CERTIFICATE

C001017

Fire suppression system for engine compartment of heavy vehicles

Issued to

Reacton Fire Suppression Ltd

14 Baynes Place, Waterhouse Business Park, Chelmsford, Essex, CM1 2QX, United Kingdom

Product and product name

Fire suppression system, Reacton CTX Indirect Powder and Reacton Wet Chemical System

Type

Dry powder and wet chemical fire suppression systems.
Suppression agents:
- Furex ABC 770
- Freefor 6% / Freezol 35% / Water

Technical data/Performance/Classification

See appendix to this certificate.

Certificate

The product described above fulfils the requirements in RISE Certification rules regarding Fire suppression systems in engine compartments of heavy vehicles, SPCR 199 edition 2017-09-08. 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 SPCR 199, RISE logo, manufacturer's logo, the number of this certificate, the name of the product, its serial number, the name of the manufacturer and RISE P-symbol. See appendix for details.

Validity

This certificate is valid until not longer than 17th January 2025.

Miscellaneous

The manufacturer's in-house inspection is under surveillance by RISE in accordance with section 4 and 5 of SPCR 199. Other terms and conditions are set out in section 6 of SPCR 199.

Signed by: Martin Tillander
Reason: I have reviewed this document
Date & Time: 2020-01-17 16:35:33 +01:00

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Product information

Technical data of the tested suppression system

Table 1a-1f shows technical data of the suppression system tested for 4 m^3 engine compartment volumes. The system may be scaled to fit the size of a specific engine compartment according to the scaling rules in SPCR 199.

Table 1a, Technical data of the tested Reacton fire suppression system – Dry chemical system 4 kg

Manufacturer	**Reacton Fire Suppression Ltd**
Fire suppression system name	Reacton CTX Indirect Powder
Suppression agent name	Furex ABC 770
Suppression agent type	Dry powder
Suppression agent mass	4 kg
Suppression agent container	5,4L
Suppression agent container article number	RE-CTXCE-054-040-ABC
Propellant gas	Nitrogen
Working pressure	25 bar (at +20°C)
Suppression agent delivery hose	3/8”
Suppression agent delivery pipes	Double braided synthetic rubber. Outer diameter 19,7 mm.
Type of nozzles	4 x RE7145
Number of nozzles	4
Distance to the most remote nozzle	6 m
Total length of agent delivery system	12 m
Number of fittings	2 x Straight couplings 2 x T-couplings 2 x 90° elbows

Table 1b, Technical data of the tested Reacton fire suppression system – Wet agent system 4 kg

Manufacturer	**Reacton Fire Suppression Ltd**
Fire suppression system name	Reacton Wet Chemical System
Suppression agent name	Freefor 6% / Freezol 35% / Water
Suppression agent type	Wet agent
Suppression agent mass	4 kg
Suppression agent container	5,4L
Suppression agent container article number	RE-CTXCE-054-040-FFF
Propellant gas	Nitrogen
Working pressure	25 bar (at +20°C)
Suppression agent delivery hose	3/8”
Suppression agent delivery pipes	Double braided synthetic rubber. Outer diameter 19,7 mm.
Type of nozzles	2 x RE7099
Number of nozzles	2
Distance to the most remote nozzle	9,25 m
Total length of agent delivery system	9,25 m
Number of fittings	2 x Straight couplings 1 x T-couplings 2 x 90° elbows

Table 1c, Technical data of the tested Reacton fire suppression system – Dry chemical system 6 kg

Manufacturer	**Reacton Fire Suppression Ltd**
Fire suppression system name	Reacton CTX Indirect Powder
Suppression agent name	Furex ABC 770
Suppression agent type	Dry powder
Suppression agent mass	6 kg
Suppression agent container	7,5L
Suppression agent container article number	RE-CTXCE-075-060-ABC
Propellant gas	Nitrogen
Working pressure	25 bar (at +20°C)
Suppression agent delivery hose	3/8”
Suppression agent delivery pipes	Double braided synthetic rubber. Outer diameter 19,7 mm.
Type of nozzles	5 x RE7145 1 x RE7154
Number of nozzles	6
Distance to the most remote nozzle	6 m
Total length of agent delivery system	20 m
Number of fittings	6 x Straight couplings 3 x T-couplings 3 x 90° elbows

