



**Light and Heavy Defense Vehicles**

# Revolutionary Fire Suppression Systems



Made in Germany

**defendex** 

We got your back!

***It's there when needed!***

*The need for simplicity and robustness, makes  
**defendex** the leading solution for  
defense vehicles*

**Designed for:**

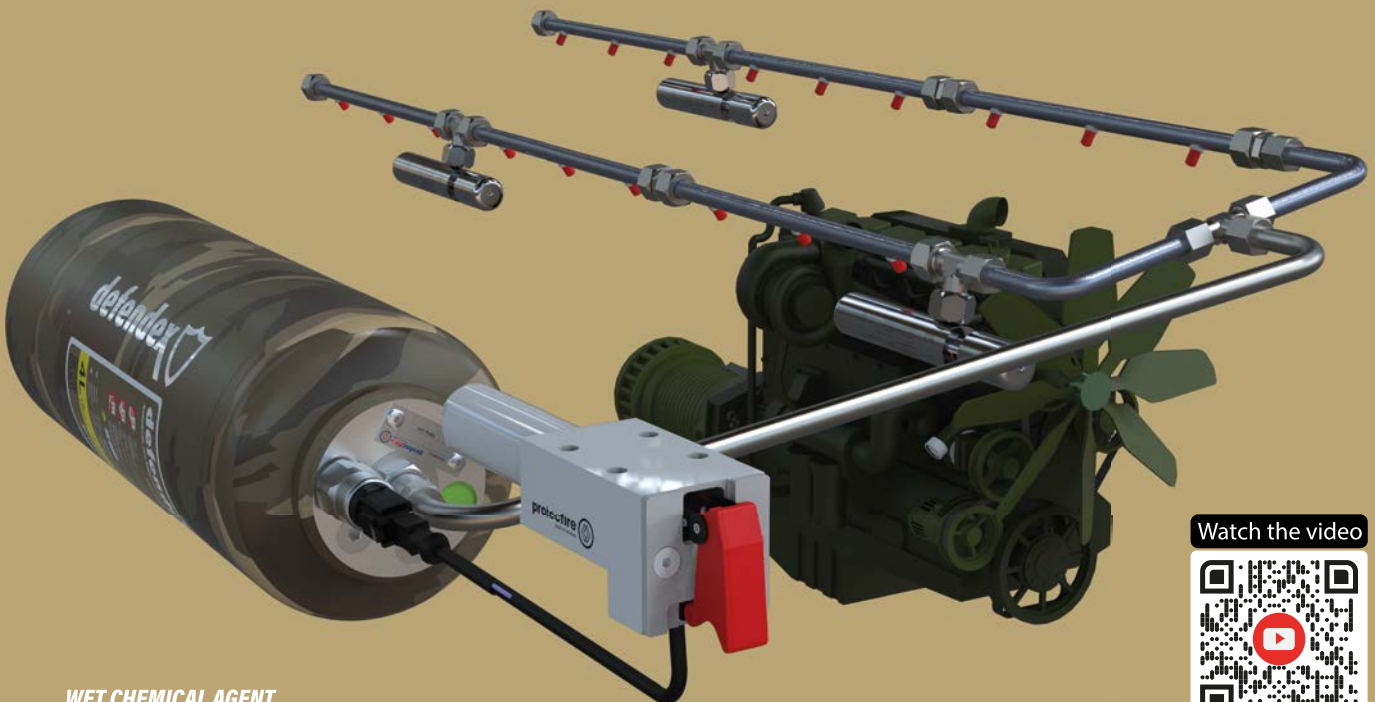
*Defense vehicles  
Armoured Transport  
Personnel Carrier  
Light & Heavy Vehicles  
Special Vehicles*



**Efficiency & Robustness**

**high resistance to shocks & vibrations**

**100% Stainless Steel**  
**No plastics in the core system**



Watch the video



**WET CHEMICAL AGENT**  
**ACCORDING TO**  
**NFPA 17-A**

**TiboRex**  
**ABSOLUTE**

**The power of liquid extinguishing agent**

A large amount of fine droplets of liquid agent is sprayed through the special patented nozzles forming a huge cooling reaction surface. Thus, the fire will be quickly deprived of thermal energy, leading to a rapid temperature drop. The cooling effect breaks the reaction necessary to support combustion.

