7424-1553-1858-8136

TEST REPORT

No. : CT22-086980E

1. Client
   - Name : SEOHAN ANTAMIN
   - Address : 51st 622 Angogae-ro, Namdong-gu, Incheon
   - Date of Receipt : 2022.09.14
2. Specimen
   - Specimen Name : Exter Core materials(Inorganic Materials+Glass fiber 7.6 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 :

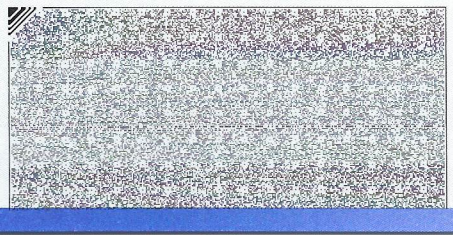
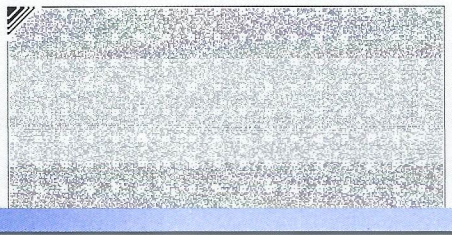
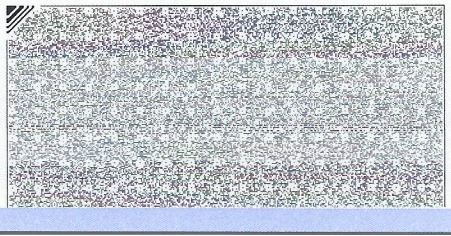
The tested specimen complies with the criteria stipulated in MOLIT(Ministry of Land, Infrastructure and Transport) Notification No. 2022-84, Article 24, Subparagraph 1, on Heat release rate(concalorimeter method) test
The tested specimen complies with the criteria stipulated in MOLIT(Ministry of Land, 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 1st	Test results 2nd	Test results 3rd	Criteria	Test method	Location
Heat Release Test	Total heat released	MJ/㎡	2.0	4.2	3.6	Below 8		
	Duration of consecutive HRR exceeding 200 kW/㎡	s	0	0	0	Under 10	(1)	A
	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	15:00	14:59	-	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

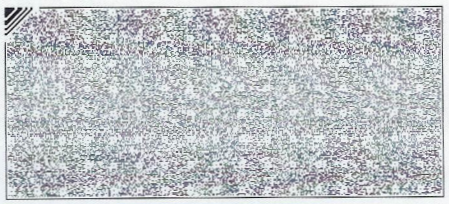
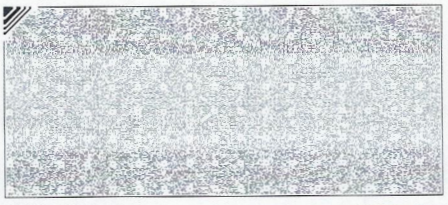
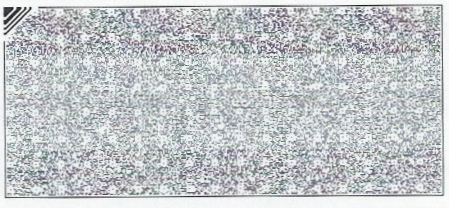
※ Note

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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TEST REPORT

No. : CT22-086980E

■ Heat Release Test Conditions

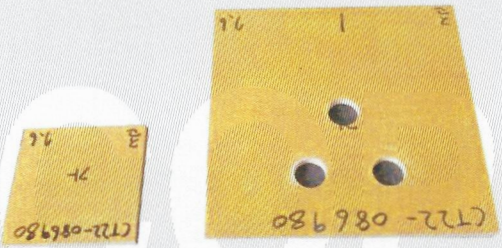
Test date	Oct. 11, 2022
Heating side of specimen (requested by client)	As both sides have the same quality, test one side only
Test condition	Temp. (24.2 ~ 24.4) ℃, Humidity (36 ~ 36) % R.H.
Test duration (min)	10
C-factor ($m^{1/2} \cdot g^{1/2} \cdot K^{1/2}$)	0.042 771
External heat flux (kW/㎡)	50
Flow rate of exhaust system (㎥/s)	0.024

