



## TEST REPORT



68, Gajaeul-ro, Seo-gu, Incheon, 22829, Korea

TEL 82-41-589-0010

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Report No. : THF-2024-000390

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## 1. Applicant

- Company Name : Saint-Gobain Isover Korea Co.,Ltd
- Address : 1F, 70, Bugokgongdan 1-gil, Songak-eup, Dangjin-si, Chungcheongnam-do, Republic of Korea
- Date of receipt : 20240610

## 2. Test target product

- Sample Name : WeatherProof Black(Glass Fiber Tissue)
- Applied Range : Exterior Finishing Materials
- Product No. : WeatherProof Black(Glass Fiber Tissue)\_240529

3. Test Standard : Ministry of Land, Infrastructure and Transport Notice No. 2023-24 'Quality recognition and management standards for building materials, etc.'

4. Purpose of the report : QUALITY CONTROL

5. Test period : 2024. 06. 10. ~ 2024. 07. 22.

6. Test Environment : Temperature : (15~30) °C, humidity : (20~80) % R.H.

7. Test Results : Suitable with test results according to Ministry of Land, Infrastructure and Transport Notice No. 2023-24 'Quality recognition and management standards for building materials, etc.'

①. The test results of this test report are only limited in to the samples and sample names provided by the client and do not guarantee the quality of all products of the client. You Can check website ([www.ktr.or.kr](http://www.ktr.or.kr)) or QR code to verify the authenticity of the certificate.

②. This test report shall be used only within the purpose of its defined usage and shall not be used for public relation, advertisement and lawsuit.

③. This test report is only valid when printed on KTR original report paper with hologram and when re-issued by KTR. The copy and the electronic file of the test report are only for reference.

|         |                                       |   |
|---------|---------------------------------------|---|
| Confirm | Prepared by                           | Technical Manager                         |
|         | Name : Choi Jung Rak <i>Choi Jung</i> | Name : Lee Seong-gyu <i>Lee Seong-gyu</i> |

Issue Date : 2024. 07. 22.

Korea Testing &amp; Research Institute

President *Kim Hyun cheol*

QR Code to verify genuineness

\* Test reports are valid for 3 year from the date of issuance of the report.



### 8. Test Results

| Division                     | Test Item  | Unit              | Test Results    |                 |                 | Criteria                     | Test Method | Test Site |
|------------------------------|--|-------------------|-----------------|-----------------|-----------------|------------------------------|-------------|-----------|
|                              |  |                   | 1st             | 2st             | 3st             |                              |             |           |
| Exterior Finishing materials | Total Heat Release   | MJ/m <sup>2</sup> | 0.9             | 1.5             | 1.0             | 8 MJ/m <sup>2</sup> or below | (1)         | A         |
|                              | Heat release rate test<br>Heat Release Rate(HRR) time over 200 kW/m <sup>2</sup>         | s                 | 0               | 0               | 0               | 10 s below                   |             |           |
|                              | Whole melting of core material or any cracking or hole that penetration to the rear side | -                 | not be observed | not be observed | not be observed | should not be observed       |             |           |
|                              | Gas Hazard Test<br>Average deed stopping time  | min:s             | 14:55           | 14:33           | -               | than 9 min or more           |             |           |

- ※ Performance test was done according to the Article 24, (1) and (2) of the 「Ministry of Land, Transport and Maritime Affairs, Notification No. 2023-24」.(Client provided)
- ※ Suitable to the heat release rate (cone calorimeter method) test result according to Article 24, (1) of 「Notice No. 2023-24 of the Ministry of Land, Infrastructure and Transport」.
- ※ Suitable to gas hazard test results according to Article 24, (2) of 「Notification No. 2023-24 of the Ministry of Land, Infrastructure and Transport」.
- ※ Test reports are valid for three years from the date of issuance of the report according to the Article 29, (4) of the 「Ministry of Land, Transport and Maritime Affairs, Notification No. 2023-24」.
- ※ Test Method
  - (1) 「Ministry of Land, Infrastructure and Transport Notice No. 2023-24」
- ※ Test site A. Korea Testing & Research Institute Building C, 68, Gajaeul-ro, Seo-gu, Incheon, Republic of Korea
- ※ Quasi-noncombustible materials performance criteria in the Article 24(1) and (2) of the 「Ministry of Land, Transport and Maritime Affairs, Notification No. 2023-24」.
  - 1) The total heat release should be 8MJ/m<sup>2</sup> or below for 10 minutes after the heating start.
  - 2) The maximum heat release rate for 10 minutes shall not exceed 200 kW/m<sup>2</sup> in a row for than 10 seconds or more.
  - 3) After heating for 10 minutes, there should be not observe harmful cracks(a deformation in which the test object splits and the floor is visible), holes(a deformation in which the bottom surface is visible from the surface of the test object), and melting(a case where the test object melts and the floor is visible) penetrating the test specimen. There should not be partial melting or contraction exceed 20% of the thickness of the test specimen.
  - 4) The average time of suspension of behavior in experimental mice should be more than 9 minutes.