Table 1d, Technical data of the tested Reacton fire suppression system – Wet agent system 6 kg

Manufacturer	**Reacton Fire Suppression Ltd**
Fire suppression system name	Reacton Wet Chemical System
Suppression agent name	Freefor 6% / Freezol 35% / Water
Suppression agent type	Wet agent
Suppression agent mass	6 kg
Suppression agent container	7,5L
Suppression agent container article number	RE-CTXCE-075-060-FFF
Propellant gas	Nitrogen
Working pressure	25 bar (at +20°C)
Suppression agent delivery hose	3/8”
Suppression agent delivery pipes	Double braided synthetic rubber. Outer diameter 19,7 mm.
Type of nozzles	2 x RE7099
Number of nozzles	2
Distance to the most remote nozzle	9,25 m
Total length of agent delivery system	9,25 m
Number of fittings	2 x Straight couplings 1 x T-couplings 2 x 90° elbows

Table 1e, Technical data of the tested Reacton fire suppression system – Dry chemical system 9 kg

Manufacturer	**Reacton Fire Suppression Ltd**
Fire suppression system name	Reacton CTX Indirect Powder
Suppression agent name	Furex ABC 770
Suppression agent type	Dry powder
Suppression agent mass	9 kg
Suppression agent container	12L
Suppression agent container article number	RE-CTXCE-120-090-ABC
Propellant gas	Nitrogen
Working pressure	25 bar (at +20°C)
Suppression agent delivery hose	3/8”
Suppression agent delivery pipes	Double braided synthetic rubber. Outer diameter 19,7mm.
Type of nozzles	5 x RE7145 1 x RE7154
Number of nozzles	6
Distance to the most remote nozzle	8 m
Total length of agent delivery system	22 m
Number of fittings	8 x Straight couplings 3 x T-couplings 3 x 90° elbows

Table 1f, Technical data of the tested Reacton fire suppression system – Wet agent system 6 kg

Manufacturer	**Reacton Fire Suppression Ltd**
Fire suppression system name	Reacton Wet Chemical System
Suppression agent name	Freefor 6% / Freezol 35% / Water
Suppression agent type	Wet agent
Suppression agent mass	6 kg
Suppression agent container	7,5L
Suppression agent container article number	RE-CTXCE-075-060-FFF
Propellant gas	Nitrogen
Working pressure	25 bar (at +20°C)
Suppression agent delivery hose	3/8”
Suppression agent delivery pipes	Double braided synthetic rubber. Outer diameter 19,7 mm.
Type of nozzles	2 x RE7099
Number of nozzles	2
Distance to the most remote nozzle	8 m
Total length of agent delivery system	10 m
Number of fittings	3 x Straight couplings 1 x T-couplings

Performance - Tested fire scenarios according to SP Method 4912

A summary of the results can be found in Table 2a-2c. 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 2a, Reacton fire suppression system – Dry chemical and wet agent system, 4+4 kg.

Test	Air flow	Test scenario category	Level of openness	Results
1	0 m^3/s	High fire load test at minimum operating temp: T_{min} = -20 °C	0	Pass
2	0 m^3/s	Low fire load test	0	Pass*
3	0 m^3/s	Hidden fire test	-	-**
4	0.5 m^3/s	Class A-fire test	0	Pass
5	1.5 m^3/s	High fire load test	0	Pass
6	1.5 m^3/s	Low fire load test	0	Pass*
7	1.5 m^3/s	Hidden fire test	-	-**
8	3 m^3/s	High fire load test	0	Pass
9	3 m^3/s	Low fire load test	0	Pass*
10	3 m^3/s	Hidden fire test	0	Pass**
11	0 m^3/s	Hot surface re-ignition	0	No re-ignition

* Passed with an amount of agent reduced by 20% compared to the ordinary amount of agent.
** By passing Test 10 one automatically obtains points for passing Test 7 and Test 3.

