

# Product Data Sheet F-Exx® 8.0 Bio

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## F-Exx® 8.0 Bio

0.8 Liters

Foam based fire extinguisher

for fire ratings:

A - B - F



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## 1. Product Description

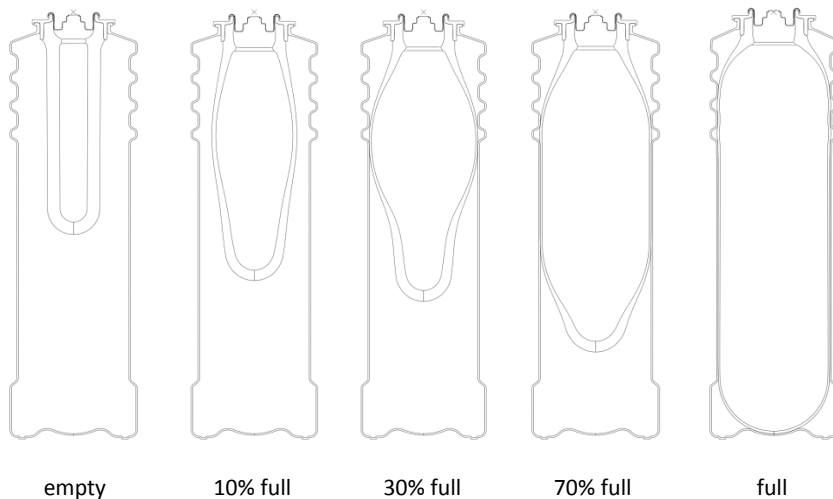
“Make Safety Available” - F-Exx® was developed and manufactured for a sole purpose only. As long as a fire is still small, it can be extinguished by simple means. The F-Exx® is a portable fire extinguisher for initial fires and can save lives and prevent further damage. The system does not require any propellant gases, aerosols or compressed air in order to discharge the extinguishing agent. Because of its extinguishing performance, handling and compact dimensions it can be employed in many areas.

The F-Exx® is suitable for extinguishing:

- solid materials (Class A fires) e.g.: wood, plastics, textiles, etc.
- fires, involving flammable or combustible liquids (fire class B), e.g.: petrol, diesel, kerosene, etc.
- fires resulting from cooking oil/fats in frying and baking equipment (fire class F), e.g.: vegetable or animal oils and fats. Powder and CO<sub>2</sub> extinguishers are hardly suitable for this purpose.

## 2. Technology

A true innovation in the field of portable fire extinguishing systems: the F-Exx®. Unlike the previously known and commercially available fire extinguishers and extinguishing spray cans, the system does not have any propellant gases, aerosols or compressed air. Because of its patented elastomer force element the spray characteristics over the entire foam dispersion period is virtually constant.



3D Sectional view with unfilled and filled force element (coloured grey)

Whereas conventional powder extinguishers operate with gas pressures up to 20 bar and extinguishing spray cans up to 10 bar, the F-Exx®, is a low pressure system with a liquid pressure of approximately 2 bars. The energy contained in the system is thus only a fraction of the amount of conventional systems and excludes any risk of an explosion due to the abandonment of compressed gas. Even with wanton destruction or burning there is no danger for the user - the F-Exx® will simply leak. With conventional operating systems the gas pressure decreases as discharge progresses further and further. With this, the spray behaviour changes regarding spraying distance and spray pattern. Due to the rapidly decreasing pressure of conventional spray can systems, it is therefore necessary to start off with a very high initial pressure. In order to achieve the required casting distance, even in these systems, a pressure

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of only 1 to 2 bar would be sufficient. But in order to still have your casting distance available with the emptying of the system, the starting pressure must be very high.

In the case of F-Exx®, the pressure of the system throughout the entire dispensing period remains approximately even at about 2 bar, so that, despite the low initial pressure during the entire extinguishing operation the necessary casting distance of the system is ensured.

### 3. Bioversal® advanced biotechnology fire extinguishing agent

F-Exx® 8.o Bio fire extinguishing system is filled with a 10% aqueous solution based on eco-friendly Bioversal® QF-R fire extinguishing agent. Bioversal® QF-R is an advanced biotechnology and multipurpose fire extinguishing agent with foaming capabilities, delivering high performance fire knock down capabilities in Class A/B/F fires.

#### 3.1 Fire extinguishing performance

F-Exx® 8.o Bio has been tested and evaluated by MPA Dresden according to EN3 Requirements certifying the following ratings regarding fire extinguishing performance:

- 5A
- 21B
- 15F

#### 3.2 Ecological cleaning agent

Bioversal® QF-R is an environmentally and user-friendly product. Through its ability to form non-emulsifying oil / water micelles, it is an excellent oil, fat and protein cleaner. During spraying and mixing with liquid fuels tiny fuel droplets on the surface are formed, which are covered by an aqueous skin consisting of Bioversal agents.

