8745-6651-4165-2980

TEST REPORT

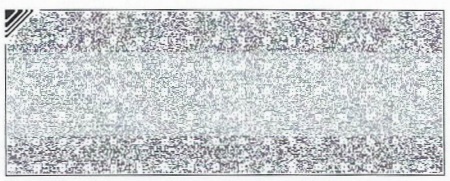
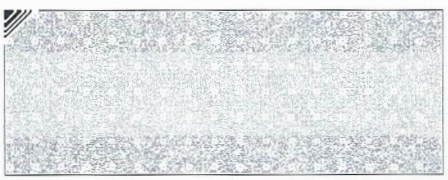
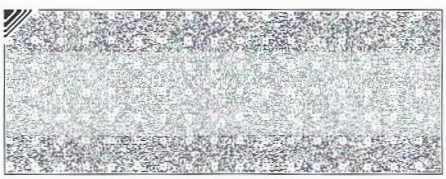
1. NO : CT22-037327E
2. Client
   - ○ Name : SEOHAN ANTAMIN
   - ○ Address : 51st 622 Angogae-ro, Namdong-gu, Incheon
3. Date of Test : 2022.04.11 ~ 2022.05.20
4. Use of Report : Quality control
5. Test Sample : AOP 8.0 mm
6. Test Method
   (1) KS F 8414:2019

Affirmation	Tested By Name : JEON NAM 전 남	Technical Manager Name : Kwon, In Koo

This report is not 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).

2022.05.20

Korea Conformity Laboratories President Jo, Yung Tae

Test Report

No : CT22-037327E

7. Test Results

■ Test results for external cladding systems

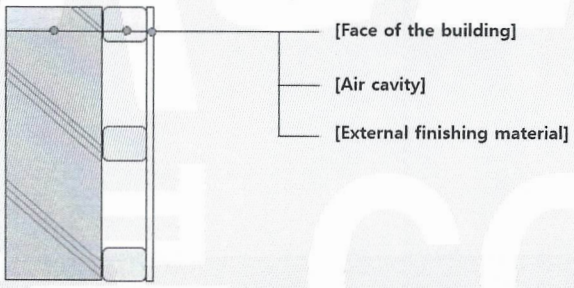
Test Item		Unit	Test Results	Test Method
Time of exceeding 600 ℃ continuously at any point of level 2 external thermocouples (within 15 minutes from the start time)	External	s	3	(1)
	Internal	s	0	
Maximum temperature at any point of level 2 thermocouples (from the start time)	External	℃	621.6 (Time of occurrence : 675 s)	
	Internal	℃	334.6 (Time of occurrence : 900 s)	

※ TC13 Temperature outliers due to errors caused by fire tests.

※ Location

A. 33-72 (Gyo-dong), Unjang 1-gil, Samcheok-si, Gangwon-do

■ Composition and construction status of test specimen



대상 항목		Thickness(mm)
Face of the building	Concrete wall	100
Air cavity	-	50
External finishing material	Glass fiber	8

Composition

Test Report

No : CT22-037327E

■ Composition and quality of test specimen

Composition		Texture	Thickness(mm)	Model Name	Manufacturer
Insulator and finishing material	Finishing material	Glass fiber	8	AOP	SEOHAN ANTAMIN
Adhesive and attached material	Accessory material	Galvanized angled Pipe	50*50*1.4T	Galvanized	Easy Steel Net
	"	Galvanized angled Pipe	75*45*1.4T	Galvanized	Easy Steel Net
	"	Zinc fasteners	40*40	Zinc	PyongWha Bolt
	"	Wedge anchor	M10*70	Zinc	PyongWha Bolt
	"	SUS 410 Flat head	#12*27	Zinc	Hangwoon Whasner

