Test score report

Korea Fire & Marine Insurance Association

Disaster Prevention Test Research Institute

Transcript Number: R2024-0413

Right) 12661 Gyeongchung-daero 1030, Ganam-eup, Yeoju-si, Gyeonggi-do TEL 031-887-6600 FAX 031-887-6620

1. Client

* Company (organization) name: FES Solution Co., Ltd. Representative: Lee Sang-yeop

* Address: 1907, 19th floor, 92 Saemunan-ro, Jongno-gu, Seoul (1st Sinmun-ro, Gwanghwamun Office Building)

* Contract Date: August 22, 2024

2. Sample name: Additive agent (F-500)

3. Test Date: October 15, 2024

4. Test purpose: Performance verification

5. Test location: - Fixed test room & On-site test

(Address: Same as the address of the Fire Prevention Testing Research Institute)

6. Test method: Standards presented by the client

7. Test environment: Temperature: (25 ± 2) *C, Humidity: (55 ± 5) % RH

8. Test results:

Test items	Test Results	note
Electric car Fire suppression test	Fire suppression time: 8 minutes 30 seconds	Details: See 'Test Content'

* The contents of this report are limited to the samples provided by the test requester, and use for any purpose other than the intended purpose is prohibited.

check	hands-on worker Name: Jeong Jong Jin (signature)	Approver (Technical Manager) Name: Hong Seong-ho (signature)

Korea Fire & Marine Insurance Association

Director of Disaster Prevention Test Research Institute

Test contents

1. Overview

This test was conducted on a fire extinguishing agent (F-500) commissioned by FES Solution Co., Ltd., using the test method suggested by the client. To conduct an electric vehicle fire test to verify the fire suppression performance of the fire extinguishing agent.

2. Test body

(1) Product name: Fire extinguishing agent (F-500 EA)

(2) Detailed specifications (physical and chemical properties)

Appearance	Appearance: liquid, Color: amber
Odor	Mild smell
PH	6.9 ÿ 7.1
Melting point/freezing point	-3 °C
Initial boiling point and boiling range	118 °C
Flash Point	> 93°C
Flammability (solid, gas)	Not applicable
Vapor Pressure	26.66 hPa @ 25°C
Solubility	100% water solubility
Specific gravity	0.98 ~ 1.0
Viscosity	70 - 100 Centipoise (cPs, cP) or mPas

3. Test criteria: Presented by the client

4. Test subjects

Test Date	2024.10.15
Vehicle Model	Kona EV
Battery Type	Lithium ion
Battery Capacity	64 kWh
Battery Voltage	356 V

5. Test method and performance

(1) Place the electric vehicle in the center of the test room.

(2) Install and arrange the measurement items (CCTV) as shown in Figure 1.

(3) Once the test preparation is complete, create a flame in the center of the battery using the ignition method suggested by the client.

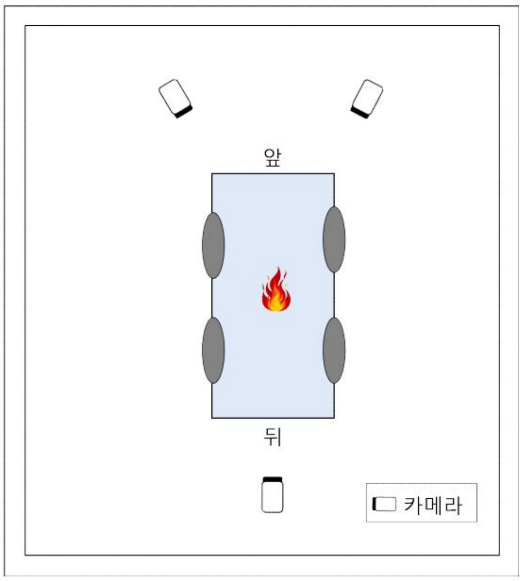
(4) Check the size of the flame according to the client's scenario and remove the ignition device.

(5) After that, observe the flame characteristics and measure the data.

(6) If the client requests extinguishment, release the extinguishing agent through the bottom of the electric vehicle (battery area) and the windows.

(7) After confirming the presence of flames and the decrease in battery temperature, the test is terminated.

(8) If no flames or signs of thermal runaway are observed with the naked eye after releasing the extinguishing agent, the point in time when the release of the extinguishing agent is terminated is considered as extinguishment.



[Figure 1] Overview of measurement items for electric vehicle fire extinguishing agent performance test

6. Test Results

(1) Test Results Summary

Test items	Fire suppression
Measurement results	The fire has been extinguished.
Suppression time	8 minutes 30 seconds

(2) Test photo

[Figure 2] Before the test

[Figure 3] During the test

[Figure 4] After the test