TEST REPORT

No. : CT22-086979E

1. Client

- Name : SEOHAN ANTAMIN
- Address : 51st 622 Angogae-ro, Namdong-gu, Incheon
- Date of Receipt : 2022.09.14

2. Specimen

- Specimen Name : Exterior Surface Materials2(Deco paper+Melamine resin 0.1 mm + Calcium silicate board 6.2 mm)
- Model Name : -
- Product Number : -

3. Test Standard : MOLIT(Ministry of Land, Infrastructure and Transport) Notification No. 2022-84

4. Use of Report : Quality Control

5. Test Period : 2022.09.14 ~ 2022.10.14

6. Test Condition : Refer to the next page

7. Test Results :

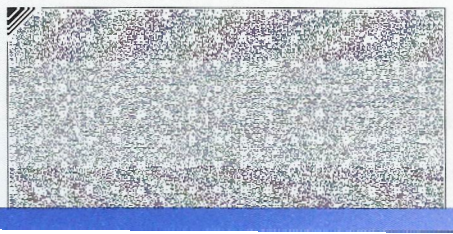
The tested specimen complies with the criteria stipulated in MOLIT(Ministry of Land, Infrastructure and Transport) Notification No. 2022-84, Article 24, Subparagraph 1, on Heat release rate(concalorimeter method) test
The tested specimen complies with the criteria stipulated in MOLIT(Ministry of Land, Infrastructure and Transport) Notification No. 2022-84, Article 24, Subparagraph 2, on Gas-toxicity test

Confirmation	Tested by Name	OH DONGUK	Technical Officer Name	CHOI, Joung Yoon

Issue Date : 2022.10.14

Korea Conformity Laboratories President Jo, Yung Tae

※ This test report is valid for 3 year from the date of issue.





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7. Test Results

Test item		Unit	Test results			Criteria	Test method	Loca-tion
			1st	2nd	3rd			
Heat Release Test	Total heat released	MJ/㎡	2.0	2.8	3.0	Below 8		A
	Duration of consecutive HRR exceeding 200 kW/㎡	s	0	0	0	Under 10	(1)	
	Occurrence(Y/N) of hazard when setting fire on the specimen	-	No	No	No	Non		
Gas Toxicity Test	Average time of laboratory mouse stopped moving	min:sec	14:59	14:40	-	Over 9:00	(2)	

※ The tested specimen complies with the criteria stipulated in MOLIT(Ministry of Land, Infrastructure and Transport) Notification No. 2022-84, Article 24, Subparagraph 1, on Heat release rate(cone calorimeter method) test

※ The tested specimen complies with the criteria stipulated in MOLIT(Ministry of Land, Infrastructure and Transport) Notification No. 2022-84, Article 24, Subparagraph 2, on Gas-toxicity test

※ According to Article 29, Clause 4 of MOLIT Notification No. 2022-84 , this test report is valid for 3 year from the date of issue.

※ Test method

(1) Article 24, Subparagraph 1 of the MOLIT(Ministry of Land, Infrastructure and Transport) Notification No. 2022-84

(2) Article 24, Subparagraph 2 of the MOLIT(Ministry of Land, Infrastructure and Transport) Notification No. 2022-84

※ Location

A. 73, Yangcheong 3-gil, Ochang-eup, Cheongwon-Gu, Cheongju-Si, Chungbuk, Korea

※ Note

This report is accredited by KOLAS.

Our report apply only to the standards or procedures identified and to the sample(s) tested unless otherwise specified. The test results are not indicative of representative of the qualities of the lot from which the sample was taken or of apparently identical or similar products. The results of using only a portion of this report cannot be guaranteed. The authenticity of this test report can be checked on KCL website(www.kcl.re.kr).

※ The above test certificate is the accredited test results by Korea Laboratory Accreditation Scheme, which signed the ILAC-MRA.