■ Test conditions for Heat release rate

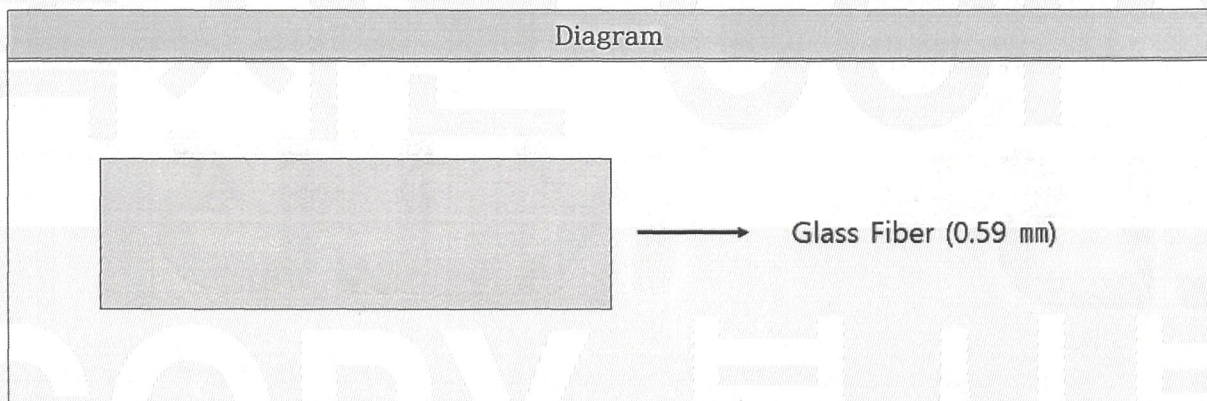
|   |  |               |
|---|--|---------------|
|   | Date of Test   | 2024. 06. 28. |
| Burning surface   | Separate display of Burning surface                        |               |
| Testing Environment   | Temperature (23 ± 2) °C, Relative Humidity (50 ± 5) % R.H. |               |
| Test Time (min)   | 10   |               |
| Orifice constant C<br>(m <sup>1/2</sup> ·g <sup>1/2</sup> ·K <sup>1/2</sup> ) | 0.041 66   |               |
| Heat Flux (kW/m <sup>2</sup> )  | 50 ± 1   |               |
| Exhaust system flow<br>(m <sup>2</sup> /s)                                    | 0.024 ± 0.002  |               |

