The Motorcycle Industry In Europe
acem

ACEM Comments on PFAS restriction proposal

24 September 2023

Introduction

Chemicals are essential for all transport vehicles. A wide variety of different chemicals is required along the supply chains for the manufacture of automobiles/motorcycles. The bans, restrictions and communication requirements for the use of chemical substances are increasing.

The automotive/motorcycle industry is committed to resource-saving and safe use of substances in the manufacture, use and recycling of automobiles/motorcycles. At the same time, however, the largest possible portfolio of substances must be available with regard to current and future developments.

Especially fluoropolymers support to achieve these goals to increase the durability of transport vehicles.

Fluoropolymers in general

The scope of the proposed restriction comprises lots of fluoropolymers, such as PTFE or PVDF, which are classified as 'polymers of low concern' by the OECD. This institution admittedly defines the group of PFAS in accordance with the draft proposal but points out that 'the term PFAS is a broad, general, non-specific term, which does not inform whether a compound is harmful or not'[1]. The fluoropolymers which are classified as PLCs are not considered a hazard for public health or the environment.

A scientific study[2] addressing blanket risk assessment of PFAS concludes that 'all PFAS should not be grouped together, persistence alone is not sufficient for grouping PFAS for the purposes of assessing human health risk, and that the definition of appropriate subgroups can only be defined on a case-by-case manner'.

Another study[3] about the fluoropolymers PTFE, ETFE, FEP and PFA illustrates that several of these substances are to be regarded as immobile, unable to be accumulated biologically, water-insoluble, and not toxic. Additionally, they exhibit a negligible concentration of monomers.

Furthermore, there is a study[4] showcasing that lots of fluoropolymers, such as PVDF and FKM, meet the PLC criteria implicating that utilizing them does not raise expectations of impact on public health or the environment.

Also dry and liquid Lubricants are containing Polymers of Low Concern (including PFPE Oils) and shall be completely exempted. Also often used PFPE Oils fulfil the criteria as Polymer of low concern. PFPE are high molecular weight polymers, molecules are bigger than 10.000 Da, it is not soluble in water, not bioavailable,

[1] see OECD Publication: Reconciling Terminology of the Universe of Per- and Polyfluoroalkyl Substances: Recommendations and Practical Guidance Series on Risk Management No.61, 09.07.21

[2] "Grouping of PFAS for human health risk assessment: Findings from an independent panel of experts" J.K. Anderson et al. , Regulatory Toxicology and Pharmacology, 2022

[3] "A Critical Review of the Application of Polymer of Low Concern and Regulatory Criteria to Fluoropolymers", Barbara J Henry et.al., 2017, Integrated Environmental Assessment and Management — Volume 14, Number 3—pp. 316–334

[4] "A Critical Review of the Application of Polymer of Low Concern Regulatory Criteria to Fluoropolymers II: Fluoroplastics and Fluoroelastomers" S. H. Korzeniowski et.al., Integrated Environmental Assessment and Management · June 2022

not toxic and fall outside the definition of hazardous products, both for human and for the environment. On the other hand, such PFAS lubricants present an outstanding and benign value for the functioning, developing and protecting society, humans and the environment.

Vehicle production

An emission of fluoropolymers into the environment does not occur during the responsible manufacturing process of parts and vehicles in the automotive/motorcycle industry. This is limited to malfunctions and accidents.

Utilization

An emission of fluoropolymers into the environment does not occur during the appropriate use of the vehicles.

Recycling

Motorcycles (L3e category) and other L-category vehicles will be included in the End-of-Life Vehicle Regulation[5]. As such, it can be expected that all motorcycles will soon be dismantled and recycled in an environmentally sound manner, at the end of a their life cycle. After acceptance of the end-of-life vehicles at a certified dismantling facility, the vehicles are drained of all liquids, collected and recycled properly.

This will ensure that components containing PFAS are also handled properly in the recycling phase. They are either properly disposed of and reprocessed, reused (e.g. as used spare parts) or completely decomposed due to the high temperatures in the thermal incinerators. The resulting fluorine compounds are removed via gas scrubbers.