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No. : CT22-086979E

■ Heat Release Test Conditions

Test date	Oct. 11, 2022

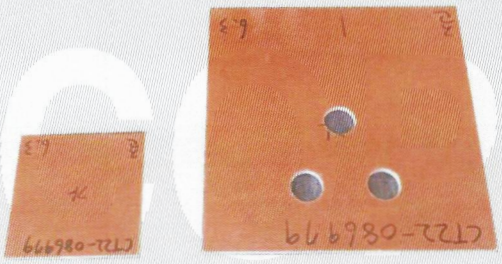
Heating side of specimen (requested by client)	Heated surface is specified
Test condition	Temp. (24.1 ~ 24.2) ℃, Humidity (35 ~ 36) % R.H.
Test duration (min)	10
C-factor ($m^{1/2}$-$g^{1/2}$-$K^{1/2}$)	0.042 771
External heat flux (kW/㎡)	50
Flow rate of exhaust system (㎥/s)	0.024

■ Test Specimen Specification

Width (mm)	Specimen 1	98.7	Specimen 2	98.7	Specimen 3	98.7
Length (mm)		98.6		98.6		98.6
Thickness (mm)		6.4		6.4		6.5
Mass (g)		55.5		55.9		56.8
Density (kg/㎥)		891.1		897.5		897.9
Density of core material (kg/㎥)		-		-		-
Pretreatment	Temp. (23 ± 2) ℃, Humidity (50 ± 5) % R.H.					

■ Test Specimen Configuration and Photograph

Composition	Material	Manufacturer	Model Name	Thickness
Surface Material	Deco paper + Melamine resin	SEOHAN ANTAMIN	-	0.1 mm
Base Plate	Calcium silicate board	TNN	-	(6.2±0.2) mm

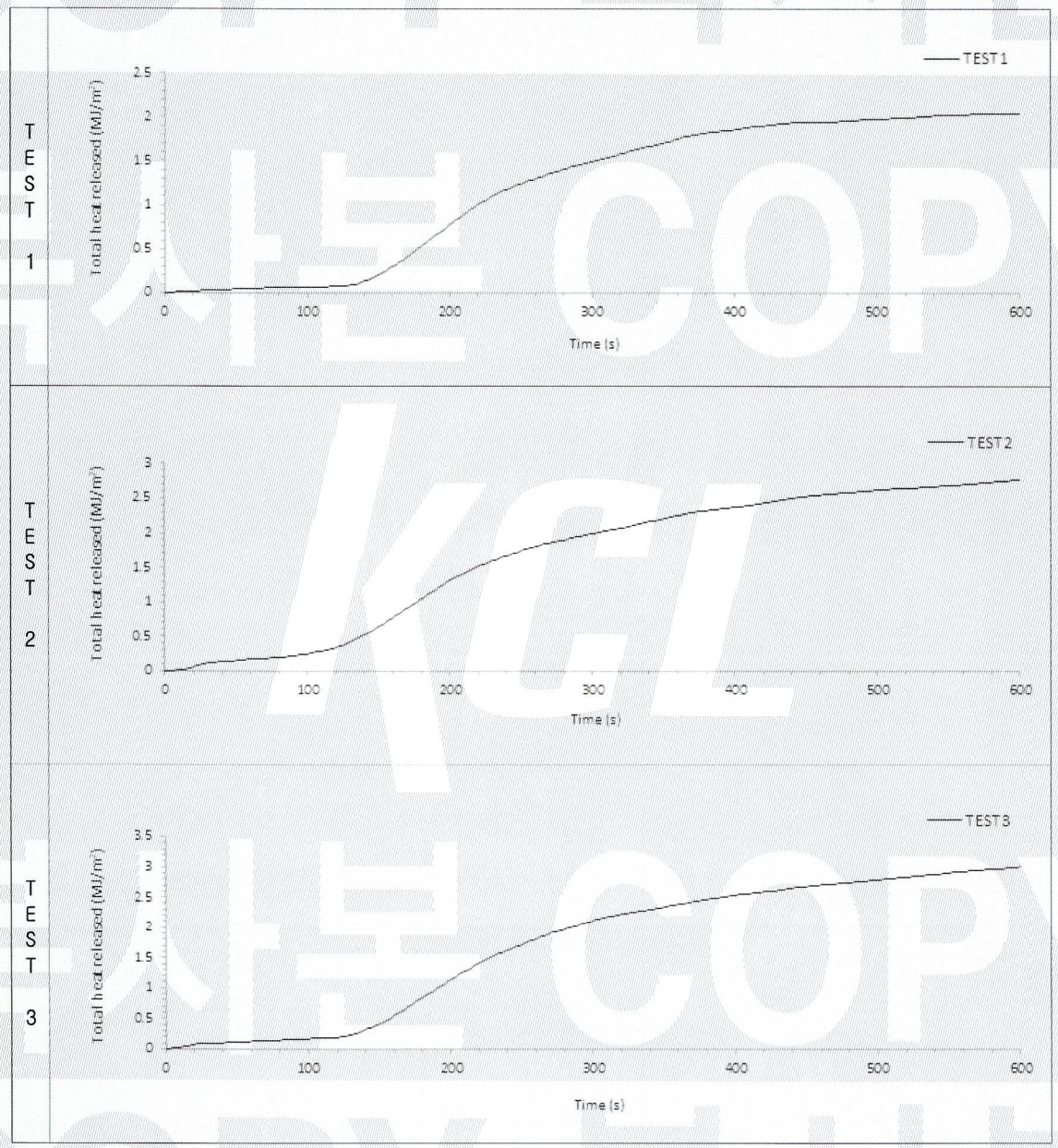
Configuration	Photograph
시험면 모양지+멜라민 수지 0.1㎜ Deco paper + Melamine resin 0.1㎜ 규산칼슘 보드 6.2±0.2 ㎜ Calcium silicate board 6.2±0.2 ㎜	

