

# Test Report 00000137

**Standard: ICAO Doc 9137-AN/898**

- Extinguishing Agents

**Flame Armor For Industry**



**FIRE TEST &  
RESEARCH LABORATORY**

ISO 17025:2017 ACCREDITED & BIS RECOGNISED



TC - 5659

# TEST REPORT

ICAO DOC 9137-AN/898 – Extinguishing Agents

ULR No.: TC565926000000137F

REPORT No.: 00000137

DATE: 08/06/2026

## 1. Introduction

This report has been prepared by FTRL and relates to the testing described below, conducted in accordance with ICAO DOC 9137-AN/898 – Extinguishing Agents.

|                |   |                          |
|----------------|---|--------------------------|
| ULR Number     | : | TC565926000000137F       |
| Report Number  | : | 00000137                 |
| Issue Date     | : | 02-06-2026               |
| Test Standard  | : | ICAO DOC 9137-AN/898     |
| Type of Sample | : | AFFF 3%                  |
| Testing Period | : | 02-06-2026 to 05-06-2026 |

### CLIENT DETAILS

Client : **Flame Armor For Industry**

Address : **Riyadh, Al Misfat Dist., Abdul Rahman Bin Salem 14545, Kingdom of Saudi Arabia.**

Country : **Saudi Arabia**

*This report shall not be reproduced in part without prior written approval of FTRL. The test results reported herein relate only to the sample(s) tested. This report does not constitute a certification of the product.*



Page 1 of 10

### LABORATORY:

9th Milestone, Sonipat-Gohana Road, VPO Rattangarh,  
NH-352A, Sonipat-131001, Haryana

### CONTACT US:

+91 85100 50500 | +91 85100 51500  
info@ftrl.in | www.ftrl.in

ULR No.: TC565926000000137F  
REPORT No.: 00000137  
DATE: 08/06/2026

## 2. Details of Samples Received

The following sample was received by FTRL for testing under the scope of ICAO DOC 9137-AN/898

### Part – A : Sample Identification

|                                   |   |                                                               |
|-----------------------------------|---|---------------------------------------------------------------|
| Type of Sample                    | : | <b>Aqueous Film Forming Foam Liquid Concentrate AFFF – 3%</b> |
| Referred Specification / Standard | : | <b>ICAO DOC 9137-AN/898</b>                                   |
| Quantity Received                 | : | <b>12 Litres</b>                                              |
| Packing & Sealing Details         | : | <b>Sample was packed in a HDPE Jerrycan</b>                   |
| Seal Intact / Not Intact          | : | <b>Seal Intact</b>                                            |
| Condition of Sample               | : | <b>Good</b>                                                   |
| FTRL Code of Sample               | : | <b>2606-102-6021</b>                                          |

### Part – B : Sample Receipt Details

|                           |   |                                 |
|---------------------------|---|---------------------------------|
| Date of Receipt of Sample | : | <b>02-06-2026</b>               |
| Testing Started On        | : | <b>02-06-2026</b>               |
| Testing Completed On      | : | <b>05-06-2026</b>               |
| Name of the Client        | : | <b>Flame Armor For Industry</b> |
| Supplementary Information | : | <b>NA</b>                       |





ULR No.: TC565926000000137F

REPORT No.: 00000137

DATE: 08/06/2026

### 3. Conditions of Issue

| Condition               | Statement                                                                                                                                                          |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Scope of Results        | The results contained herein apply only to the particular sample(s) tested and to the specific tests carried out as detailed in this report.                       |
| Reproduction            | This report shall not be reproduced in part, abridged or abstracted without the written consent of FTRL. It shall not be used for advertisement or legal purposes. |
| Liability               | Total liability of this laboratory is limited to the invoiced amount only. Results are based on tested samples as received.                                        |
| Remnant Samples         | Remnant samples (if any) will be disposed of within 10 days after completing 90 days from the test report issue date, unless a prior written request is received.  |
| Confidentiality         | This report is prepared exclusively for the client named herein. FTRL accepts no responsibility to third parties for the content of this report.                   |
| Customer Data           | Any information or data provided by the customer is clearly identified and remains the responsibility of the customer.                                             |
| Sampling                | The Laboratory did not participate in sampling. The above test results are based on the tested sample(s) as received.                                              |
| Statement of Conformity | Decision rule based on IEC Guide 115:2023, Clause 4.3.3 Simple Acceptance. Measurement uncertainty not applied per IEC Guide 115:2023, Cl. 4.3.3.                  |



**LABORATORY:**

9th Milestone, Sonipat-Gohana Road, VPO Rattangarh,  
NH-352A, Sonipat-131001, Haryana