■ Heat release rate test conditions

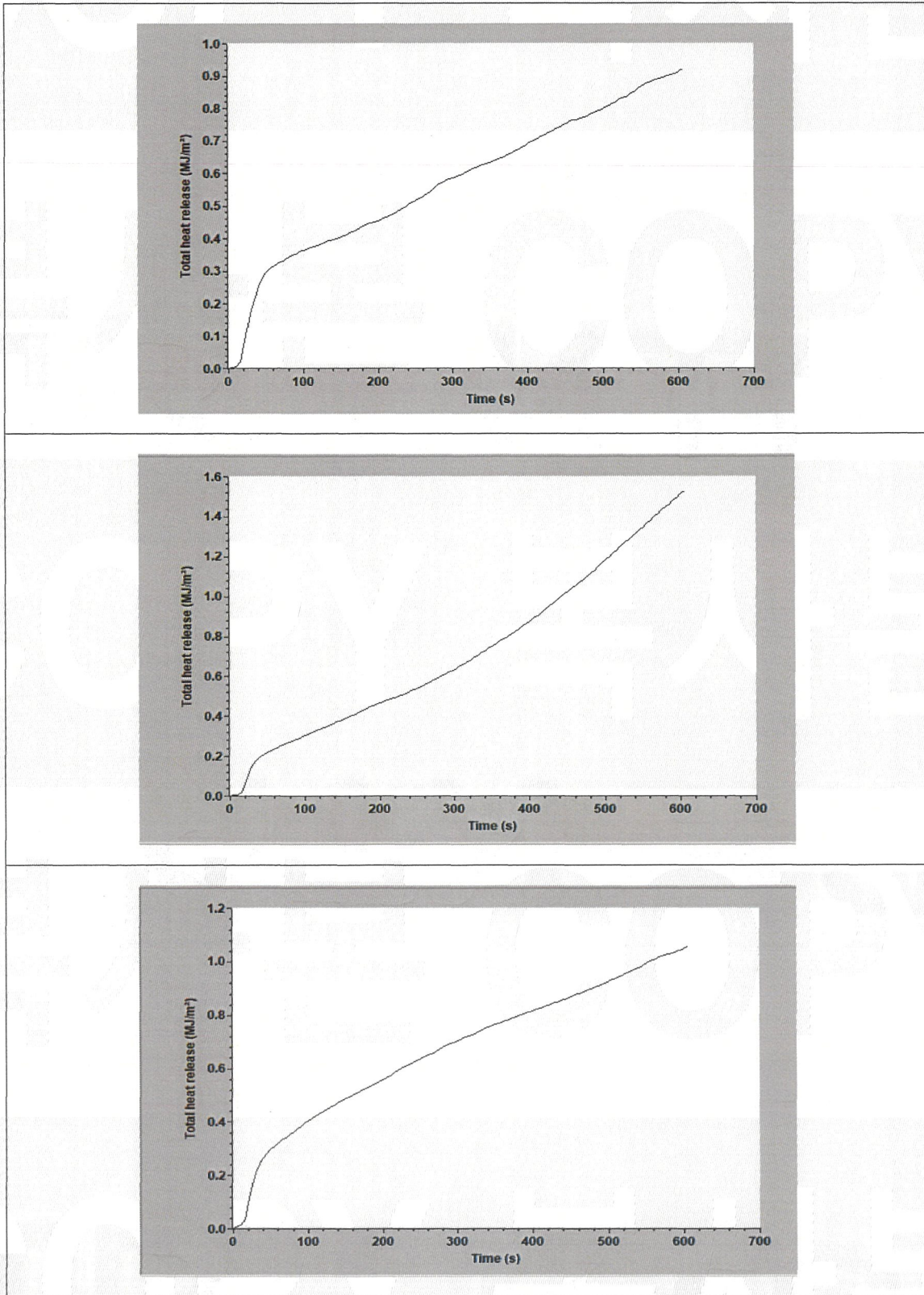
|                                    |       |  |       |       |       |      |
|------------------------------------|-------|--|-------|-------|-------|------|
| Width (mm)                         | No. 1 | 98.3   | No. 2 | 98.6  | No. 3 | 98.4 |
| Length (mm)                        |       | 98.4   |       | 98.2  |       | 98.3 |
| Thickness (mm)                     |       | 0.6  |       | 0.6   |       | 0.7  |
| Mass (g)                           |       | 1.4  |       | 1.6   |       | 1.6  |
| Total density (kg/m <sup>3</sup> ) |       | 99.9   |       | 101.6 |       | 98.1 |
| Core density (kg/m <sup>3</sup> )  |       | -  |       | -     |       | -    |
| Pretreatment                       |       | Temperature (23 ± 2) °C, Relative Humidity (50 ± 5) % R.H. |       |       |       |      |

■ Composition of specimen

| Composition | Quality of the material | Manufacturer | Model | Thickness (mm) |
|-------------|-------------------------|--------------|-------|----------------|
| Facing      | Glass Fiber             | ADFORS       | UH60B | 0.59 mm        |



■ Heat release rate Test Temperature Graph(Total heat release)



