

Dafo Fomtec AB

Baltic Security Conference

Riga, April 11th 2024

Opening Remarks



- Appreciation and thanks
- Schedule 12.30 → 13.30 (presentation approx. 55 minutes, QA session approx. 5 minutes)
- Safety briefing
- Telephones
- FN Serviss stand in Hall B



Company presentation

Dafo Fomtec AB Introduction

Dafo Fomtec AB was founded in 2001 by fire industry professionals with decades of combined experience.

Fomtec develops, manufactures, and distributes high-quality firefighting foams and selected foam equipment to the fire protection industry globally.

Fomtec is an independent and privately owned company with a strong customer focus. Fomtec is committed to meet and exceed the standards we set behind the company's core values of:

Performance – Trust – Sustainability

Dafo Fomtec AB main focus

- At Fomtec we strive to document our products with test data relevant to the end users.
- Our products are used in critical installations intended to work after years of storage. It is intended to be used in dangerous situations where performance is critical. The link between our products and systems or equipment is critical.
- We want to document through testing how our products perform with this type of equipment and the various flammable liquids our products shall fight.

The importance of test data is obvious. Data – not opinions.

Dafo Fomtec AB scope

- All kind of foam concentrates available – Synthetic as well as Protein types
- Foam concentrates are tested against different international standards
- Equipment for foam generation – for fixed, mobile and portable systems
- Global supplier of foam concentrates and equipment in over 80 countries
 - Represented on each continent
 - Covers all market segments
 - Teamed up with local partners and distributors around the world

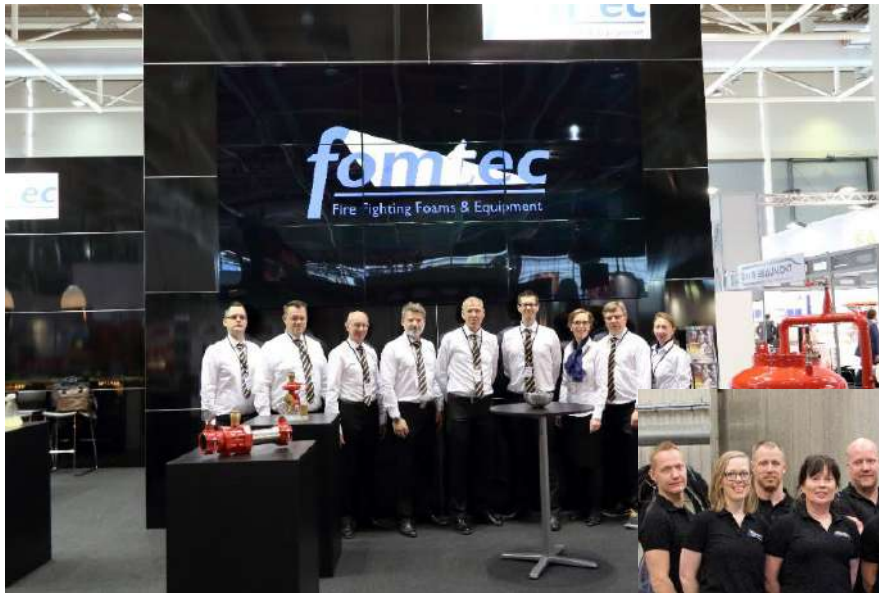


Dafo Fomtec AB locations

- Head office Stockholm, Sweden
- Production – Foam Concentrates Helsingborg, Sweden
Milano, Italien
Johannesburg, RSA
Cleveland, USA
Dammam, Saudi Arabia
- Production – Foam Equipment Gothenburg, Sweden
Milan, Italy
- Sales offices Helsingborg, Sweden
Stockholm, Sweden
Sandefjord, Norway
Manchester, UK
South London, UK
- Administration & Finance Stockhom, Sweden

Company presentation

Fomtec team



Fomtec sales and marketing team



John-Olav Ottesen
Owner and CEO



Carl Rydén
Regional Sales Manager



Fomtec production and management team

Company presentation

Fomtec production and R&D – Helsingborg, Sweden



Fomtec quality control – in-house and third party

Fomtec company and products are certified by:

- DNV, ISO 9001, Annual Audit 
- Lloyds Register, MED Module D, Annual Audit 
- RINA, MED Module D, Annual Audit 
- Underwriters Laboratories L, UL 162, Quarterly Audit 
- Factory Mutual, FM 5130, Quarterly Audit 
- MIL-F-24385F, US military specification

Fomtec firefighting foam concentrates

- Fluorine free foams (SFFF) – Enviro programme
- Multipurpose foams
- AFFF
- Alcohol resistant AFFF
- Protein-based foams (P, FP & FFFP)
- High expansion foams
- Class A & Class F foam
- Dry Chemical Powder



enviro
by fomtec

Company presentation

Fomtec foam system equipment

- Proportioners
- Inductors
- Bladdertanks
- Tank storage system components
- High expansion system components
- Monitors and nozzles
- Concentrate storage tanks



