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# FLUORINE-FREE FIREFIGHTING FOAMS

**Are you ready for the transition?**

PFAS FREE

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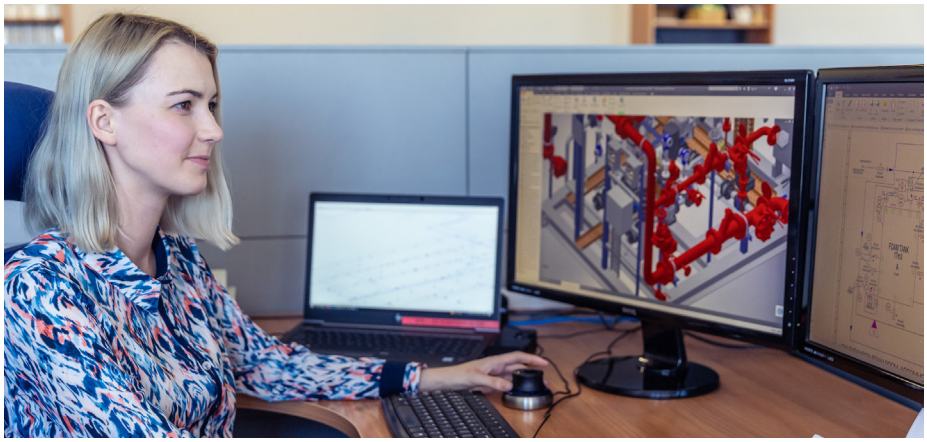

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# INTRODUCTION

## Are you perplexed about PFOS? Mystified by MSC.532(107)?

**You're not alone. There's a lot of confusion in the market about the phasing out of fluorinated substances; what this means specifically for firefighting foams; and when – and how – to make the transition. This guide is intended to provide clear answers to some key questions, and to help you make informed decisions.**

**Do you have a question that's not covered?**
**Then contact us here, and one of our customer service representatives will be pleased to help.**

## What are PFAS?

PFAS stands for Per- and PolyFluoroAlkyl Substances, a large group of manmade chemicals that have been used in everyday products since the 1940s/50s. PFAS substances contain carbon-fluorine bonds which are incredibly strong and very difficult to break down. This makes them very successful at resisting water, oil, grease and stains, which is why there are used in thousands of everyday products: non-stick cookware, water-repellent clothing, stain-resistant fabrics, food packaging, cosmetics – and also firefighting foams.