■ Gas Hazard test result

| Test Items                               | Unit  | Test result |       | Test Method |
|--|-------|-------------|-------|-------------|
|  |       | No. 1       | No. 2 |             |
| Average deed stopping time of Test Mouse | min:s | 14:55       | 14:33 | (1)         |

|              |               |
|--------------|---------------|
| Date of Test | 2024. 07. 05. |
|--------------|---------------|

■ Gas Hazard Test Conditions

|                                   |  |             |     |   |                    |
|-----------------------------------|--|-------------|-----|---|--------------------|
| Heating Condition                 | Start heating with a sub-heat source (LPG) for 3 minutes first, heat with a main heat source (full heat) from 3 minutes, and end after 6 minutes (sub-heat source: 6 minutes, main heat source: 3 minutes) |             |     |   |                    |
| Burning surface (Client provided) | Separate display of Burning surface  |             |     |   |                    |
| Testing Environment               | Temperature (23 ± 2) °C, Relative Humidity (50 ± 5) % R.H.   |             |     |   |                    |
| Test Time (min)                   | 15   |             |     |   |                    |
| Test Mouse                        | Line   | ICR, Female | Age | 5 | Weight (18 ~ 22) g |

■ Gas Hazard Test Specimen Conditions

|                                    | No. 1  | No. 2 |
|------------------------------------|--|-------|
| Width (mm)                         | 219.3  | 219.9 |
| Length (mm)                        | 218.6  | 218.2 |
| Thickness (mm)                     | 0.5  | 0.5   |
| Mass (g)                           | 2.8  | 2.8   |
| Total density (kg/m <sup>3</sup> ) | 99.2   | 101.7 |
| Pretreatment                       | Temperature (23 ± 2) °C, Relative Humidity (50 ± 5) % R.H. |       |

■ Report on the end of animal testing

|                           |              |
|---------------------------|--------------|
| Committee approval number | IAC2024-1494 |
| Committee approval date   | 2024-06-21   |



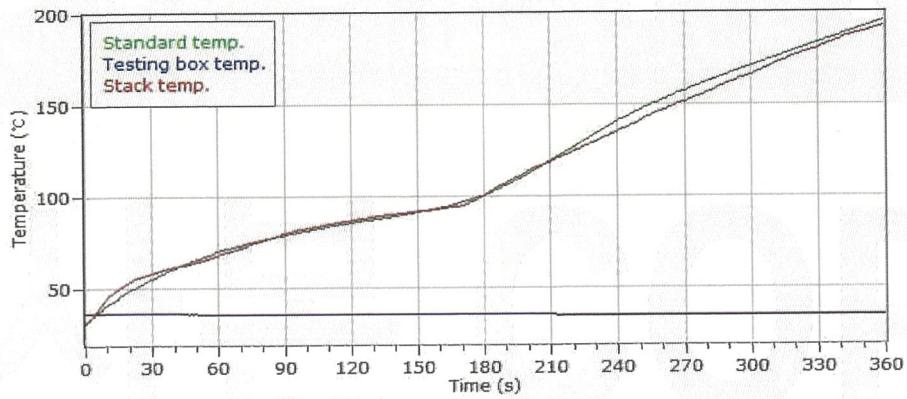
■ Standard Form Test

- Standard Form : Fiber Reinforced Calcium Silicate Board

< Exhaust Temperature >

| Elapsed Time<br>(s) | Standard Temperature<br>(°C) | Measure Temperature<br>(°C) | Temperature range<br>(°C) |
|---------------------|------------------------------|-----------------------------|---------------------------|
| 0.0                 | 30                           | 30.7                        | -0.7                      |
| 60.0                | 70                           | 67.4                        | 2.6                       |
| 120.0               | 85                           | 86.2                        | -1.2                      |
| 180.0               | 100                          | 99.8                        | 0.2                       |
| 240.0               | 140                          | 134.5                       | 5.5                       |
| 300.0               | 170                          | 165.4                       | 4.6                       |
| 360.0               | 195                          | 192.2                       | 2.8                       |

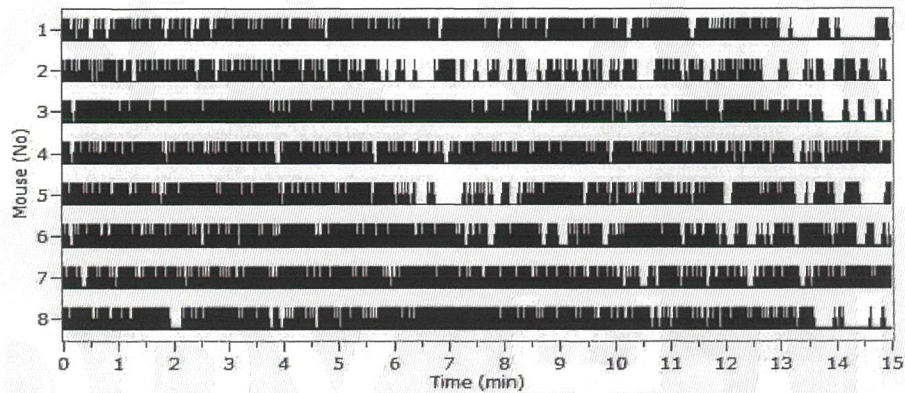
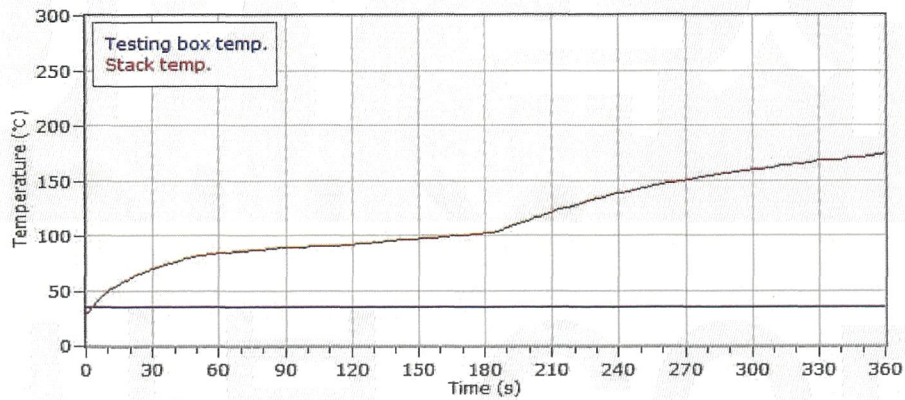
< Exhaust Temperature Curve >



■ Hazardous gas test result(No. 1)

| Elapsed Time (s) | Measure Temperature (°C) |
|------------------|--------------------------|
| 0                | 29.9                     |
| 60               | 83.4                     |
| 120              | 91.3                     |
| 180              | 101.4                    |
| 240              | 137.9                    |
| 300              | 159.1                    |
| 360              | 173.8                    |

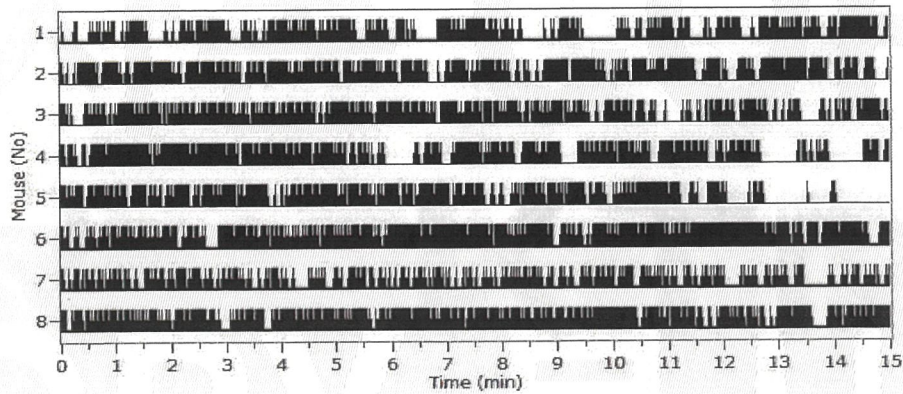
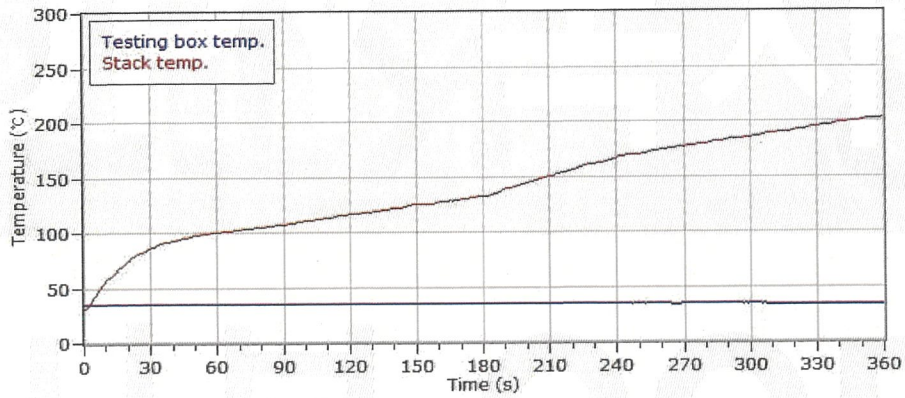
| Spinning box               | Stop time   |
|----------------------------|-------------|
| M1                         | 14 min 56 s |
| M2                         | 14 min 53 s |
| M3                         | 14 min 59 s |
| M4                         | 15 min 00 s |
| M5                         | 15 min 00 s |
| M6                         | 15 min 00 s |
| M7                         | 15 min 00 s |
| M8                         | 14 min 52 s |
| Average                    | 14 min 58 s |
| Standard deviation         | 00 min 03 s |
| Average deed stopping time | 14 min 55 s |