Table 2b, Reacton fire suppression system – Dry chemical and wet agent system, 6+6 kg.

Test	Air flow	Test scenario category	Level of openness	Results
1	0 m^3/s	High fire load test at minimum operating temp: T_{min} = -20 °C	0	Pass
2	0 m^3/s	Low fire load test	0	Pass*
3	0 m^3/s	Hidden fire test	-	-**
4	0.5 m^3/s	Class A-fire test	0	Pass
5	1.5 m^3/s	High fire load test	0	Pass
6	1.5 m^3/s	Low fire load test	0	Pass*
7	1.5 m^3/s	Hidden fire test	-	-**
8	3 m^3/s	High fire load test	III***	Pass
9	3 m^3/s	Low fire load test	0	Pass*
10	3 m^3/s	Hidden fire test	0	Pass**
11	0 m^3/s	Hot surface re-ignition	0	No re-ignition

* Passed with an amount of agent reduced by 20% compared to the ordinary amount of agent.
** By passing Test 10 one automatically obtains points for passing Test 7 and Test 3.
*** For level of openness details, see fire test report.

Table 2c, Reacton fire suppression system – Dry chemical and wet agent system, 9+6 kg.

Test	Air flow	Test scenario category	Level of openness	Results
1	0 m^3/s	High fire load test at minimum operating temp: T_{min} = -20 °C	0	Pass
2	0 m^3/s	Low fire load test	0	Pass*
3	0 m^3/s	Hidden fire test	-	-**
4	0.5 m^3/s	Class A-fire test	0	Pass
5	1.5 m^3/s	High fire load test	0	Pass
6	1.5 m^3/s	Low fire load test	0	Pass*
7	1.5 m^3/s	Hidden fire test	-	-**
8	3 m^3/s	High fire load test	III***	Pass
9	3 m^3/s	Low fire load test	III***	Pass*
10	3 m^3/s	Hidden fire test	0	Pass**
11	0 m^3/s	Hot surface re-ignition	I***	No re-ignition

* Passed with an amount of agent reduced by 20% compared to the ordinary amount of agent.
** By passing Test 10 one automatically obtains points for passing Test 7 and Test 3.
*** For level of openness details, see fire test report.

Assessment - Rating according to SP Method 4912

A summary of the results can be found in Table 3a-3c. The rating numbers refer to SP Method 4912. More information about the tests is shown in the test report.

Table 3a, Rating according to SP Method 4912. Reacton fire suppression system – Dry chemical and wet agent system, 4+4 kg.

Category	Category Rating
1. High fire load	3
2. Low fire load	3
3. Class A-fire	1
4. Hidden fire	3
5. Hot surface re-ignition protection	No re-ignition
6. Level of openness	0
Total Rating	**10**

Table 3b, Rating according to SP Method 4912. Reacton fire suppression system – Dry chemical and wet agent system, 6+6 kg.

Category	Category Rating
1. High fire load	3
2. Low fire load	3
3. Class A-fire	1
4. Hidden fire	3
5. Hot surface re-ignition protection	No re-ignition
6. Level of openness	0
Total Rating	**10**

Table 3c, Rating according to SP Method 4912. Reacton fire suppression system – Dry chemical and wet agent system, 9+6 kg.

Category	Category Rating
1. High fire load	3
2. Low fire load	3
3. Class A-fire	1
4. Hidden fire	3
5. Hot surface re-ignition protection	No re-ignition
6. Level of openness	III
Total Rating	**10**

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 4

Property	Standard	Result
Mechanical stress resistance (vibration and shock)	ISO 16750-3:2007 (Test VII)	Pass
Corrosion resistance	ISO 21207:2016, test method B (3 cycles)	Pass

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 199 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.

Marking plate template: