

# Fire suppression system for engine compartment

## Issued to

### Firetrace International LLC

8435 N. 90th St., Suite 2, Scottsdale, AZ 85258, USA

## Product and product name

Fire suppression systems:

Firetrace 360 psi ILP with 20 lbs ABC Dry Chemical - DOT

Firetrace 360 psi ILP with 20 lbs ABC Dry Chemical - CE

Firetrace 360 psi ILP with 22 lbs ABC Dry Chemical - DOT

Firetrace 360 psi ILP with 10 lbs Black Widow BC Dry Chemical - DOT

## Type

Extinguishing agent: ABC Dry Chemical powder (20 and 22 lbs) or Black Widow BC Dry Chemical powder (10 lbs).

## Technical data/Performance/Classification

See appendix to this certificate

## Certificate

The product described above fulfils the requirements in SP's Certification rules regarding Fire suppression systems in engine compartments of buses and coaches, SPCR 183. The certification is based on the manufacturer's technical file and type tests performed in accordance with standards specified in the appendix to this certificate.

## Marking

Marking shall show the number of this certificate, the name of the product, its serial number, the name of the manufacturer and SP's p-symbol. See appendix.

## Validity

This certificate is valid until not longer than 8<sup>th</sup> April 2020.

## Miscellaneous

The manufacturer's in-house inspection is under surveillance by SP in accordance with section 4 and 5 of SPCR 183. Other terms and conditions are set out in section 6 of SPCR 183. This certificate replaces earlier issues with the same number. The first issue was issued 2015-08-08 by SP Technical Research Institute of Sweden, which during 2017 has changed its name to RISE Research Institutes of Sweden.



Dag Sjöholm

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Certificate No. SC1263-13 | issue 4 | 2017-09-15

RISE Research Institutes of Sweden AB | Certification

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2017-08-24



## Product information

### Technical data of the tested suppression system

Table 1 shows technical data of the suppression system tested for 4 m<sup>3</sup> engine compartment volume. The system may be scaled to fit the size of a specific engine compartment according to the scaling rules in SPCR 183.

**Table 1. Technical data of the tested fire suppression systems**

Manufacturer	Firetrace	
Fire suppression system name	20 lbs ABC (DOT) 20 lbs ABC (CE) *22 lbs ABC (DOT)	10 lbs Black Widow BC (DOT)
Extinguishing agent name	ABC Dry Chemical	Black Widow BC Dry Chemical
Extinguishing agent type	ABC dry chemical	BC dry chemical
Extinguishing agent mass	20 lb (9.07 kg) *22 lb (9.98 kg)	10 lb (4.54 kg)
Extinguishing agent container volume	676 in <sup>3</sup> (11.1 l) (DOT) 687 in <sup>3</sup> (11.3 l) (CE) *1011 in <sup>3</sup> (16.6 l)(DOT)	300 in <sup>3</sup> (4.9 l) (DOT)
Container article number	100680 (DOT) 100701 (CE) *101011 (DOT)	101200 (DOT)
Propellant gas	Nitrogen	
Extinguishing agent container pressure	360 PSI (24.8 bar)	
Extinguishing agent delivery hose	½ inch inner diameter hose	
Nozzle denotation	500002	
Number of nozzles	6	
Distance to the most remote nozzle, ABC nozzles	16 ft (4.88 m)	

\* 22 lbs system is regarded as equivalent to the 20 lbs system

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## Performance - Tested fire scenarios according to SP Method 4912

A summary of the results can be found in Table 2. The test numbers refer to SP Method 4912. More information about the tests is shown in the test report.

Table 2. Results

Test	Air flow	Test scenario category	Results	
			Firetrace 360 psi ILP with:	
			20 lbs ABC	10 lbs Black Widow BC
1	0 m <sup>3</sup> /s	High fire load test Minimum operating temp. test T <sub>min</sub> = -40 °C	Pass	Pass
2	0 m <sup>3</sup> /s	Low fire load test	Pass*	Pass*
3	0 m <sup>3</sup> /s	Hidden fire test	Pass	Pass
4	0.5 m <sup>3</sup> /s	Class A-fire test	Pass	-
5	1.5 m <sup>3</sup> /s	High fire load test	Pass	-
6	1.5 m <sup>3</sup> /s	Low fire load test	Pass*	Pass*
7	1.5 m <sup>3</sup> /s	Hidden fire test	-	Pass
8	3 m <sup>3</sup> /s	High fire load test	Pass	Pass
9	3 m <sup>3</sup> /s	Low fire load test	Pass*	Pass*
10	3 m <sup>3</sup> /s	Hidden fire test	Pass	Pass
11	0 m <sup>3</sup> /s	Hot surface re-ignition	Pass (58 s)	Pass (54 s)

\* Passed with an amount of agent divided by 1.2 compared to the ordinary amount of agent.

## Component tests

In addition to fire tests components in the fire suppression system need to be verified and tested through international standards as specified below.

Table 3.

Property	Standard	Result
Mechanical stress resistance (vibration and shock)	ISO 16750-3:2007 (Test VII)	Pass
Corrosion resistance	ISO 21207, test method B (3 cycles)	Pass

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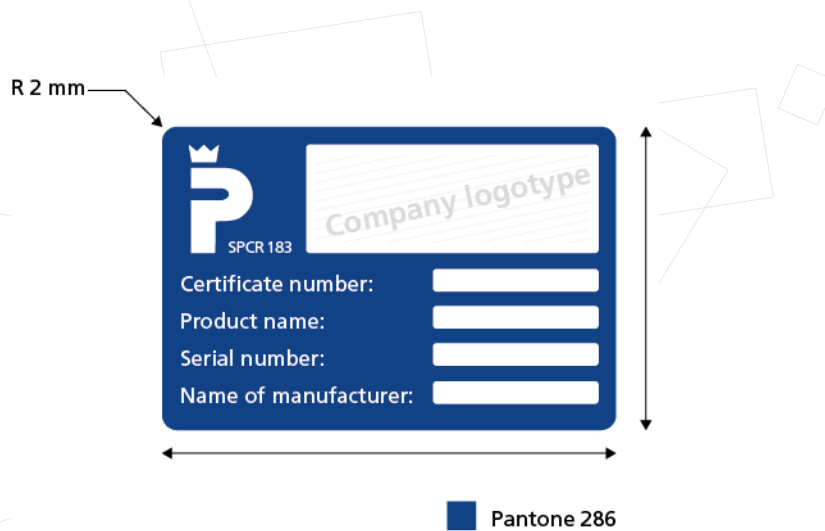

## Conditions

Electrical equipment included in the system shall have a classification of at least IP65, and tested in accordance with IEC 60529:1989/A1:2009/COR3:2009.

A risk assessment in accordance with SPCR 183 section 3.2 shall be made prior to equipment being placed into service. The risk assessment shall be made by personnel having documented experience for the task.

It is the responsibility of the suppression system manufacturer to assure compliance of its suppression system components with legal requirements and vehicle manufacturer requirements.

The marking of the product shall be legible and durable and be placed adjacent to the engine compartment and be designed as below. The size of the sign shall be 40 x 60 mm.



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