



**Never Before Available All Fire Class Protection  
(ABCDK) For Full Military Deployment**

# **XL "PLUS" FFC**

**(EQUALLY USABLE AT: 1%, 3%, & 6%)**

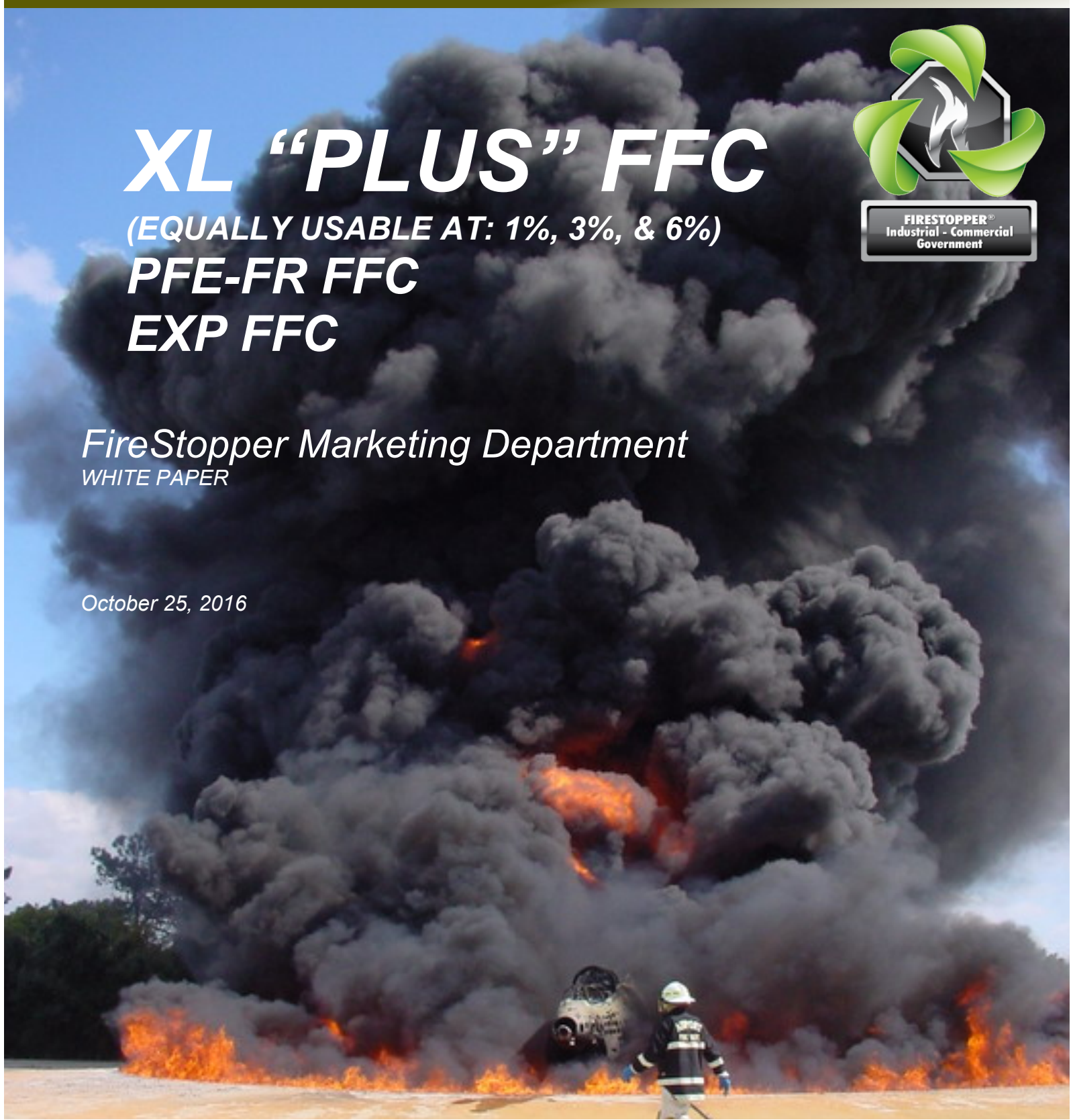
**PFE-FR FFC**

**EXP FFC**



**FireStopper Marketing Department**  
WHITE PAPER

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# **Preface**

FireStopper International Limited, a transnational Registered Company, is the developer of the most advanced and powerful firefighting technology in the “World. It devoted the first 25-years of its existence to R&D and the recipient of subsequent stand alone testing results in the ratings and certifications awarded by the most recognized and respected third-party testing and listing facilities in the world.

Moreover, this unique Technology has rendered the only available all fire class and subclass effective and anti-explosive products, which are non-toxic, non-irritant, environmentally safe, and non-hazardous over all other existing and available products in the fire and safety channel of business.

Having proven the former statement through the outstanding results of the products testing, rating, and certifications thus received, FireStopper®, in tandem with its novel firefighting and anti-explosion products (the “software”), developed the most durable and reliable supporting hardware and detection systems available today, which also meet and exceed the relative standards used to certify said product lines.