Company presentation

Fomtec market segments



Company presentation

Some users of Fomtec products

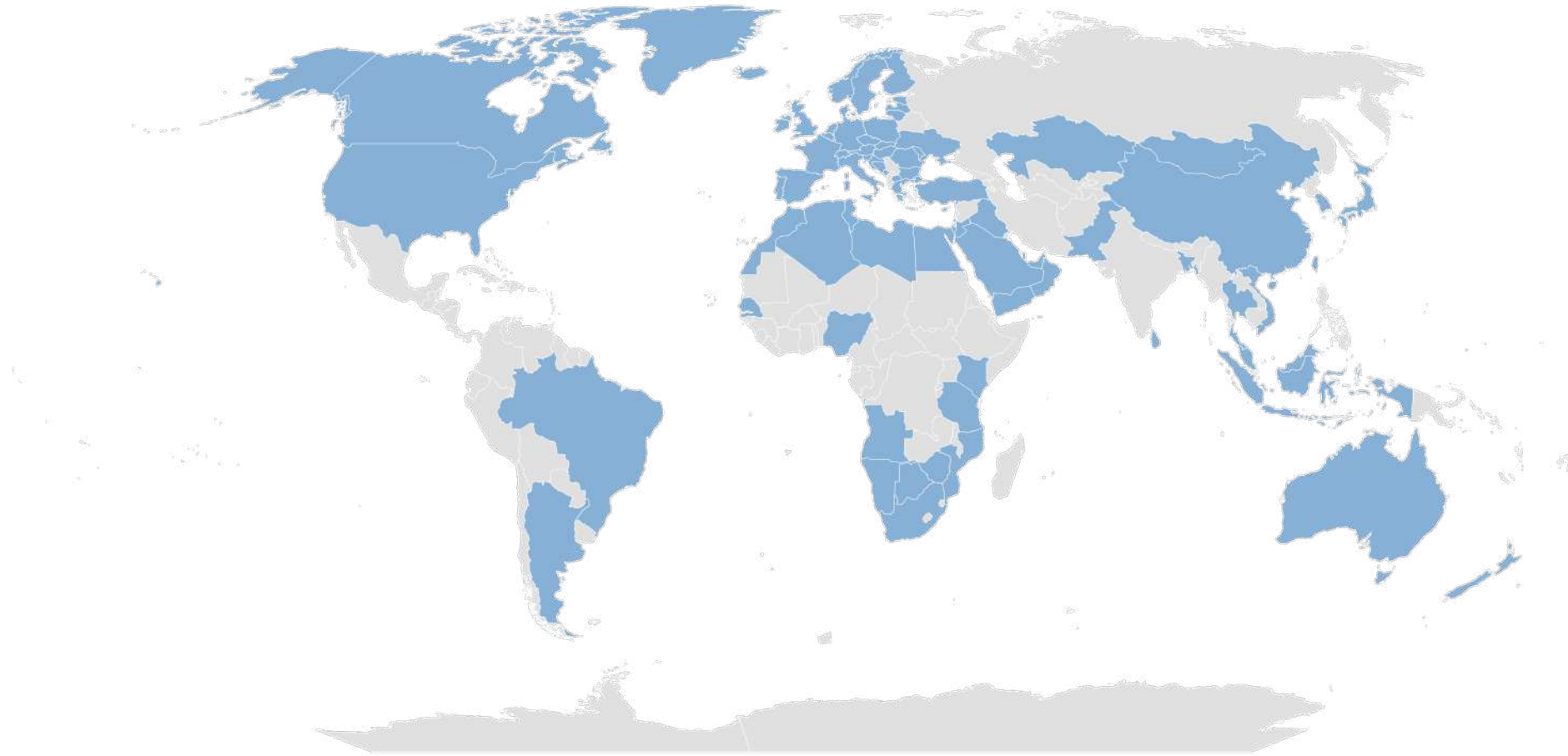
Swedish Army – Sweden
Nynäs refinery – Sweden
Maritime Safety Training Center – Finland
Exxon Mobile – France, Germany
Pernod Richard/Absolute Vodka – Sweden
Swedish Navy – Sweden
Chevron – USA, Thailand
Civil defence – Lithuania
US Air Force – USA
Total/FINA/ELF – France, UK, Fiji, Togo
Phillips 66 – USA
BP – UK, Azerbaijan
NRC, NRC, SOC – Iraq
Qatar Petroleum – Qatar
Adnoc – United Arab Emirates
Jordan Petroleum – Jordan
Sonatrach – Algeria
Vopak – Holland, UAE, Singapore
Amreya Petroleum Co – Egypt
Azzawiya Oil Refining Company – Libya

Finnish fire brigades – Finland
DuPont – USA, Taiwan, Japan
Finnish Navy – Finland
Emergency Service College – Finland
Bio-Venta – Latvia
3M – USA
Intel – USA, Malaysia
Bayer – Germany
Pfizer – UK, Spain, Asia
Merck – Germany
Astra Zeneca – Sweden
Jotun Paint – Global
Airbus – France, Spain
Dassault Aviation – France
Mercedes AG – Germany
VW – Germany
DHMI – Turkey
Nobel – Norway
Scherrin Williams - USA

..and many more.

Company presentation

Fomtec global distribution





**SFFF transition -
PFAS regulations
and back to basics**

The SFFF transition – foam basics



The SFFF transition – foam basics

What is in a firefighting foam concentrate?

Detergents and cleaning agents



Fluoro-surfactants



Glycols

Foam Concentrate Build-Up

AFFF – synthetic film forming foam – with added **fluorine surfactant**

- Water
 - Hydrocarbon surfactants
 - **Fluorine surfactants**
 - Foam Boosters
 - Anti-Freeze Agents
- Foaming Agents
Firefighting film formation
Additives to Strengthen the Bubbles
Additives to Adjust Freezing Point
- AFFF Foams
 - AFFF ARC Foams
 - FP Foams
 - FP AR Foams
- Aqueous Film Forming Foams
AFFF Alcohol Resistant Foams
Fluoro Protein Foams
FP Alcohol Resistant Foams

The SFFF transition – foam basics

Fluorine surfactant and film-formation in fire scenario



Foam Concentrate Build-Up

Typical SFFF – Synthetic Fluorine Free Foam – **without added fluorine surfactant**

(also applicable for Class A, Multi-purpose MB and High Expansion Foams)

- Water
 - Hydrocarbon surfactants Foaming Agents
 - Foam Boosters Additives to Strengthen the Bubbles
 - Anti-Freeze Agents Additives to Adjust Freezing Point
 - Natural gum Additive to enhance performance
-
- SFFF Good class B fire performance **without PFAS** (fluorine surfactants)
 - High Expansion High strength of foam bubble
 - *Class A Foams* *Good wetting properties*

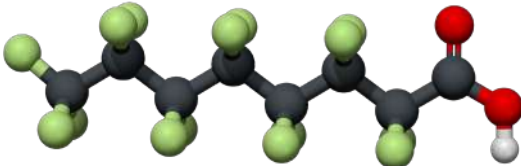
SFFF fire performance – key parameters

- Without added fluorine surfactant the SFFF products cannot rely on film-formation, supreme heat resistance or minimal fuel pickup
- SFFF products rely much more on the build up of a thick foam layer – good expansion ratio, long(er) drainage time and bubble structure, referred to as "foam quality"
- It is the foam quality/foam layer itself that will extinguish the fire and prevent re-ignition
- In some cases we see that fire performance is similar (or even better!) than AFFF or AFFF ARC foams – in other cases the application rate/time/method must be increased
- In general, SFFF products are much more sensitive to application method and type of fuel or chemical

