maintaining of **competitiveness of European textile machinery** industry and jobs in the EU
The textile machinery industry has strong roots in the EU, especially in Italy and Germany. Besides, there is a significant industry in Belgium, France, The Netherlands, Portugal, Spain and Sweden. Apart from local textile machine manufacturers in the Czech Republic, engineering companies in this country and in Bulgaria act as sub-contractors / extended workbench partners.

Production, placing on the market and putting into service of the parts mentioned in the confidential attachment would no longer be possible in the EU after a ban of FP and PFPE. The machines that need these indispensable parts could no longer be manufactured in the EU.

The additional high R&D costs explained under i) would put the predominantly medium-sized companies in the textile machinery industry at a disadvantage compared to non-EU suppliers. This would mean additional burdens to the already existing supply chain/sourcing problems and current shortage of skilled labor. A derogation until 2040 would permit a longer period for R&D.

Market surveillance cannot prevent non-EU import of textile machinery with FP components: There is no standardized analysis method to detect products containing PFAS. Thus, neither the import into the EU of FP and PFPE spare parts separately nor inside textile machines could be prevented. For example, Chinese manufacturers of man-made fibre equipment and dyeing machines would therefore be able to supply them with PFAS parts to customers in the EU without any problems. This would mean a distortion of competition for EU textile machine manufacturers.

For availabe statistical data please see the information in the confidential attachement.

Maintaining of **competitiveness of European textile industry** and jobs in the EU
The Industrial Strategy of the EU values the textile industry as one of 14 strategic industrial ecosystems of the EU. The industry not only supplies the population with clothing, but also produces technical textiles for the medical sector, among other things, in addition to household and home textiles.
The EU Commission wants to make the European textile industry not only sustainable but more crisis-proof and resilient. The textile sector, especially dyeing and drying companies, are strongly affected by the high energy costs. The industry in the EU should not be saddled with additional costs and burdens. A ban of FP and PFPE use in textile machines would cause additional costs as a result of lower functionality of the affected components and machines.

The spare parts demand for machines on the market could not be covered from the EU: The EU textile industry would no longer be able to have the repair of machines already in use in the EU carried out with original FP and PTFE spare parts. It would have to accept losses in quality and efficiency or would try to source the spare parts in non-EU countries. Neither of these can be in the interest of the legislator.
Non-EU textile companies are able to continue using FP and PFPE in textile machines and could gain significant competitive advantages.

A derogation until 2040 would permit to maintain production quality and costs in the textile industry and reduce the risk of job losses.

For availabe statistical data on both sectors please see the information in the confidential attachement.