In addition, a chemical process already exists for fluoropolymers that can close the product cycle of the chemicals via upcycling. In this process, they are decomposed into gaseous monomers via pyrolysis. These can then be captured, purified and reused for the production of new polymers without any loss of quality.[: N]

The blanket restriction of fluoropolymers is unjustified due to the classification as PLCs and the fact that normally no fluoropolymers or their fluorinated degradation products are emitted into the environment during their manufacture, utilization and energetic recovery.

For this reason, the automotive/motorcycle industry demands an exemption from the PFAS restriction for all fluoropolymers that do not pose a risk for public health or the environment.

[5] COM(2023) 451 final - 2023/0284 (COD) - Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on circularity requirements for vehicle design and on management of end-of-life vehicles, amending Regulations (EU) 2018/858 and 2019/1020 and repealing Directives 2000/53/EC and 2005/64/EC

Gehrmann et al. (2023): Pilot-Scale Fluoropolymer Incineration Study: Thermal Treatment of a Mixture of Fluoropolymers under Representative European Municipal Waste Combustor Conditions

[: N] https://www.chemanager-online.com/news/cycling-von-vollfluorierten-polymeren (last access: 24.05.2023)

Automotive/Motorcycle specific exemptions for Fluoropolymers

In the Annex E 'impact assessment' of the draft restriction proposal of February 7th 2023, the authorities concluded on the relevance of the proper functioning of transport vehicles and the safety of passengers

"It is concluded that a minimum 12 year derogation could be appropriate for PFAS use in transport (including automotive/motorcycle, aircraft, rail, marine, and aerospace industries) where the substances are needed to ***ensure proper functioning and safety of the vehicles****, operators, passengers or goods."*

The relevance of a derogation for the automotive/motorcycle industry has been recognized. However, the formulation in the derogation dismissed the impacted "proper functioning" and left alone the safety part. It depends on further information provided by the automotive/motorcycle industry:

"A derogation might be proposed at a later stage if additional information on (eg.) the rationale for continued PFAS use in specific applications and the quantities of PFAS used in those applications is provided."

In the next paragraphs we want to give answers to this request:

Quantities of Fluoropolymers in transport vehicles

Based on the collected data of the declarable fluoropolymers and perfluoropolyether in the automotive/motorcycle industry, **we estimate that around 15% of the parts in a vehicle are directly or indirectly affected**. ormally no-fluoropolymers or their fluorinated degradation products are emitted into the environment during the appropriate use of the vehicles.

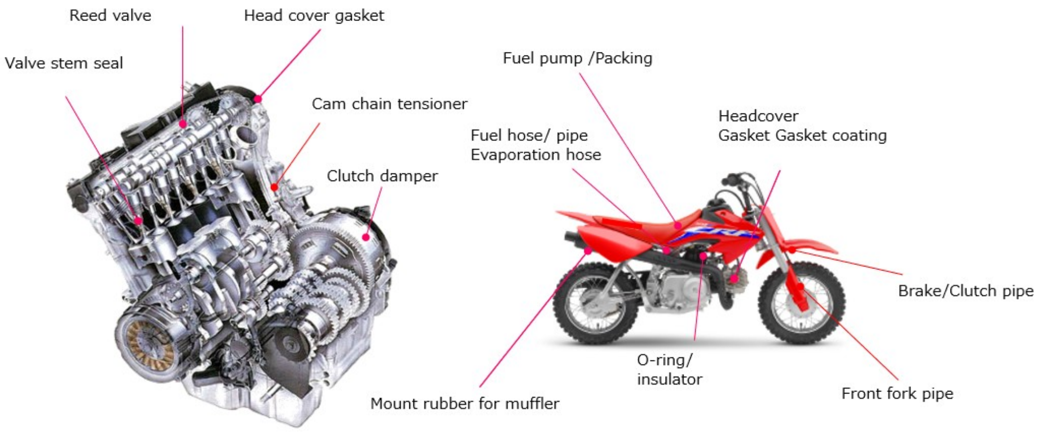
Function of Fluoropolymers in transport vehicles