SFFF transition – PFAS regulations

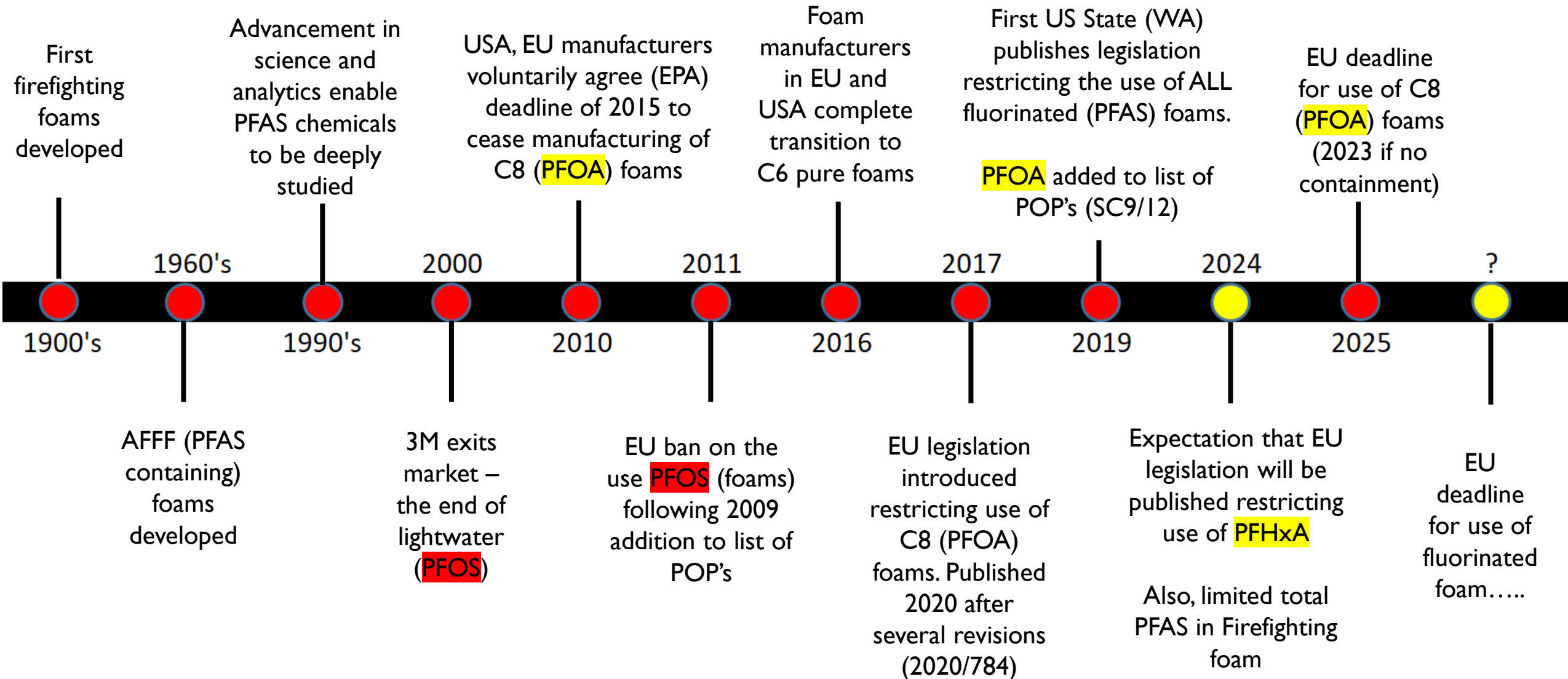
- Millions of litres of Class B firefighting foams will need to be replaced globally over the next two decades due to regulations of fluorine surfactants.
- A growing number of companies and organisations have already transitioned to fluorine free foams or in the planning phase to make the transition.
- Transition will cover fixed head foam systems as well as foam used for emergency response and municipal fire brigades
- The Fomtec Enviro Programme incorporating more than 2,500 fire tests has already led to an available range of tested and approved SFFF products.

SFFF transition – terms

- SFFF = Synthetic fluorine free foams. The term was introduced by NFPA and used by the foam business for all “new” generation of high-performance fluorine free foams.
- Film forming foams = AFFF/AFFF ARC/FFFP/FP type foams contain fluorine surfactant – often referred to as “PFAS” foams
- PFAS = umbrella name for fluorine surfactant = carbon (C) + fluorine chains/molecules of different length/strength and characteristics
- **PFOS** = long chain molecule part of fluorine surfactant manufactured with ECF (electrochemical fluorination) method used by 3M in their “Lightwater” products
- PFOA = fluorine surfactant 8 carbon atoms = “C8 fluorine”

- PFHxA = 6 carbon atoms, as pure as can be (minimum C8/PFOA contamination) = “C6 pure fluorine”

- PFOS
 - bio-persistent
 - bio-ackumulative
 - carcinogenic
 - extremely poiseuous
 - reproduction defects
- PFOA (C8)
 - persistant
 - break-down products unknown
 - assumed reproductive harm
- PHFxA (C6)
 - persistant
 - assumed reproductive harm

SFFF transition – PFAS regulations timeline



Fomtec foam concentrates and PFAS

- **PFOS** – NO Fomtec product manufactured with this fluorine surfactant

Banned by EU since 2011

- PFOA (C8) – Fomtec products with added fluorine surfactant manufactured up to 2016

Banned by EU since 2023/2025

- PHFxA (C6) – Fomtec products with added fluorine surfactant manufactured from 2016

Banned in coming 2024 EU directive – deadline for use and storage?

“Solutions” are more than just “products”

When transitioning to SFFF you need to take a holistic approach/system approach.

What fights fire is the foam generated by a system and not the concentrate. The foam quality - physical properties (expansion, drainage time and bubble structure) of fluorine free foam are very important for performance and will affect your system and equipment.