With this coating:

- the fuel is partially inerted (fuel ignites poorly)
- reducing the fuel gas formation noticeably
- the energy of evaporation is increased, which dramatically improves the cooling
- the combustion gases / flue gases are also covered in the vapor phase, the toxicity of the combustion gases is reduced and the visibility drastically improved
- the liquid fuel loses its typical adhesion properties (cleaning effect)
- by splitting into micelles poorly degradable mineral hydrocarbons, fats and proteins are transformed into their environmental characteristics:
  - these are now bio-available
  - they are isolated from their eco-toxicological original effect profile
  - they are bio-compatible with respect to interaction with bacterial membranes.

The result is that environmentally harmful mineral hydrocarbons are biodegradable and achieve waste water compatibility. Thus, the effect of Bioversal QF-R can be characterized as environmentally sanitizing.

After extinguishing, contaminated areas can be cleaned with it. QF-R is pH-neutral and generally compatible. Bioversal® QF-R was tested in the same manner as a cosmetic product and it has been confirmed that it is not irritating in

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direct contact with skin or eyes. With the extinguishing agent, mixed washing water containing encapsulated oil / fat / protein are easily bio degradable and waste water compatible. Direct contact with the respiratory tract should be avoided.

### 3.3 Anti Pollution Agent

Bioversal® QF-R contains a BioActivator, which is proprietary Biotechnology of Bioversal International. This component is a modified ingredient of vegetal origin, coating treated oil/fat/protein micelles, transforming eco-toxicity, bio-compatibility and biodegradation characteristics of pollutants.

These mechanisms equip Bioversal® QF-R with anti-pollution capabilities and bioremediation effectiveness. This makes the product ideal for applications in open environment and near protected open water or maritime waters during professional or leisure applications.

Treat non recoverable, residual oil spills by spraying on the concerned area or water surface. Application of the product should always be in accordance with local, state or national regulations & legislation.

### 3.4 Environmental Safety

Bioversal® QF-R 10% premix is an aqueous combination of environmentally safe, easily, rapidly and nearly completely biodegradable, bio-compatible surfactants with low eco toxicological profile.

Its components derived from vegetal origin contain:

- polyvalent ingredients free of phosphates and nitrates
- hetero organic substances
- modified glycol derivatives
- natural colours and fragrances.
- BioActivator

The Premix is free of:

- PFOS, PFOA and its fluorinated persistent and bio-accumulative substances
- Solvents, fertilizers and xeno-biotics

Its sophisticated composition of bio-chemicals makes the premix harmless for the environment and is sewage plant compatible.

### 3.5 Operator Safety

Bioversal® QF-R contains skin-friendly and not hazardous ingredients, is not toxic by inhalation and has been tested according to cosmetic requirements on human patch test and has been evaluated as non-irritating for skin and eyes.

Furthermore its micelles encapsulation mechanisms significantly

- cool down the combustible A/B/F and maximize water evaporation
- reduce the formation of toxic combustion gases
- improve visibility during smoke formation

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## 3.6 Environmental and operational user safety

F-Exx® guarantees environmental and Operational User Safety minimizing collateral damage during and after application to a minimum.

The F-Exx® does not contain any powders, whereby consequential damage is avoided. This can be significant, since large dust clouds of extinguishing salts spread far beyond the source of the fire and can also be inhaled. Dry powder acts in conjunction with humidity in a highly corrosive manner. The F-Exx® is equipped with a biologically degradable liquid chemical. Remnants of the extinguishing agent can be wiped off easily after spraying and wetted surfaces can be cleaned with water.

The F-Exx® is not refillable and can after its service life be disposed of in accordance with the respective local regulations (e.g. recycling centres, building yards and waste disposal plants). The drained system can simply be put into the trash after use. Even with the destruction of the F-Exx® during the disposal process there is no risk of expansion or explosion.

As an alternative to the disposal in accordance with the provisions of the council, the life cycle of the product can be further improved if it is checked after use or after the expiration of the service life of the F-Exx® by an authorized customer service agent and maintained accordingly.

## 4. Advantages and unique Features

### „Make safety available“

- Availability of safety due to its immediate extinguishing performance at the site of a fire!
- High Performance Fire Knockdown and broad operating capability ideal for Classes A, B and F
- Ability to provide full extinguishing performance at any orientation (upright, upside down, on the side = 360°)
- High extinguishing performance despite the small size of the extinguishing system
- Intuitive, easy and safe usage even for inexperienced users
- Ergonomically designed handle that allows operation by either a small child's hand or by large hands and firemen's gloves
- Protection against inadvertent release (operator error)
- Spraying performance is almost constant over the entire extinguishing period
- Easy to use by use of lightweight plastic parts => minimum weight
- Applicable for electrical installations up to 1000 V (minimum spray distance 1 m)
- No maintenance and no maintenance costs within the service life of 3 years

### Harmless and Safe

- Free of propellant gases, aerosols and compressed air, thus no risk of explosion - even at high temperatures
- No risk of explosion in the disposal chain
- Can be used indoors, as no propellant gases can displace breathing air
- System is not a pressurized container, thus the associated risk and the usual rules for storage and transport according to UN 1950 and BGHW M20 do not apply.