Moreover, the FireStopper® lines of products reach across the full spectrum of safety application including environmental remediation post spills both onshore and offshore.

In the International arena, the FireStopper® brand is the recipient of the highest certifications in all category of Governmental requirements to market such as defined below:

## **Handheld Portable Extinguishers:**

*ANSI/UL711, ULC – Southwest Research Institute (San Antonio, TX)  
Defense Logistics Agency (DLA) US Gov. NSN Approval #s’*

*EN3-7; EN3-8<sup>1</sup> – MPA, Dresden (Germany)  
CE<sup>2</sup> – DNV*

## **Firefighting Foam Concentrates:**

*EN1568 – MPA Dresden  
ICAO – CNPP (France)  
IMO – MPA Dresden, Lloyds Registry: DNV & MED  
CE*

## **Environmental Testing:**

*NAMSA, USA  
Associated Laboratories, CA USA  
Environmental Medicine, Inc., USA  
OPUS, Ltd., UK*

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<sup>1</sup> This Standard refers to hardware durability, reliability and efficacy

<sup>2</sup> This Mark assures manufacturing quality through yearly inspections

# **EXECUTIVE SUMMARY**

## **A New Weapon Against All Flammable Events In The Field And In Base**

Never before has there been a greater demand for fire protection in everyday occurrences and/or under battlefield environment. The Military service structure can now assign detail responsibility for fire amelioration to designated individual personnel or systems, requiring no special equipment and with minimal training.

Due to the now available FireStopper® FFC (*Fire Fighting Catalyst*) Technology, said assigned individual or personnel and/or fire suppression equipment or system can effectively and quickly extinguish the fire event returning the affected area to the ambient temperature, enabling the continuation of the intended task.

## ***The advantages not available before in any other deployed products or fire safety technologies:***

1. Effectiveness on all classes and sub classes of fire (*the FireStopper® XL “PLUS” FFC is the only product to be certified to deliver full extinguishment of flammable events borne from all flammable materials in existence*)
2. **No PFOA or PFOS**
3. DLA approved
4. Fast extinguishment (*usually within the range of micro seconds to under 5-seconds*)
5. No re-ignition
6. Non-Irritant (*skin or eyes*), Non-Toxic, Non-Aggressive
7. Freeze resistant to -30.1°F (-34.5°C)
8. Usable with all existing fire equipment
9. Anti-explosive properties
10. No unpleasant odor
11. Can be used with sea and brackish water
12. Can be used at **.1% to 100%** as needed
13. Garments do not require detoxification
14. Compatible with all other wet and dry chemicals & gasses
15. Can be batch mixed and safely run through conventional pumps
16. Eliminates the need for expensive foam generating equipment
17. Superior performance on all Class A, B, **C/E**, D, and **K/F** fires
18. Fully effective on all sub classes of flammables
19. Fully effective on marine fires
20. Will adhere to surfaces such as fiberglass, etc.

## **SPECIFICATION/APPLICATION**

**XL “PLUS” (FFC)** has a water-thin viscosity, making it ideal for fire suppression systems and manual applications to fight the broadest range of fire class A B **C/E** D & **K/F** fires.

In direct contrast to the older foam technologies, ***FFCs Can Be Batch Mixed And Also Proportioned*** from .1% to 100%. These proportions allow for greater flexibility in safety while in use, saving time, storage space, and capital.

***XL “PLUS” (FFC) AT .1% IS IDEAL FOR ALL TRAINING DEMANDS. (FOR ALL OTHER APPLICATIONS, END USER SHALL DETERMINE BEST USE PERCENTAGES)***

FIRE EXTINGUISHING LIQUID CONCENTRATE PRODUCT SPECIFICATIONS



## ***ENVIRONMENTAL AND TOXICOLOGY***

***XL “PLUS” (FFC) The mixture is not an eye or skin irritant and is non-toxic when testing according to the FHSa protocols it shall be judged to pose no chronic health hazard. Under European standards (OECD 306, ISO 14669, ISO 5667-16, and ISO 10253 2006, the FFCs are designed to meet “green” qualifying requirements under HOCNF protocols. The FFCs need no special labeling or chronic health hazard warning statements and are in compliance with FHSa regulations, 16 CFR 1500 and California Proposition 65.***

XL “PLUS” is the only fire fighting concentrate equally certified for usage at 1%, 3% and 6%, eliminating the following needs:

- ❖ Special equipment
- ❖ Multiple types of foam concentrate
- ❖ Toxic anti freeze additives
- ❖ Expensive high expansion equipment
- ❖ Special training of personnel
- ❖ Environmental and human exposure safety precautions

## ***“FireStopper® XL “PLUS” FFC Will Prevent Catastrophic Results Commonly Associated With Aviation, Transportation, Structural, And Equipment Fire Events”***

In contrast with AFFF’s standard performance on hydrocarbon fire, the FireStopper® FFC technology accelerates the knockdown and extinguishment of the fire event in the following manner:

- ❖ Instantly drastically reduce the fire environment temperature allowing the following:
  - Prevention of auto-ignition by the fuel
  - Elimination of heat barrier to the firefighting personnel
    - *AFFF does NOT provide significant temperature reduction. At the contrary, it relies on film formation and foam production to suppress flammable vapors in addition to oxygen deprivation*
- ❖ FireStopper® chemically interfere with the ability of the hydrocarbon molecule to be flammable



- ❖ The FFC vastly reduce the surface tension of the water
- ❖ **XL "PLUS"** is endothermic and exothermic
- ❖ It migrates over the surface seeking the heat of the fire
- ❖ Other proprietary functions...