In addition, after the entire extinguisher has been dispensed, nitrogen propellant gas will be discharged from the patented container, resulting in a hybrid suppression system, also ensuring fire suffocation.



**FROM THE MOUNTAINS TO THE DESERT**  
**The BEST temperature ranges!**  
**-50°C to 80°C**

**LIQUID FIRES**

Fuel, lubricant and hydraulic fluids

**SOLID FIRES**

Plastic, rubber, wood, sawdust, wires, cables

**ELECTRICAL FIRES**

Electrical cabinets, substations, transformers and other equipment

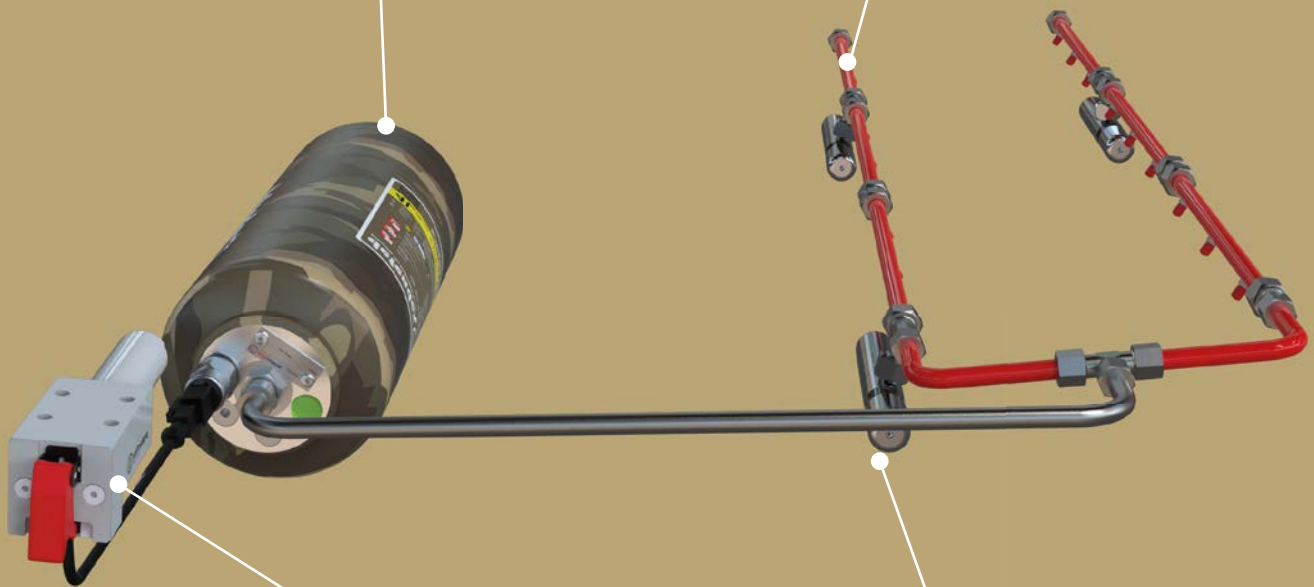
# Fully Pneumatic - Self Contained

## Stainless Steel Container

Safe and robust  
Internal activation system  
Maintenance free  
Stainless steel

## Fine Spray Nozzles

Patented  
75° angle spraying  
Robust and precise  
Stainless steel  
Very small and fits virtually anywhere



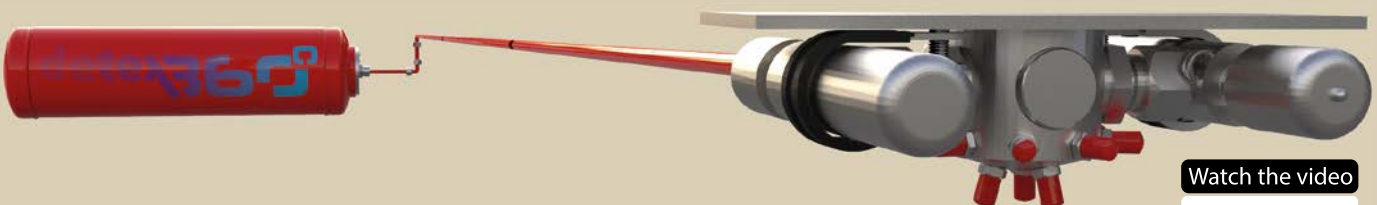
## Manual Actuator & Optical and Acoustic Alarm