■ Hazardous gas test result(No. 2)

| Elapsed Time (s) | Measure Temperature (°C) |
|------------------|--------------------------|
| 0                | 30.4                     |
| 60               | 99.2                     |
| 120              | 115.9                    |
| 180              | 131.7                    |
| 240              | 166.1                    |
| 300              | 184.8                    |
| 360              | 202.7                    |

| Spinning box               | Stop time   |
|----------------------------|-------------|
| M1                         | 14 min 59 s |
| M2                         | 14 min 59 s |
| M3                         | 14 min 58 s |
| M4                         | 14 min 59 s |
| M5                         | 14 min 01 s |
| M6                         | 15 min 00 s |
| M7                         | 14 min 59 s |
| M8                         | 15 min 00 s |
| Average                    | 14 min 52 s |
| Standard deviation         | 00 min 19 s |
| Average deed stopping time | 14 min 33 s |

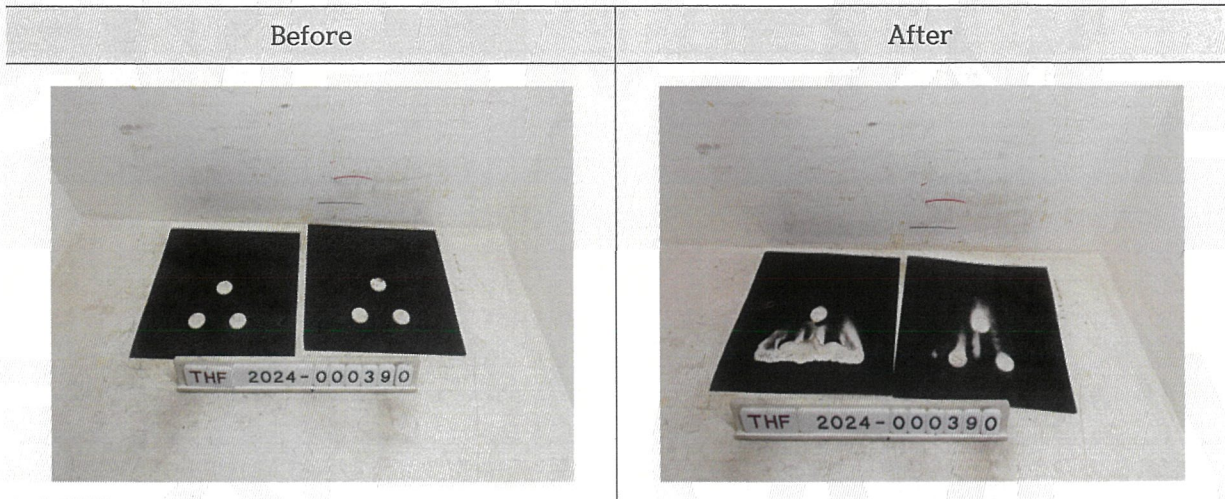


■ Test sample picture

< Heat release rate test >



< Gas Hazard Test >



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