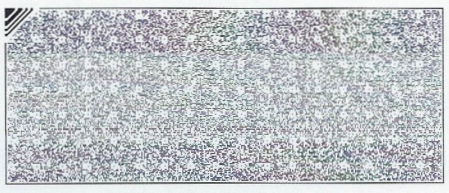
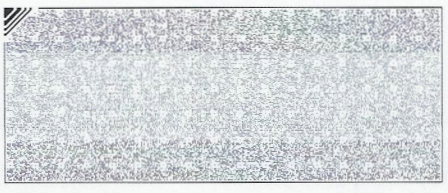
■ Test Specimen Specification

Width (mm)	Specimen 1	98.6	Specimen 2	98.7	Specimen 3	98.7
Length (mm)		98.9		98.9		98.9
Thickness (mm)		7.7		7.7		7.7
Mass (g)		139.8		139.4		140.3
Density (kg/㎥)		1 861.8		1 854.6		1 866.6
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
Core Material	Inorganic Minerals + Glass fiber	SEOHAN ANTAMIN	-	(7.6±0.5) mm

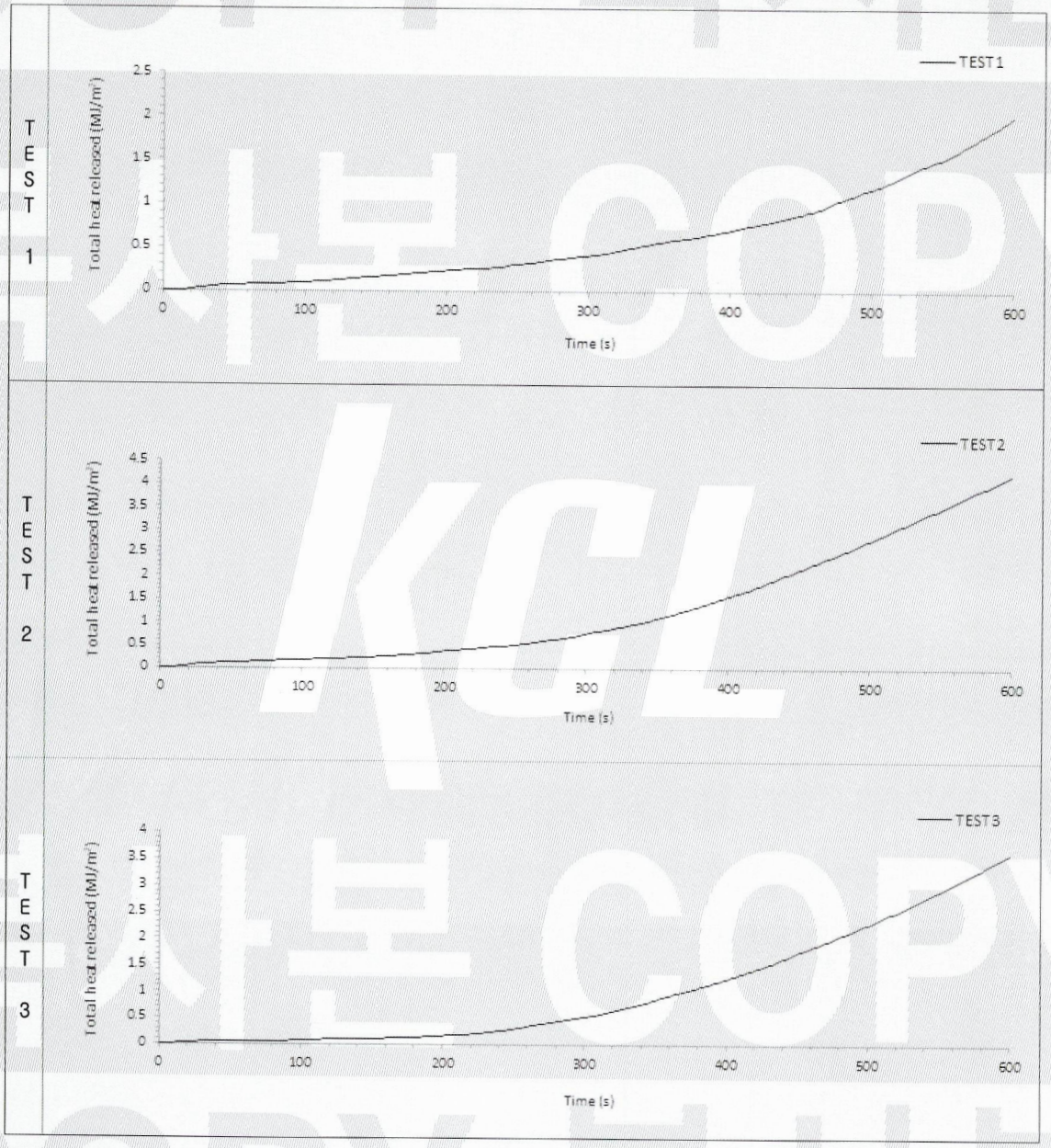
Configuration	Photograph
가열면 무기물 + 유리섬유 7.6±0.5㎜ Inorganic Minerals + Glass fiber 7.6±0.5㎜	