Below please see examples of fire events that produced catastrophic end results to the equipment and on personnel:

Fig. 1



Fig. 2



Fig. 3



Fig. 4



# **COMPLEMENTARY PORTABLE SYSTEMS**

Until now, the usual supporting mechanism for fire prevention in transport vehicles, whether aircraft, land base or sea based, is either dry chemical based, AFFF, or gaseous. With the advent of this novel Technology, FireStopper® offers the first and only all fire class and sub class effective line of handheld extinguishers capable of preventing catastrophic fires by ameliorating incipient fire emergencies before they become terminal.

**As an example: a head to head comparison with Halon:**

## **FireStopper® Portable Extinguisher Comparison** (Aviation Application)

**PFE-101 (400-ml Fog Spry Type Nozzle)**

**Vs.**

**H<sub>3</sub>R Aviation's Model: RT-A400**

**(.9-lb Halon 1211-1301 Blend Typical use: Cockpit/Cabin)**

**Table 1**

<b>PRODUCT</b>	<b>SIMULATED FIRE AREA</b>	<b>NOZZLES</b>	<b>FUEL</b>	<b>CONCLUSION</b>
<b>FireStopper® PFE-101</b>	<b>2-B</b>	<b>Fog/Spray</b>	<b>1-gal Jet-A &amp; Av-Gas</b>	<ul style="list-style-type: none"> <li>• <b>FireStopper® PFE-101 Extinguisher controlled the fire in &lt; 1 sec. fully extinguish the fire in &lt; 5 secs.</b></li> <li>• <b>No re-ignition of fuel possible</b></li> <li>• <b>Total spray time 6-seconds</b></li> </ul>
<b>H<sub>3</sub>R Aviation Model: RT-A400</b>	<b>“</b>	<b>Standard Halon Application</b>	<b>“</b>	<ul style="list-style-type: none"> <li>• <b>Extinguishment was attempted for 17 secs till empty</b></li> <li>• <b>Failed to extinguish the fire</b></li> <li>• <b>The area was fully engulfed in fire</b></li> <li>• <b>Total spray time 17-seconds</b></li> <li>•</li> </ul>



**H<sub>3</sub>R Aviation**  
**Model: RT-A400 –Halon Extinguisher**

Fig.1



**1-sec**

Fig. 2



**8-secs**

Fig. 3



**12-secs**

Fig. 4



**14-secs**

**FireStopper®**  
**PFE-101**

Fig. 1



**1-sec**

Fig. 2



**2-secs**

Fig. 3

Fig. 4





**4-secs**



**5-secs**

*Below are some of the advantages PFE-FR FFC provides:*

- This product is designed for use exclusively with FireStopper® trademarked systems and delivers:
  - DLA approved
  - Full efficacy on all fire class and subclasses
  - -100°F freeze resistance while in use without harmful antifreeze additives
  - Viscosity: water-thin
  - Anti-explosive properties
  - Highest ratings in the world both: EN3-7 & UL7-11
  - Highest Eco-Safety testing results under HOCNF, and meet or exceed *FHSA regulations, 16 CFR 1500 and California Proposition 65*
  - Ideal for use where extreme cold temperatures may be a factor
  - The ideal product for use in concert with FireStopper® CAC (*Compressed Air Catalyst*) units; please see CAC Catalog
  - Stainless steel body and components
  - Meet or exceed USCG 1000-hour salt spray requirements
  - Available in small silhouette for cockpit use
  - Available in large volume portable systems for maximum application (*please consult the FireStopper® Catalogs for further detail*)

To complete the full safety circle, FireStopper® offers **EXP FFC**, the only true anti-explosion media capable of suppressing hydrogen/methane explosions as tested at the Gexcon, Norway testing facilities. This media is the newest of the FFC product line designed to provide full protection to the Military and Industry.

## **Conclusion**

Asymmetric warfare and conventional engagements will require a new generation of fire and explosion protection. FireStopper® has developed the deepest variety and most flexible hardware to deploy the most advanced, powerful, reliable and safe array of firefighting and anti-explosion media available in the world. No matter whether it is necessary in a concentrated form for massive use or in a premix format exclusively designed for use through FireStopper® trademarked portable or fixed systems, FireStopper® is ready to deliver...