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■ Building fire safety monitoring (in the field of building materials), alternative facilities for apartment evacuation spaces, and other building materials Detailed operating guidelines [Attached Form 1]

# TEST REPORT OF SINGLE MATERIAL(INCOMBUSTIBILITY)

Report No. : M255-23-03497



**1. Applicant**

- Corporate Name : DSP Co., Ltd.
- Address : 439-24, Jangjae-ro (57-1, Saenglim-ri), Saengnim-myeon, Gimhae-si, Gyeongsangnam-do, Republic of Korea
- Date of Acceptance : 2023. 12. 07.

**2. Test Item**

- Specimen Name : **Stainless Steel Laminated Sheet - INOXTEEL 1.0T (STS 0.2T + High Corrosion-resistant Steel 0.8T + PVD + NCC)**
- Range : **External Wall Construction**
- A number of Product : -

**3.Test Specificaion** : Ministry of Land, Infrastructure and Transport Notification No 2023-24 Quality recognition and management standards for building materials, etc

**4. A Purpose of Report** : Quality Control

**5. Date of Test** : 2023. 12. 07. ~ 2024. 01. 09.

**6. Conditioning** : (22.5 ± 7.5) ℃, (50.0 ± 30.0) % R.H.

**7. Test Results** : **Ministry of Land, Infrastructure and Transport Notification No 2023-24 Quality recognition and management standards for building materials, etc. Articale 23 in accordance with (Incombustibility Materials) Paragraph 1, incombustibility test result suitable**

**Articale 23 in accordance with (Incombustibility Materials) Paragraph 2, , gas toxicity test result suitable**

| Affirmation | A Practitioner of Test | A Technical Responsibility Manager |
|---|---|---|
| | Name : Dai-jin Kim Kim Dai jin (Sign) | Name : Do-hyeob Lee Lee Do Hyeob (Sign) |

**THE DATE OF ISSUE : 2024. 01. 09.**

**FITI Testing & Research Institute**

**President** Hwayoung Kim

**※ The test report is valid for Three years from the date of issue.**

**※ Report Verification No.: NDJ1-RYKQ-LUSK ※**

(You can see the authenticity of your test report through the above "Report Verification No." at FITI homepage.)

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**8. TEST RESULT(DETAILS)**

| ITEM | | UNIT | TEST RESULTS | | | CRITERIA | TEST METHOD | TEST SITE |
|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | | | |
| INCOMBUSTILBILITY TEST | MASS REDUCTOIN RATE | % | 0.14 | 0.12 | 0.14 | UNDER 30 | (1) | A |
| | THE DIFFERENCE BETWEEN MAXIMUN TEMPERATURE AND FINAL EQUILIBRIUM TEMPERATURE | ℃ | 1.1 | 0.0 | 2.0 | UNDER 20 | | |
| GAS TOXICITY TEST | INCAPACITIATION TIME | min:sec | 15:00 | 13:00 | - | MORE THAN 9 MIN | | |

※ 『Ministry of Land, Infrastructure and Transport Notification No 2023-24 』 Article 23 in accordance with Paragraph 1, incombustibility test result **suitable**

※ 『Ministry of Land, Infrastructure and Transport Notification No 2023-24 』 Article 23 in accordance with Paragraph 2, gas toxicity test result **suitable**

※ 『Ministry of Land, Infrastructure and Transport Notification No 2023-24 』 Article 29 in accordance with paragraph 4, The test report is valid for **three years** from the date of issue.

※ TEST METHOD

(1) Ministry of Land, Infrastructure and Transport Notification No 2023-24

※ TEST SITE

A. 21 Yangcheong 3-gil, Ochang-eup, Cheongwon-gun, Cheongju-si, Chungcheongbuk-do, Korea

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## ■ INCOMBUSTILBILITY TEST CONDITION

| TEST DATE | 2023.12.26 |
|---|---|

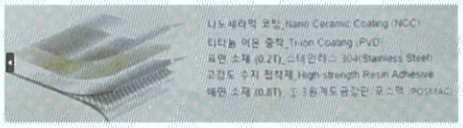
| | |
|---|---|
| CODITION | TEMPERATURE (21.0 ~ 25.0) ℃, HUMIDITY (48.0 ~ 52.0) % R.H. |
| TEST TIME(min) | 10 |