**CONTACT US:**

+91 85100 50500 | +91 85100 51500  
info@ftrl.in | www.ftrl.in

ULR No.: TC565926000000137F  
REPORT No.: 00000137  
DATE: 08/06/2026

#### 4. Objectives & Report Summary

##### Test Objective

|          |   |                                                                                                     |
|----------|---|-----------------------------------------------------------------------------------------------------|
| Standard | : | ICAO DOC 9137-AN/898 – Extinguishing Agents                                                         |
| Purpose  | : | To perform testing against physical, chemical and performance requirements of ICAO DOC 9137-AN/898. |
| Scope    | : | All clauses listed in Section 6 were assessed unless marked N/A.                                    |

##### Report Summary

The sample was submitted by the client and testing commenced on 02-06-2026. All testing was conducted at FTRL, 9th Milestone, Sonipat-Gohana Road, VPO Rattangarh, NH-352A, Sonipat, Haryana – 131001, India, using calibrated laboratory equipment traceable to national standards.

Testing was performed on samples received directly from the client. Test methods, environmental conditioning, instrumentation and acceptance criteria followed the requirements of ICAO DOC 9137-AN/898 and relevant referenced annexes.

##### Deviations & Limitations

*NOTE: No deviations from ICAO DOC 9137-AN/898 were recorded during testing unless explicitly stated in the individual clause results in Section 7.*



ULR No.: TC565926000000137F  
REPORT No.: 00000137  
DATE: 08/06/2026

## 5. Glossary of Terms

Result codes used throughout this report.

| Term     | Definition                                                                                |
|----------|-------------------------------------------------------------------------------------------|
| PASS     | Complies. Tested at FTRL using calibrated equipment.                                      |
| PASS*    | Complies – compliance more probable than non-compliance within measurement uncertainty.   |
| FAIL     | Non-compliance. Product does not meet clause requirements.                                |
| FAIL*    | Non-compliance more probable than compliance (within uncertainty band).                   |
| N/A      | Not applicable to the design under consideration.                                         |
| N/T      | Not tested. Refer to previously tested item or referenced report.                         |
| [value]* | Measured result within specification limit by a margin less than measurement uncertainty. |



ULR No.: TC565926000000137F  
REPORT No.: 00000137  
DATE: 08/06/2026

## 6. Summary of Test Results

Detailed results for each clause are in Section 7. The table below gives an at-a-glance overview of all tested clauses.

| Item | Clause       | Title                              | Applicable | Conformity |
|------|--------------|------------------------------------|------------|------------|
| 1.   | 8.1.5        | pH                                 | Yes        | PASS       |
| 2.   | 8.1.5        | Viscosity                          | Yes        | PASS       |
| 3.   | 8.1.5        | Sedimentation                      | Yes        | PASS       |
| 4.   | 8.1.7.6      | Expansion                          | Yes        | PASS       |
| 5.   | 8.1.7.6      | 25% Drainage Time                  | Yes        | PASS       |
| 6.   | 8.1.8.3 (a)  | Air Temperature                    | Yes        | PASS       |
| 7.   | 8.1.8.3 (b)  | Temperature of Foam Solution       | Yes        | PASS       |
| 8.   | 8.1.8.3 (c)  | Wind Speed                         | Yes        | PASS       |
| 9.   | 8.1.8.2      | Shape & Area of the Fire Pan       | Yes        | PASS       |
| 10.  | 8.1.9.2      | Water Quantity                     | Yes        | PASS       |
| 11.  | 8.1.8.2 (c)  | Fuel for Fire Test                 | Yes        | PASS       |
| 12.  | 8.1.8.2 (c)  | Fuel Quantity                      | Yes        | PASS       |
| 13.  | 8.1 (c)      | Application Density                | Yes        | PASS       |
| 14.  | 8.1.9.2      | Pre-burn Period                    | Yes        | PASS       |
| 15.  | 8.1.9.2      | Total Application Time             | Yes        | PASS       |
| 16.  | 8.1.10.1     | Extinction Time                    | Yes        | PASS       |
| 17.  | 8.1.8.2 (f)  | Shape & Dimension of Burn Back Pot | Yes        | PASS       |
| 18.  | 8.1.8.2 (f)  | Fuel Quantity in Burn Back Pot     | Yes        | PASS       |
| 19.  | 8.1.10.1 (b) | 25% re-ignition time               | Yes        | PASS       |



### LABORATORY:

9th Milestone, Sonipat-Gohana Road, VPO Rattangarh,  
NH-352A, Sonipat-131001, Haryana

### CONTACT US:

+91 85100 50500 | +91 85100 51500  
info@ftrl.in | www.ftrl.in

ULR No.: TC565926000000137F

REPORT No.: 00000137

DATE: 08/06/2026

## 7. Detailed Test Results

### PART-C – TEST RESULTS

Following Test Results have been obtained on the sample.