## What is PFOS?

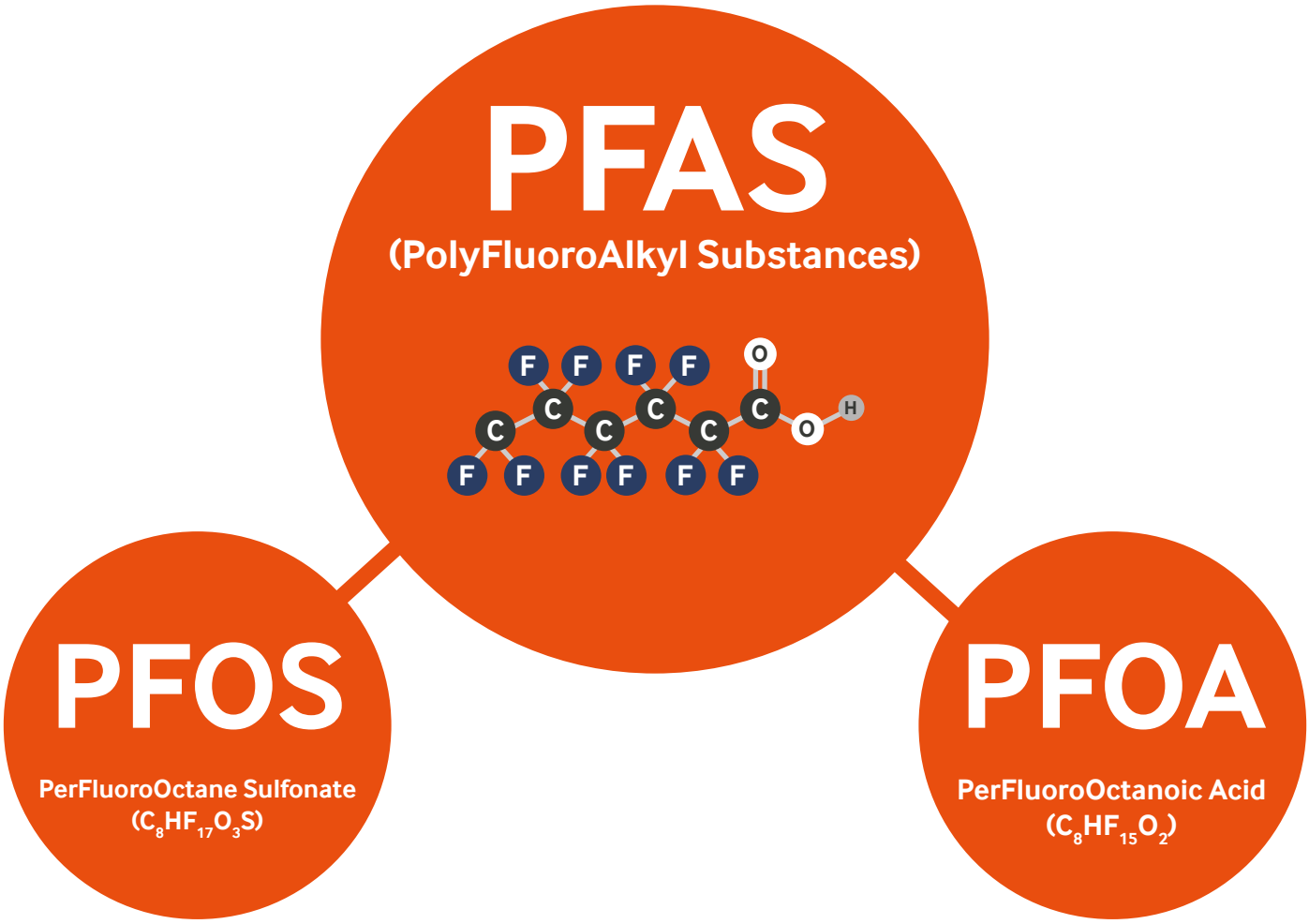
PFOS is the abbreviation for PerFluoroOctane Sulfonate or PerFluoroOctane Sulfonic Acid. PFOS chemicals are a subgroup of PFAS substances. They are some of the "strongest" chemicals in the PFAS family and therefore some of the most difficult substances to break down.

## What is PFOA?

PFOA stands for PerFluoroOctanoic Acid. This is another member of the PFAS family. PFOA is not added to firefighting foams but can be present in trace amounts as a byproduct of the fluoro-compounds that are used to make firefighting foams.

## If PFAS have been used in so many products, for so long, why are we worried about them now?

Research has shown PFAS substances to be persistent, bio-accumulative and toxic. The properties that make these substances so successful at resisting water, oil and grease etc, also make these substances very difficult to break down. This is why there are sometimes known as "forever chemicals" because they can live inside the human body and in the environment for many years. Governmental and regulatory bodies are therefore planning to restrict their use and, ultimately, replace them with fluorine-free alternatives that have less impact on humans and the environment.




PolyFluoroAlkyl Substances (PFAS) is the term used to describe a whole class of man-made chemical compounds that contain a chain of carbon and fluorine atoms strongly bound together. PFOS and PFOA are both members of the PFAS product family.

# PFAS AND FIREFIGHTING FOAMS

## Do all firefighting foam concentrates contain PFAS?

No. The foam concentrates used for high-expansion foam firefighting systems, such as those used to protect engine rooms, are usually fluorine free.

However, the foam concentrates used for low expansion foam systems, such as deck systems and helideck systems, have commonly been manufactured using fluorinated compounds (PFAS) for many years, although new, fluorine-free products are now available on the market, and more are in development.


## How do I know whether my firefighting foam contains PFAS?

You should find this information on product packaging, or in the product datasheet from the manufacturer.

All Aqueous Film Forming Foam (AFFF) concentrates, including Alcohol-Resistant Aqueous Film Forming Foam (AR-AFFF) concentrates, contain fluorosurfactants (PFAS), as it is the fluorosurfactants that give these foams their film-forming properties. Additionally, any foam described as "fluorinated" or that contains fluoroprotein will also contain PFAS.