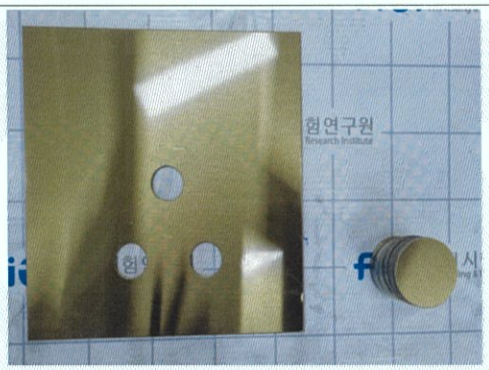
## ■ INCOMBUSTILBILITY TEST SPECIMENS

| | | | | | | |
|---|---|---|---|---|---|---|
| DIAMETER (mm) | SPECIMEN 1 | 45.0 | SPECIMEN 2 | 45.0 | SPECIMEN 3 | 45.0 |
| THICKNESS (mm) | | 50.0 | | 50.0 | | 50.0 |
| MASS (g) | | 571.6 | | 571.1 | | 571.2 |
| DENSITY (kg/m$^3$) | | 7 187.9 | | 7 181.7 | | 7 183.0 |
| CORE MATERIAL DENSITY (kg/m$^3$) | | - | | - | | - |
| PRETEATMENT | TEMPERATURE (23 ± 2) ℃, HUMIDITY (50 ± 5)% R.H. | | | | | |

## ■ SPECIMEN COMPOSITION AND DIAGRAM

| DIVISION | COMPOSITION | MANUFACTURER | MODEL | THICKNESS |
|---|---|---|---|---|
| Surface | Stainless Steel | | STS | 0.2 T |
| Back | High Corrosion-resistant Steel | | POSMAC | 0.8 T |
| Adhesive | High Strength Resin Adhesive | | - | - |





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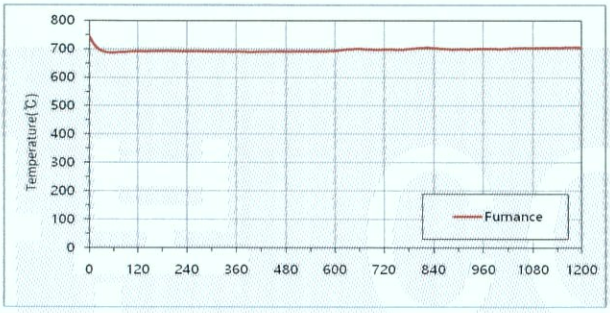
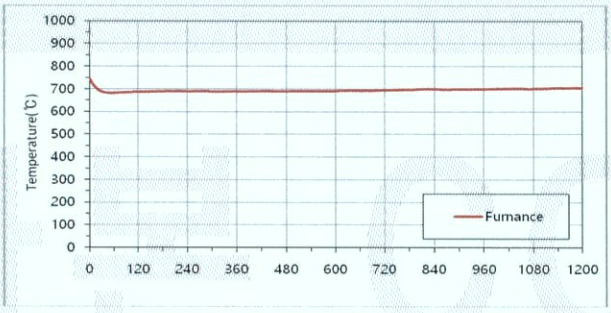
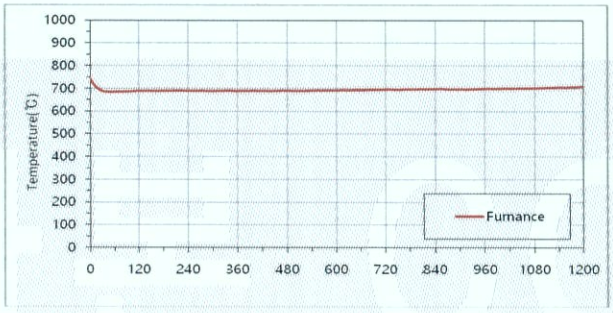
## ■ INCOMBUSTILBILITY TEST




**TEMPERATUER GRAPH**

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## ■ GAS TOXICITY TEST RESULT

| TEST DATE | 2023.12.27. |
|---|---|

| ITEM | UNIT | RESULTS | | TEST METHOD |
|---|---|---|---|---|
| | | 1 | 2 | |
| INCAPACITIATION TIME | min:sec | 15:00 | 13:00 | KS F 2271 : 2021 |