A motorcycle consists of minimum 2,000 parts and a much larger number of subcomponents which have to meet high standards and satisfy high quality requirements. These include guaranteed vehicle safety, reliability under large temperature fluctuations, flame retardancy and high durability over the whole lifecycle. Safety is not the only top priority; proper functioning also plays a major role in meeting these criteria for the vehicle's reliability and longevity. It is important to highlight that proper functioning only related to safety is not sufficient.

A **transport vehicle** naturally includes **many moving parts** that must last many years under partly harsh climate conditions. **Screws** seem minor but play a major role with support of PFAS. For example, some screw are coated with PTFE.

Also **fuel hoses** are coated with fluoropolymer at critical points (connection to the engine). Reason: Thermal stability even near the engine, chemical stability compared to fuel vapours, prevention of fuel vapor emissions (compliance with EVAP legislation). As potential alternatives, metal pipes have already been tested, but are not as flexible mechanically (cornering, braking, acceleration) and are therefore more susceptible to wear and are also more easily damaged in the event of a crash than flexible plastic hoses. Also under normal conditions, the proper functioning together with the fulfilment of regulation stands at first place, safety is relevant.

The image below shows examples of motorcycles parts that inlcude PFAS.



Requirement of monitoring and review period

Vehicles have to meet many requirements in terms of quality, comfort, legal requirements etc., which today can only be fulfilled with fluoropolymers. The quantity of fluoropolymers used in relation to the components is usually very small. However, a large number of components are affected, some with very specific functions.

The search for substitutes without serious loss of performance and durability is a time-consuming process and it is unlikely that many of them can be replaced.

Instead of a fixed restriction date, we propose, based on these principles of evidence-based policymaking (COM/2021/219 final)[6], to monitor and review frequently the fluoropolymers in **transport vehicles** with the aim to control fluoropolymers and prevent their release into the environment, to facilitate Circular Economy and to avoid the disposal of hazardous waste.

In particular, the manufacturing and use of materials and components, which contain PFAS, should be restricted, if there is a risk of release into the environment. For fluoropolymers, this danger does not usually exist. Before a strict ban on fluoropolymers in the automotive/motorcycle industry shall come into force, this should first be reviewed, as:

- their small amount (see ‘quantities of PFAS’),
- minor risk for environment and human (see ‘Function of Fluoropolymers in **transport vehicles’**)
- current lack of equivalent substitutes and (see specific examples below)
- social-economic consequences (see study ‘PFAS and Future Technologies: A Socio-Economic Impact Assessment’).

The applications in the automotive/motorcycle industry e.g. can be defined in a separate list and shall be regularly reviewed by the European Commission:

The Commission shall review the defined applications **(batteries, electronics, technical textiles, seals and hoses, lubricants),** together with the automotive/motorcycle industry on a regular basis within 13,5 years after entry into force. The result of the review should be based on the availability of substitutes, an assessment of the risks of possible emissions into the environment and the socio-economic impact. For the

[6] COM/2021/219 final (2019): COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS Better regulation: Joining forces to make better laws

identification of PFAS applications in the automotive/motorcycle industry existing monitoring processes e.g SCIP Database which can be extent to PFAS can be used.

(i) as necessary, establish maximum concentration values up to which the existence of the substances in specific materials and components of vehicles shall be tolerated;
(ii) exempt certain materials and components of vehicles if there is no risk of release into the environment.
(iii) delete materials and components of vehicles from the list if the use of these substances is avoidable and if there is a risk of release into the environment.

In cases in which the scrutinized process shows that development and industrialization of alternatives cannot be achieved, the uses of these polymers of low concern should receive an unlimited derogation.

The automotive/motorcycle industry has typical development cycles of around 4 years and production cycles of around 10 years. A review period latest 13.5 years is reasonable to monitor and review the technical progress.