| Sr. No. | Test Parameter<br>(ICAO Documents 9137-AN/898 Part- 1) | Requirements as per ICAO Documents<br>9137-AN/898 Part- 1 Fourth Edition<br>2015                                       | Test Observations |
|---------|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-------------------|
| 1.      | pH<br>(Cl. 8.1.5)                                      | 6.0 to 8.5 at 27±5°C                                                                                                   | 7.92 at 29.1°C    |
| 2.      | Viscosity<br>(Cl. 8.1.5)                               | Less than 200 cSt, at the lowest temperature<br>up-to which sample remains pourable.<br>(1 cSt = 1 mm <sup>2</sup> /s) | 4.05 cSt at 4°C   |
| 3.      | Sedimentation<br>(Cl. 8.1.5)                           | Maximum 0.5% at 27±5°C                                                                                                 | 0.02% at 29.1°C   |

### Environmental conditions

### for determination of Expansion Ratio and Quarter Drainage Period

| Sr. No. | Test Parameter<br>(ICAO Documents<br>9137-AN/898 Part- 1) | Requirements as per ICAO Documents<br>9137-AN/898 Part- 1 Fourth Edition<br>2015 | Test Observations  |
|---------|-----------------------------------------------------------|----------------------------------------------------------------------------------|--------------------|
| 4.      | Expansion<br>(Cl. 8.1.7.6)                                | (For AFFF) 6 to 10 optimum limit at Temp.<br>15°C (minimum) of Foam solution     | 9.9 at 28.8°C      |
| 5.      | 25% drainage time<br>(Cl. 8.1.7.6)                        | (For AFFF) > 3 minutes optimum limit at<br>temp. 15°C (minimum) of Foam solution | 03 minutes 32 sec. |



#### LABORATORY:

9th Milestone, Sonipat-Gohana Road, VPO Rattangarh,  
NH-352A, Sonipat-131001, Haryana

#### CONTACT US:

+91 85100 50500 | +91 85100 51500  
info@ftrl.in | www.ftrl.in





ULR No.: TC565926000000137F

REPORT No.: 00000137

DATE: 08/06/2026

**Environment conditions for carrying out Fire Test & Burn back  
Resistance Test**

**Potable water was used to make premix foam-water solution to generate foam as well as substrate in the fire tray.**

| Sr. No. | Test Parameter<br>(ICAO Documents<br>9137-AN/898 Part- 1)                          | Requirements as per ICAO<br>Documents 9137-AN/898<br>Part- 1 Fourth Edition 2015 | Test Observations                                     |
|---------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-------------------------------------------------------|
| 6.      | Air Temperature<br>{Cl. 8.1.8.3 (a)}                                               | 15°C (minimum)                                                                   | 30.4°C                                                |
| 7.      | Temperature of Foam<br>solution<br>{Cl. 8.1.8.3 (b)}                               | 15°C (minimum)                                                                   | 28.8°C                                                |
| 8.      | Wind Speed<br>{Cl. 8.1.8.3 (c)}                                                    | 3 m/s (maximum)                                                                  | 0.2 m/s                                               |
| 9.      | Shape & area of the fire<br>pan<br>(Cl. 8.1.8.2)                                   | Circular<br>Area = 4.5m <sup>2</sup><br>Depth = 200mm                            | Circular<br>Area = 4.5m <sup>2</sup><br>Depth = 200mm |
| 10.     | Quantity of water to be<br>taken as substrate in the<br>fire tray<br>(Cl. 8.1.9.2) | 100 liters                                                                       | 100 liters                                            |
| 11.     | Fuel for Fire Test<br>{Cl. 8.1.8.2 (c)}                                            | Kerosene , Avtur Jet A 1                                                         | Avtur Jet A 1                                         |
| 12.     | Quantity of fuel to be<br>taken in the fire tray<br>{Cl. 8.1.8.2 (c)}              | 100 liters                                                                       | 100 liters                                            |
| 13.     | Application density of<br>Foam-Water solution<br>{Table 8.1 (c)}                   | 2.5 lpm/m <sup>2</sup>                                                           | 2.5lpm/m <sup>2</sup>                                 |
| 14.     | Preburn period<br>(Cl. 8.1.9.2)                                                    | 60 seconds                                                                       | 60 seconds                                            |
| 15.     | Total duration for<br>application of foam<br>(Cl. 8.1.9.2)                         | 120 seconds                                                                      | 120 seconds                                           |



**LABORATORY:**

9th Milestone, Sonipat-Gohana Road, VPO Rattangarh,  
NH-352A, Sonipat-131001, Haryana

