REPORT
issued by an Accredited Testing Laboratory

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ISO/IEC 17025

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Test of foam concentrate according to EN 1568-2:2008

(1 appendix)

The department of Fire Technology at SP Swedish National Testing and Research Institute has on your request performed tests of foam concentrate according to EN 1568-2:2008.

Designation of foam concentrate:	Fomtec LS EXP
Type of foam concentrate:	Synthetic High Expansion Foam
Samples:	8 x 25 L cans, batch No 113511
Manufactured by:	Dafo Fomtec AB
Date of arrival at SP:	September 8, 2011
Date of fire tests:	October 4, 2011

Total results

The foam concentrate denoted Fomtec LS EXP fulfil the technical requirements stated EN 1568-2:2008 when tested with 2,4 % admixture as high expansion foam on petroleum fire.

Note: No examination of the foam concentrate in order do fulfil the requirements given in the EC Directives have been conducted.

SP Technical Research Institute of Sweden
Fire Technology - Fire Dynamics

Performed by

Magnus Bobert

Examined by

Tommy Hertzberg

Appendix

Test results

Test results

Numbering according to corresponding clause in the standard.

Suppliers's recommendations and characteristic values

According to the supplier the foam concentrate is intended for use with fresh and sea water for high expansion foam with an admixture ratio of 2,4 %.

According to the manufacturer the foam concentrate is not freeze protected. The foam concentrate was conditioned for 7 days at (60±2) °C without prior freezing and thawing.

Lowest temperature for use (LUT): ±5 °C

Introduction

No examination of the foam concentrate in order do fulfil the requirements given in the EC Directives have been conducted.

4, 5, 6, 7 Chemical-physical examination

Parameter	Clause in the standard	Before temperature conditioning	After temperature conditioning, Top sample	After temperature conditioning, Bottom sample
Sedimentation, vol%	4.1-4.2	< 0,1*	--	--
Dispersible through 180-µm-sieve	4.1-4.2	Yes*	--	--
Viscosity, +20 °C, cSt	--	31,0	--	--
Viscosity, 5 °C (LUT), cSt	5.1	60,2	--	--
pH-value, +20 °C	6	6,8	--	--
Surface tension, 2,4 % admixture (Ts), mN/m	7	24,2	24,0	24,1
Refractive index, +20 °C	--	1,367	--	--

* Before and after conditioning for 24 h at 60 °C.

-- Not included in the standard.

9. Expansion and drainage of foam

For foam generation the following types of water were used:

Fresh water; tap water taken from the municipal waterworks of Borås.

Sea water has been prepared by tap water and additives as specified in the standard.

Test conditions: Ambient temperature: 18 °C-21°C

Premix temperature: 18 °C-20°C

High expansion foam (annex G)

Fresh water, 2,4 % admixture, before conditioning				
Test No.	1	2	3	Mean value
Expansion ratio	994	1047	1004	1015
Drainage 25 %, min:s	16:54	14:12	14:15	15:07
Drainage 50 %, min:s	29:48	26:25	24:35	26:56

Fresh water, 2,4 % admixture, top sample after conditioning				
Test No.	1	2	3	Mean value
Expansion ratio	976	1021	1041	1013
Drainage 25 %, min:s	12:59	15:13	13:28	13:53
Drainage 50 %, min:s	24:27	28:50	25:07	26:08

Fresh water, 2,4 % admixture, bottom sample after conditioning				
Test No.	1	2	3	Mean value
Expansion ratio	1021	1023	1023	1022
Drainage 25 %, min:	16:02	16:26	16:28	16:19
Drainage 50 %, min:s	28:57	29:01	29:31	29:10

Appendix 1

Sea water, 2,4 % admixture, before conditioning				
Test No.	1	2	3	Mean value
Expansion ratio	952	893	918	921
Drainage 25 %, min:s	15:13	12:20	13:50	13:48
Drainage 50 %, min:s	24:56	21:53	23:05	23:18

Sea water, 2,4 % admixture, top sample after conditioning				
Test No.	1	2	3	Mean value
Expansion ratio	902	944	889	912
Drainage 25 %, min:s	11:57	13:01	10:21	11:46
Drainage 50 %, min:s	20:48	22:26	19:48	21:01

Sea water, 2,4 % admixture, bottom sample after conditioning				
Test No.	1	2	3	Mean value
Expansion ratio	1023	867	867	919
Drainage 25 %, min:s	13:47	11:15	11:38	12:13
Drainage 50 %, min:s	23:30	20:26	20:48	21:35

Comments to the chemical- physical examination and the expansion and drainage tests

The surface tension after conditioning, top and bottom sample, is within ±5% of the value obtained before conditioning.

The requirements for the chemical- physical properties are fulfilled in accordance with the standard.

The expansion ratio after conditioning, top and bottom sample, do not differ from each other or from the value obtained before conditioning by more than 20 %. The 25 % drainage time after conditioning, top and bottom sample, do not differ from each other or from the value obtained before conditioning by more than 20 %.

The requirements for the expansion and drainage of foam are fulfilled in accordance to the standard.

The foam concentrate is not temperature sensitive.

10. Test fire performance EN 1568-2:2008 (annex H)

All fire tests were conducted indoors in the fire hall of SP.

Designation	**Unit**	**Test No 1**	**Test No 2**	**Test No 3**
Type of foam, expansion grade		High	High	High
Date of test	y-m-d	2011-10-04	2011-10-04	2011-10-04
Admixture	%	2,4	2,4	2,4
Type of water		Fresh water	Sea water	Fresh water
Foam generator	L min^{-1}	6.1	6.1	6.1
Air temp.	°C	20	18	19
Fuel temp.	°C	18	18	18
Water temp.	°C	19	18	18
Foam solution temp.	°C	18	20	18
Wind speed	m/s	< 1	< 1	< 1
Extinction				
Type of fuel		Heptane	Heptane	Heptane
Preburn time	min	1	1	1
Start foam application	min:s	00:00	00:00	00:00
90 % control	min:s	01:25	00:42	01:12
99 % extinguished	min:s	01:54	00:52	01:38
Extinguished	min:s	01:58	00:56	01:45
Stop fan and foam application	min:s	02:00	02:00	02:00

Comments to the fire tests

The requirements for the test fire performance are fulfilled in accordance to the standard.

11. Container marking

Marking of the containers shall be made according to clause 11 in the standard in order to fulfil the requirements.