Compact control panel  
Acoustic signal  
Test button

## Spy - Thermo-Pneumatic Detector

Patented  
Multiple temperature ranges  
Sensitive to hidden fires  
Robust and accurate  
Stainless steel

detex360 version



## 360 degrees of fine spray and detectors, all in one piece.

A single small unit system with detection and extinguishing, the fastest to install!  
This system allows an homogeneous fine spray dispersion throughout the compartment.  
The nozzles cover all directions for effective dispersion.

Watch the video





### Single-line system (det-ex)

Detection and extinguishing in a single pipeline.



### No Pressure

The extinguishing agent container is made of stainless steel and is pressure-free in the operating state. The piping is also pressureless.



### No Electricity

No electricity needed in the system.



### 5 Years - No parts change

Long savings - durable and resistant parts.



### Ultra-fast detection

Response speed: Ultra Fast Response RTI 12. False alarm proof. Based on "temperature" parameter for pneumatic activation.



### Operation temperature range: -50°C to 80°C

Prepared for extreme climates, whether in the desert or in the mountains.



### Capable of working in extreme conditions

Shock and vibration resistant.



### Stainless steel

Precision manufacturing - highly durable stainless steel.



### Very low maintenance

Due to the absence of pressure and simplicity, maintenance routines are practically only visual.



### Fully Mechanical / Pneumatic

The entire system is self-contained. It does not require manual operations and does not depend on external controls, such as control panels or electrical detectors.

Possibility of multiple temperature ranges in a single system.  
57 °C | 68 °C | 79 °C | 93 °C | 110 °C | 141 °C | 182 °C | 230 °C | 260 °C

Operates in highly ventilated places and in open spaces



**Extinguishing Agent**  
**Liquid - TiBorex Absolute**



**Can be installed in Any Position/Angle**

Watch the video





**NEW  
CERTIFICATION  
PROCESS**

**RI  
SE**

**DMT**

# Long-Term Savings

Factors that make Detexline the most economical system

**Almost maintenance-free for 5 years:**

No need for the usual annual maintenance as it is not pressurized!

**No False Alarms:**

Patented, accurate and reliable detection system.

**Make your own maintenance:**

Your own staff - no need for external companies.

**It can be reinstalled in different vehicles:**

Easy and fast installation.

## How it Works

The detexline tank and piping network are not pressurized. The SPY detectors will be activated by thermal detection, thus releasing the pressure in the pipeline and cylinder control valve, which in turn will trigger the release of the extinguishing agent. Fine spray nozzles will disperse the Tiborex Absolute providing the cooling effect and effectively extinguishing fires within the first few seconds.

It can be manually activated remotely. An alarm and test button can be installed.

Name	detexline 4MC
Temperature Range	-50°C / -30°C to 80°C
Detection Technology	Rise of Pressure
Detection and External Line	One integrated line
System Pressure	No pressure
Detection Technology	SPY detection element - Stainless steel
Trigger Temperature	Glass ampoule, 9 independent temperatures
Life of Detectors	5 years
Nozzle Type	S1
Extinguishing Agent	Tiborex Absolute
Extinguishing Agent Volume	4, 7, 14, 24L
Extinguishing Technology	Fine spray technology
Extinguishing Container (pressure)	Pressureless (Sealed Cartridge)
Product Material	Stainless steel
Alarm Signal Switch	Yes
Maintenance Inspection	Annually
Parts Replacement Duration	5 years

**Certifications for protectfire various systems:**



**Most recent certification process with 4 LT - RISE, Sweden**

Tests for fire suppression systems intended for engine compartments according to SP Method 4912, UNECE R107, AIS 135 - SPCR 183 or SPCR 199 (P-mark).