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■ Total Heat Release Curve



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■ Gas Toxicity Test Results

Test date			Oct. 12, 2022
Test item	Unit	Test results	Test method
		1st / 2nd	
Average time of laboratory mouse stopped moving	min:sec	14:59 / 14:40	(2)

■ Gas Toxicity Test Conditions

Heating condition	The heating time is a total 6 minutes. Heat up with the auxiliary heat source first. 3 minutes later, additionally heat up with the main heat source while maintaining the auxiliary heat. The heating completes after 6 minutes. (Auxiliary heat source heating time: 6 minutes, main heat source heating time: 3 minutes)						
Heating side of specimen (requested by client)	Heated surface is specified						
Test condition	Temp. (17.2 ~ 17.8) ℃, Humidity (61 ~ 62) % R.H.						
Test duration (min)	15						
Laboratory mouse	Type	ICR group female	Age	5 weeks	Weight	(18 ~ 22) g	

■ Test Specimen Specification

Width (mm)	Specimen 1	218.7	Specimen 2	219.0
Length (mm)		218.9		218.7
Thickness (mm)		6.5		6.4
Mass (g)		277.9		277.4
Density (kg/㎥)		893.1		905.0
Pretreatment	Temp. (23 ± 2) ℃, Humidity (50 ± 5) % R.H.			

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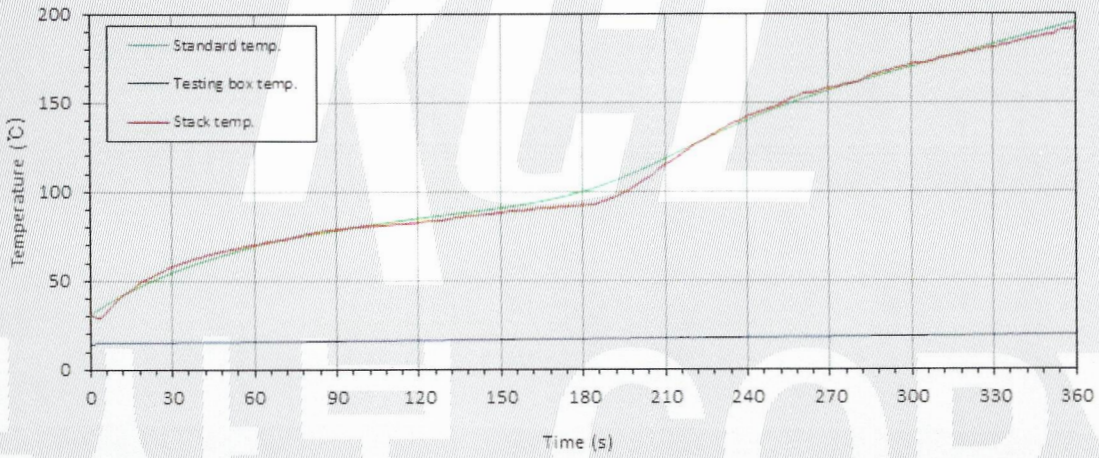
■ Standard Sample Test

