



Test Report - Fire Extinguishing Media to EN 1568-3:2008 Specification

Office: **Helsingborg**

Date: **03 December 2009**

This certificate is issued to **NARFOAMKAR**

to certify that at their request the undersigned Surveyor to this society did attend their designated test facilities for the purpose of selecting samples of **NKF 60** to confirm that the properties were within the technical specifications and were in accordance with EN 1568-3: 2008(E).

The necessary tests were witnessed and the results obtained were all within the limits given in the manufacturer's specification, and the requirements of EN 1568-3:2008(E).

Report:

Tolerance to Freezing and thawing (Annex E)

No stratification or non-homogeneity could be detected in the sample;

Sediment (Annex C)

Before ageing of the sample = <0.1%
 After ageing of the sample = <0.1%
 (24 hours at 60 °C)

Viscosity at 20 °C = 3 mPa.s

pH of the concentrate at 20 °C = 7.94

Surface Tension, Interfacial Tension and spreading coefficient (Annex F)

	<u>Surface Tension</u> Dynes/cm	<u>Interfacial Tension</u> Dynes/cm	<u>Spreading Coefficient</u> Dynes/cm
Before Conditioning	18.1	2.2	4.7
After Conditioning			
Top Sample	18.2	2.0	4.8
Bottom Sample	18.1	2.0	4.9
at -30 °C for 24 hrs followed by 48 hrs at 20 °C and at 60 °C for 7 days followed by 2 days at 20 °C			

Expansion and Drainage (Annex G)

	Fresh water		Sea water	
	Top	Bottom	Top	Bottom
Before Conditioning of the sample				
Expansion	7.18		6.89	
25% drainage time	1' 32"		1' 32"	
50% drainage time	3' 29"		3' 21"	
After Conditioning of the sample				
In accordance with Annex E				
Expansion	6.83	6.92	7.25	7.38
25% drainage time	1' 29"	1' 20"	1' 46"	1' 48"
50% drainage time	3' 05"	4' 00"	3' 38"	3' 38"

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Fire Tests (Annex H)

A) Gentle application in accordance with EN 1568-3

Fire Tests carried out in accordance with Annex H1 and H2 using:-

Fresh water and Sea water

Pre burn time	60 seconds
Foam application	300 seconds
Wait after foam application	300 seconds
Fire tray	1448 (4.5 m ²)
Fuel	Commercial Heptane on water bed
Air Temperature (°C)	11 °C
Water Temperature (°C)	17 °C
Fuel Temperature (°C)	17 °C
Foam Temperature (°C)	18 °C
Wind speed (m/sec.)	< 0.5

	<u>Fresh water</u>	<u>Sea water</u>	<u>Fresh water</u>
90% Control	1' 15"	1' 40"	1' 53"
99% Control	2' 15"	2' 00"	3' 00"
100% Extinction	2' 49"	2' 24"	3' 55"
25% Burnback time	15' 29"	17' 10"	16' 19"

From the above test results it is confirmed that NKF 60 is a film forming foam concentrate suitable for use at 3% concentration with potable water and sea water.

NKF 60 has tolerance to freezing and thawing (annex E). The product is suitable for storage above -30 °C. The fire extinguishing performance is Class III and the burnback level is B using potable water and sea water.

Performance level achieved:

Extinguishment Class III

Burnback resistance level B.

Client: NARFOAMKAR



Peter Andersson for Gerhard A Kucer
Surveyor to Lloyd's Register EMEA

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