Transitioning to fluorine free foam require a close look at **your system design, the applicable design standards, your strategy, and operational tactics**. Most of all you need to use tested and approved systems, with verified and documented performance and not bits and pieces, it is the system and how that works in harmony that will fight the fire, not individual components alone.

Accepting this is critical, the task is more than dropping in a new concentrate.

The foam concentrate is one part of the foam system.

It's not just about the concentrate – and it never was!

Good old-fashioned approach

Performance of a foam system is dependent on a **holistic approach**

What is my fuel? What is my application? How does it work with my proportioning system? How does my discharge devices work with this new concentrate? And so on..

Any approval requirement? What design standard do we need to follow.

A concentrate replacement must be proven by testing.

All foam systems fixed or mobile consist of:

- Water source
- Proportioning system. (should be documented to work with the concentrate?)
- Foam concentrate. (should be documented to work with the systems components?)
- Distribution system, hoses, piping.
- Discharge device. (should be documented to give you the foam properties/quality needed with the specific concentrate used)

- Example: ARFF trucks, fire brigade trucks, sprinkler system, offshore heli deck..

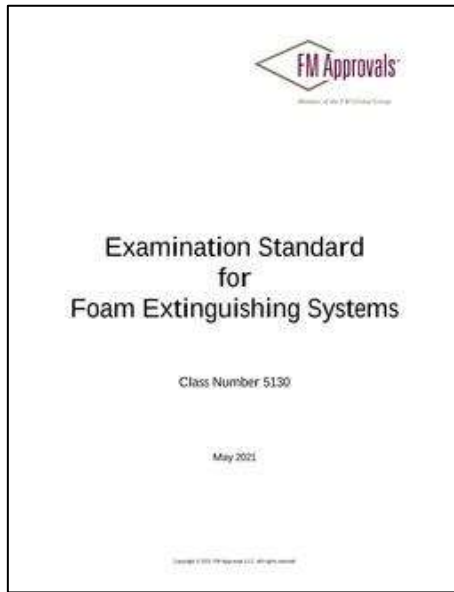
Why test and document each the SFFF products? Why no all-in-one SFFF products?

- Different material, fuels and chemicals
- Different foam mixing systems
- Different application methods
- Different discharge devices
- Different test standards – foam concentrate tested as part of a complete foam system or “single point” test standard such as EN1568
- “Single point” test does not ensure fire performance for SFFF products!

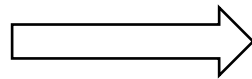
What can happen if holistic approach is ignored? Let us look at some examples...

System changes involving SFFF products

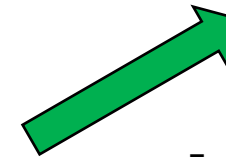
Show case: Importance of foam properties and holistic approach



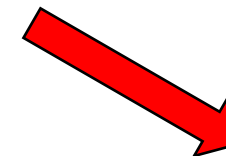
Recognized test standard
(FM 5130)



Foam concentrate Fomtec Enviro USP
(FM approved with FM sprinkler head "A")



Foam sprinkler head model "A"
(FM approved with Fomtec Enviro USP)



Foam sprinkler head model "B"
(non-approved, same manufacturer)

System changes involving SFFF products

Result after 3 minutes of foam application



Fomtec Enviro USP applied through nozzle "A"



Fomtec Enviro USP applied through nozzle "B"

System changes involving SFFF products

Result after 5 minutes of foam application



Foam pass extinguishing test. Foam layer from nozzle "A" remain solid and do not drain – even after 5 minutes of water deluge



Foam just pass extinguishing test. Foam layer from nozzle "B" is heavily reduced – both from drainage and water deluge test

System changes involving SFFF products

Result from burnback (re-ignition) test



PASS



FAIL



Foam layer from nozzle "A" is so strong that it is able to close the burning surface and extinguish.



Foam layer from nozzle "B" break down during burnback test and fire re-ignites.

System changes involving SFFF products

The above example show a typical sprinkler system – but is applicable on all foam systems. Therefore, it does matter if your discharge devise is:

Test nozzle giving great foam quality for certification*)



Sprinkler head with **unknown** foam quality



ARFF monitor with **unknown** foam quality



Foam generator with **unknown** foam quality



or

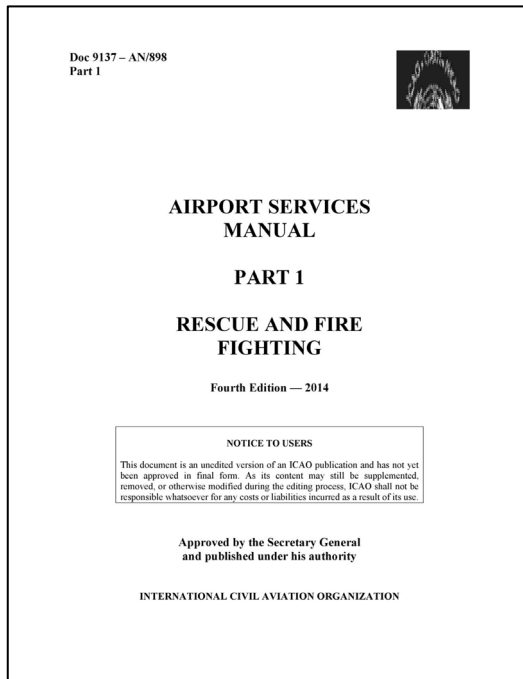
Portable branchpipe with **unknown** foam quality



*) Especially valid for “single data point” test standards such as EN1568 or ICAO

System changes involving SFFF products

Application + Test standard + Certificate or test data + **Foam quality matching the approval**
= correct foam concentrate proven and documented for **your foam system**



or



Fomtec recommendations:

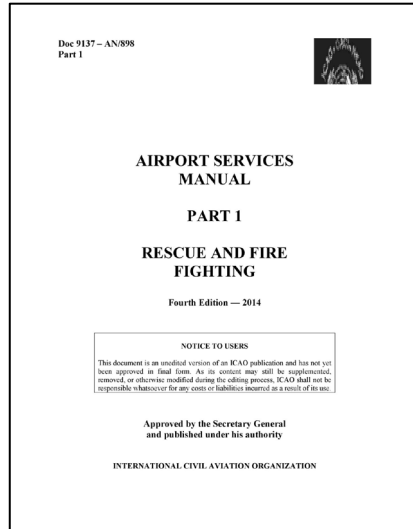
Test foam quality with discharge device used in your system.