General exemption of spare parts and used vehicles

Placing back used transport vehicles on the market

The ECHA Q&A on the draft PFAS restriction on 5th of April 2023 answered the question 'Will the restriction apply to products that were in the market before the entry into force?' with 'No'. The proposed restriction relates to placing on the market and not to products already on the market. Consumers will not have to discard PFAS-containing products they already have. Companies will not have to get rid of equipment already used. It's important to note that **second-hand** products will fall under the restriction, if they are placed on the market.' This would mean that under the draft PFAS restriction a consumer would be allowed to sell his used vehicle to another consumer (depending on whether this is not considered placing on the market, see ECHA reply), but a used vehicle seller could no longer sell a used vehicle to a consumer (**second hand market**).

Spare Parts

Maintenance and repair are important factors in a vehicle's life cycle. It is economically and technically not feasible to phase out the substances in Legacy Spare Parts.

Spare parts for vehicles must meet the performance demands of the original part and function identically with associated systems and components to make sure that the function and safety of the vehicle is not adversely affected. The technical performance defined for these spare parts may be linked to their chemical composition. To guarantee the technical performance of the individual parts and interaction with other components an adverse chemical reaction should be avoided. The geometry of the spare parts needs to be identical to the original part in order for the components to physically fit into the required space. Interchangeability must be ensured.

Furthermore, the use of remanufactured components as spare parts is widely common in the automotive/motorcycle sector. Such parts are offered by vehicle manufacturers, automotive/motorcycle suppliers, and independent specialized remanufacturers. In practice, an entire ecosystem was established ensuring that worn-out or defect parts (product, sub-assembly or component / article), find their way back to remanufacturing plants via specialized logistic operators and parts selection centres. After an industrialized remanufacturing process consumers can enjoy affordable spare parts with full warranty while meeting all specifications as defined for the original part.

In the interest of a flourishing circular economy it is relevant that all products which are already in the market can be remanufactured without any restrictions or conflicts with other regulations. The current proposals for PFAS-Ban will no longer allow existing processes for remanufacturing with the consequence to make the circular use of components impossible or economically no longer feasible.

Specific applications for PFAS

As described in the review of specific exemptions for fluoropolymers, vehicles have to meet many requirements in terms of quality, comfort, legal requirements. With the universal PFAS-Ban, proposed by the current Annex XV report a large number of components are affected, some with very specific functions. The search for substitutes without serious loss of performance and durability is a time-consuming process and it is unlikely that many of them can be replaced.

Instead of a fixed restriction date, we propose, based on these principles of evidence-based policymaking (COM/2021/219 final) , to monitor and review frequently the fluoropolymers in transport vehicles with the aim to control fluoropolymers and prevent their release into the environment, to facilitate Circular Economy and to avoid the disposal of hazardous waste.

The Commission shall review the applications defined in this chapter together with the automotive/motorcycle industry on a regular basis within 13.5 years after entry into force.

The defined applications are:

Lithium-ion batteries, Electronics, Technical textiles, Seals/hoses, Lubricants.

Lithium-Ion Batteries

The cathode of a Lithium-ion battery (LIB) cell is produced with a metal oxide or phosphate powder (NMC, LFP) with the aid of a binder. All binders used in series production today consist of the fluoropolymer PVDF. Furthermore, PVDF is used as an adhesive layer to connect the separator and the electrodes. New, dry electrode coating processes that are conceivable in the future also require fluoropolymers (e.g. PTFE). Only fluoropolymers such as PVDF or PTFE have the necessary chemical, electrochemical and thermal stability to be used as a binder on the one hand and to meet the high requirements of a LIB cathode on the other hand.

Sodium-based batteries that may be available in the future will also require PFAS-containing binders for the production of the cathode coating, as the chemistry and the requirements for the cathode are very similar to lithium-based batteries.

This is also mentioned in Annex E of the Annex XV dossier: "In several cases chemical stability in combination with higher temperature stability is requested, especially for battery and ..."