Foam concentrates that have been especially formulated and manufactured without PFAS will commonly be described as "fluorine-free" or "non-fluorinated". Alternatively, ask your supplier for advice.

## What does the label "no PFOS/PFOA added" mean? Is it the same as being "fluorine-free"?

Not necessarily. PFOA has never intentionally been added to firefighting foams as a raw material or ingredient. Instead, it is formed during the manufacturing process as a byproduct of the fluoro-compounds used to create the foams. Therefore, a manufacturer may not add PFOA directly, but it may still be present as a contaminant.

There are significant differences in how such labels are used among different suppliers. However, a responsible supplier will clearly define the terms they use in the product datasheet.

# MSC.532(107)

## What is MSC.532(107)?

MSC.532(107) is an IMO resolution that prohibits the use or storage of firefighting foams containing PerFluoroOctane Sulfonic Acid (PFOS). The resolution was adopted in June 2023 and will come into force as of 1st January 2026. However, it refers only to a specific group of PFOS chemicals within the wider PFAS family. It does NOT prohibit the use of all PFAS products, only those products containing PFOS.

## What does MSC.532(107) mean for me?

In practical terms, it is highly likely that you will already be compliant because most suppliers phased out the use of foams containing PFOS many years ago – for example, Survitec started to phase out the supply of PFOS foams in 2005, and stopped supplying PFOS foams completely in 2009. Therefore, if you source your firefighting foams from trusted suppliers such as Survitec, you will likely already be compliant but if you are in any doubt you should contact your supplier to confirm.


## Do I still need to worry about PFAS?

While there is currently no global regulation in place, countries such as Norway, Germany, Denmark, Sweden and the Netherlands are actively advocating for restrictions on **all products containing PFAS**. Furthermore, regulatory bodies, such as the European Chemicals Agency (ECHA) and the Environmental Protection Agency (EPA) in the US, are working towards the gradual withdrawal of PFAS products from the market, but with a focus on consumer goods first.

Additionally, class societies are introducing new "clean design" notations that recognise ships designed, built, and operated to minimise their environmental impact. Some of these notations already require that all firefighting foams onboard be fluorine free. Compliance with this notation is entirely voluntary but increasingly popular among shipowners adopting it as part of their broader Environmental, Social, and Governance (ESG) strategies.

While there may not be an immediate need to switch to fluorine-free firefighting foams, we recommend beginning the planning process now. The transition to new foams can be complex and costly. By starting to prepare now, you can budget and plan effectively to ensure a seamless transition, with minimal disruption.

# PHASING OUT FLUORINATED FOAMS

## When do I need to phase out my PFAS foam and transition to fluorine-free?

There has been some confusion in the market on this point. Some are interpreting MSC.532(107) as a requirement to be fluorine-free by 1st January 2026 but this is incorrect. MSC.532(107) refers only to foam concentrates containing PFOS, and these were phased out by many suppliers many years ago.

In March 2023, ECHA's Committee for Socio-Economic Analysis (SEAC) published a final opinion supporting a gradual ban on PFAS substances in firefighting foams. However, the committee also recommended lengthened transition periods for:

- Uses in civilian shipping
- Offshore installations in the oil and gas industry
- Certain types of portable fire extinguishers

This recommendation was in recognition of the cost and complexity of transitioning to fluorine-free alternatives and to ensure that suitable fluorine-free products are available at the end of the transition period to maintain fire safety.

Since then, ECHA has conducted a consultation process, and their proposal to restrict PFAS in Europe under REACH, the EU regulation that affects the supply and use of chemicals, is being further evaluated in a series of committee meetings, which will also define the next procedural steps.

At the time of writing (December 2024), there are no defined timescales for introducing product restrictions but there is a clear focus on prioritising consumer products first. Therefore, it is expected that the IMO will continue to work with PFAS throughout 2025, and that any changes to regulation impacting firefighting foams will be announced no earlier than 2026, with product restrictions coming into force a year later. However, because retrofit solutions take time and resources, budgeting and planning for the transition now will help mitigate the risk of future product restrictions and ensure a smooth and successful transition.

