SCOPE

PROVIDED AS COMMENT TO THE PUBLIC CONSULTATION ON THE REACH RESTRICTION PROPOSAL ON PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

Legal name of commentator:	Maschinenfabrik Kaspar Walter GmbH & Co. KG
Submitted by:	Maschinenfabrik Kaspar Walter GmbH & Co. KG
Date:	22th of September 2023
Substance:	Fluoropolymers
Title:	PFAS-based fluoropolymers used in machines for producing cylinders used in the rotogravure printing and embossing industry

CONTENTS

LIST OF ABBREVIATIONS

CrO_3	Chromium Trioxide
EBIT	Earnings Before Interest and Taxes
EEA	European Economic Area
EU	European Union
EUR	Euro
PFAS	Per- and polyfluoroalkyl substances
t	Tonnes

SUMMARY

Maschinenfabrik Kaspar Walter GmbH & Co. KG, further on referred to as K. Walter, is a manufacturer of plating equipment for gravure and embossing cylinders and supplies customer-specific equipment for different printing segments: packaging, decorative, publication and embossing. Machines for various galvanic applications are the core business. These processes involve the use of aggressive chemicals, which require high demands on the chemical stability of the materials plating units are made of. The use of highly resistant fluoropolymers is essential for the safe and reliable performance of rotogravure and embossing coating processes.

1. AIMS AND SCOPE

1.1. AIMS

The following substancees are subject to this SCOPE:

TABLE 1: INFORMATION ON FLOUROPOLYMERS

Substance	Commercial name
Poly(1,1,2,2-tetrafluoroethylene) PTFE	PTFE Teflon
Fluoroelastomers	Viton® FKM FPM
Poly(1,1-difluoroethylene) PVDF	PVDF

In the systems and products manufactured by K. Walter, the above-mentioned fluoropolymers are used in a wide variety of places for a wide variety of applications. Due to the higher cost of fluorinated plastics compared to less resistant polymers, they are only used to the extent absolutely necessary for the processes and safety. K. Walter is therefore very concerned about a possible ban on PFAS-based polymers.

Currently, there are no restrictions in place regarding Fluoropolymers. However, the national authorities of Germany, the Netherlands, Norway, Sweden, and Denmark have submitted a joint REACH restriction proposal to limit the risks to the environment and human health from the manufacture and use of a whole group of PFAS, including also flour containing polymers. The proposal was published by ECHA on 22 March 2023. Possible date of entry into force of this restriction is expected in 2025 with two restriction options considered:

- A full ban with no derogation and a transition period of 18 months
- A full ban with the use of specific time-limited derogations (18 months transition period plus either a 5-year or a 12-year derogation period).

1.2. SCOPE

K. Walter is a manufacturer of plating equipment for gravure and embossing cylinders and supplies customer-specific equipment for different printing segments: packaging, decorative, publication and embossing. Devices for the application of a chromium(VI)-based functional chrome plating of printing cylinders present the core part of such plating systems and it is highly important that such coating provides multiple beneficial properties such as high wear resistance and longevity combined with the high-quality printing for long printing runs.

Due to the harsh chemicals in the plating units and its periphery there are several applications where fluoropolymers have to be used. It is also important to use high quality and durable PFAS-based plastics for equipment longevity, process quality and safety of workers. Thus, K. Walter is requesting a derogation period of 12 years, assuming an enforcement of the restriction in mid-2025.

2. USAGE AND REQUIREMENTS

PFAS-based plastics are used in numerous installations for a wide variety of applications. Their use is determined by the properties required. The ultimate goal is to build the safest and most durable equipment possible in order to protect employees, protect the environment and, last but not least, to be able to compete.

2.1. Key functionalities

Key advantages of the PFAS-based polymers in use are given in the table below.

TABLE 2: KEY MATERIAL FUNCTIONALITIES OF FLUOROPOLYMERS.