- Specimen: Fiber-reinforced calcium silicate board

< Exhaust Temperature >

Elapsed Time (s)	Standard Temp. (℃)	Measured Temp. (℃)	Temp. Deviation (℃)
0.0	30.0	30.2	0.2
60.0	70.0	70.3	0.3
120.0	85.0	82.6	-2.4
180.0	100.0	92.0	-8.0
240.0	140.0	141.9	1.9
300.0	170.0	171.4	1.4
360.0	195.0	191.4	-3.6

< Exhaust Temperature Curve >



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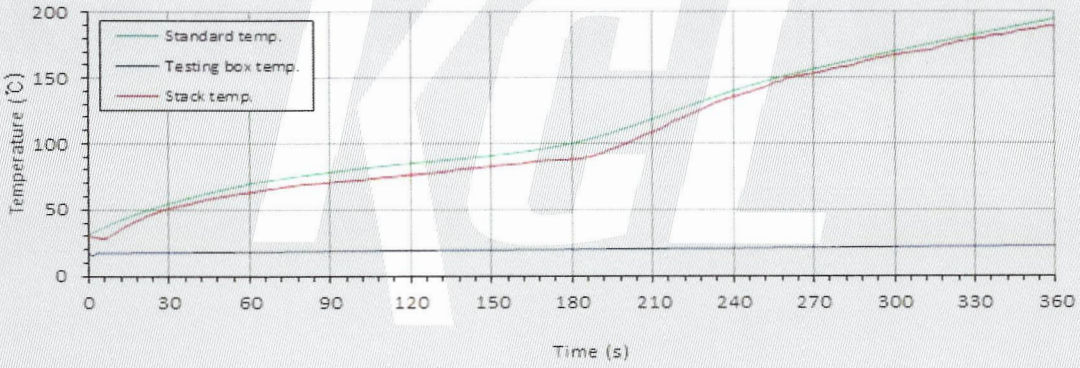
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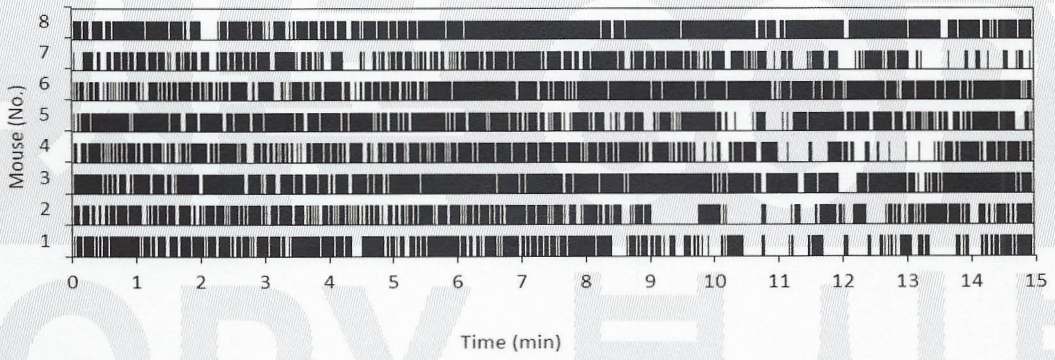
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■ Gas Toxicity Test Results (Specimen 1)

Elapsed time (s)	Measured temp. (℃)
0	29.8
60	62.7
120	76.2
180	87.6
240	135.0
300	166.8
360	188.6

