

Consultation report on the PFAS restriction proposal

With more than 500.000 vehicles sold in 2022, Daimler Truck AG is one of the leading truck and bus manufactures in the world and sells its products all over the world. Our ultimate target is to become CO₂-neutral in the most important markets by 2039. We are aggressively transforming our product portfolio towards zero emission commercial vehicles and are already producing today battery electric vehicles (BEV) in series alongside conventional powertrains (ICE). The fuel cell electric vehicles (FCEV) will expand our product portfolio by the end of this decade. Our success can only be achieved within the appropriate regulatory framework. Under these circumstances the restriction proposal for per- and polyfluoroalkyl substances (PFAS) chemicals, which is essentially a total ban of all uses of PFAS, from the European Chemistry Agency (ECHA) **will have an enormous impact and will affect our global competitiveness.**

In our worst case, it will prevent possible future technologies for a CO₂ neutral driven world. We are aware of the required safe and responsible dealing with PFAS chemicals. Especially the research and development (R&D) department is seeking for the highest technical and economical feasible solutions for substitutes. The restriction proposal will have a major impact on failing the European Green Deal goals with the "Fit for 55-package". We appeal for a revision of the current proposal including the consideration of exemptions and the different separation of the chemicals, which are all part of the ban. We emphasize the significance of the already submitted reports by the VDA, ACEA and BDI.

Furthermore, it is questionable if the current restriction proposal of PFAS fulfills the legal requirements of Article 68 of the Reach regulation, which requires "unacceptable risk to human health or the environment", because the hazard for public health is not seen in many of the over 10.000 PFAS substances. For this reason, it is fundamental, to exclude fluoropolymers, which have been classified as "Polymers of low concern" (PLC) according to the OECD classification. In this case, the legal preconditions are not fulfilled for a ban of fluoropolymers, so it is necessary to exclude PLC's of the scope to meet the requirements of Article 68.

The scope of the restriction proposal is too broad, over 10.000 PFAS substances are used and exist in everyday consumer products. It is not justified to group the various substances and segment them based on the main concern: persistence, as shown by a study from 2022 of different experts¹. PFAS is a large, highly varied class of chemicals with significantly divergent chemical and physical property on its own. It is not the case that all PFAS are *very persistent* according to Annex XIII of the REACH Regulation. Some PFAS may be considered to be *persistent* as opposed to *very persistent*. Also, persistency alone should not suffice as the basis for a restriction as it is not a hazardous property on its own. The other concerns identified in the Proposal are based on evidence that is scarce, inconsistent, questionable and certainly not applicable to all PFAS substances. Thus, the Proposal would ban PFAS on the basis of mainly a "persistency concern"

¹ "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

without a proper demonstration that each and all of them present an unacceptable risk. Therefore, it does not meet the criteria for a lawful restriction under Article 68.1 of REACH.

The complete identification of PFAS substances in products and their usage is currently not possible, because we are dependent to our suppliers, who are not always able to provide the necessary information. The problem is further aggravated by the fact, that CAS numbers for the search in our database system IMDS are not available for the whole spectrum of PFAS substances. The globalisation makes the dealing more complex by the worldwide supplier competition. CAS numbers are missing for some material data sheets due to the different ways of, which these chemicals are identified and classified. Additionally, EG numbers in the European Union and the globally used CAS numbers, which are independent from each other, do not synchronize for some substances. These circumstances have made the ongoing PFAS-applications very challenging.

PFAS chemicals are utilized in different stages of the product lifecycle. Daimler Truck AG does not produce PFAS substances on its own. In the production phase PFAS is used as lubricants with no emissions into the environment. Only exceptions can be accidents or malfunctions. As long as it is strictly controlled and monitored, it should be assessed as safe – a ban is therefore not justified. The unique main properties of PFAS chemicals are long-term resistance, high temperature resistance and chemical stability, which are mandatory necessary for some production processes and safety-relevant components as a result from their molecule structure, which contain strong carbon-fluorine-bonds that are difficult to break.

As a result, PFAS parts are high in demand and essential in the automotive industry: from hoses and sealing rings to sensors, actuators, semiconductors, seat covers, electronics and beyond. In preparation of the expected integration of trucks and buses to the “End-of-Life Vehicle Directive”, we assume that all our components will fall under this directive and consider the expected inclusion in our component developments.

The two possible restriction options, even with a ban after the use-specific derogations in option 2, do not include all required exemptions for our applications. We demand an exemption for applications where substitutes are not foreseeable today and within the next 13,5 years. The R&D department is working on finding solutions for this issue, but the testing procedures need time and it goes along with high testing costs. To provide an example, we currently implement ACM as an approved alternative for some parts in seal ring operations, but for others FKM or FPM elastomers only. It is important to review the exemptions and make the situation clear within the 13,5 years after entry into force to make sure if substitution options are operational or not.

We endorse the proposed amendments by the consultation report of the VDA (“Verband der Automobilindustrie”) and support them, especially chapter 3 “Automotive specific exemptions”.

We present various application examples, where no substitutions are currently available and foreseeable in the future as well:

- 1) Wiring harnesses,
- 2) Sensors,
- 3) Actuators,
- 4) Sealing rings,
- 5) Battery cell in BEV.

