

## FAQ - Wet extinguisher in transition

### **Foam as extinguishing medium**

Perfluorinated extinguishing foams (also known as AFFF foams) are convincing due to their high extinguishing power and wide range of possible applications, with which fire classes A and B can be covered simultaneously. For fires of fire class A, the extinguishing additives in the extinguishing agent enhance the cooling effect. The water lowers the temperature below the ignition point and the additives intervene effectively in the combustion process. The foam extinguishing agent lowers the surface tension of the water. This causes the foam to penetrate better and faster into fine structures.

In fire class B, a mobile, liquid-covering or film-forming and heat-stable foam prevents the supply of oxygen; re-ignition and the rising of flammable vapors are prevented.

### **What does the fluorine content in conventional foam extinguishing agent do?**

The fluorine substances give the extinguishing foam its excellent film-forming properties, which significantly enhance the extinguishing effect, especially on B fires (liquid fires). A very thin liquid film forms between the liquid and the foam. On the A-fire, the fluorosurfactants can lower the surface tension much further than other additives in the foam concentrate. This ensures that the foam penetrates better and faster into fine structures. In addition, the fluorosurfactants ensure that the foam concentrate has a repellent effect on liquids. The advantage of this is that the liquid film is more stable, lasts longer and does not crack. These properties effectively prevent gas from escaping from the flammable liquid. Fluorine compounds belong to the PFAS group.

### **What are PFAS?**

PFAS are often toxic perfluorinated and polyfluorinated alkyl substances, of which more than 4,700 individual substances are known. Chemically, PFAS are organic compounds of various chain lengths in which the hydrogen atoms have been completely (perfluorinated) or partially (polyfluorinated) replaced by fluorine atoms. They are found in countless everyday products, such as outdoor jackets, Teflon pans and pots, cosmetics and protective clothing, but also in fluorine-containing fire extinguishing agents.

### **Why are foam extinguishing agents criticized?**

The chemically produced substances do not occur in nature. Although they offer the advantage of being water-, dirt- and grease-repellent, they have long been suspected of being harmful to living organisms. They rapidly enter our ecosystem via water and accumulate in humans via ground and drinking water, food (plants, animals and bio-organisms) or the air we breathe.

# FAQ - Wet extinguisher in transition



PFAS are hardly degradable, remain in the environment for a very long time and can, among other things, increase cholesterol levels and the tendency to infections, damage the liver and thyroid gland as well as the heart, probably have a carcinogenic effect and have an unfavorable influence on unborn life.

Even the newer generation of short-chain C6 foams, which represent the current state of the art, are now classified as hazardous. The conspicuous substance among the C6 foams whose compounds are extremely persistent in the environment is PFHxA (perfluorohexane sulfonic acid) and also belongs to the PFAS group of substances.

In many ÖKO-TIPP foam models, GLORIA already set an example in early 2013 for advanced foams with a fluoro-surfactant content of only max. 0.04% of the total content.

However, taking into account the precautionary principle, the authorities now consider the regulation of the entire PFAS substance group to be necessary and are currently working with other authorities on an EU-wide restriction proposal under REACH.

## **STATUS QUO**

### **PFOA restriction**

Perfluorooctanoic acid (PFOA) is the second of the two PFAS substances regulated in Europe to date. It is considered the end product of the degradation of all so-called C8 substances and thus the lead substance of all long-chain C8 fluorosurfactants used in extinguishing agents.

### **Current regulations on PFOA, effective since July 2020**

1. Regulation (E1U) 2017/1000 on PFOA, its salts and related substances.
2. Regulation (E1U) 2020/784: PFOA as New entry in Annex I of Regulation (EU) 2019/1021 on persistent organic pollutants concerns production sale and use.

The exemptions for foam extinguishing agents that applied until then were declared ineffective. PFOA and its precursors may not be manufactured or placed on the market in the jurisdiction of the EU after July 4, 2020.