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## Environmentally friendly

- Extinguishing agent is biologically degradable (non hazardous/non toxic)
- Extinguishing agent is pH neutral
- No contamination as with dry powder, as a liquid extinguishing agent is used
- Remains of extinguishing agent can simply be wiped up with a cloth after spraying

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## 5. Technical Data:

Class:	A, B, F with extinguishing performances of 5A, 21B, 15F. With the official confirmation of the fire extinguishing performance for Classes A, B and F, the following fires can be extinguished: 5A: a 30 kg pile of burning dry pine wood (l: 50cm; w: 50cm; h: 56cm) 21B: approx. 21 liters of burning liquid (14 liters heptane + 7 liters of water) 15F: 15 liters of burning vegetable oil
Total height:	360 mm
Weight:	1.3 kg
Contents (net):	800 ml
Pressure (at 20 ° C):	approx. 2 bar (pure liquid pressure, not gas pressure)
Casting distance:	approximately 4.5 m
Spraying duration:	approx. 15 secs
Propellant:	elastomer force element (no gas)
Extinguishant:	Extinguishing agent: Bioversal® QF-R Micelles encapsulating agent tested according to EN 1568-3:2008, primarily constituted of components of bio-chemical/plant derived origin with low eco-toxic potential and high bio-compatibility
Operating temperature:	0°C to 70°C
Shelf-life:	3 years, maintenance free
	Applicable for electrical systems up to 1000 V (minimum spray distance 1 m)

## 6. Why F-Exx® is not a fire extinguisher according to DIN EN-3

This European Standard (EN-3-8, Chapter 1 "Application") sets out rules for the design, type testing, production and inspection of portable fire extinguishers with metal housings, to reduce risks of the internal pressure of these devices causing an explosion.

The gas pressure inside a conventional powder extinguisher is between 15 and 20 bar. The flexible force element in the interior of the F-Exx® only produces a fluid pressure of approximately 2 bar and does not contain gas or propellants. A metal housing is neither needed maintain the internal pressure nor to protect against explosions. The outer container of the F-Exx® can therefore be made of plastic, without compromising functionality or safety of the extinguisher.

Extinguishers with aqueous agents, including foam fire extinguishers require a minimum filling volume of 2 liters according to the standard (EN-3-7, section 6.4.2). The F-Exx® has for reasons of ease of use and the associated low weight, a nominal volume of 0.8 liters. The filling capacity is sufficient because of the performance capability of the extinguishing agent being able to achieve the stated extinguishing performance mentioned in point 5 of this Product Data Sheet in accordance with the EN-3-7 Section 6.4 and it being certified.

## 7. Why the F-Exx® is not considered to be a spray can extinguisher

A spray can extinguisher is an aerosol package (Aerosol Directive 2008/47/EG), which contains a compressed gas as an energy storage in addition to the liquid or powdered chemical. Conventional extinguishing spray cans have pres-

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tures of approx. 10 bar (car tyres, 2-3 bar). Due to the resulting potential hazards similar regulations for storage and transport (UN 1950, BGHW M20) apply.

In the past, cases of bursting spray can extinguishers were reported in the media and there have been numerous recalls by the manufacturers since. The reason for this was often due to corrosion of the can resulting from the extinguishing agent. In the event of overheating, spray cans may burst, as they have no pressure relief valve. Most fire extinguishing aerosol spray cans only can operate, system-related, in an upright position. Already the mere extinguishing of a rubbish bin on the floor can therefore be a challenge. At high temperatures, the internal pressure increases dramatically. When stored in the trunk of a car a spray can quickly reaches temperatures of over 60 ° C, which can bring the spray can to its bursting limit.

Due to the elimination of any compressed gases, the F-Exx<sup>®</sup> is not covered by the Aerosol Directive and therefore is not subject to the restrictive regulations for storage and transport. Attributable to its design, the system inherently does not possess any of the mentioned disadvantages. Any increase in temperature hardly increases the fluid pressure within the interior. Even pressure fluctuations, resulting, for example, in air transportation are safe. In addition, the system works in any orientation (360°), even upside down. Even with violent destruction, the foam will simply flow out completely without any risk of explosion.