## ■ GAS TOXICITY TEST CONDITION

| | | | | | | |
|---|---|---|---|---|---|---|
| HEAT CONDITION | AFTER SUB HEATER : 3 min, MAIN HEATER :3 min | | | | | |
| HEATING SIDE | (FRONT AND BACK) SAME. | | | | | |
| CODITION | TEMPERATURE (21.0 ~ 25.0) ℃, HUMIDITY (48.0 ~ 52.0) % R.H. | | | | | |
| TEST TIME(min) | 15 | | | | | |
| LABORATORY WHITE MOUSE | TYPE | ICR,FEMALE | AGE | 5 WEEKS | MASS | (18 ~ 22) g |

## ■ GAS TOXICITY TEST SPECIMEN

| | | | | |
|---|---|---|---|---|
| WIDTH (mm) | SPECIMEN 1 | 220.1 | SPECIMEN 2 | 220.0 |
| LENGTH (mm) | | 220.2 | | 220.1 |
| THICKNESS (mm) | | 1.1 | | 1.1 |
| MASS (g) | | 390.0 | | 391.2 |
| DENSITY (kg/m$^3$) | | 7 315.3 | | 7 344.5 |
| CORE MATERIAL DENSITY (kg/m$^3$) | | - | | - |
| PRETREATMENT | TEMPERATURE (23 ± 2) ℃, HUMIDITY (50 ± 5)% R.H. | | | |

## ■ ANIMAL EXPERIMENT PEPORT

| | |
|---|---|
| COMMITTEE APPROVAL NO. | FITI-23-003-1A |
| COMMITTEE APPROVAL DATE | 2023.09.01 |
| PROJECT NAME(OPTION) | - |

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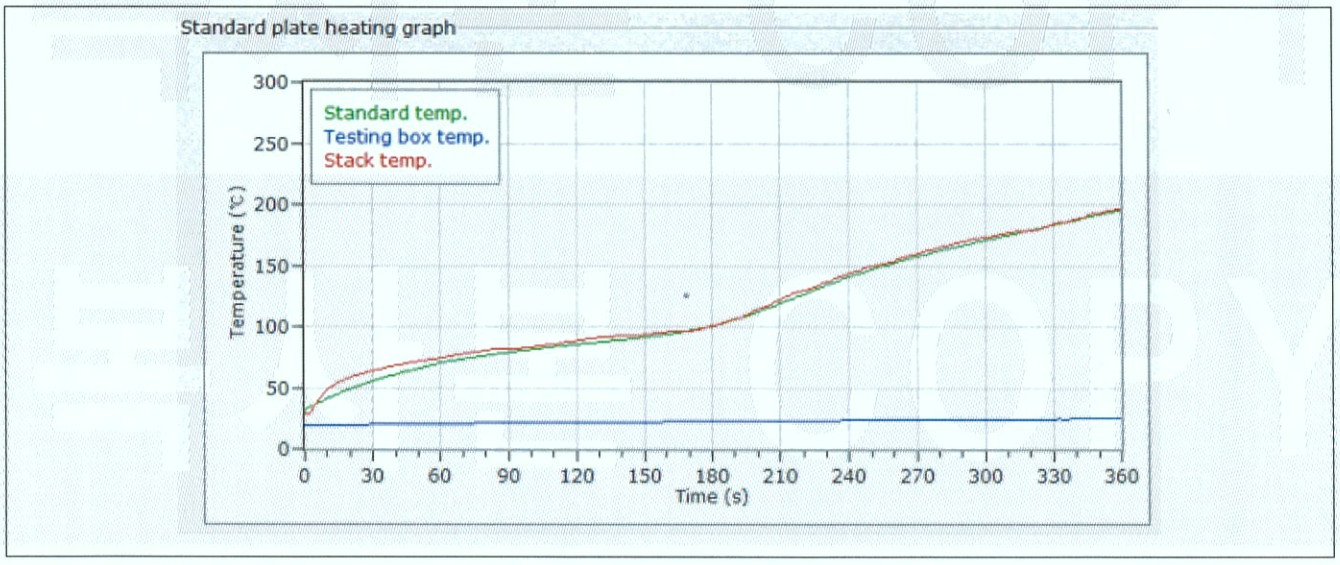
## ■ STANDARD PLATE TEST

