Bauaufsichtlich anerkannte Prüf-, Überwachungs- und Zertifizierungsstelle
Amtlich anerkannte Prüfstelle für Feuerlöschmittel und -geräte
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ZLS-P-860/09; ZLS-ZE-707/09
Notified Body no. 0767
Mitglied des VMPA e.V.

MPA Dresden

Test report

No. 2011-F-3353/Fm 06

Applicant:	Dafo Fomtec AB Vindkraftsvägen 8 P. O. Box 683 SE-135 26 Tyresö Sweden
Manufacturer:	Dafo Fomtec AB Vindkraftsvägen 8 P. O. Box 683 SE-135 26 Tyresö Sweden
Application date:	August 4, 2011
Subject of application:	Test of a premixed liquid fire extinguishing medium for evidence of the suitability as a fire extinguishing medium on use with fire extinguishers
Name of the fire extinguishing medium:	Fomtec Alpha R -10 AFFF ARC FOAM SOLUTION
Basis of the examination:	Test procedure instruction LM 01-01 of MPA Dresden GmbH dated Nov. 29, 2011, test of water based fire extinguishing media
Receipt of sample:	July 15, 2011
Test laboratory:	MPA Dresden GmbH Official laboratory for fire extinguishing media and fire extinguishers Fuchsmühlenweg 6F 09599 Freiberg Germany

This test report comprises 10 pages, including 1 annex.

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General information:

Only equipment and materials detailed in this report have been subjected to the tests. Test results apply to the tested samples only.

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Summary:

The liquid fire extinguishing medium Fomtec Alpha R -10 (ready to use, premixed, film forming foam solution) has been tested relating to its chemical / physical characteristics and to its extinguishing efficiency in order to proof the suitability for fire extinguishing purposes.

The fire extinguishing medium Fomtec Alpha R -10 is suitable to be used as premixed water based solution for fire extinguishers against fires of materials of the fire classes A and B according to EN 2.

The evidence of the extinguishing effectiveness has been performed with portable stored pressure fire extinguishers (6 litres).

Test fire rating in accordance with EN 3-7 : 2004 + A1: 2007:	**21 A and 144 B**
Application percentage of the extinguishing medium with water:	undiluted application
Freezing point of the medium (measured):	- 13.7 °C

July 20, 2012

Grad. Eng. Dittrich
Laboratory Manager

1. General

The liquid fire extinguishing medium Fomtec Alpha R -10 is premixed water based solution ready to use and it is not to dilute with water further more.

The suitability of the product as fire extinguishing medium has been examined in accordance with the test procedure instruction LM 01-01of MPA Dresden GmbH, test of water based fire extinguishing media, considering the respective requirements of the norms EN 1568 and EN 3-7.

2. Chemical composition

A notice of the manufacturer about the chemical composition of the fire extinguishing medium is not available to the test laboratory.

3. Submitted documents

/1/ Product data sheet of the fire extinguishing medium fomtec Alpha R -10 FOAM SOLUTION, undated, Dafo Foamtec AB Tyresö

/2/ Material Safety Data Sheet of the fire extinguishing medium Fomtec Alpha R -10 (ARC Premix), dated 01/11/2008, Dafo Foamtec AB Tyresö, 4 pages

/3/ Marking label for packing cans, Fomtec Alpha R -10 AFFF ARC FOAM SOLUTION

4. Test results

4.1 Laboratory tests – characteristic values (clauses 3 to 10 of the test procedure instruction)

Characteristic value		Requirement EN 1568	Manufacturer specification	Sample measurement	Requirement fulfilled (yes/no)
pH-value	(20°C)	6.0 – 9.5	7.5 ± 1.0	8.03	Yes
Density g/cm³	(20°C)	–	1.03 ± 0.01	1.03	3)
Viscosity mm^2/s	(20°C) (0°C) (-10°C)	– – –	< 30 – –	9.6 19.8 28.6	3)
Refraction index	n^D_{20}	–	1.3541	1.3478	3)
Freezing point	°C 1)	–	- 10	- 13.7	3)
Sediment before aging after aging Sample dispersible through 180 µm - sieve	Vol % (yes/no)	 ≤ 0.25 ≤ 1.00 Yes	 – – –	 < 0.25 < 1.00 not applicable	 Yes Yes Yes
Resistance to aging T_1 = -30°C; 23°C; 60°C; 23°C 2)		No formation of layers	–	No formation of layers	Yes
Infrared spectrogram		–	–	Annex 1	3)

4.2 Tests in conjunction with a fire extinguisher (clause 11 of the procedure instruction)

4.2.1 Details of the fire extinguisher

Type:	6 litres permanent pressure type fire extinguisher, model SK 6 A, foam spray nozzle
Nominal Charge:	6 litres (it corresponds with 6,18 kg)
Fire extinguishing medium:	6 liters Fomtec Alpha R -10 AFFF ARC foam solution
Pressure storing:	15 bar at 20 °C
Specification:	EN 3

1) The lower application temperature has to be at least 5°C more than the freezing point.
2) T_1 = freezing point minus 10 °C, if the fire extinguishing medium is declared as freeze resistant.
T_1 = the lower application temperature, if the fire extinguishing medium is not declared as freeze resistant and it has a lower application temperature.
3) No assessment is given because the test norm specifies no requirement for this characteristic value.