Ask your foam supplier if foam quality data correspond to foam quality from approval test to verify fire performance!

If required – ask your foam partner how equipment can be adjusted for correct foam quality.

Standards selection for your application

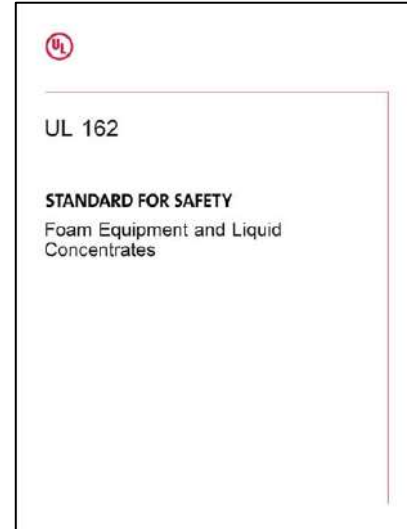
Application + Test standard + Certificate or test data + **Foam quality matching the approval**
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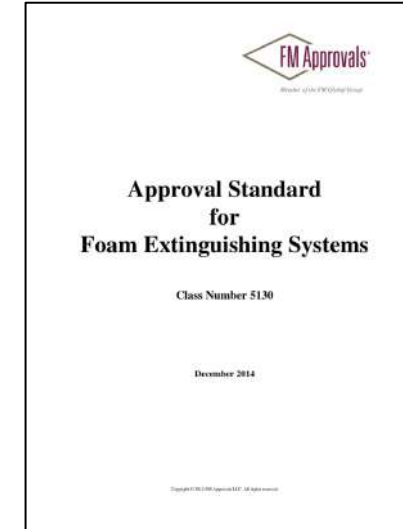
Test standard for ARFF application: ICAO certificate for foam concentrate with test nozzle



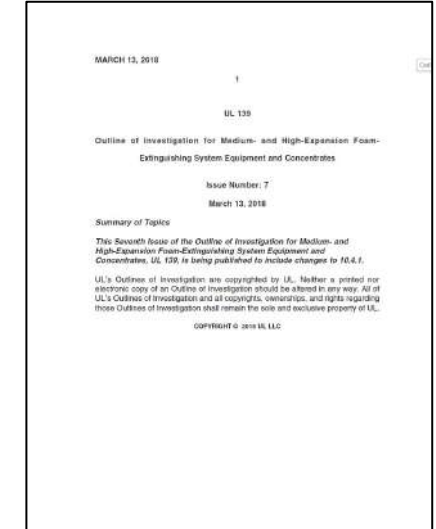
Design standard for air hangar applications: assumes UL listed or FM approved foam concentrate with corresponding foam system components to confirm minimum application rate and time



Test standard for low expansion foam concentrates with system components – such as foam monitor: UL listing determine type of fuel/chemical, application rate and time



Test standard for low expansion foam concentrates with system components – such as grate nozzles: FM approval determine type of fuel/chemical, application rate and time



Test standard for high expansion foam concentrates with system components – such as high expansion foam generators: UL listing determine type of fuel/chemical, application rate and time



SFFF transition of
your foam system

Reminders!

- SFFF agents rely on good foam qualities (expansion ratio and drain time) as well as a regular bubble structure to work efficiently – not on film formation!
- Correlation of performances when changing fuels, application methods or application rates with SFFF agents is much more difficult as development of SFFF agents is still at an early stage.
- Rarely are SFFF products “drop-in” replacements to PFAS-based (fluorine-containing) foams. Transition may require:
 - Increased application rates
 - Changes in foam equipment
 - Changes in operational tactics
- Most SFFF agents regardless manufacturer are not interchangeable - they are not mixable and compatible! (unlike most fluorine containing foams such AFFF, FFFP, FP)
- Timelines for removal of PFAS based foams in some regions of the world are very short

SFFF transition "check list" – system inventory for end users

- Type of installation – oil terminal, chemical tanker, municipal fire brigade, aircraft hangar, recycling center etc etc
- Current design standard and approval requirements
- Type of system – sprinkler, high-expansion, bund protection, bilge protection, large scale mobile monitors etc
- Type of foam mixing system – foam pump proportioner, bladder tank, foam inductor etc
- Type of discharge device – aspirating or non-aspirating, hi-ex generators, medium expansion etc
- Type of material, fuel or chemical – with CAS numbers
- Current product – test for banned substances at accredited laboratory

Then contact your foam partner for guidance on documented solution!



Transition your foam system to PFAS free foam

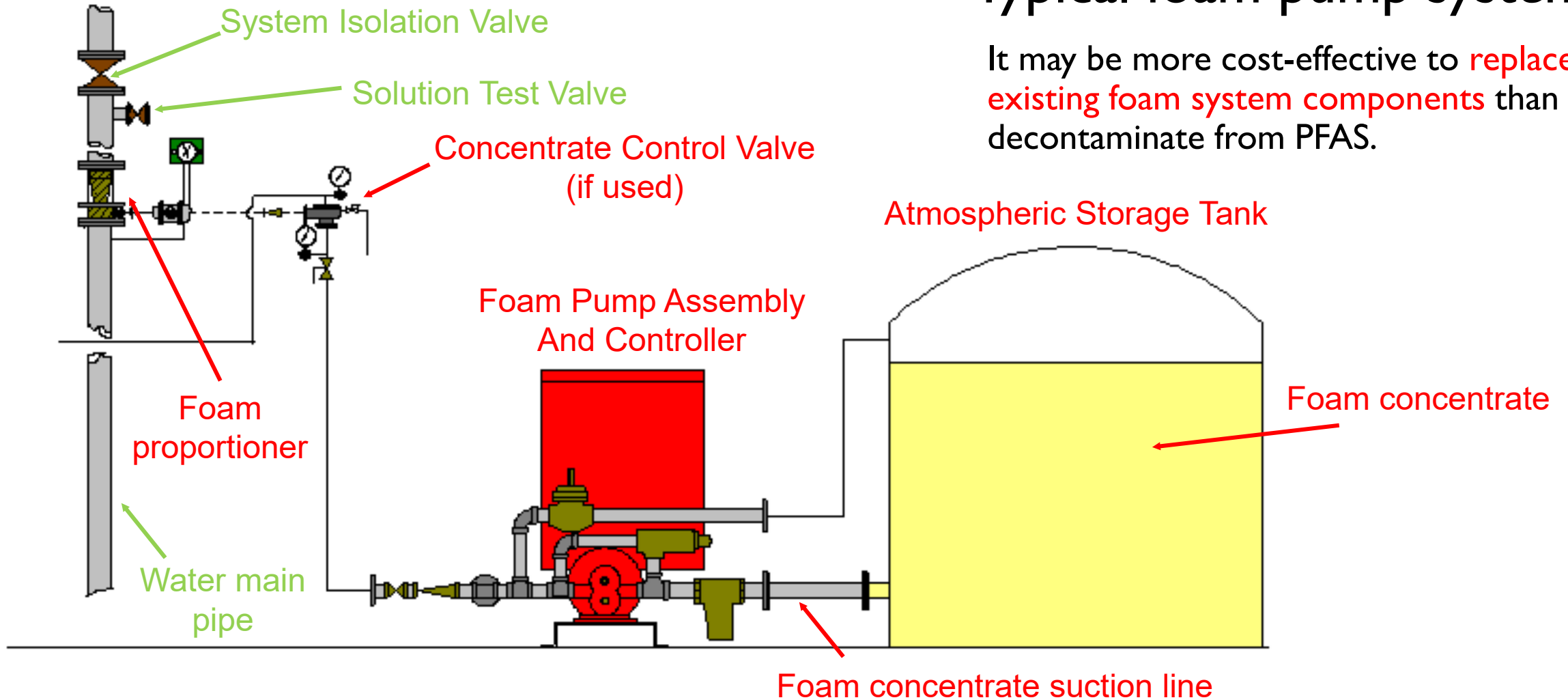
1. Make a complete system inventory – holistic approach – and consult your foam partner
2. Can the manufacturer or foam partner provide data – or opinions?
3. Test current foam concentrate for PFOA/C8 at accredited laboratory
4. Clean/decontaminate system from PFOA/C8 (and other PFAS) – it may be more cost effective to replace components
5. Follow local regulations for handling and disposal of flush water
6. Ask your foam supplier for a SFFF product tested and documented for your system
7. It may be required to replace foam mixing or foam discharge devices to ensure function of system
8. Apply correct engineering – not wishful thinking
9. Remember, you need more than just a piece of paper to choose correct product for your system!
10. Data – not opinion!



Decontamination of your foam system

- Removal of the PFAS-containing foam concentrate from the tank alone is unlikely to solve the contamination issue as residual levels of PFOA may be found in any remaining foam concentrate that is left in the tank or on any surfaces that have been in contact with the foam concentrate.
- A number of different cleaning / decontamination concepts are available that involve cleaning with water that is mixed with additives, and cleaning with water and using activated carbon to absorb the PFAS chemicals.
- Please note that current science indicates that the PFAS chemicals can only be destroyed through incineration at temperatures exceeding 1,100 °C.
- Fomtec is aware of a number of organisations that offer cleaning / decontamination services for mobile equipment and foam systems and will share contact details upon request.
- Fomtec is aware of a number of accredited laboratories that offer PFAS analysis services according to proper test methods will share contact details upon request
- If the foam system is not completely decontaminated and verified your new SFFF product may be contaminated with PFAS!

General recommendations



Typical foam pump system

It may be more cost-effective to **replace existing foam system components** than to decontaminate from PFAS.

A firefighter in full protective gear is spraying a large fire with a hose in an industrial setting. The fire is intense and bright yellow and orange. The firefighter is on the right side of the frame, facing left, and is holding a hose that extends towards the fire. The background shows industrial structures and scaffolding.

Selecting your SFFF transition partner

Selecting your foam partner

Supply performance – Fomtec & FN Serviss partnership

- Fomtec and FN Serviss are privately owned companies operating according Swedish and Latvian environmental and work labour laws
- Fomtec and FN Serviss operating according to EU environmental regulations
- FN Serviss have +20 years' experience of the fire industry, sales and customer support
- Fomtec have more than 15 years of R&D of “new” high performance SFFF:s
- Fomtec documented and tested foam concentrates for all applications
- Fomtec have performed more than 2000 fire tests
- Fomtec foam manufacturing located in Helsingborg, Sweden with 40000 liter per day production capacity, short lead times from order to delivery, product stock in Sweden
- FN Serviss have Latvian-speaking sales and technical team available
- FN Serviss have key products on stock for immediate supply
- FN Serviss have know-how on local regulations
- Market leaders in product and system solution – FM approved and UL listed foam systems with partner



Available information, technical know-how and services

- Fomtec make complete product documentation available for download at www.fomtec.com – technical datasheets, approval certificates, environmental documentation and MSDS in Latvian language version
- Fomtec Technical Advices give guidance to all critical parts of your foam system – storage and handling, material compatibility, PFAS regulations etc
- To guide you on SFFF products from Fomtec Enviro programme we rely on data from more than 2500 fire tests – not opinions
- Fomtec offer laboratory foam quality control service according international standards
- All above is shared with our local distribution partner



Fomtec Enviro technical datasheet



FOMTEC® Enviro 3x3 Ultra
Fluorine free alcohol resistant foam concentrate



Fomtec®
Enviro 3x3 Ultra



FOMTEC Enviro 3x3 Ultra

Fomtec® Enviro 3x3 Ultra is a novel multi-purpose alcohol resistant firefighting foam concentrate totally free from fluorinated surfactants and polymers (PFAS). The unique formulation of Fomtec® Enviro 3x3 Ultra enables the foam to rapidly cover burning surfaces and control of the fire. As a result, it is effective against hydrocarbon fires and with the presence of special polymers it is also very effective against polar solvents. In particular the performance on IPA is a significant improvement in comparison with many FFF type products.

- Fluorine free alcohol resistant foam concentrate
- Excellent fire performance on Heptane, Acetone and IPA with both potable and sea water
- HOCNF documented and NEMS registered

FOMTEC® Enviro 3x3 Ultra
Fluorine free alcohol resistant foam concentrate



DESCRIPTION

The fire suppression mechanism of Fomtec Enviro 3x3 Ultra is utilising the foam blankets ability to block oxygen supply to the fuel and the high water content cools the fuel surface reducing the evaporation of flammable vapours. Additionally, the foam blanket prevents reignition of an extinguished fuel surface. When applied on polar solvents a polymeric membrane is formed and makes it possible for the foam blanket to extinguish effectively. It also works on severe foam destroying liquids such as MTBE. Fomtec® Enviro 3x3 Ultra should be used at a 3% proportioning ratio (3 parts concentrate and 97 parts water) for hydrocarbon fuels as well as polar solvents. For use on Class A type fires, induction ratio of 0.3% to 1% is recommended depending on application and discharge device. When used with sea water the fire performance is slightly reduced on hydrocarbon fuels. This may be compensated by increased application rate.

APPLICATION

Fomtec® Enviro 3x3 Ultra is intended for use on class B hydrocarbon fuels as well as polar solvents like isopropyl alcohol, methanol, ethanol, acetone etc. Fomtec® Enviro 3x3 Ultra can be used as low and medium expansion foam. Especially suited for use in mobile firefighting by use of aspirating foam discharge devices such as foam branchpipes and monitors, where application rates and technique can be adjusted to the specifics of each incident. Or in systems designed for use with the product based on recommended minimum applications rates, application duration and discharge devices. Fomtec® Enviro 3x3 Ultra is also effective against class A fires such as wood, paper, textiles etc. at 0.3% to 1% proportioning.

FIRE PERFORMANCE & FOAMING

The fire performance of this product has been tested and documented according to the "International Approvals" stated in this document. The use of the product should follow design guidelines appropriate to the type of system and application. The foaming properties are depending on equipment used and other variables such as water and ambient temperatures. Average expansion 7:1, average 25% drainage time 18:00 minutes using UNI 86 test nozzle according to EN 1568-3.

EQUIPMENT

Fomtec® Enviro 3x3 Ultra can be proportioned at the correct ratio using proportioning equipment designed for the foam type. Fomtec® Enviro 3x3 Ultra is suitable for use with Type II (gentle application) and Type III (direct application) discharge devices. It can be used in low and medium expansion applications with all conventional aspirating discharge devices giving an expansion ratio of more than 7:1 for best performance. Fomtec Enviro 3x3 Ultra is also suitable for use in CAF-systems.

TYPICAL DATA

Appearance	Clear yellowish liquid
Specific gravity at 20°C	1,035 ± 0,01 g/ml
Viscosity	Pseudoplastic*
pH	6,5 – 8,5
Freezing point	-12°C
Recommended storage temperature	-11°C – 55°C
Suspended sediment (v/v)	Less than 0,1%
Surface tension	≤ 28,0 mN/m

* See detailed viscosity data below

COMPATIBILITY

Fomtec® Enviro 3x3 Ultra can be used together with foam compatible powders and other expanded foams. It is suitable for all water types. For mixing with other foam concentrates, contact Fomtec for advise and guidance. For material compatibility please refer to our Fomtec Technical Advices FTA 20 addressing the topic.

ENVIRONMENTAL

Fomtec® Enviro 3x3 Ultra is non-hazardous, biodegradable substance formulated using raw materials specially selected for their fire performance and their environmental profile. All raw materials are registered in European REACH-database. The product is totally free from fluorinated surfactants and polymers and other organohalogens, and therefore it does not contain any PFAS. The disposal of spills of concentrate or premix foam solution should be made in accordance with local regulations. For more detailed information please consult our Fomtec Technical Advices FTA 40. The products is fully documented to the Norwegian HOCNF regulation, and is registered in the NEMS database.

STORAGE / SHELF LIFE

Stored in original unbroken packaging the product will have a long shelf life. Shelf life in excess of 10 years will be found in temperate climates. As with all foam concentrates, shelf life will be dependent on storage temperatures and conditions. For storage recommendations and material compatibility please refer to our Fomtec Technical Advices FTA 10 addressing the topic.

INSPECTION/TESTING/ MAINTENANCE

All foam concentrates should be tested annually. Testing should be carried out by an approved laboratory certified to assess firefighting foam quality according to relevant standards, such as NFPA 11, EN 13565-2, EN 1568 and IMO MSC.1/Circ. 1312. Storage containers should be inspected and reevaluated for the

FOMTEC® Enviro 3x3 Ultra
Fluorine free alcohol resistant foam concentrate



suitability of the storage location regarding temperature fluctuations (temperature should be as stable as possible). Exposure to direct sunlight should be avoided.

PACKAGING

We supply this product in 25 litre or 5 US gallon cans, 200 litre or 55 US gallon drums, and 1000 litre or 265 US gallon IBC containers. Larger bulk supply is available against special request.

Volume per piece	Packaging	Part no	Approx. shipping weight*	Dimensions (mm) L x W x H
25 ltr	Can	I2-3355-01	27,2 kg	295 x 260 x 441
200 ltr	Drum	I2-3355-02	216,5 kg	581 x 581 x 935
1000 ltr	Container	I2-3355-04	1100 kg	1200 x 1000 x 1150
5 US gal.	Can	I2-3355-XX	20,7 kg	295 x 260 x 441
55 US gal.	Drum	I2-3355-XX	225,2 kg	581 x 581 x 935
265 US gal.	Container	I2-3355-XX	1105 kg	1200 x 1000 x 1150
Bulk	Special request	I2-3355-XX		

* Including packaging

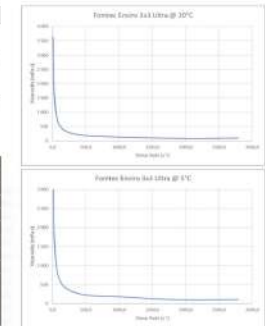
VISCOSITY DATA - FLOW CURVES

The viscosity flow curves are determined by Brookfield RST rheometer from low to high shear rates. The viscosity curves below are determined by calculating the average value of at least 8 different measurements and add a safety margin of three standard deviations to the average. The viscosity curves are determined for 20°C and 5°C. In the table below the kinematic viscosity (mm²/s) is calculated as dynamic viscosity (mPa·s) divided by the specific gravity of the concentrate.