Mixtures or articles may not contain more than

- a maximum of 25ppb PFOA (=0.025mg/kg)
- in total not more than 1000ppb of all precursors (1mg/kg).

### **What special regulations and transition periods apply?**

Until July 4, 2025, the use of PFOA, its salts, and PFOA-related compounds in fire extinguishers for Class B fires is allowed when already incorporated into systems, including mobile and fixed systems, under the following conditions:

- Do not use for training purposes
- Use for testing purposes only if all released quantities are collected
- Beginning in 2023, use is limited to sites where all releases can be contained.
- As of July 5, 2025, use of firefighting foams that fall within the scope of the regulation is no longer allowed. The products must be disposed of as hazardous waste.
- Reporting obligations exist if the stored quantities are > 50 kg.
- The ban on use applies to the products stored on site

# FAQ - Wet extinguisher in transition



## Which GLORIA foams are affected?

The GLORIA extinguishing agents were finally converted to short-chain C6-based foam agents in 2014. Due to the service life of the extinguishing agents, older foams should also have already been replaced in accordance with the maintenance instructions.

These extinguishing agents **must** be taken out of circulation by the end of 2022.

<b>Löschmittel</b>	<b>Zulassungs Nr.</b>
<i>Imprex</i>	<i>PL-8/89</i>
<i>Imprex F 20</i>	<i>PL-3/96</i>
<i>Imprex Plus</i>	<i>PL-8/98</i>
<i>Imprex 05</i>	<i>SP 01/05</i>
<i>Moussol APS</i>	<i>SP 110/94</i>
<i>Favorit Home</i>	<i>SP 10/09</i>
<i>Glorilight plus</i>	<i>SP 02/11</i>
<i>Imprex S</i>	<i>SP 42/12</i>
<i>Imprex Eco+</i>	<i>SP 118/11</i>
<i>Imprex F</i>	<i>SP 133/11</i>
<i>Imprex ECO</i>	<i>SP 111/11</i>

## New development - restriction of all PFAS in firefighting foams

### Background and what has happened so far:

#### 2019-2020:

ECHA (European Chemicals Agency) preliminary studies on the use of PFAS firefighting foams and their alternatives.

#### Juli 2020:

The Commission invites ECHA to develop a restriction proposal for all PFAS in firefighting foams in cooperation with the five authorities preparing the „universal“ PFAS restriction.

#### 2020-21:

The EU regulatory committees RAC and SEAC are evaluating the proposed restriction on PFHxA. Firefighting foams are one of the evaluated uses.

The evaluation is due to be completed in December 2021.

### Proposed restriction on PFHxA (perfluorohexanoic acid), its salts and related compounds

- The first draft was published in January 2020 and is currently being discussed in EU regulatory committees.
- It concerns all fluorinated substances, such as C6, which is used in fire extinguishing agents.
- If the restriction on these substances is enforced as proposed, extinguishing agents based on C6 technology will no longer be allowed to be manufactured, used or placed on the market in the EU.
- Planned entry into force: Spring 2022
- The proposed limits are
  - 25ppb PFHxA and its salts (0.025mg/kg)
  - Sum of 1000 ppb of related substances (1mg/kg).

# FAQ - Wet extinguisher in transition



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## Which GLORIA foams are likely to be affected by the restriction proposal?

In principle, all liquid extinguishing agents with a B rating according to the following overview:

<i>Imprex 05 C6</i>	<i>KB 13/14</i>
<i>Moussol APS</i>	<i>SP 110/94</i>
<i>Favorit Home</i>	<i>SP 10/09</i>
<i>Glorilight plus C6</i>	<i>KB 276/13</i>
<i>Imprex S C6</i>	<i>KB 14/14</i>
<i>Imprex Eco+ C6</i>	<i>KB 12/14</i>
<i>Imprex F C6</i>	<i>KB 275/13</i>
<i>Imprex F 30 C6</i>	<i>KB 186/13</i>
<i>Imprex ECO C6</i>	<i>KB 11/14</i>
<i>Imprex S ECO C6</i>	<i>KB 261/13</i>