4.2.2 Duration of operation, minimum duration (clause 7.1.1 of EN 3-7)

Sample no.		1	2	3
Measured duration of operation	(s)	23.5	24.1	24.2
Minimum required duration of operation (tables 3 to 8)		15		
Compliance with clause 7.1.1	(yes/no)	Yes		

4.2.3 Duration of operation, spread of measurements (clause 7.1.2 of EN 3-7)

Deviation of measured time from average discharge				
Average discharge duration	(s)	23.9		
Sample no.		1	2	3
Deviation of the measured value from the average	(%)	1.8	0.7	1.1
Maximum permissible deviation	(%)	≤ 15		
Compliance with clause 7.1.2	(yes/no)	Yes		

4.2.4 Residual charge (clause 7.2 of EN 3-7)

Sample no.		1	2	3
Determined residual charge	(kg)	0.04	0.04	0.03
Residue as a percentage of the nominal charge *)				
Actual	(%)	0.6	0.6	0.5
Maximum permissible residue	(%)	≤ 10		
Compliance with clause 7.2	(yes/no)	Yes		

*) Nominal charge (kg) for water based fire extinguishers: 6 l x 1.03 kg/l = 6.18 kg

4.2.5 Commencement of discharge (clause 7.3 of EN 3-7)

Sample no.		1	2	3
Measured space of time	(s)	< 1	< 1	< 1
Maximum permissible space of time	(s)	≤ 4		
Compliance with clause 7.3	(yes/no)	Yes		

4.2.6 Effective range of operating temperature (clause 7.4 of EN 3-7)

Temperature cycling		Cycle A		Cycle B	
Sample no.		1	2	3	4
Temperature of start of cycle	(°C)	T_{min}: -10	T_{min}: -10	T_{max}: 60	T_{max}: 60
Temperature at and of cycle	(°C)	T_{max}: 60	T_{max}: 60	T_{min}: - 10	T_{min}: -10
Commencement of discharge after opening control valve					
Measured space of time	(s)	< 1	< 1	< 1	< 1
Maximum permissible space of time	(s)	≤ 10			
Duration of operation					
Measured duration of operation	(s)	22.6	22.9	28.4	32.1
Maximum permissible duration of operation [1]	(s)	≤ 47,8			
Minimum required duration of operation	(s)	≥ 6			
Residual charge					
Determined residual charge	(kg)	0.01	0.01	0.1	0.1
Residue as a percentage of nominal charge [2]		0.2	0.2	1.6	1.6
Maximum permissible residue [3]	(%)	≤ 10			
Compliance with clause 7.4	(yes/no)	Yes			

1) The duration of operation must not be more than twice the value established at 20 °C (except CO_2 fire extinguishers).

2) Nominal charge (kg) for water based fire extinguishers see page 5.

3) 15 % for BC-fire extinguishing powder, 10 % for all other fire extinguishing media.

4.2.7 Class A fire rating (clause 15.2 of EN 3-7)

Test no.		1	2	3
Fire size as per I.2.1 of annex I		21 A		
Moisture of test fire wood: measured average	(%)	15	15	–
Permissible average moisture of fire wood	(%)	10 to 15		
Measured temperature inside test room before ignition	(°C)	17	17	–
Permissible temperature inside test room before ignition	(°C)	0 to 30		
Measured air speed inside test room before ignition	(ms^{-1})	0	0	–
Maximum permissible air speed before ignition	(ms^{-1})	≤ 0.2		
Test fire extinguished	(yes/no)	Yes	Yes	–
Measured time to extinguish test fire	(min:s)	1:47	2:33	–
Maximum permissible extinguishing time [1)]	(min)	5		
Measured O_2 concentration throughout test inside test room	(Vol%)	20.6	20.6	–
Minimum required O_2 concentration throughout test	(Vol%)	≥ 19		
Achieved test fire rating – fire class A		21 A		
Minimum required test fire rating – fire class A [2)]		8 A		
Compliance with clause 15.2	(yes/no)	Yes		

1) Time to extinguish: < 5 min up to 21 A; < 7 min greater than 21 A.
2) As per tables 3 and 4 of clause 6.4.2 of EN 3-7.

4.2.8 Class B fire rating (clause 15.3 of EN 3-7)

Test no.		1	2	3
Fire size as per I.3.1 of annex I		144 B		
Fire test carried out	(indoors / outdoors)	Outdoors		
Measured ambient temperature	(°C)	8	4	–
Permissible ambient temperature	(°C)	0 to 30		
Measured wind speed	(ms^{-1})	0.8	0.8	–
Maximum permissible wind speed	(ms^{-1})	≤ 3		
Test fire extinguished	(yes/no)	Yes	Yes	–
Measured time to extinguish test fire	(s)	82	107	–
Measured reminder of heptane after extinction	(mm)	> 5	> 5	–
Minimum required reminder of heptane after extinction	(mm)	≥ 5		
Achieved test fire rating – fire class B		144 B		
Minimum required test fire rating – fire class B *)		113 B		
Compliance with clause 15.3	(yes/no)	Yes		

*) As per tables 5 to 8 of clause 6.4.3 of EN 3-7.

5. Requirements for marking (clause 12 of the procedure instruction)

The submitted marking label is in accordance with the requirements for marking as follows:

- The words "fire extinguishing medium"
- Trade name according to the approval
- Certification number: SP 17/12
- Storage temperature range - 10 °C to 50 °C
- Required warning information: (e.g. health protection, water protection)
- Filling date
- Manufacturer/distributor

Annex 1: Infrared spectrogram of the fire extinguishing medium Fomtec Alpha R -10