Test Report

No : CT22-037327E

■ Photo of test specimen

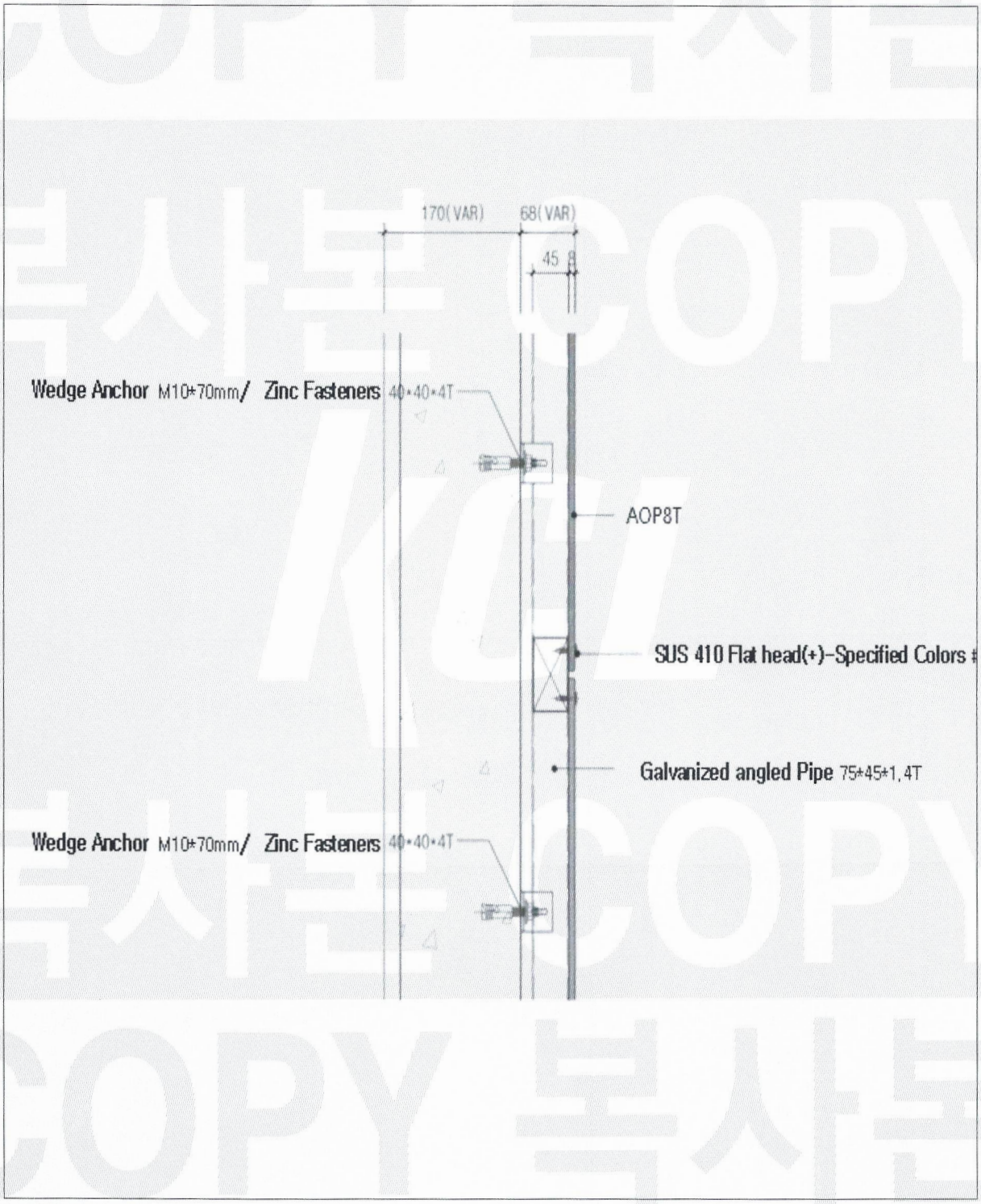


< Test specimen before test >

Test Report

No : CT22-037327E

■ Drawing of test specimen [Vertical cross section]