The binder is removed together with the electrolyte components during recycling, usually thermally via pyrolysis, to produce the so-called blackmass (NMC). The resulting exhaust gas is purified, for example, in gas scrubbers. The step is necessary because organic components interfere with the subsequent

COM/2021/219 final (2019): COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS Better regulation: Joining forces to make better laws hydrometallurgy. The undestroyed PVDF residues behave inert in the subsequent hydrometallurgy and thus end up in the filter cake, which consists mainly of graphite.

The filter cake is either further processed to recover the graphite or directly incinerated. In both cases, the binder is completely decomposed and the exhaust gases are cleaned by means of a gas scrubber.

In today´s LIB 15 – 50 g PVDF per kWh are used, depending on the power of the battery.

The planned short-term ban on fluoropolymers would make the required development of a competitive European battery production impossible.

Fluoropolymers such as PVDF are relatively expensive materials and are only used where it is technically imperative. Their replacement is regularly reviewed by manufacturers for economic reasons. In the past, for example, the binder for the anode coating was changed from a fluoropolymer originally used to a cellulose-based system. Within the proposed review period, the respective success of a substitution could be reviewed or reported to the authorities.

While a battery's first life lasts for between 10-15 years, it still has a capacity of at least 75%. This means it can be repurposed for up to another 10 years in applications such as stationary energy storage. This is what is known as the battery's "second life".

If no exception is made for the re-use of used batteries as proposed in the battery regulation of the European Union, valuable resources and energy will be wasted and the principles of the circular economy will be violated[7].

In the future, solid-state batteries using polymer electrolyte may become available as an alternative to today's LIBs for vehicles. But in medium term solid-state batteries for vehicles are a speculative technology and the material development is far from complete. It is likely that PFAS, e.g. in polymer electrolytes, will also be needed for a good performance of the future solid-state batteries. LiTFSI, for example, is a promising substance for use as conducting salt in this polymer electrolytes.[8]

Ultimately, the testing of new materials to increase battery performance and secure competitive advantages for the fledgling production of batteries in Europe affects all types of vehicle batteries.

In today´s LIB 50 –150 g/kWh of the conducting salt $LiPF_6$ are used. At the present it is unclear whether this amount can be reduced when LiTFSI or Triflates are used.

In order to maintain the ability to innovate and thus make battery production in Europe possible, the use of new PFAS- applications, e.g. for additives, should continue to be permitted.

This exemption should be reviewed after a reasonable period. However, the period should be long enough, e.g. 13.5 years, to consolidate battery technology and battery production in Europe.

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[7] Concerning the potential of used batteries for circular economy applications see for instance: Engel et. al (2019): Second-life EV batteries: The newest value pool in energy storage. In: https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/second-life-ev-batteries-the-newest-value-pool-in-energy-storage (last access: 01.06.2023); Niese et. al. (2020): The Case for a Circular Economy in Electric Vehicle Batteries. In: https://www.bcg.com/publications/2020/case-for-circular-economy-in-electric-vehicle-batteries (las access: 01.06.2023); Iqbal et al. (2023): A survey of second-life batteries based on techno-economic perspective and applications-based analysis; Carbon Neutrality; open Access (last access: 01.06.2023)

[8] "Editors' Choice—Review—Innovative Polymeric Materials for Better Rechargeable Batteries: Strategies from CIC Energigune", Zhang et. al., 2019, Journal of the Electrochemical Society, IOPscience (last access: 24.05.2023)

Electronics

PFAS and fluoropolymers are found in most electronic components in today's vehicles. In contrast to electronics in the consumer sector, the requirements for automotive/motorcycle electronics are significantly higher. For example, the electronics must work in a temperature range of -60 °C to +135 °C (reliable for 20 years) and withstand high shock and vibration loads. These high demands on automotive/motorcycle electronics can only be guaranteed with the help of the special properties of PFAS and fluoropolymers. Fluoropolymers have the highest media resistance to aggressive media in combination with high mechanical, thermal, dielectric and long-term properties. There are no materials with comparable property profiles available on the market today. Up to now there have been no suitable alternatives with the same reliability and lifetime for automotive/motorcycle electronics.

