

Project: Fire Extinguishing Media to
EN 1568-3 & EN 1568-4
Specifications

Certificate Number: MCH 02327401/1

Client: Dafo Fomtec AB
PO Box 683
135 26 Tyresö
Sweden

Office: Liverpool

**Client's Order
Number:**

Date: 20 May 2002

Order Status: Complete

Inspection Dates

First: 29.04.02.

Final: 17.05.02.

This certificate is issued to Dafo Fomtec AB, to certify that at their request, the undersigned Surveyor to this Society did select samples of FOMTEC FFFP ARC 3x3, for the purpose of confirming that the properties were within the technical specifications and were in accordance with EN 1568-3 and EN 1568-4.

The necessary tests were witnessed by the Surveyor and the results obtained were all within the limits given in the manufacturers specification, and the requirements of EN 1568-3 and EN 1568-4.

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 = < 0.25%
After ageing of the sample = < 0.25%
(24 hours at 60°C)

Viscosity at 20°C = 1250 mPa.s (Brookfield)

pH of the concentrate at 20°C = 7.0

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

| | <u>Surface Tension</u> | <u>Interfacial Tension</u> | <u>Spreading Coefficient</u> |
|---|------------------------|----------------------------|------------------------------|
| | Dynes/cm | Dynes/cm | Dynes/cm |
| Before conditioning | 19.0 | 3.5 | +2.5 |
| After conditioning at - -30°C for 24 hrs followed by 48 hrs at 20°C (four cycles) | | | |
| Top Sample | 18.5 | 3.5 | +3.0 |
| Bottom Sample | 18.9 | 3.5 | +2.6 |
| After conditioning at - 60°C for 7 days followed by 2 days at 20°C | | | |
| Top Sample | 18.3 | 3.1 | +3.6 |
| Bottom Sample | 18.5 | 3.2 | +3.3 |

Expansion and Drainage (Annex G)

| | | | | |
|--|---------|------------|---------|------------|
| Before conditioning of the sample | Fresh | Sea | | |
| Expansion = | 6.6 | 6.5 | | |
| 25% Drainage time = | 8'08" | 7'50" | | |
| After conditioning of the sample in accordance with Annex E | Fresh | Sea | | |
| Expansion = | Top 6.4 | Bottom 6.7 | Top 6.4 | Bottom 6.3 |
| 25% Drainage time = | 8'00" | 8'06" | 7'30" | 7'10" |

Fire Tests (Annex H)**A) Forceful Application in accordance with EN 1568-3**

Fire tests carried out in accordance with Annex H1 and H3 using:-

Fresh water and sea water

Preburn time 60 seconds

Foam application 180 seconds

Wait after foam application 300 seconds

Fire tray 144B (4.5m²)

Fuel Commercial Heptane on water bed

| | Fresh Water | | Sea Water |
|---------------------|-------------|---------|-----------|
| 90% Control | 51" | 53" | 54" |
| 99% Control | 87" | 104" | 108" |
| 100% Extinction | 160" | 141" | 169" |
| 25% Burnback time | 14'05" | 12'00" | 13'27" |
| Air Temp | 18.0 °C | 11.0 °C | 11.0 °C |
| Water Temp | 15.0 °C | 15.0 °C | 15.0 °C |
| Fuel Temp | 15.0 °C | 16.0 °C | 15.0 °C |
| Foam Temp | 15.0 °C | 16.0 °C | 15.0 °C |
| Wind Speed (m/sec.) | < 1.0 | < 1.0 | < 1.0 |

Fire Tests (Annex H) in accordance with EN 1568-4

Fire Tests carried out in accordance with Annex H using:-

Fresh water and sea water

| | |
|--------------------------------|---------------------------|
| Preburn time | 120 seconds |
| Foam application (fresh water) | 300 seconds |
| Foam application (sea water) | 180 seconds |
| Wait after foam application | 300 seconds |
| Fire tray | 55B (1.73m ²) |
| Fuel | Acetone |

| | Fresh Water | | Sea Water |
|---------------------|-------------|---------|-----------|
| 90% Control | 52" | 42" | 60" |
| 99% Control | 97" | 63" | 93" |
| 100% Extinction | 120" | 94" | 118" |
| 25% Burnback time | 10'01" | 10'12" | 10'27" |
| Air Temp | 13.0 °C | 13.0 °C | 13.0 °C |
| Water Temp | 16.0 °C | 16.0 °C | 16.0 °C |
| Fuel Temp | 15.0 °C | 15.0 °C | 15.0 °C |
| Foam Temp | 17.0 °C | 17.0 °C | 17.0 °C |
| Wind Speed (m/sec.) | < 1.0 | < 1.0 | < 1.0 |

From the above test results it is confirmed that FOMTEC FFFP ARC 3x3 is a film forming foam concentrate suitable for use with fresh and sea water. FOMTEC FFFP ARC 3x3 has tolerance to freezing and thawing (Annex E) and is suitable for storage above -30°C. The fire extinguishing performance class is 1 and the burnback resistance level is A using fresh and sea water for Hydrocarbon fuel. The fire extinguishing performance class is 1 and the burnback resistance level is B using fresh water and sea water for Polar solvent fuel.

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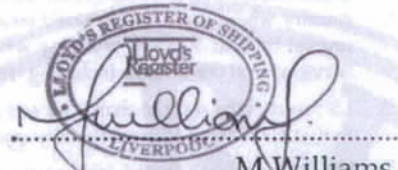
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Performance level achieved:

Extinguishment class 1 for Hydrocarbon fuel with fresh and sea water. Extinguishment class 1 for Polar fuel with fresh water and class 1 for Polar fuel with sea water.

Burnback resistance level A for Hydrocarbon fuel and level B for Polar fuel.



M. Williams
Surveyor to Lloyd's Register