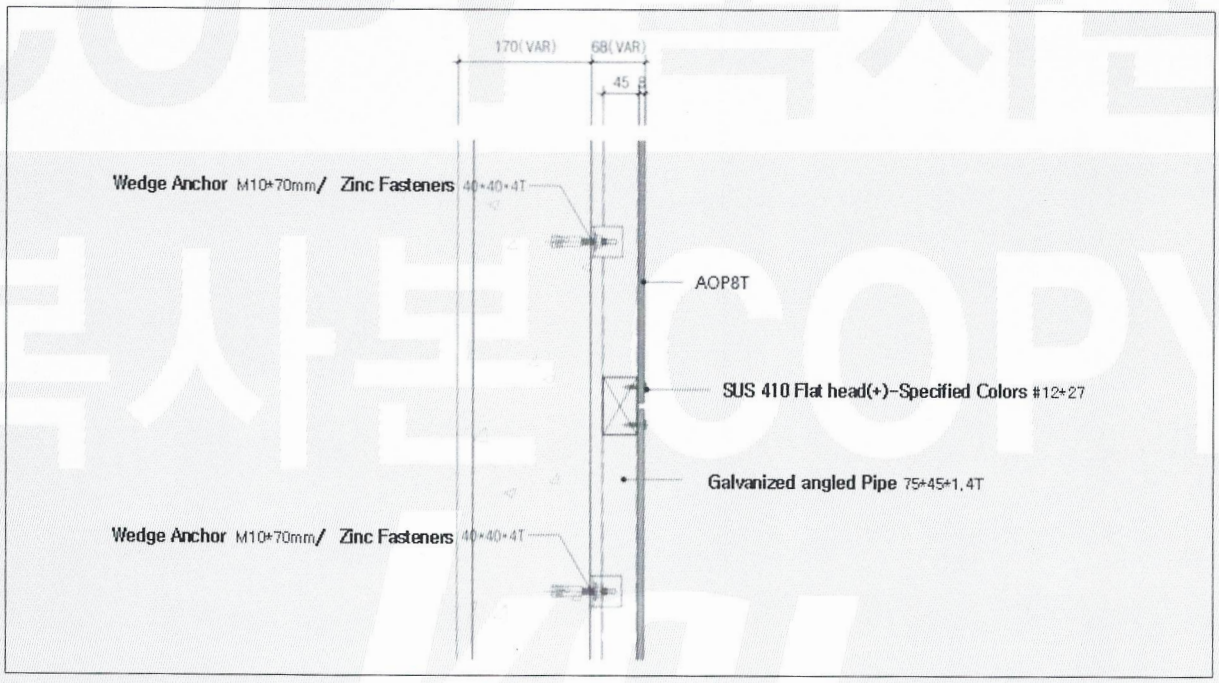


COPY 복사본

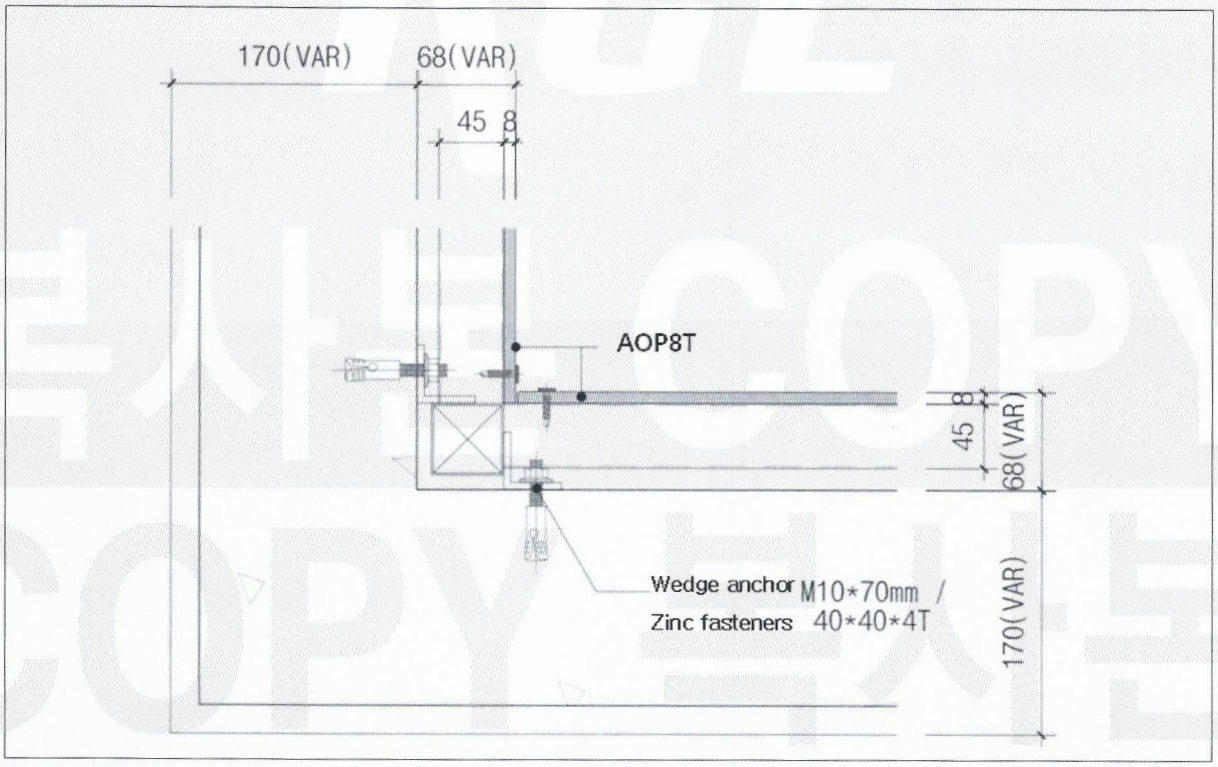
Test Report

No : CT22-037327E

■ Drawing of test specimen [Horizontal cross section]



■ Drawing of test specimen [Inner detail section]



Test Report

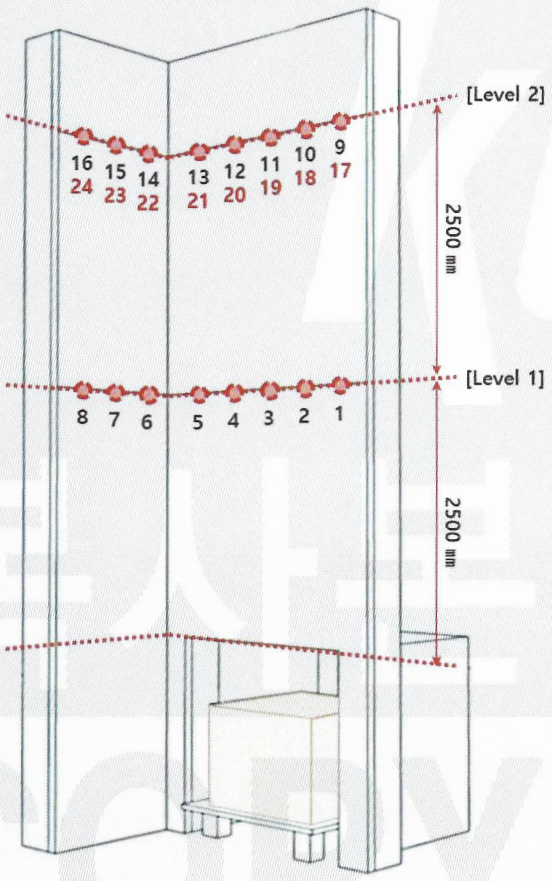
No : CT22-037327E

■ Test condition

Test Date	2022. 4. 14.

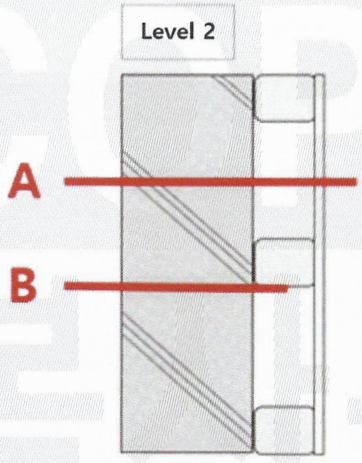
Test Environment	(13.1) ℃ of temperature, (72.4 ~ 72.9) % R.H. of humidity, 0.32 m/s of wind speed
Test Time	60 min
Test apparatus	Concrete, 100 mm of thickness
Timber Heat Source	Pine, (10.1 ~ 12.8) % of moisture content
Heating Method	Ignite by using heptane pool(Mixture of 2L water and 2L heptane) within the combustion chamber

■ External and internal thermocouples



■ Classification of level 2 thermocouples placement

Thermocouples No.	Thermocouples Location
TC (9 ~ 16)	External (A)
TC (17 ~ 24)	Air cavity (B)



Test Report

No : CT22-037327E

■ Test photo and observation (Flame, mechanical response, etc.)