Fluoropolymers, such as PFA and PTFE pose significant challenges, like high temperature cable insulation and cable protection in our powertrains. Two examples can be given to highlight the issue of cable protection in wiring harnesses: Exhaust gas after treatment wiring harnesses and motor wiring harnesses. In addition, high temperature cable insulation is crucial for safety aspects in sensors and actuators. For these applications, it is justified to mention non-substitution examples such as NOx sensors, speed sensor turbocharger, high temperature sensor for the global after treatment system (GATS), servomotor exhaust flap, servomotor for the exhaust gas recirculation (EGR) and actuator waste gate.

The restriction proposal aims to include a production ban for PTFE-chemicals, which are necessary for the mentioned examples also with a view to safety relevance. It is more than clear, that safety is on our top priority. On request, the manufacturers of these goods expressed worriedly due to the lack of substitutional potential today following the approval tests for insulation material "MBN LV112-01" and cable protection "MBN LV312-01" for temperature ranges up to 260° Celsius in 3000 hours. It is impossible to predict any progress in the next 5-10 years regarding this matter.

According to this statement, fluoropolymers in automotive high temperature applications are not replaceable.

Basis for sealing rings, which include the FKM/FPM sealing material, is their high temperature resistance and the (required) long-lasting performance, two main unique properties of PFAS substances. In the input shaft, the radial shaft seal in the gearbox is made of Torlon 4301 and has no PFAS-free alternative, only with a proportion of PTFE. The same applies within the output shaft for the radial shift seal, which contains Torlon XA. Absolutely no alternatives are known for 75 FKM 595 in the radial shift seal in the output shaft.

Our laboratories using PTFE or PFA for stirring fish, vessels for acid digestion and seals as utility items in their operations for testing, measurements, controls and more.

As an outlook to our future technologies, which bring us on the CO2 clean track, PFAS play an absolute fundamental role, for example in the battery cell of our BEV's (not to forget the fuel cell technology, but the response to the ban proposal will be mainly covered by our Joint Venture company Cellcentric). The usage of PVDS and NMP is required within the battery cell for two main applications: First, it serves as a binder for the cathode and creates electrochemical stability. Secondly, it forms micro fibrils for the high mechanical stability of the cathode even with low binder contents. Unfortunately, no alternate options are known today and can be adapted to our cells. In addition, the electrolyte contains PFAS substances as a component of the conducting salt (trifluoromethylsulfonyl). With increasing requirements for the voltage window, the amount of fluorinated compounds in battery cells will also be on the rise. The next future technology, fuel cells, also requires the use of PFAS as the Nafion membrane serves as the central unit and the used seals are made of FKM.

In addition to the examples mentioned it is important to note that the restriction will influence many other applications and processes upon its entry into force.

An additional essential aspect is the dealing with spare parts and vehicles, which have already been produced and sold. It is not imaginable to take the existing vehicles into the scope of the

restriction. We, as a vehicle manufacturer, have the responsibility to provide spare parts for some years after a series is already tamped down. The impact in the spare part market, repair market and the second hand market is much bigger than the rest. We want to fulfill our responsibility as an OEM and request the exclusion of the three mentioned categories from the scope. If not, the society will face significant challenges as many already produced products can't be used anymore. In addition to, we fear the loss of many jobs, slump in used car dealership sector, a decline of suppliers etc.

Without PFAS, it is impossible to bring our BEV's on the road and to fulfill the CO2 heavy duty fleet regulation goals, as well as our ultimate target of being CO2 neutral by 2039. It still seems unclear how companies should fulfill the goals of the European Green Deal with the eventual restriction of PFAS chemicals. The target of reducing our greenhouse gas emissions in 2030 of 45% in comparison to the reference year 2019 seems (current proposal by the EU-COM) to be unable to reach under the circumstances with the restriction, especially if BEV's or any zero emission vehicles (ZEV's) cannot be produced or sold.

Our suppliers are dependent on the availability of the above-mentioned materials. We initiated broad research activities with some of our big main suppliers to find out the impact of the possible restriction and to get a real understanding of consequences for us. The feedback was clear, all of the five big suppliers replied to take actions on the PFAS restriction as soon as possible, but pointed out the limited and critical scope of actions and reconfirmed the usage of PFAS in their goods in the whole spectrum of cables, lubricants, gear pinion, foil coating and other areas. The industry is seeking for alternate insulation materials for high temperature applications. Not to be disregarded it is important to have the entire supply chain in mind and the very long lead time, which is necessary to develop those alternatives, to test them and then to generate mass-market production processes. Some of the major suppliers have responded to take further investigations together with their (sub-) suppliers, which will make the whole process more complicated and can potentially lead to non-compliance with agreements if the restriction proposal is implemented.

To sum it up, we share the intention to reduce the use of PFAS chemicals and to minimize the hazard for human health and environmental damage. It is of highest importance to us, to observe our requirements and the statements of the entire industry to keep the socio-economic impacts in mind and the economy ongoing. Exemptions need to be implemented to the proposal, especially safety relevant components and applications without alternatives. The given derogations are too short for the mentioned example cases with view on the supplier side and their own sub-suppliers. The investing costs run high to seek economic and technical feasible substitutions. On the cost side, the customer and consumer will face higher prices and investors will hold back with their investments in future technologies. In terms of climate change, the restriction will not go hand in hand with the European Green Deal and threatens the Paris Climate Agreement.

We appreciate the consultation and are here to address any inquiries that arise.

Our consultation report is signed by:

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