- SPECIMEN : Stainless Steel Laminated Sheet - INOXTEEL 1.0T
(STS 0.2T + High Corrosion-resistant Steel 0.8T + PVD + NCC)

### < EXHAUST TEMPERATURE >

| TIME (s) | STANDARD TEMP. (℃) | TEST TEMP. (℃) | DEVIATION (℃) |
|---|---|---|---|
| 0.0 | 30 | 28.8 | 1.2 |
| 60.0 | 70 | 73.7 | -3.7 |
| 120.0 | 85 | 87.8 | -2.8 |
| 180.0 | 100 | 100.1 | -0.1 |
| 240.0 | 140 | 142.7 | -2.7 |
| 300.0 | 170 | 172.6 | -2.6 |
| 360.0 | 195 | 196.3 | -1.3 |

### < EXHAUST TEMPERATURE GRAPH>



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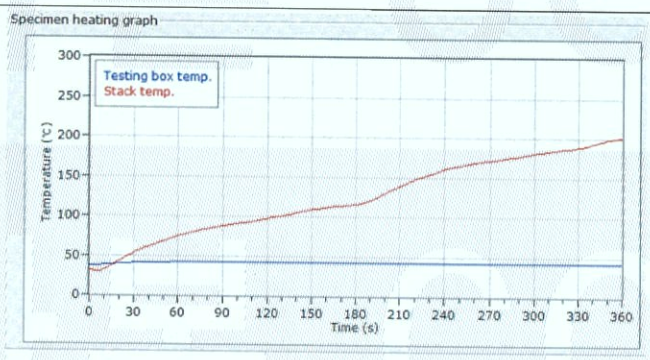
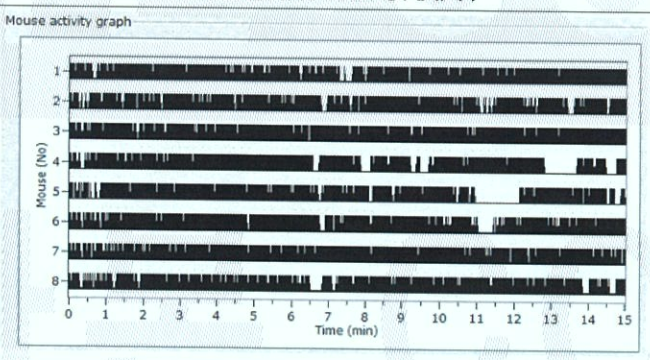
## ■ GAS TOXICITY TEST SPECIMENS (SPECIMEN 1)

| TIME (s) | GAS TEMP. (℃) |
|---|---|
| 0 | 30.6 |
| 60 | 74.0 |
| 120 | 96.2 |
| 180 | 114.8 |
| 240 | 159.6 |
| 300 | 180.2 |
| 360 | 200.7 |

| MICE NO. | INCAPACITIATION TIME |
|---|---|
| M1 | 15 min 00 s |
| M2 | 15 min 00 s |
| M3 | 15 min 00 s |
| M4 | 15 min 00 s |
| M5 | 14 min 59 s |
| M6 | 15 min 00 s |
| M7 | 15 min 00 s |
| M8 | 15 min 00 s |
| AVERAGE | 15 min 00 s |
| STANDARD DEVIATION | 00 min 00 s |
| TEST RESULT | 15 min 00 s |




