

Use of PFAS in machinery and equipment

Section III

1.

Transport, Food contact materials and packaging, Electronics and semiconductors, Other niche applications

The following comments correspond to paragraphs 6, 7, and 8.

Rotational seals, reciprocating seals, fixed seals, valves, thrust washers, sealing rings, wear bands, dampers, chain tensioners, etc., used in machinery, equipment, etc. (Transportation vehicle, agricultural machine, construction machine, industrial vehicle, industrial machine, robot, etc.), whether special or general.

Produced by NOK CORPORATION and supplied to the EU.

a. Types of PFAS

Fluororubber (FKM, FFKM, FVMQ, Bisphenol AF, etc.), Fluororesin (PTFE, PFA, FEP, ETFE, etc.)

b. Main functions of PFAS

It is used in rotating shafts, reciprocating shafts, fixed sealing surfaces, flow control sections, sliding sections, and vibrating sections of machines and equipment. It prevents leakage of lubricating oil, controls the flow rate of liquids and gases, suppresses abnormal vibration, and achieves low frictional resistance and low wear under high loads.

It provides functions and safety up to the life of machines and equipment (approximately 20 years) without deterioration due to hydraulic oil, sliding heat generation, or friction and wear.

g. Substitution is not technically or economically feasible

Many parts such as rotary seals, reciprocating seals, fixed seals, valves, thrust washers, sealing rings, wear bands, dampers and chain tensioners are used in machinery and equipment (Examples include transport vehicles, agricultural machinery, construction machinery, industrial vehicles, industrial machinery, food processing machinery, robots, etc., regardless of special or general use.). When a high performance level is required for the performance required for these parts in any or a combination of heat resistance, oil resistance, chemical resistance, wear resistance, and low sliding resistance, fluororubber (FKM, FFKM, FVMQ, Bisphenol AF, etc.) and fluoropolymer (PTFE, PFA, FEP, ETFE, etc.) are selected as the materials. Usually, fluororubber and fluoropolymer have a material cost more than twice that of other rubbers and resins. Therefore, fluororubber and fluoropolymer are adopted only when there is no other option. Paradoxically, there are parts whose performance can only be maintained by fluororubber and fluoropolymer, and the parts cannot be replaced by other rubbers and resins. This is the reason why fluororubber and fluoropolymer are adopted even at high cost.

If fluororubber and fluoropolymer are used in the parts to be used, the following two patterns can be easily predicted.

(1) The life of the parts is short, and the replacement frequency of the parts is high.

In this case, it is obvious that the increase in the replacement frequency greatly increases the amount of waste and causes a heavy burden on the environment. At the same time, the cost burden on the user increases. This is caused not only by the cost of parts, but also by extensive repair activities such as removing the engine from the engine bay. If the parts are not replaced in order to avoid large economic costs, the failure of parts can lead to increased environmental pollution due to oil leaks, etc., and in the worst case, damage to machinery and equipment, resulting in accidents and fires that affect human lives.

(2) Parts are destroyed and machinery and equipment fail.

In this case, an increase in environmental pollution due to direct oil leakage, etc., and in the worst case, damage to machinery and equipment, resulting in an accident or fire, can be assumed.

Fluororubber (FKM, FFKM, FVMQ, Bisphenol AF, etc.) and fluoro-resin (PTFE, PFA, FEP, ETFE, etc.) are important materials for reducing environmental impact and protecting human lives. Therefore, they should be exempted from regulations and continued use in Time-unlimited.

In addition, banning supply parts from the market after a certain time limit would interfere with the repair and inspection of vehicles already on the market and would violate the CE Principles and Green Deal targets. Supplies should be recognized as an important requirement for exemptions.

In addition, the use of FKM (perfluoro and polyfluoropolymers) to form molded products with rubber elasticity requires the use of bisphenol AF, a type of PFAS, as a cross-linking agent. Proposed regulations for bisphenol AF have been published in the "ANNEX XV RESTRICTION REPORT - BPA and bisphenols of similar concern for the environment". It can be said that the proposed regulations have established upper limits for the release of bisphenol AF into the environment and that the environmental impact has been sufficiently examined. The threshold for bisphenol AF in molded products should be in accordance with the values in this proposed legislation. The use of FKM (perfluoro and polyfluoropolymers) is not subject to PFAS regulations and its continued use with Time-unlimited is essential.

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