## What are the next steps?

Different options for restrictions have been developed by ECHA and evaluated taking into account the following aspects:

- How effectively they reduce the identified risks (speed and proportionality).
- How practical they are, including in terms of enforcement
- How easy they are to monitor
- Fire safety should not be compromised

The proposals will be evaluated by ECHA's committees:

- Risk Assessment (RAC)
- Socio-economic analysis (SEAC)
- Six-month consultation with „interested parties“
- Evaluation is documented in „opinions“
- Commission and Member States decide on the implementation of the restriction in the REACH Committee
- Review by the Council of the EU and the European Parliament

## Publication of the new regulation is expected in spring 2022.

A final ban on the production and use of C6-based foams will in all likelihood take place with a transition period of 2-3 years, i.e. 2024/2025.

## Are there any transition periods for existing equipment?

This has not yet been decided and the formulation remains to be seen. GLORIA is working on concepts that provide for the continued use of various existing devices through conversion.

## Does the new purchase of fluorine-containing fire extinguishers/extinguishing agents still make sense?

Definitely NO - neither economically and even less from an environmental point of view - keywords: Sustainability/longevity. Due to the looming obligation to phase out fluorine-containing foams in 2024/2025, their acquisition is not advisable.

# FAQ - Wet extinguisher in transition



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The service life of conventional foam extinguishers is becoming very manageable due to the old regulation. Comprehensive advice to end users in favor of fluorine-free extinguishing agents is the order of the day.

## **A new acquisition is pending - what does GLORIA recommend?**

GLORIA looks back and reflects:

1. Do conventional foam extinguishers necessarily need to be replaced with fluorine-free foam extinguishers?  
GLORIA says: NO

2. Have workplaces been equipped with foam extinguishers in the past for the sake of simplicity, where a water extinguisher would also have sufficed?  
GLORIA says: YES

Let's think of the classic office building as one of many examples. A differentiated risk assessment will predominantly identify the ember fire as the highest fire risk in the formation phase and thus the water extinguisher for fire class A.

## **GLORIA Plea:**

Decisively rethink and clearly differentiate in the risk assessment with regard to fire risks. The water extinguisher will increasingly have the edge and will play a decisive role in workplaces in the future, also in terms of price/performance. The clear trend towards water extinguishers is already significant in Scandinavia and England. The wide range of products from high performance to frost-proof (-30°) is convincing.

## **It all depends on the differentiated risk assessment!**

The GLORIA plea in favor of the water extinguisher is in no way intended to devalue the fluorine-free foam extinguisher. There are clear fire class B applications, e.g. in industry with flammable liquids (Attention: currently only with frost-free application (temperature functional range 0° to 60°C)).

## **And in case of danger of frost and fire class B - application?**

Here are two -also fluorine-free- options to be mentioned in the future:

1. Powder extinguishers for fire classes A,B and C for outdoor use
2. Carbon dioxide extinguishers for fire class B as residue-free as well as CO2 neutral extinguishing agent. Also suitable for B applications in areas with low fire load!

## **What change can be expected in the grease fire extinguisher?**

The current models will be gradually phased out and replaced by a fluorine-free version. The units will be approved for fire classes A and F.

## **Which fluorine-free foam fire extinguishers does GLORIA offer in the initial phase?**

GLORIA will start in spring 2022 with Premix rechargeable fire extinguishers as well as continuous pressure fire extinguishers with a B- rating of remarkable 183B (12LE) - already with the 6l unit- as well as a temperature functional range 0° to 60° C.

## **May fluorine-free foams be disposed of via the public sewer system?**

No. Fluorine-free foams are subject to water hazard class (WGK) 1. They must therefore be disposed of properly like conventional foams.