In conventional spray cans the gas pressure continues to decrease with continuing discharge. As this happens, the spray behaviour changes regarding the spraying distance and spray pattern. The pressure curve of F-Exx<sup>®</sup> remains virtually constant during the entire period of usage, making possible a uniform spraying pattern (see paragraph 2).

## **8. Why the F-Exx<sup>®</sup> does not have any CE marking**

The CE marking is a requirement for the commercialization of products for which a CE mark for various EU directives is required. With the CE marking, the manufacturer or importer declares under EU Regulation 765/2008, "that the product complies with the applicable requirements." The F-Exx<sup>®</sup> system is not covered by any of these groups or existing product technology areas. As such, for instance, the directive "Simple Pressure Vessels (2009/105/EC)" requires a welded metal container.

The Directive on General Product Safety (Directive 2001/95/EC) regulates health and safety of consumers. It is a collection policy that comes into play when specific guidelines are not applicable. In its new form, it also applies to products that are intended for commercial use, but can also go to the consumer market. The CE marking pursuant to this Directive is not intended for use.



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## 9. Specification

Overall, the following certificates are available:

- environmental certificate from the manufacturer Tectro SMT GmbH
- ISO-TS certificate of the manufacturer Tectro SMT GmbH
- Review of the extinguishing performance according to DIN EN3-7 extinguishing performance (MPA Dresden)
- Electrical Test according to NF S 61-804 and DIN EN3-7 (MPA Dresden)
- Approval of the extinguishing agent according to DIN EN 1568-3 :2008 (MPA Dresden)
- Material Safety Data Sheet of the extinguishing agent and the system
- Environmental and Operator Safety related certificates, approvals and expert reports (see MSDS)
- Material Safety Declaration by VDE Institute (research on polycyclic aromatic hydrocarbons)

The extinguishing performance of the F-Exx® 8.o Bio has been confirmed by the MPA (Dresden, Germany) with the classifications 5A for solids, 21B for liquids and 15F for oils and fats.

Electrical installations voltages up to 1000 V can be extinguished at a safety distance of 1 m.

The extinguishing agent being used meets the requirements according to DIN EN 1568 and -4:2008 and is approved by the MPA Dresden (Germany).

Bioversal® is a registered trademark.

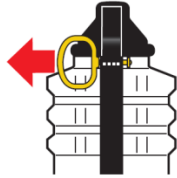
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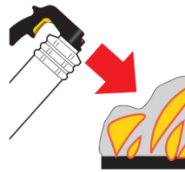


## 10. Functional Description

1. Remove safety pin



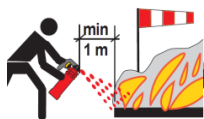
2. Aim nozzle at fire



3. Press yellow trigger



## Vital Instructions for Fighting Fires:



Always maintain a safe distance to the fire



As a rule, fight the fire from below



Fight grease fires from the side, Keep a min distance of 1.5 m



Do not spray in the eyes



Extinguish drip fires from above



After extinguishing the fire, observe the fire site

## 11. Applicational Examples

Areas of applications can be found in commercial, recreational use and at home. It can also be carried by security personnel. Applications are for fighting initial fires and in extinguishing individuals on fire. Upon spraying at individuals, be aware that breathing through the foam is not possible.



For Fire Class A  
5A



For Fire Class B  
21B



For Fire Class F  
15F



... for camping ...



... on boats ...



... for BBQ's ...



... at fire places ...



... in kitchens, also for grease fires ...



... in offices ...



... for use in doors ...



... in leisure ...



... for use on electrical appliances up to 1000 V, min. spray distance 1 m

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## 12. Maintenance and Repair

The F-Exx® has a dealer warranty of 36 months and requires no maintenance during this period. The expiration date is indicated on the label. After removal of the safety device the F-Exx® should be disposed of, even if it was not entirely empty. Only by doing so, it can be ensured that in the case of an emergency, the full amount of extinguishing agent is at hand.

The F-Exx® is not refillable and should be disposed of after the expiration period in accordance with local regulations. However, an empty system can be easily fed into the trash. As an alternative to the disposal in accordance with the provisions of the council, the life cycle of the product can be further improved if it is checked after use or after the expiration of the service life of the F-Exx® by an authorized customer service agent and maintained accordingly.



Always protect the F-Exx® against exposure to direct sunlight and from other heat sources and protect it against freezing temperatures.



Storage temperature: 0°C to 50°C

Operating temperature: 0°C to 70°C

## 13. Other

EAN-Code:



Customs Tariff Number: 84241000

Patents: DE 10 2009 006 755.8, DE 10 2010 018 915.4, DE 10 2010 018 888.3,  
DE 10 2010 018 889.1, DE 10 2011 011 352.5

Registered Design: 001 204 499-0001

Trade Mark: 011 457 108 „F-Exx“

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📺 <http://www.youtube.com/user/TectroSMTGmbH>