Shear Rate (1/s)	Dynamic Viscosity (mPa·s) 20°C	Dynamic Viscosity (mPa·s) 5°C	Kinematic Viscosity (mm ² /s) 20°C	Kinematic Viscosity (mm ² /s) 5°C
0,7	5531	5658	1508	3533
21,5	1981	2077	497	2007
117	758	1021	397	987
104	536	615	517	297
214	225	291	214	336
375,0	225	271	218	265
1370	180	219	174	211
1024,0	176	178	171	175
1411,0	93	117	90	113
2148,0	93	99	77	96
2792,2	96	107	92	103

INTERNATIONAL APPROVALS

- EN 1568, part 3
Class IB fresh water / IIC sea water
- EN 1568, part 4
Acetone: IA Fresh water / IB sea water
IPA: IB fresh water / IB sea water
- GESIP



enviro
by fomtec

FTA 10 – Storage and Handling

FTA 20 – Material Compatibility

FTA 30 – Corrosion

FTA 40 – Waste Handling and Disposal

FTA 50 – Health and Environment

FTA 60 – Viscosity

FTA 70 – Application Rates

FTA 80 – Foam Systems

FTA 90 – Premixes

FTA 100 – Inductors

FTA 100 a – Transitioning Inductor systems to SFFF

FTA 120 – PFAS-free FFFs

FTA 125 – Legislation of PFOA in Foam Concentrates



Selecting SFFF
product for your
application

Fluorine free products for fire brigades

Product	Foam type	Main application	Certification	Mixing ratio	Viscosity
Fomtec Class A	Class A	Forest fires Domestic and car fires	US Forest Service QPL listed NFPA 18 & 1150	0,1-3%	Newtonian
Fomtec Class A Super	Class A	Domestic and car fires CAFS		0,1-1%	Newtonian
Fomtec MB 5	Class A & B	Domestic and car fires	EN1568-1 & 3	2-6%	Newtonian
Fomtec MB -20	Class A & B	Domestic and car fires Hydrocarbon fuel spill High expansion	EN1568-1 & 2 & 3	3%	Newtonian
Fomtec Enviro 3x3 Plus	Class B & B AR	Polar solvent fuels and chemical spill	EN 1568-1 & 3 & 4	3%	Pseudoplastic
Fomtec Enviro 3x6 Plus	Class B & B AR	Polar solvent fuels and chemical spill	EN 1568-1 & 3 & 4	3-6%	Pseudoplastic
Fomtec Enviro 3x3 Ultra	Class B & B AR	Polar solvent fuels in depth and chemical spill	EN 1568-3 & 4 GESIP & LASTFIRE	3%	Pseudoplastic

Complete product documentation available at www.fomtec.com:

Technical datasheet, material safety datasheet (incl. all EU language versions) and approval certificates

Detailed technical documentation (shear rate viscosity curve etc) available on request

Fluorine free marine approved products



Product	IMO & MED certified	Main application	Hydrocarbon fuels	Polar solvent fuels	Viscosity	Foam pump type
Fomtec Enviro SEA	Yes	Deck foam & Engine room	1%, 3% or 6% version	N/A	Newtonian	Centrifugal
Fomtec P 3%	Yes	Deck foam & Engine room	3%	N/A	Newtonian	Centrifugal
Fomtec P 6%	Yes	Deck foam & Engine room	6%	N/A	Newtonian	Centrifugal
Fomtec Enviro 3x3 Ultra	Yes	Deck foam & Engine room	3%	3%	Pseudoplastic	Gear pump
Fomtec P 3% AR	Yes	Deck foam & Engine room	3%	3%	Pseudoplastic	Gear pump
Fomtec Enviro USP	Yes	Deck foam & Engine room	6%	6%	Pseudoplastic	Gear pump
Fomtec LS EXP	Yes (hi-ex)	High expansion foam systems	3%	N/A	Newtonian	Centrifugal

Complete product documentation available at www.fomtec.com:
 Technical datasheet, material safety datasheet (incl. all EU language versions) and approval certificates
 Detailed technical documentation (shear rate viscosity curve etc) available on request

Fluorine free airport approved products

Product	ICAO level B certified	Main application	Mixing ratio	Viscosity	Foam pump type
Fomtec Enviro AIR	Yes	ARFF	3%	Newtonian	Centrifugal
Fomtec Enviro 3% ICAO	Yes	ARFF	3%	Pseudoplastic	Gear pump
Fomtec Enviro USP	Yes	ARFF, hangar protection, storage tank protection	2%	Pseudoplastic	Gear pump

Complete product documentation available at www.fomtec.com:

Technical datasheet, material safety datasheet (incl. all EU language versions) and approval certificates

Detailed technical documentation (shear rate viscosity curve etc) available on request

Fluorine free industry approved products

Product	Foam type	Main application	Certification	Mixing ratio	Viscosity
Fomtec Enviro USP	Class B	Sprinkler system Tank protection Bund protection	UL 162 FM 5130 EN 1568-3	2-3%	Pseudoplastic
Fomtec Enviro ARK	Class B & B AR	Sprinkler system Tank protection Bund protection for polar solvent fuels and chemical spill	UL 162 FM 5130 EN 1568-3 & 4	3%	Pseudoplastic
Fomtec Enviro 3x3 Ultra	Class B & B AR	Emergency response Tank protection Bund protection for polar solvent fuels and chemical spill	GESIP LASTFIRE protocol EN1568-3 & 4	3%	Pseudoplastic
Fomtec LS xMax	Class A & B	High expansion foam system	UL 139 CNPPT12 EN1568-1 & 2 & 3	3%	Newtonian
Fomtec LS EXP	Class A & B	High expansion inside air foam system	EN1568-2	2,4%	Newtonian
Fomtec LS eMax	Class A & B & B AR	High expansion foam system for polar solvent fuels and chemical spill	CNPPT12 EN1568-2 & 3 % 4	3%	Pseudoplastic

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Technical datasheet, material safety datasheet (incl. all EU language versions) and approval certificates

Detailed technical documentation (shear rate viscosity curve etc) available on request