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■ Total Heat Release Curve



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No. : CT22-086980E

■ Gas Toxicity Test Results

Test item	Unit	Test results		Test method
		1st	2nd	
Test date		Oct. 12, 2022		
Average time of laboratory mouse stopped moving	min:sec	15:00	14:59	(2)

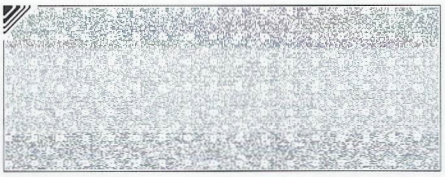
■ Gas Toxicity Test Conditions

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)	As both sides have the same quality, test one side only					
Test condition	Temp. (18.5 ~ 19.1) ℃, Humidity (60 ~ 61) % 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	219.0	Specimen 2	219.0
Length (mm)		218.9		218.8
Thickness (mm)		7.7		7.7
Mass (g)		689.8		687.1
Density (kg/㎥)		1 868.7		1 862.2
Pretreatment	Temp. (23 ± 2) ℃, Humidity (50 ± 5) % R.H.			

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TEST REPORT

No. : CT22-086980E

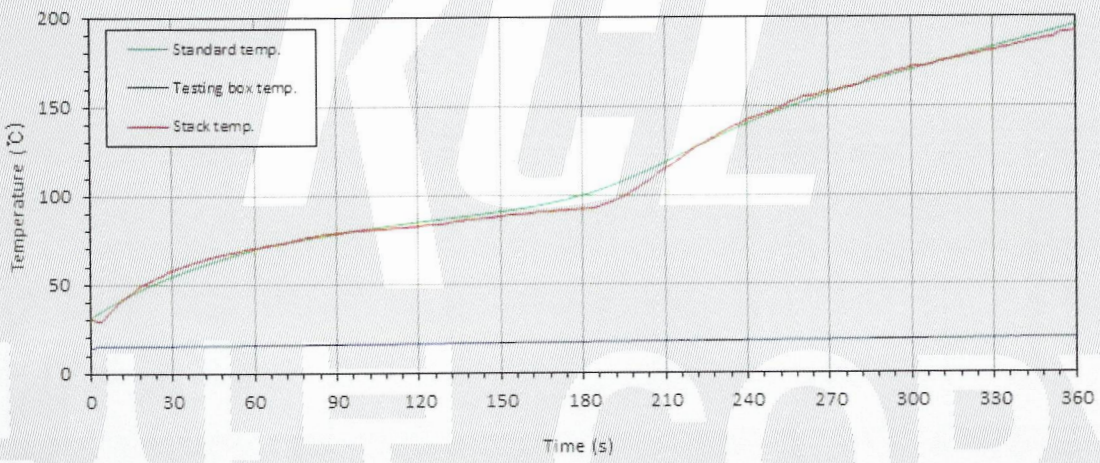
■ Standard Sample Test

- 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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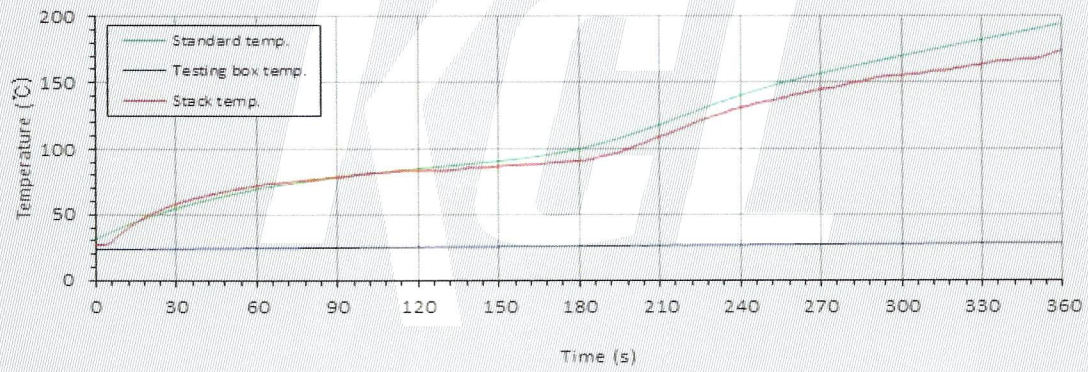
TEST REPORT

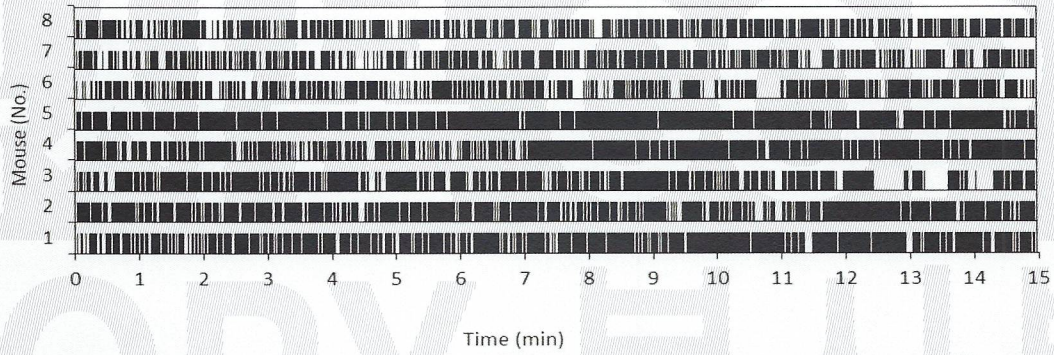
No. : CT22-086980E

■ Gas Toxicity Test Results (Specimen 1)

Elapsed time (s)	Measured temp. (℃)
0	27.1
60	72.6
120	84.0
180	91.3
240	131.2
300	155.5
360	174.6

Treadmill	Time of stop moving
M1	15 min 00 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	15 min 00 s
M8	14 min 59 s
Average	15 min 00 s
Standard deviation	00 min 00 s
Average time of stop moving	15 min 00 s





