

# ANALYSIS OF PFAS



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## Determination of PFASs in food

Per and polyfluorinated alkyl substances (PFAS) belong to a broad group of chemicals characterized by a fully fluorinated hydrophobic carbon chain bonded to diverse hydrophilic heads.

The unique properties of these chemicals, such as chemical and thermal stability and their ability to lower surface tension, make them popular and very useful in various applications in food packaging materials, fire-fighting foams, fat and water repellents for paper, leather and textile treatment, performance chemicals and in the production of fluorinated polymers, among other applications.

Due to their toxicity, persistence, and bioaccumulation potential, PFAS are considered as global environmental pollutants. Besides the environment, the food chain represents another source of exposure, and the risk to consumers related to the presence of PFAS in foods has recently become of increased interest.

On 9 July 2020, the EFSA adopted an opinion on the risk to human health related to the presence of perfluoroalkyl substances in food and concluded that PFOS, PFOA, PFNA and PFHxS can cause developmental effects and may have adverse effects on serum cholesterol, the liver and the immune system and birth weight.<sup>1</sup>

In December 2022 the European Commission published the **Commission Regulation (EU) 2022/2388 of 8 December 2022** amending Regulation (EC) No 1881/2006 (repealed by Reg. EU 915/2023) as regards maximum levels of perfluoroalkyl substances in the following foodstuffs:<sup>1</sup>

Eggs
Fish meat
Fish meat for the production of food for infants and young children
Crustaceans and bivalve molluscs
Meat and edible offal

For details, please see the Annex to Regulation EU 915/2023, Section 4.2: Perfluoroalkyl substances, at the following link:

<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023R0915&qid=1686127180466>.

**Foodstuffs listed in the Annex, lawfully placed on the market before 1 January 2023, may remain on the market until their date of minimum durability or use-by date.**<sup>1</sup>

## Neutron proposal

Neutron performs the analysis of perfluoroalkyl substances by LC-MS/MS technique. The analytes in **Table 1\*** are accredited performed in compliance with Commission Regulation (EC) 2022/2388 for those matrices included in the Regulation: eggs, fish meat, fish meat for the production of food for infants and young children, crustaceans and bivalve molluscs, meat and edible offal.

Perfluorooctane sulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorononanoic acid (PFNA)
Perfluorohexane sulfonic acid (PFHxS)
Sum of PFOS, PFOA, PFNA and PFHxS

**Table 1:** PERFLUOROALKYL SUBSTANCES (PFAS) group, according with Com. Reg. (EU) 2022/2388<sup>1</sup>.

Neutron is also able to detect the following substances listed in Commission Recommendation (EU) 2022/1431 in all matrices (**Table 2\***):

Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)
Perfluorododecane sulfonic acid (PFDoDS)	Perfluorotetradecanoic acid (PFTeDA)
	Perfluorotridecanoic acid (PFTrDA)
Perfluorononane sulfonic acid (PFNS)	Perfluoroundecanoic acid (PFUnDA)
Perfluoropentane sulfonic acid (PFPS)	Perfluorobutane sulfonic acid (PFBS)
Perfluorotridecane sulfonic acid (PFTrDS)	Perfluorodecane acid (PFDS)
Perfluoroundecane sulfonic acid (PFUnDS)	Perfluoroheptane acid (PFHpS)
Perfluorooctane sulphonamide (FOSA)	Perfluorooctane sulfonic acid (PFOS)
Perfluorodecanoic acid (PFDA)	Perfluorooctanoic acid (PFOA)
Perfluorododecanoic acid (PFDoDA)	Perfluorononanoic acid (PFNA)
Perfluoroheptanoic acid (PFHpA)	Perfluorohexane sulfonic acid (PFHxS)
Perfluorohexanoic acid (PFHxA)	Sum of PFOS, PFOA, PFNA and PFHxS

**Table 2:** PERFLUOROALKYL SUBSTANCES (PFAS) group.

### \*Quantification Limits:

- **Accredited Matrices** (eggs, fish meat, fish meat for the production of food for infants and young children, crustaceans and bivalve molluscs, meat and edible offal):

0,10 µg/kg except for PFBA 1,0 µg/kg

- **Other not accredited Matrices:**

Solid: 0,050 µg/kg except for PFBA 0,50 µg/kg

Liquid: 0,010 µg/kg except for PFBA 0,10 µg/kg

To request an analysis, or to learn more about this specific topic, please do not hesitate to contact the Neutron team <https://www.neutron.it/en/contacts>.

### References:

1. Commission Regulation (EU) 2022/2388 of 8 December 2022 amending Regulation (EC) No 1881/2006 as regards maximum levels of perfluoroalkyl substances in certain foodstuffs.
2. Commission Recommendation (EU) 2022/1431 of 24 August 2022 on the monitoring of perfluoroalkyl substances in food.
3. Commission Regulation (EU) 2023/915 of 25 April 2023 on maximum levels for certain contaminants in food and repealing Regulation (EC) No 1881/2006
4. Risk to human health related to the presence of perfluoroalkyl substances in food, EFSA Panel on Contaminants in the Food Chain, *EFSA Journal* **2020**; 18(9):6223.