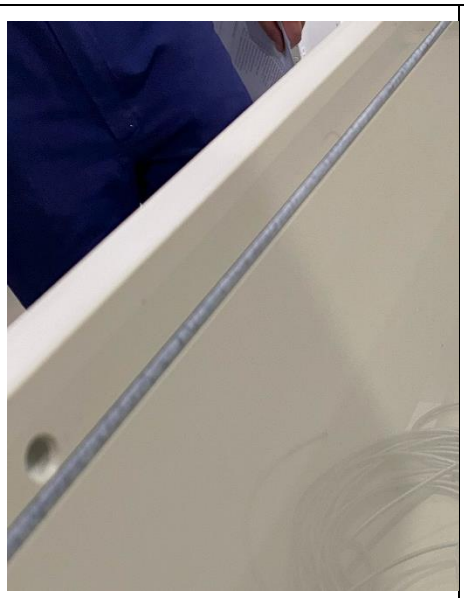
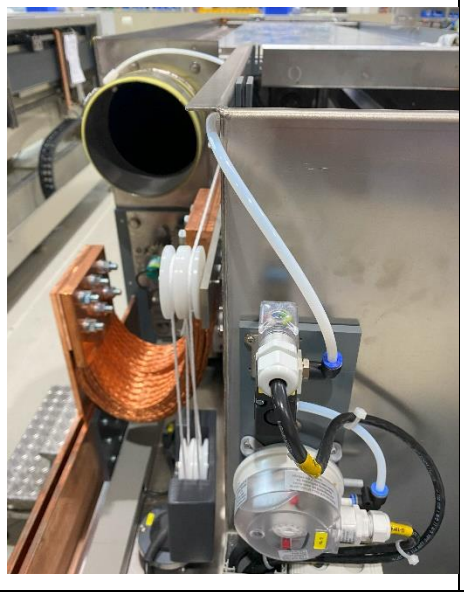
Number	Key material functionality	Technical Requirement (quantitative/qualitative)
1	Chemical resistance of process chemistry	Aggressive chemicals, like concentrated sulfuric acid or chromic acid, must not alter the properties of the plastic or elastomer.
2	Chemical resistance of external influence	Substances that act on the plastic from the outside, such as ozone, must not alter the properties of the plastic or elastomer.
3	Mechanical stability and durability	The strength and shape of the plastics must not change due to mechanical influences such as vibration.
4	Mechanical stability and flexibility	The strength and shape of the elastomers must not change due to mechanical influences such as vibration.
5	Inertness to chemical processes	The plastics were not allowed to interfere the chemical processes in the machine by the release of any substance and reduce the process capability.
6	Sliding properties	Plastics have to function as wear-free as possible, especially in components subject to friction.

2.2. Application of Fluoropolymers

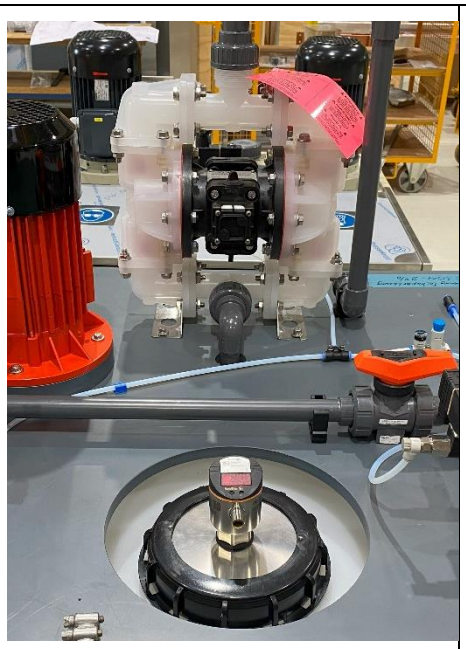
The use of PFAS-based polymers is selected according to process requirements of plating and treating cylinders for rotogravure and embossing. Images of installed systems and individual components illustrate the wide range of applications. The functionality (**TABLE 2**) is related to the application.

TABLE 3: LIST OF FLUOROPOLYMER COMPONENTS.

Description	Material	Functionality	Application in machine	Component
Gasket	FPM	1, 2, 4, 5	invisible	
Gasket	Viton®	1, 2, 4, 5	invisible	

Belt sealing	Viton®	1, 2, 4, 5		
Sealing	PTFE	1, 2, 4, 5	invisible	
Hoses for air	PTFE	1, 2, 3, 5		

Hoses for chemicals	PTFE	1, 2, 3, 5		
Sealing sleeve	Viton®	1, 2, 4, 5		

Pumps for dosing	PTFE	1, 2, 3, 5		-
Pumps for electrolyte circulation	PTFE	1, 2, 3, 5		

Gear wheels for cylinder rotation	PTFE	1, 2, 3, 5, 6	Hidden inside plating line	
Storage tank for chemicals	PTFE	1, 2, 3, 5	Installed at customer site	
Sliding rails	PTFE	1, 2, 3, 5, 6		

Sliding bushes	PTFE	1, 2, 3, 5, 6		

2.3. Standardisation and safety in usage

Many components made of fluoropolymers are used in different types of plating machines or applications. The requirements are also diverse. High-quality components made of PFAS-based plastics or elastomers would not have to be used in every case. Nevertheless, K. Walter has standardised its components on high-quality materials and accepts the additional costs for the following reason. In practice, it has turned out that confusion always occurs with the same components of different quality. Especially during maintenance and replacement of spare parts, this has immense consequences for the safety of the employees and the process. Inferior materials in the wrong place lead, for example, to the leakage of harmful chemicals. For this reason, all hoses on K. Walter coating systems are made of PTFE. This fact increases the total amount of fluoropolymers. However, it is justified at all times by safety and process control.