## Can I do a direct swap and replace my PFAS foam with a fluorine-free alternative?

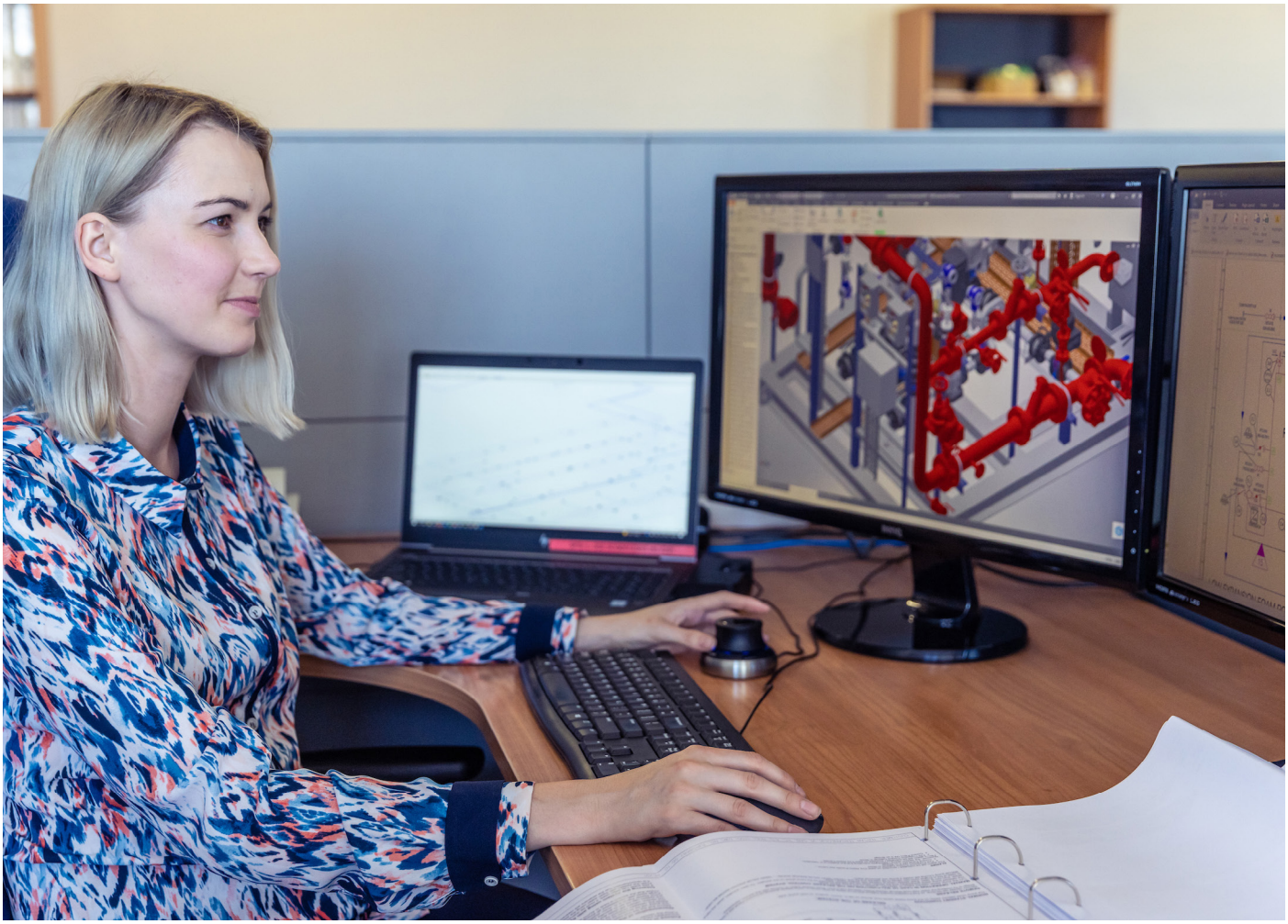
No. It is important to remember that the entire system must be fluorine-free, not just the foam concentrate. A deep clean of the foam tank, the pipework and all other system parts and components is essential to remove all traces of the old foam concentrate and avoid contamination of the new concentrate. If the new foam becomes contaminated, it will fail to comply with the environmental guidelines. Moreover, the system may fail to operate properly in a fire.