**CONTACT US:**

+91 85100 50500 | +91 85100 51500  
info@ftrl.in | www.ftrl.in



ULR No.: TC565926000000137F

REPORT No.: 00000137

DATE: 08/06/2026

| Sr. No. | Test Parameter<br>(ICAO Documents<br>9137-AN/898 Part- 1)                                                                                                                                                      | Requirement as per the revised<br>ICAO Test Protocol Documents No.<br>9137-AN/898 Airport Fire Services<br>Manual Part 1, Performance Level<br>'B'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Test Observations for<br>Performance level 'B'                                                                                                                                                                                                    |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16.     | Extinction time<br>(CI 8.1.10.1)<br>Note (a) & (b) for testing<br>authorities                                                                                                                                  | 60 seconds (maximum). However, sample shall be deemed to have passed the test even if the complete extinction time is greater than 60 seconds provided it is found to have met the following conditions: -<br>i. Flame flickers observed immediately at the end of application of foam for 60 seconds are found restricted to the circumference of the inner edge of fire tray.<br>ii. Immediately at the end of application of foam for initial 60 seconds the cumulative length of the flame flickers shall not be more than one fourth of the circumference of the tray.<br>iii. Flames flickers if any left out un-extinguished immediately at the end of application of foam for 60 seconds shall be completely extinguished during the second minute of foam application.<br>iv. Total foam application time is 120 seconds. | Complete extinction time is 88 seconds.<br><br>At the end of 60 seconds of foam application there were flame flickers which were less than one fourth of the circumference of the tray along the inner edge which got extinguished in 88 seconds. |
| 17.     | Burn Back Pot<br>Shape & dimensions.<br>{Cl. 8.1.8.2 (f)}                                                                                                                                                      | Circular<br>Diameter = 300 mm<br>Height = 200 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Circular<br>Diameter = 300 mm<br>Height = 200 mm                                                                                                                                                                                                  |
| 18.     | Quantity of fuel to be taken<br>in the burn back pot.<br>{Cl. 8.1.8.2 (f)}                                                                                                                                     | 2 litres of gasoline or kerosene.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 2 liters of gasoline                                                                                                                                                                                                                              |
| 19.     | 25% re-ignition time<br>counted from the moment<br>of placement of the burning<br>burn back pot at the center<br>of the fire tray 2 minutes<br>after completion of<br>application of foam<br>{Cl. 8.1.10.1(b)} | Burn back resistance time shall be minimum 5 minutes for 25% of area of the fire test tray to catch fire.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Observed up to 5 minutes, the area around the hot burning burn back pot did neither open up nor caught fire.                                                                                                                                      |



**LABORATORY:**

9th Milestone, Sonipat-Gohana Road, VPO Rattangarh,  
NH-352A, Sonipat-131001, Haryana

**CONTACT US:**

+91 85100 50500 | +91 85100 51500  
info@ftrl.in | www.ftrl.in

ULR No.: TC565926000000137F  
REPORT No.: 00000137  
DATE: 08/06/2026

## 8. Remarks & Statement of Conformity

### STATEMENT OF CONFORMITY

The sample of mechanical foam for firefighting AFFF 3% type has been found meeting the requirements of the physical properties, chemical properties & fire performance tests including 25% re-ignition period as far as tested as per the revised ICAO test I document no. 9137-AN/898 Airport fire services manual part-1 Rescue & Fire fighting Fourth Edition, 2015 for performance level 'B'.

### General Remarks:

- Decision rule for statement(s) of conformity is based on IEC Guide 115:2023, Clause 4.3.3 Simple Acceptance. Measurement uncertainty is not applied when providing statements of conformity in accordance with IEC Guide 115:2023, Clause 4.3.3.
- The above test results are based on the tested sample(s) as received.
- The Laboratory is responsible for all the information in the test report except for the information provided by the customer. The laboratory did not participate in sampling.
- The Remnant Samples (if any) will be disposed of within 10 days after completing 90 days from the Test Report issuing date, unless a written request is given before testing.
- This Report shall not be reproduced in part and shall not be used for the purpose of advertisements or legal action.
- Total liability of our Laboratory is limited to the invoiced amount only.

## 9. Approval & Sign-Off

This report has been prepared, reviewed and issued by the personnel identified below for and on behalf of Fire Test & Research Laboratory (FTRL).

| Authorized By                                                                                                   | Reviewed & Issue By                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| <br>Manjita<br>Sr. Scientist | <br>Rahul Chhillar<br>Director |

**FTRL • Fire Test & Research Laboratory • END OF REPORT**

Page 10 of 10

### LABORATORY:

9th Milestone, Sonipat-Gohana Road, VPO Rattangarh,  
NH-352A, Sonipat-131001, Haryana

### CONTACT US:

+91 85100 50500 | +91 85100 51500  
info@ftrl.in | www.ftrl.in