## System components



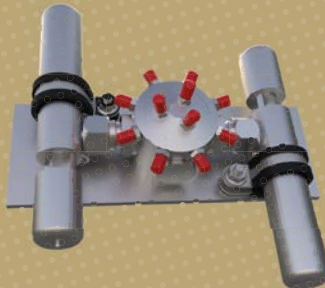
### SPY thermo-pneumatic detector

- Unique patented detector
- No electricity required
- High-finish stainless steel
- Response speed: Ultra Fast Response RTI 12
- Available detection temperatures:  
-57°C -68°C -79°C -93°C -110°C -141°C -182°C -230°C 260°C



### Fine-Spray Nozzles

- Unique patented nozzle solution
- Quick and easy to install - Reduces installation time by ~70%.
- Very small - Virtually fits anywhere
- Stainless steel
- S1 factor 0.5 - Fine spray technology
- Up to 75° spray pattern
- High quality, heavy-duty nozzle caps



### detex360

- Multi-directional fine dispersion nozzles and detectors in one piece.
- Very small - Virtually fits anywhere
- Stainless steel
- S1 factor 0.5 - Fine spray technology
- Up to 90° spray pattern on each nozzle - high coverage.
- Unique in the world.

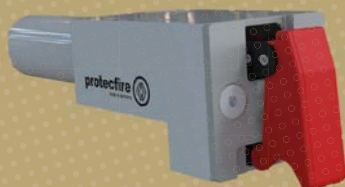


### Extinguishing Agent Tank

- Patented - Unique Pneumatic Release System
- Can be placed in any position!
- Stainless steel with electrostatic paint finish Ral3000
- Patented - Stainless steel actuation system



- Liquid Agent: Tiborex Absolute - exclusive protectfire agent
- Effective against liquid, solid and grease fires.



### Pneumatic Manual Actuator/Alarm

- Unique patented pneumatic activation system
- Stainless steel
- Safety locking system
- Argon gas activation
- Led light and buzz alarm
- Test light

- Ultra-Rapid Extinguishing
- Cooling and Blanketing effect
- Environmentally Friendly (non-toxic | biodegradable)
- Fluorine Free
- Residue control by ultraviolet light

**Tiborex**  
ABSOLUTE  
Ultra-fast extinguishing agent



## Extinguishing Agents Comparison

	TiboRex Absolute	Water	Foam	Powder	Gas
Fast Temperature Reduction	+	-	-	-	-
Surface Blanketing	+	-	+	-	-
Quenching Effect	+	-	+	-	+
Fine-Spray Technology	+	+	-	-	-
Fluorine Free	+	+	-	-	+
Temperature Range -50°C to +80°C	+	-	-	+	-
Danger to Persons	+	+	-	-	-

### Ultrafast extinguishing

Only small amounts of extinguishing agent required. Tiborex rapidly delivers a huge cooling power. The object to be protected remains almost undamaged.

### Ultrafast cooling

Enormous reduction of surface temperature. Avoidance of re-ignition. Reduced effect of fire. Quick interruption of combustion process.

### The cooling effect

The enormous cooling effect of Tiborex Absolute is mainly based on **two physical properties:**

**Cooling effect due to water evaporation:** The fine-spray nozzles developed specially for Tiborex Absolute produce very fine droplets, smaller than 100µm, when discharging the extinguishing agent. As a result, ultra-fast evaporation of the liquid share in the extinguishing agent is achieved. Due to the required enthalpy of evaporation of 2.26 MJ/kg (equivalent to 1 litre of water) energy is extracted from the burning object in a minimum of time and it cools down substantially.

**Cooling effect due to sublimation:** During the evaporation of the aqueous phase some of Tiborex Absolute's main components form crystalline structures. With the still existing combustion temperature, these solid structures change from the crystalline phase to a gaseous phase. The enormous enthalpy of evaporation (heat) required for this amounts to 7.23 MJ/kg.

### Quenching effect

Rapid removal of thermal energy therefore removing heat, hence no combustion or fire in hidden cavities.