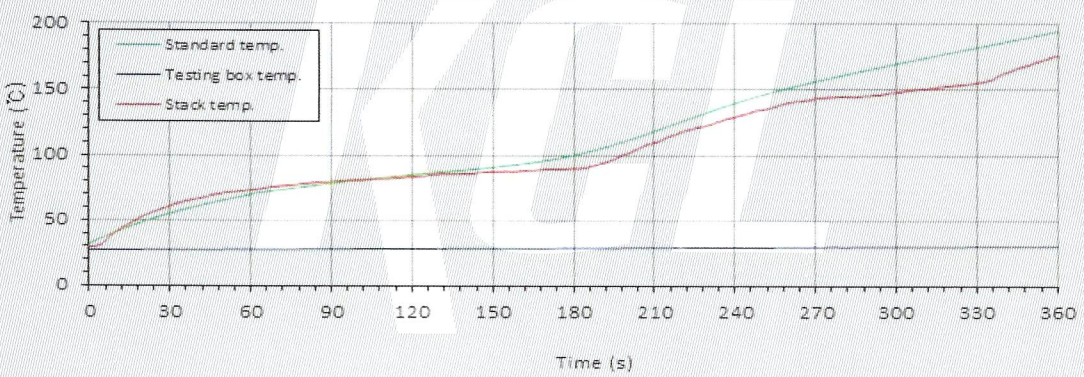
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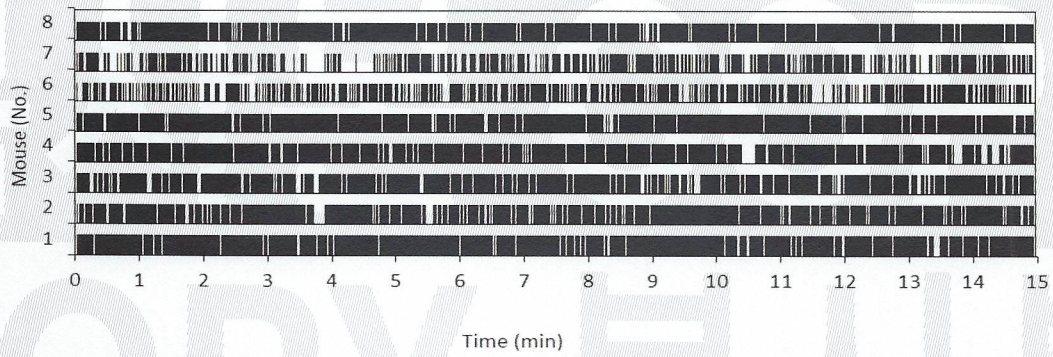
No. : CT22-086980E

■ Gas Toxicity Test Results (Specimen 2)

Elapsed time (s)	Measured temp. (℃)
0	28.8
60	72.9
120	83.0
180	89.5
240	128.9
300	147.8
360	174.9

Treadmill	Time of stop moving
M1	15 min 00 s
M2	15 min 00 s
M3	15 min 00 s
M4	14 min 59 s
M5	15 min 00 s
M6	14 min 57 s
M7	15 min 00 s
M8	15 min 00 s
Average	15 min 00 s
Standard deviation	00 min 01 s
Average time of stop moving	14 min 59 s





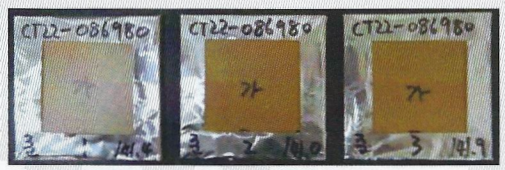
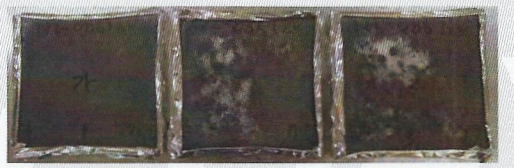
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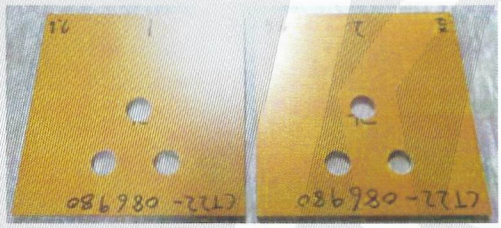
No. : CT22-086980E

■ 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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