Another important consideration is that fluorine-free alcohol-resistant foam concentrates have a higher viscosity than their fluorinated counterparts. Your system will require re-engineering to allow for this. For example, you may need a more powerful, positive displacement pump, instead of a standard centrifugal pump, and the pipework and proportioner may need replacing, to allow for higher flow resistance. Such modifications also require class approval. Consequently, switching from a fluorinated foam concentrate to a fluorine-free alternative can be a complex, lengthy and costly process that demands careful planning.

## What is Survitec doing to help the transition?

In line with our Environmental, Social and Governance (ESG) policy, and our commitment to positive change to protect the environment, we phased out all firefighting foam concentrates containing PFOS in 2009.

Our high expansion foam concentrate, used in the Survitec high expansion foam firefighting system, has always been fluorine free. We now also supply fluorine-free foam concentrates for our low expansion foam systems and applications, and fluorine-free foam fire extinguishers, to meet our customers' needs. Our sales and customer service representatives are fully trained and ready to advise you on the requirements, and to guide you through the transition process step-by-step.



## Are fluorine-free foams suitable for ALL applications?

Fluorinated firefighting foams are effective because they expand to create a thick blanket of bubbles while forming a thin film between the bubbles and the fuel. In contrast, fluorine-free foams have a different chemistry and lack the film-forming properties of their fluorinated counterparts. Their performance then relies on generating sufficient foam expansion to create an effective blanket of bubbles. This is influenced by the turbulent flow to the discharge device and the throwing distance required for air absorption which raises questions about how well these concentrates might perform with low-capacity sprinkler nozzles or in confined spaces, where throwing distance is limited.

To address this, Survitec fire safety experts conducted fire tests in the laboratory to assess performance in accordance with maritime rules and regulations using various types of foam sprinkler nozzles on different burning media across different setups. Thanks to the high polymer content in the fluorine-free formulas, the foam remained stable and performed well, even against challenging fuels such as methanol.

All fluorine-free foam concentrates supplied by Survitec have been tested according to international standards and received the relevant approvals for maritime applications, such as IMO MSC.1/Circ.1312, ICAO, and MED. However, it is also essential to verify that you are using an appropriate foam for your specific application. For instance, if you need a fluorine-free foam concentrate for a helideck system, you will require a foam that also meets aviation standards (ICAO certification). A trusted fire safety partner such as Survitec can advise you and supply the right foam for your system and application.

## Do I need to involve the OEM when transitioning to a new foam?

Not necessarily. Expert support should only be required if your system requires modification.

Fluorine-free foam concentrates have a different chemistry than fluorinated foam concentrates. Consequently, some fluorine-free foam concentrates have a higher viscosity than their fluorinated counterparts. In such cases, your system will require modifications to accommodate the change. These modifications will require class approval and, once installed, also testing to verify performance. In these cases, transitioning to a new foam will require the support of an OEM with engineering expertise to ensure that the foam is compatible with your system and that system performance is maintained. While this can be a complex process, a trusted OEM and fire safety expert, such as Survitec, can guide you through it.