Technical Textiles

A variety of technical textiles are used in vehicles. In addition to their use as membranes, technical textiles are also required for ignition protection and as filters in the fuel supply.

Due to the demanding operating conditions, materials containing PFAS are indispensable.

Seals and Hoses

Fluoroelastomers such as FKM, FFKM and FVMQ as well as some other classes of fluorinated plastics such as PTFE or PVDF are used in demanding seal and hose applications. The materials are either used as bulk materials, or as single layers in multi-layer constructions or as coatings. While some applications will disappear with the end of ICE technology others are not related to ICEs and will remain important components also in e-powertrain vehicles. Also new products are currently being developed in the field of electric drives.

Examples for important seals and hoses used in current ICE technology made from or using fluoroelastomers, PTFE or other fluorinated plastics are valve stem seals, crank shaft seals, fuel injector seals and generally the majority of seals used on the fuel circuit, intake manifold seals, oil seals and O-rings for engine and transmission, fuel pump seals, high temperature coolant seals, oil separation membranes, drive belts, fuel hoses, hose lines for DEF lines and DPF/GPF control lines. Components that are phasing out with the combustion engine cannot simply be converted.

Examples for important seals and hoses not related to ICE technology are seals for thermo management such as newly developed dielectric cooling fluids for active battery cooling, seals for compressors e.g., oil seals and O-rings in e-engine and e-transmission, brake vacuum hoses and thrust washers.

Besides seals and hoses fluoropolymers such as PTFE and PDVF are used as coatings or tribological additives also in thermoplastic bearings, electronic coolant distribution modules, dosing valves for AdBlue and electric actuators in gears and bearings.

Fluoropolymers are used in all the cases mentioned because of the following unique properties or combinations there of: high temperature and media stability (fuels, acids, bases, high performance lubricants such as motor and gear box oils, hydraulic fluids), excellent wear resistance and low friction properties, corrosion resistance and permeation tightness. It is important to note that fluoropolymers are among the highest priced polymers and there is a significant gap to other classes of polymers. They are therefore only used today in applications for which there are no technical alternatives.

Replacing fluoroelastomers, PTFE or PVDF in sealing and hose applications with other polymer classes always comes with a loss of performance and/or a significantly reduced lifetime of the respective component.

This loss of functionality easily leads to premature component failure, causing leakage and associated safety issues, as well as emissions of the respective fluids to the environment.

Complex and expensive core systems such as the engine, transmission or the fuel system pose a high risk of serious damage if a seal or hose fails, which can result in the entire vehicle breaking down.

Other polymer classes are more permeable to liquids and gases than fluoropolymers and therefore lead to emissions of functional fluids such as fuels or lubricants.

Therefore, seals and hoses need to be replaced regularly as a preventive measure, necessitating frequent and expensive service intervals. In many cases, replacing a seal or hose is entirely not feasible.

To ensure proper functioning, fundamental engineering changes on motor vehicles currently in production are based on type approval processes implemented by national transport authorities of EU member states. If possible, a single material change in such a scenario affords up to eight years in average from initial request to fully validated approval. Ensuring continuous production of proper functioning vehicles under such an extensive change regime requires a review no later than 13.5 years after EiF.

Lubricants

“Proper” functioning needs to be included as PFAS lubricants including dry film lubricants play a vital role, for energy savings, emission reduction, resource saving durability and longevity (for-life-lubrication), uninterrupted operation of vehicles and machines needed for the proper functioning of the society. According to the study "Influence of tribology on global energy consumption, costs and emissions" [222]
[21 c] 23 percent of the global energy consumption is caused due to friction and reconditioning of worn components. As a result of the study the potential to reduce energy losses in short term (8 years) of 18 percent and in long term (15 years) of 40 percent are possible if new technologies to reduce friction and protection against wear will be used. This will lead to a reduction of 1.460 million tons CO emissions in short term and a reduction of 3.140 million tons of CO emissions in long term. Lubricants containing PFAS polymers of low concern play an important role in this reduction of CO emissions what is a major goal in the European green deal.

