



# FOAM FIGHTS FIRE

## Fluorine-free foams for the future

### Recommendations for a safe and environment-compatible operation with foam

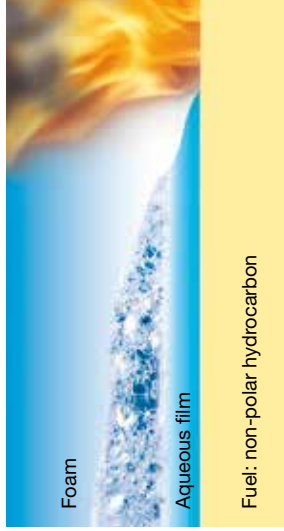
All firewater additives used by municipal fire services should be fluorine-free. The vast majority of fire incidents involve class A fires and containment of contaminated firewater is not always possible.

- Smaller fires of e.g. passenger cars or waste skips can be extinguished economically with wetting water from **UltraWet®**, **STHAMEX®-class A** or **STHAMEX®** multi-range foam concentrate using a venturi nozzle. The proportioning rates are between 0.1 % and 0.3 %, i.e. significantly below 1 %. As the required amount of extinguishing agent is very low so is the amount of contaminated firewater. Alternatively, targeted use of **STHAMEX®-Performance** compressed air foam can save water and prove very efficient.
- **STHAMEX®-class A**, **STHAMEX®-Performance** and **STHAMEX®** are EN1568 certified for class A (solids) and B (liquids) fires. For class A fires they can be used as wetting agents or low-, medium- and high-expansion foams. For class B fires we recommend low- or medium-expansion foam.
- Our new fluorine-free, low viscosity **vaPUREx® LV** is designed for direct application on fires of petroleum products including E10 petrol. It replaces fluorinated AFFF concentrates previously used by fire services and contributes to protecting the environment.
- The fluorine-free **MOUSSOL®-FF** replaces fluorinated AFFF-AR products previously used by fire services. Because of its viscosity, a pressure proportioning device may have to be used at low temperatures. **MOUSSOL®-FF Plus** is a further development featuring additional performance parameters.
- Fluorosurfactants are not fully biodegradable and are regulated by European legislation: Since June 2010 the threshold for PFOS has been 10 mg/kg. As of July 2020 the legal threshold for PFOA is 25 µg/kg. The transition period for use without firewater containment ends on 1 January 2023.
- Foam concentrate tanks on vehicles which previously contained fluorinated AFFF or AFFF-AR products must be cleaned by a specialist company.
- Fluorine-containing foams (e.g. AFFF, AFFF-AR, FP, FFFP) must not be released into the environment and not be used for training purposes. Their use is limited to class B fires where complete containment of firewater is secured.
- **STHAMEX®-class A**, **STHAMEX®-Performance** and **STHAMEX®** can be used for training with foam. Discharge into sewage systems by prior agreement with waste water treatment plants. Degradation data can be obtained from the material safety data sheets.
- When filling vehicle foam tanks from bulk containers the tanks should be labelled accordingly and the batch numbers documented. Please contact your local dealer for additional labels.

# Synthetic fire fighting foam concentrates



## Aqueous film formation



## Polymer film formation



The proportioning rate specifies the percentage of foam concentrate added to water. If two figures are provided, the first stands for the proportioning rate on non-polar hydrocarbons (diesel/petrol). The second figure is the proportioning rate on polar solvents (alcohol/acetone), e.g. MOUSSOL®-APS 1x3 = AFFF/AR to be used at 1 % on petrol and 3 % on ethanol.

**S** = synthetic (low-, medium- and high expansion foam and class A) · **class-A** = foam agent for class A fires · **S-AR** = synthetic and alcohol resistant foam  
**AFFF** = aqueous film forming foam · **AFFF-AR** = alcohol resistant aqueous film forming foam · **F3** = fluorine free foams for forceful application with low expansion foam on non-polar liquids, · **F3-AR** = alcohol resistant high-performance foam agent as replacement of AFFF and AFFF/AR for industrial applications

## Fire Class A



Water without wetting agent



Water with wetting agent

Wetting agents such as UltraWet® and STHAMEX®-class A significantly lower the surface tension of firewater and provide excellent wetting of class A fuels (deep seated fires). The heat energy of the fire is rapidly reduced by the larger contact area, resulting in quick fire extinction.

## Fire Class B



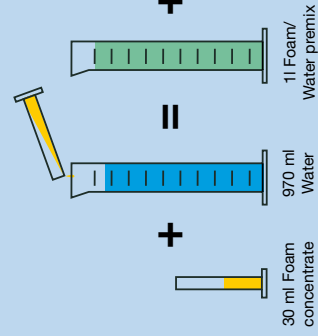
**Indirect foam application using the tank as a back board**  
 (Non-polar fuels: S/S-AR, polar fuels: S-AR/AFFF-AR/F3-AR)  
**Note:** On polar fuels, always use air-aspirated foam!



**Direct foam application on non-polar liquids**  
 (only AFFF/AFFF-AR/F3/F3-AR)

## Proportioning

### 3 % foam solution / premix



## Expansion

### Foam types

Air	Foam types
9 l	10 l Low expansion foam, ER <sup>1</sup> = 10:1
199 l	200 l Medium expansion foam, ER <sup>1</sup> = 200:1
999 l	1000 l High expansion foam, ER <sup>1</sup> = 1000:1

<sup>1</sup>ER = Expansion rate