### Blanketing fat and oil fires

When mineral, animal or vegetable fats and oils burn, Tiborex Absolute uses chemical reactions to form a closed, gas-proof protective layer quenching the fire and protecting the hot fat or oil from re-ignition by cooling them down very quickly.

### Residue monitoring and guaranteed quality

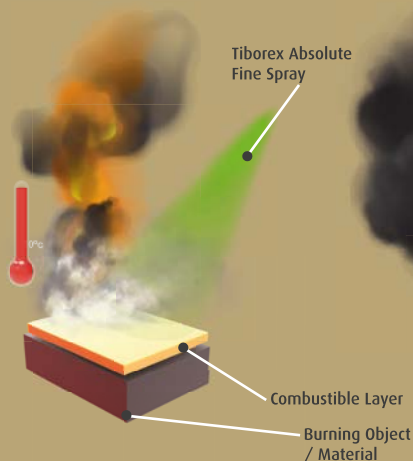
Residues of the extinguishing agent on the object can be identified with the help of ultraviolet light. A chemical analysis (DNA) can verify and confirm that the original Tiborex Absolute was used.

### Environmental friendliness

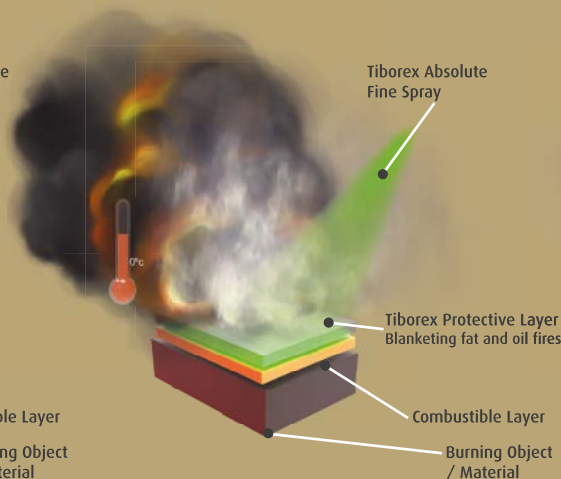
Ecological and 100% fluorine-free extinguishing agent. Biodegradable. Non toxic to humans and animals.

## 3 stages fire suppression

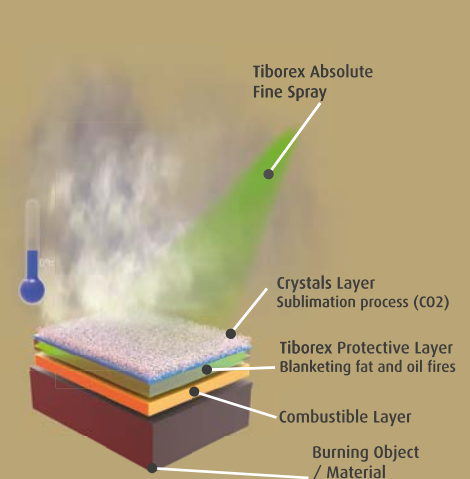
### 1 Cooling Effect Fine Spray Droplets that penetrate fire



### 2 Oxygen Suffocation by evaporation



### 3 Ultra Cooling through Sublimation Layering with solid crystals that convert to gas





## Automatic Fire Suppression Systems for Light & Heavy Defense Vehicles



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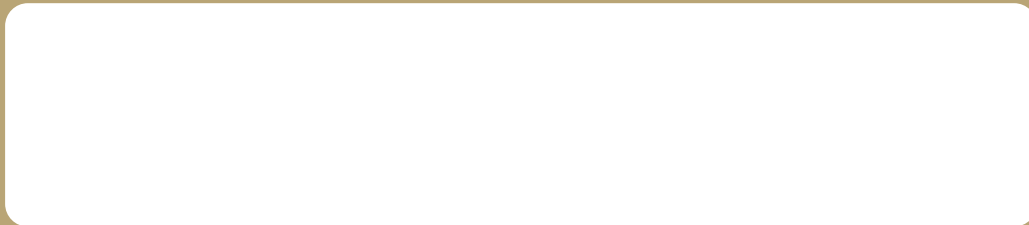
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