To ensure proper functioning, fundamental engineering changes on motor vehicles currently in production are based on type approval processes implemented by national transport authorities of EU member states. One single material change in such a scenario affords three years in average from initial request to fully validated approval. A modern passenger vehicle has in order of 20 – 40 components containing PFAS-containing lubricants on board, depending on vehicle size and its functional complexity. Ensuring continuous production of proper functioning vehicles under such an extensive change regime requires a minimum derogation of 13.5 years after EiF.

Spare parts: as the PFAS lubricants and components lubricated with such PFAS lubricants are used for vehicles and machines designed themselves for longevity and repairability it must be assured that spare parts are kept available and can be sold. Otherwise, non-availability of minor PFAS spare parts may lead to scrapping of even large and costly equipment.

Dry lubricants are also used as **coating materials** as a surface additive to adjust particularly smooth surfaces for vehicles applications. Due to the wide range of applications and each type of counter-layer made of different materials (steel, aluminium, magnesium, painted and unpainted, plastics, etc.), a short-term

[222] [21 c] Kenneth Holmberg, Ali Erdemir (2017): Influence of tribology on global energy consumption, costs and emissions

changeover is impossible. Even with alternatives that may be available in the future, lengthy testing and approval processes are required across the entire supply chain.

Restriction of specific application for PFAS

Hardchrome application

Disclaimer: The mist suppressants do not enter the consumer product; it is a pure issue in terms emission reduction and workers safety in the plating industry.

The use of PFAS in chrome plating is limited to mist suppressants in closed loop systems reducing emissions and increasing workers safety.

Hardchrome plating is already extremely restricted, first by REACH Annex XIV, allowing only authorized applications for which no alternative exists. These applications had been scrutinized by ECHA, MS and COMM resulting in some automotive/motorcycle applications with review periods up to 2032.

Secondly, mist reduction during hard chrome plating has been seen of high importance to allow derogation under the most restrictive prohibition order the EU POP regulation even for the harmful PFOS if no alternatives exist.

The industry has accepted the harmful properties of PFOS on the environment and developed alternatives based on incompletely fluorinated octane sulfonic acids as spray suppressant such as 6:2 fluorotelomer sulfonic acid (6:2 FTS)

Low power yield at chrome plating leads to the remaining electricity to be used for the electrolysis of water. Spray mist is formed by gas bubbles that burst at the electrolyte surface of up to 10 m/s. Spray preventers reduce surface tension and prevent the formation of spray fog (gas bubbles that form is smaller and have fewer energy). The importance and alternativeness of PFAS has been scrutinized and accepted under the EU POP Regulation.

PFAS-free substitutes for mist suppressants are used in decorative chrome plating but not in hard chrome plating. The reason according to experts is found in the much higher current density and the much thicker layer structure in the hard chrome plating that causes the interference with these other mist suppressants or their degradation products. However, even when chromium (III) is used, PFAS cannot be substituted today with in the etching process that precedes decorative chrome plating.

A derogation influences the authorized hardchrome applications for the automotive/motorcycle industry with review periods up to 2032 and expected prolongation of these authorizations for several years.

Currently, the proposed restriction only considers hard chrome applications as potential derogation for consideration and 6.5 years estimated until 2031 (worst case).

The purpose of the derogation under the EU POP Regulation is emission reduction and workers safety by mist suppressant with the hazardous Substance PFOS. Nowadays, harmless alternatives such as 6: 2 FTE are available and already in use. Therefore, these recently introduced, alternative mist suppressants should be derogated for 13,5 years from the planned PFAS restriction to be in line with the authorized hard chrome uses under EU REACH and the EU POP regulation.

Please see attached confidential information with currently identified applications of our industry to supplement our comments.

Thank you in advance for considering our comments as part of your assessment. We remain at your disposal should you need further information.