TEMPERATYRE GRAPH




MOUSE ACTIVITY GRAPH

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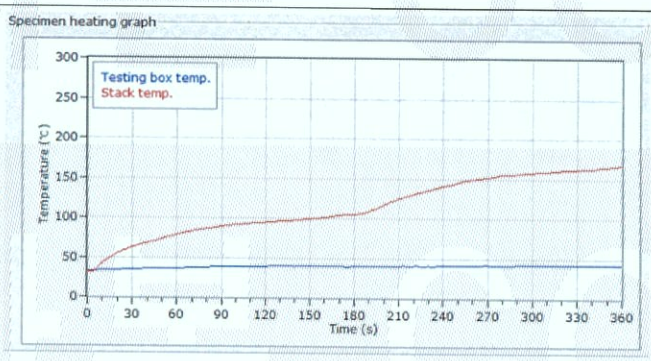
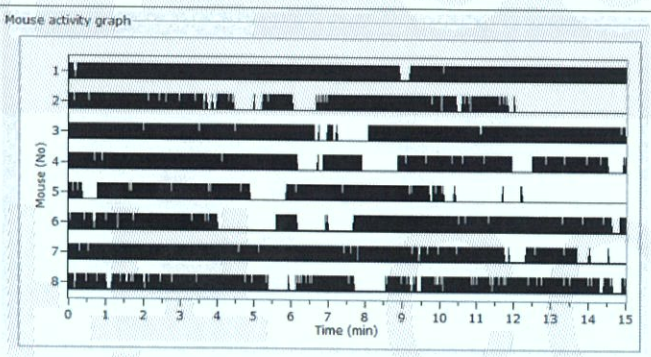
## ■ GAS TOXICITY TEST SPECIMENS (SPECIMEN 2)

| TIME (s) | TEMPERATURE (℃) |
|---|---|
| 0 | 31.4 |
| 60 | 77.9 |
| 120 | 93.9 |
| 180 | 104.6 |
| 240 | 139.8 |
| 300 | 157.6 |
| 360 | 166.2 |

| BOX | INCAPACITIATION TIME |
|---|---|
| M1 | 15 min 00 s |
| M2 | 12 min 01 s |
| M3 | 14 min 59 s |
| M4 | 15 min 00 s |
| M5 | 12 min 13 s |
| M6 | 15 min 00 s |
| M7 | 14 min 33 s |
| M8 | 15 min 00 s |
| AVERAGE | 14 min 33 s |
| STANDARD DEVIATION | 01 min 13 s |
| TEST RESULT | 13 min 00 s |




TEMPERATYRE GRAPH




MOUSE ACTIVITY GRAPH

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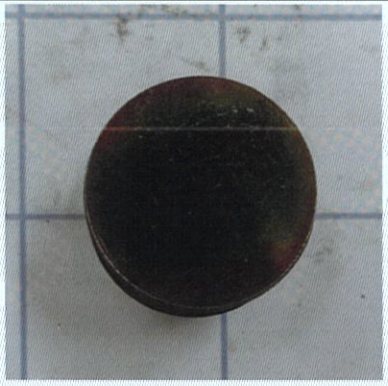
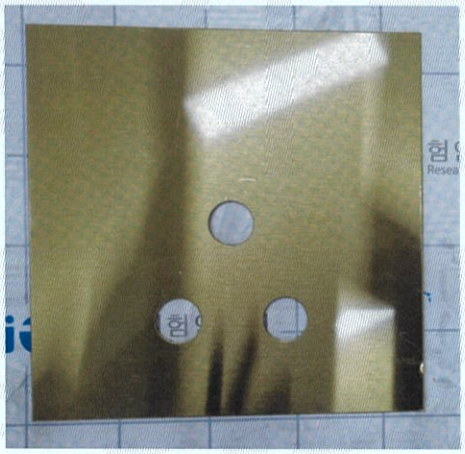
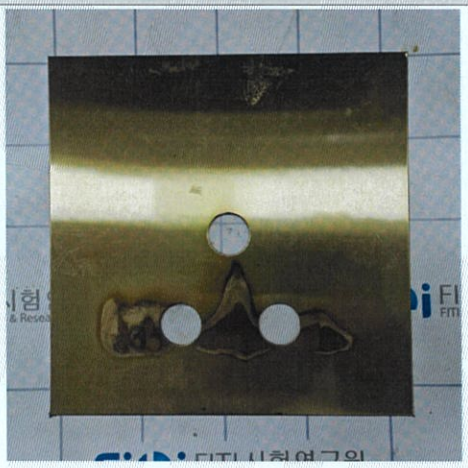
## ■ PICTURE OF TEST(BEFORE & AFTER)

### < INCOMBUSTILBILITY TEST >

| | BEFORE | AFTER |
|---|---|---|
| FRONT |  |  |

### < THE GAS TOXICITY TEST >

| BEFORE | AFTER |
|---|---|
|  |  |

----- End of the Report -----