2.4. Estimated tonnage

The following table (**TABLE 4**) shows the amount of PFAS-based polymers and elastomers going into main products of K. Walter. The estimation was done for last three years.

TABLE 4: ESTIMATED AMOUNT OF FLOUROPOLYMERS PER YEAR.

Process of the unit	**Amount of fluoropolymers per unit (estimated)**	**Number of units 2020**	**Number of units 2021**	**Number of units 2022**
Degreasing	[redacted]kg	[redacted]	[redacted]	[redacted]
Copper plating	[redacted]kg	[redacted]	[redacted]	[redacted]
Chrome plating	[redacted]kg	[redacted]	[redacted]	[redacted]
		2020	**2021**	**2022**
Total amount of fluoropolymers (estimated)		1440 – 1720 kg	650 – 760 kg	1195 – 1420 kg

Additionally, to the plating units there is equipment, which could have Fluoropolymer components too. In total, the quantity of PFAS-based plastics distributed by K. Walter can be estimated at less than 2 tonnes per year.

2.5. Life cycle

After a component containing fluoropolymer has been removed, it is disposed by the customer. The components are not returned to K. Walter. Accordingly, there is no control over the disposal routes.

3. IMPACT ASSESSMENT

The widespread use of fluoropolymers has far-reaching implications beyond K. Walter. From chemical analysis to the production of high-quality packaging for hygiene products, the entire supply chain would be threatened by a PFAS ban. Two directly verifiable impacts are explained below.

3.3. Consequences for the K. Walter company

K. Walter as a manufacturer of plating lines for rotogravure and embossing as well as a supplier and service for the galvanic processes in this field is directly dependent on materials such as PFAS-based polymers and elastomers. As shown in chapter 3, these are used in various areas of application and are essential for their respective application purpose. Without these fluoropolymers, it would be impossible to manufacture machines for the coating of printing and embossing cylinders. Again, without these machines there would be no coating processes that require service and chemistry. Finally, the entire company can only survive in the EEA if the use of fluoropolymers remains guaranteed. A ban on these substances would directly result in the loss of all jobs and the associated value added (Table 5).

TABLE 5: K. WALTER ECONOMICS

Economic Data from Maschinenfabrik Kaspar Walter GmbH & Co. KG			
Number of employees 2023	[redacted]		
	2020	2021	2022
Annual turnover	[redacted] Mio €	[redacted] Mio €	[redacted] Mio €
Annual EBIT	[redacted] €	[redacted] €	[redacted] €

3.4. Alternative polymers for chrome plating

The pump housings for the chrome plating machines manufactured by K. Walter account for a large proportion of the PVDF used. An alternative was tested in the past. PVC (polyvinyl chloride) is chemically resistant to chromic acid, but deforms at the required process temperatures above 60°C. The chlorinated version of the material, called PVC-C, also has this property and was therefore used for the pump housings.

As time went on, the PVC-C became brittle. After only 1.5 years, material fatigue became apparent and the pumps had to be replaced. In comparison, pumps with PVDF housings easily last 10 years.

This difference in lifespan shows that not using a fluoropolymer results in much more maintenance. It also results in higher costs than using a comparatively more expensive PVDF material.

The main disadvantage of not using high performance plastics containing fluorine is the increased exposure of workers to hazardous substances such as chromic acid. In the case described, the risk increases by a factor of 6.7. If the pump is not replaced in time, or if

material fatigue is greater than expected, highly toxic chemicals can escape. The exposure may be much higher as the worker might be exposed to the hazardous substances unprepared and therefore without the necessary protective equipment.

In summary, the replacement of fluoropolymers, in this specific case PVDF with PVD-C in chrome plating machines, involves an additional risk that is difficult to calculate and not necessary.

4. CONCLUSION

The use of fluoropolymers is essential for K. Walter. Materials such as PTFE, fluoroelastomers or PVDF are indispensable in the plating systems for rotogravure and embossing cylinders. Key functionalities such as chemical resistance, stability, inertness or uniformity make PFAS-based polymers indispensable. They prolong equipment life, improve process reliability and, most importantly, protect workers from hazardous chemicals. In total, around 2 tonnes of fluoropolymers are used annually in the machines manufactured by K. Walter. A ban, as proposed in the EChA draft, would inevitably threaten the existence of K. Walter. This would mean the loss of [redacted] jobs in the EEA. In addition, a large number of customers along the supply chain would be affected. K. Walter is therefore requesting a derogation period for PFAS-based polymers for 12 years from 2025.

5. REFERENCES

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