# RETROFITS

## What does a retrofit solution involve?

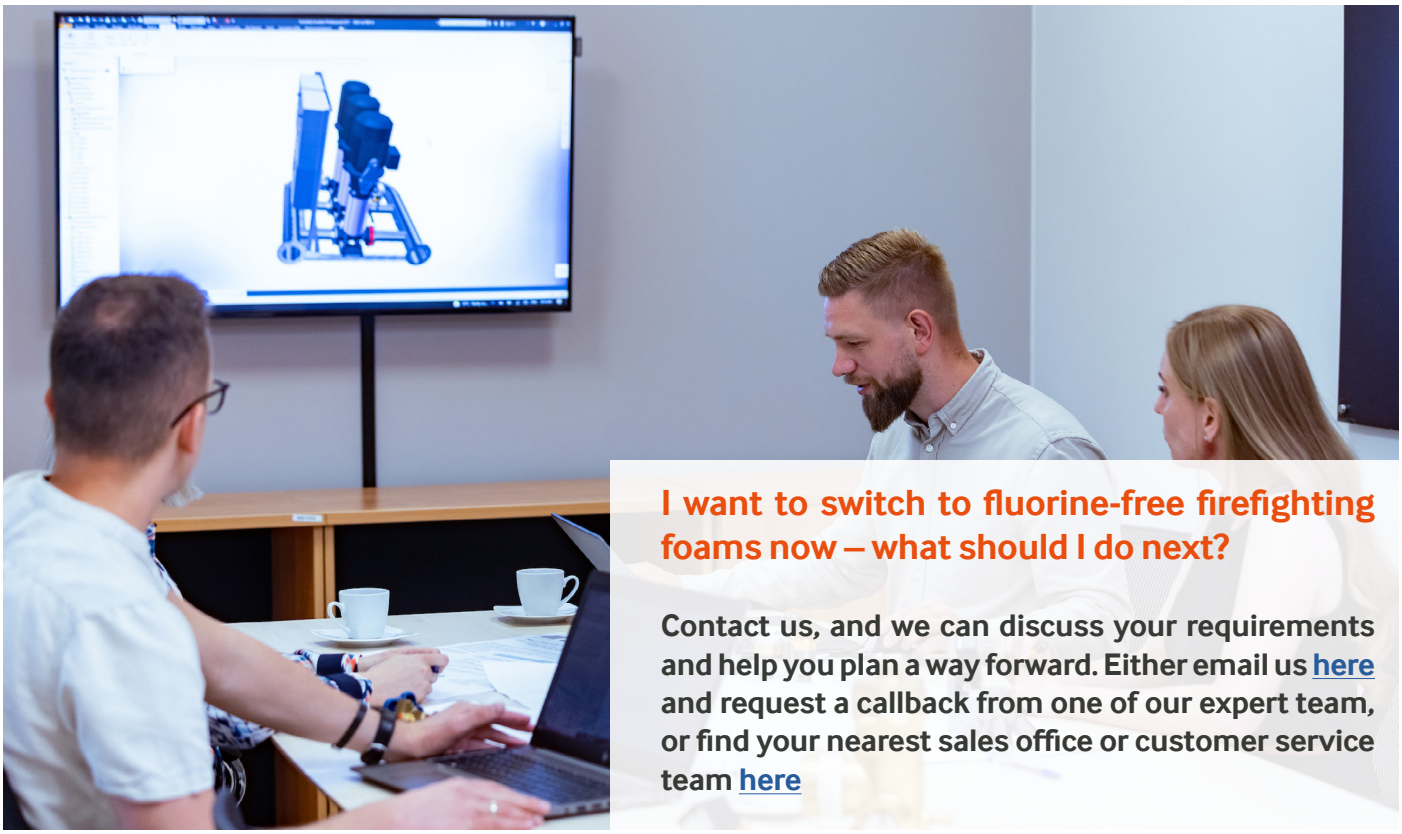
Retrofits will vary in cost and complexity depending on your specific system and application but the process may involve some or all of the following steps:

- A pre-survey report to assess your engineering requirements
- Preparation of the engineering drawings (if system modifications are required) plus administration of Class approval
- Collection and disposal of the existing foam concentrate in line with environmental guidelines
- A deep clean and flush of the entire system, followed by testing for PFAS residues (max 25 ppb; 0.25 ppm)
- The supply of all new system components and equipment, including the new fluorine-free foam concentrate
- Installation of any system modifications
- Commissioning and testing of the system, including a full and detailed service report
- Testing of the output from the foam proportioner to confirm it meets the required guidelines.

Retrofit projects are complex and mistakes can be costly so we would always recommend getting expert advice and support from an OEM or fire safety expert before embarking on a retrofit project.

## How can Survitec support me with the transition?

Survitec is an Original Equipment Manufacturer (OEM) with decades of experience designing, manufacturing and maintaining fixed foam firefighting systems. We offer technical expertise and consultancy and a comprehensive "service and supply" solution to manage the whole retrofit process, step by step, from start to finish. We also support ongoing product supply and servicing via our worldwide servicing network and global supply chain.



**I want to switch to fluorine-free firefighting foams now – what should I do next?**

**Contact us, and we can discuss your requirements and help you plan a way forward. Either email us here and request a callback from one of our expert team, or find your nearest sales office or customer service team here**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## GET IN TOUCH

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