Treadmill	Time of stop moving
M1	14 min 59 s
M2	15 min 00 s
M3	15 min 00 s
M4	15 min 00 s
M5	15 min 00 s
M6	15 min 00 s
M7	14 min 58 s
M8	14 min 59 s
Average	15 min 00 s
Standard deviation	00 min 01 s
Average time of stop moving	14 min 59 s





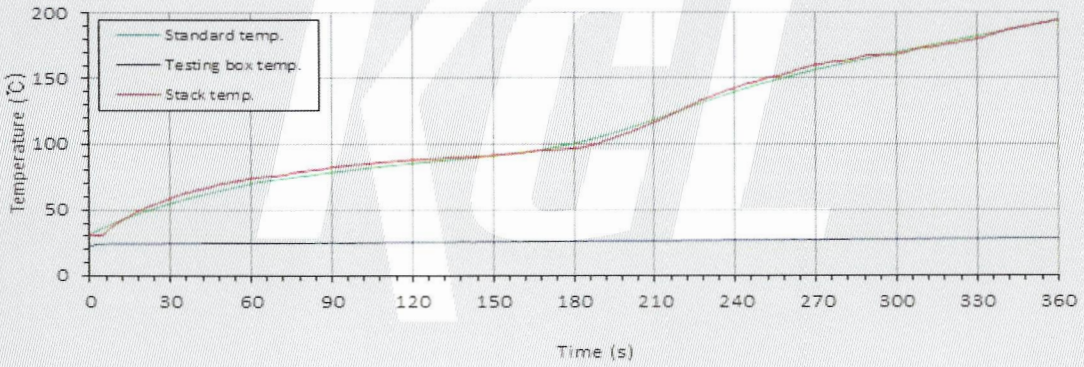
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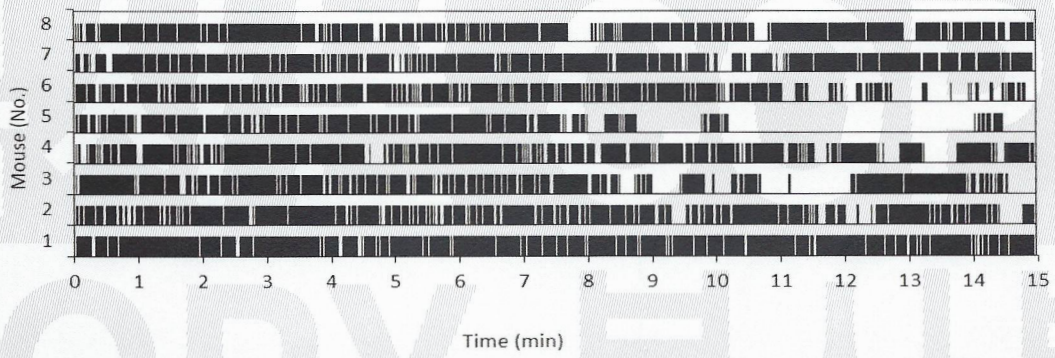
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■ Gas Toxicity Test Results (Specimen 2)

Elapsed time (s)	Measured temp. (℃)
0	30.4
60	73.6
120	87.4
180	96.1
240	142.4
300	168.0
360	194.5

Treadmill	Time of stop moving
M1	15 min 00 s
M2	15 min 00 s
M3	14 min 34 s
M4	15 min 00 s
M5	14 min 30 s
M6	14 min 51 s
M7	14 min 58 s
M8	15 min 00 s
Average	14 min 52 s
Standard deviation	00 min 12 s
Average time of stop moving	14 min 40 s



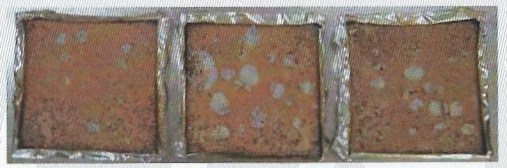


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■ Photograph of Specimen Before/After Test

< Heat release test >

Photograph of Specimen Before Test	Photograph of Specimen After Test
	

< Gas toxicity test >

Photograph of Specimen Before Test	Photograph of Specimen After Test
	

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

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