

Additional input from JBCE

In addition to the on-line consultation, JBCE would like to provide the following information in relevant to applications not covered in the consultation, and measurement of PFAS.

1. Applications

Please kindly refer the attached non-exhaustive list.

2. Measurement of PFAS

From an analytical point of view, the implementation and enforcement of PFAS restriction is not possible.

Regarding the measurement of PFAS in water, standards such as ISO 21675:2019, US EPA 537.1, US EPA 533 are available, and analytical methods have been established using LCMSMS. For the measurement of PFAS in soil, also a standard (ASTM D7968-17a) is available. However, these standards only cover a few dozen of PFASs. The methods for the analysis of many other PFASs have not yet been established.

Regarding the measurement of PFAS in articles, no established analytical method is known: The standard CEN/TS 15968:2010 for PFOS can be a reference, however, it is not known whether this method is also valid for Polymeric PFASs. In the USA, the State California will regulate PFAS in food packaging (AB-1200 Plant-based food packaging: cookware: hazardous chemicals.), however, there is no detailed description of the analytical method. The establishment of methods for the extraction of PFAS from articles is especially important for the measurement.

In addition, small amounts of PFAS are frequently used in the manufacture of components of complex equipment. For enforcement, even identifying which components of the equipment to try to measure would present an enormous challenge.

As a consequence of the difficulty in identifying which parts of complex articles to try to measure coupled with the general lack of analysis methods applicable to the broad range of substances and matrices in which PFAS are used, enforcement of a broad PFAS restriction will not be feasible. In the interest of both sustainability and compliance related level-playing field restrictions must be enforceable.

3. Spare part: “repair as produced” principle should be introduced

We strongly believe that spare parts for EEE placed on the market before the implementation of the restriction should be excluded from the restriction without expiry date. If spare parts are not exempted, the lifetime of EEE will be shorten. Consequently, the volume of waste of EEE will rapidly increase, which is undesirable from the viewpoint of circular economy. Therefore, “repair as produced” principle should be introduced.

ABOUT JBCE

Founded in 1999, the Japan Business Council in Europe (JBCE) is a leading European organization representing the interests of about 90 multinational companies of Japanese parentage active in Europe. Our members operate across a wide range of sectors, including information and communication technology, electronics, chemicals, automotive, machinery, wholesale trade, precision instruments, pharmaceutical, textiles and glass products.

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Non-exhaustive list of uses of PFAS substances

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		Use	Reasons of using PFAS substances
Electric Equipment	Electric components	Printed circuit boards and electric components	Electric equipment is used in the variety conditions, and also required proper functional operation. To keep high reliability, components are required moisture proof, waterproof, rust proof, corrosion resistance, maintaining the performance.
		Photodiodes and laser diodes	In order to achieve the above requirement, such functions as low dielectric constant, low dielectric loss tangent, low refractive index, and oil repellency are essential. Only PFAS substances can provide the required several functions together as one substance.
	Mechanical components	Mechanical components (O-ring, valve material, and sliding portion)	PFAS-related substances contribute the functionality such as sealing, non-adhesive and abrasion resistance.
		Parts to be contacted to reagents, gases, analytical samples	These parts require functions such as high chemical resistance, rust proof, water proof, and cleanliness. In order to achieve the above requirement, such functions as chemical resistance, and water repellency are essential. Only PFAS substances can provide the required several functions together as one substance.
		Parts of optical components, detectors, and optical fibres	These parts require functions such as high chemical resistance, corrosion resistance, adhesion prevention, refractive index and water proof. In order to achieve the above requirement, such functions as chemical resistance, corrosion resistance, low refractive index, water repellency and non-adhesive function are essential. Only PFAS substances can provide the required several functions together as one substance.
	Parts to be contacted to foods and beverages	These parts require functions such as preventing the foods and beverage adhesion, reducing abrasion, preventing oil adhesion to the foods, and resistance to boiled water, hot water, and chemical resistance. In order to achieve the above requirement, such functions as chemical resistance, corrosion resistance, water repellency and non-adhesive function are essential. Only PFAS substances can provide the required several functions together as one substance.	
	lubricants and grease		If the lubricant coated on the sliding portion of the precision parts is spread, the durability and performance of the products will be significantly reduced. In order to prevent from the above failure, PFAS related substances are added in the lubricants and grease, because

		<p>PFAS related substances have function such as high dispersible, and high repellency. Fluorochemicals have smaller attraction forces between molecules (the cohesive energy between the molecules) because of the stable C-F bonds, so PFAs related substances can provide high oil repellency. Recently the parts getting smaller and smaller, it is difficult to take mechanical measures to prevent the lubricants from spreading. It is same purpose and function as “epilames used in watches” which SEAC Draft opinion proposed to exempted from the PFHxA restriction under REACH. The amount of PFAS use in this application is also very low.</p>
	Photoresist	<p>As the previous report stated, the Photoresist is being used for producing semiconductor devices with a photolithography process. The detailed application on Photoresist is "Positive Tone Photoresist", "Negative Tone Photoresist" and "Negative Tone Color Imaging-resist".</p> <p>The function of PFAS in the photoresist is; 1) The PAG (Photo Acid Generator) to use at the photolithography process, 2) Surfactant to control surface tensions and surface property. 3) Polymer to control surface distribution, 4) Initiator of polymerization, 5) Specific Pigment</p>
	Display materials	<p>PFAS are being used for controlling molecular orientation in liquid crystal displays;, surfactant, smoothing, and leveling reagent of LCDs and OLEDs and banking materials for OLEDs.</p> <p>The function of PFAS in this application is to contributes unevenly distributed on the surface to promote molecular orientation and are also capable of controlling film thickness precisely. Their applications are diverse, including polarizing film’s surface layer / retardation layer, touchscreen panels’ protective layer / functional layer, protective layer outside liquid crystal cells, color resist / black resist that form color filters, and TFT substrate’s insulation layers.</p>
Photographic application		<p>In this application, PFAS-related substances are being used as the function of surfactant, anti-static reagent, and colour dye formation materials.</p> <p>The function of PFAS in this application is to make the surface smooth and flat. The fluorinated surfactant also contributes the function of regulating the photosensitive film’s</p>

			triboelectric series, preventing static electricity when the material comes in contact with a roller, etc. during coating and processing.
Printing application			Printing application like photosensitive plate, plotter film and inkjet inks were missing as usage. In this application, PFAS-related substances are being used for surfactant, coating aid and nucleating agent. Low dielectric constant, low refractive index, waterproof, oil repellency, and physical-chemical properties of fluoro-chemicals are essential function for these usages.
Industrial Products application			Industrial Products Application like Industrial X-ray film, Glass safe film, microfilm, Measurement film, Filtration and Separation were missing as usage. In this application, PFAS-related substances are being used for surfactant, coating aid and functional materials. Low dielectric constant, low refractive index, waterproof, oil repellency, and physical-chemical properties of fluoro-chemicals are essential function for these usages.
Reference material	Reference material for the analysis		Reference material is essential for the reliable comparable, traceable accurate analysis, such as NMIJ CRM 4056-a, and NMIJ CRM 4220-a.
Analytical equipment	Oil Content Analyzer	Extraction solvent	Oil is often poorly biodegradable and must be disposed of properly. Otherwise, it will cause the negative impact to the environment. NDIR analysis (infrared spectroscopy) is used for this analysis. Oil is extracted from the sample with an extraction solvent that does not have a C-H bond, and the bond of C-H, which is an oil component, is analyzed by NDIR. PFAS substance is required as a solvent with no C-H bond, low volatility and high oil-dissolving power.