

# SPRC 183證書





# CERTIFIKAT

Certificate No. SC1061-13

## Fire suppression system for engine compartment

### Holder/Issued to/Manufacturer

Dafo Brand AB, Box 683, SE-135 26 TYRESÖ, Sweden

### Product and product name

Fire suppression system: Dafo Forrex Fire Suppression System

### Type

Water based fire suppression system

Suppression agent: Dafo Forrex AB-50

### 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 -symbol. See appendix.

### Validity

This certificate is valid until not longer than 27<sup>th</sup> June 2018.

### 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 is the first issue of this certificate.

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Borås, 27<sup>th</sup> June 2014

**SP Technical Research Institute of Sweden  
Certification**

  
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## 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 *Dafo Forrex Fire Suppression System*

<b>Manufacturer</b>	DAFO
<b>Suppression agent:</b>	Dafo Forrex AB-50
<b>Suppression agent volume and mass:</b>	12.5 litre / 14.6 kg
<b>Propellant gas:</b>	Nitrogen
<b>Mass of propellant gas:</b>	198 g (±14 g)*
<b>Pressure in propellant gas cartridge:</b>	145 bar (at +20 ° C)*
<b>Propellant gas delivery hose:</b>	One ¼" hose with a length of 1 m.
<b>Suppression agent delivery hoses:</b>	Two ½" hoses with a length of 3 m and 3.5 m.
<b>Suppression agent delivery pipes:</b>	Steel pipes with 10 mm inner diameter and a total length of 11 m.
<b>Distance from agent container to the most remote nozzle (including hoses and pipes):</b>	7 m
<b>Number of nozzles:</b>	20
<b>Type of nozzles:</b>	19 Nozzles DW2 (100° full cone, 1.6 l/min)* 1 Nozzle BETE FF125145 BSP (140° flat spray, 2.8 l/min)* – nozzle 8 in Figure 4 and 5.
<b>Discharge time:</b>	Approximate 8 seconds of suppression agent discharge and additional time with nitrogen gas discharge.

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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. The sign (-) indicates that the test has not been used as a basis for this approval.

Table 2

Test	Air flow	Test scenario category	Result
1	0 m <sup>3</sup> /s	High fire load test Minimum operating temp. test T <sub>min</sub> = -30 °C	Pass Pass
2	0 m <sup>3</sup> /s	Low fire load test	Pass*
3	0 m <sup>3</sup> /s	Hidden fire test	-
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*
7	1.5 m <sup>3</sup> /s	Hidden fire test	-
8	3.0 m <sup>3</sup> /s	High fire load test	-
9	3.0 m <sup>3</sup> /s	Low fire load test	Pass*
10	3.0 m <sup>3</sup> /s	Hidden fire test	-
11	0 m <sup>3</sup> /s	Hot surface re-ignition test	00:47 min 00:54 min

\* Passed with an amount of agent reduced by (1/1.2) 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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27<sup>th</sup> June 2014 - Appendix, page 2 (3) Sign:



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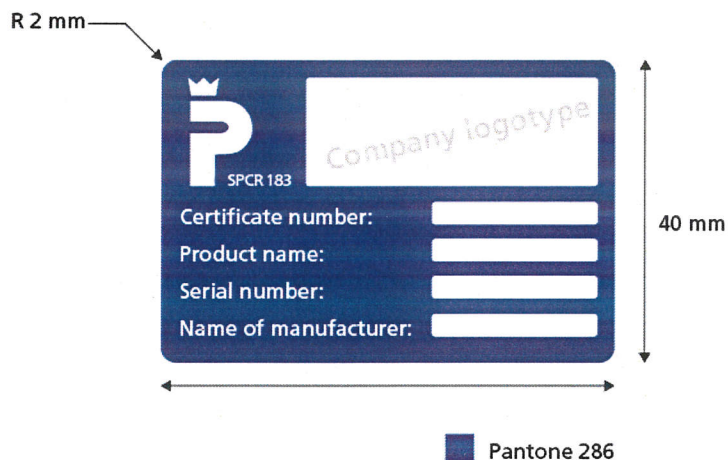
## Conditions

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.



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