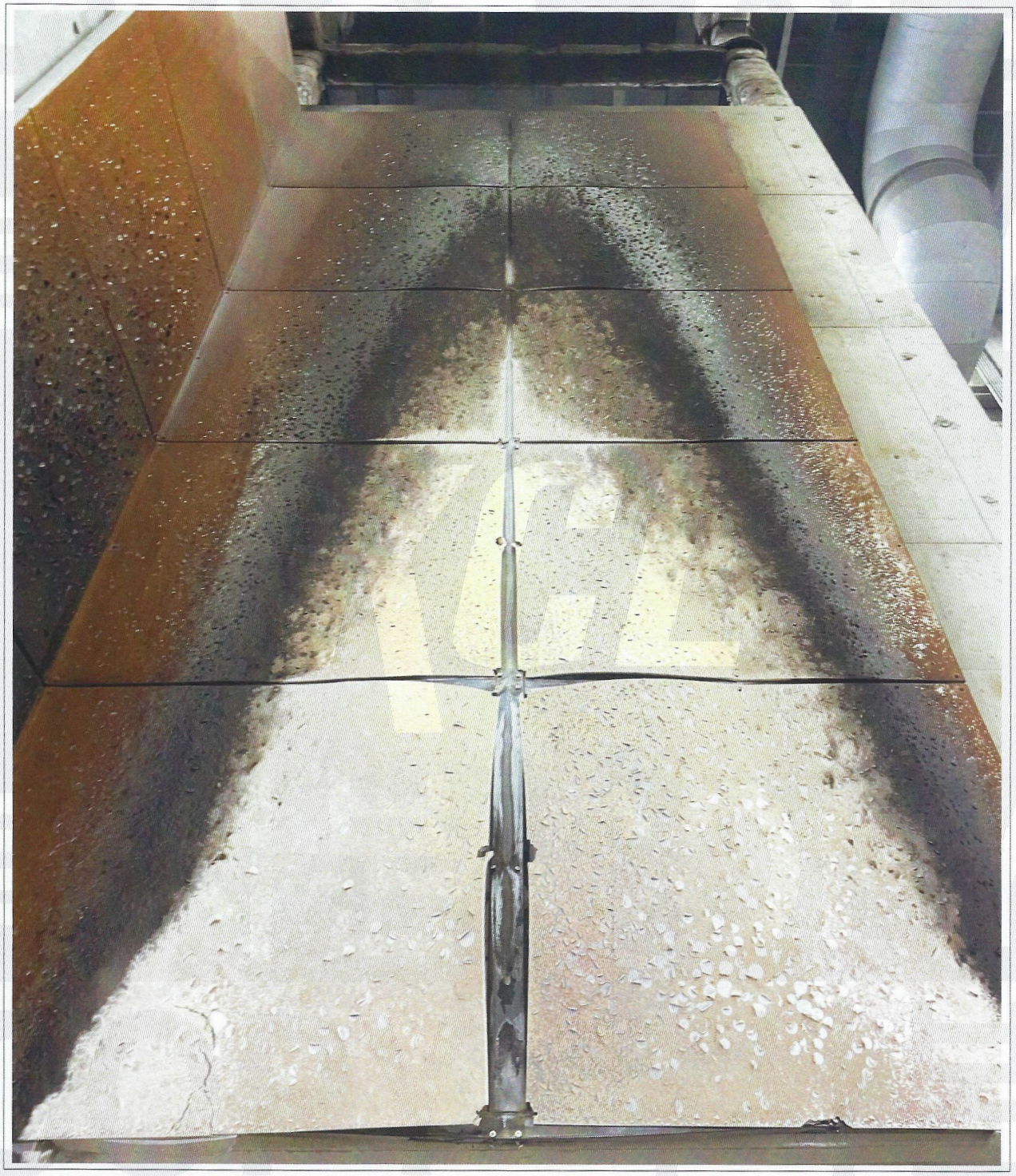


< Photo after test >

Test Report

No : CT22-037327E

■ Test photo and observation (Flame, mechanical response, etc.) (continue)



< Carbonized status of the finishing material directly above the combustion chamber >

Test Report

No : CT22-037327E

■ Test photo and observation (Flame, mechanical response, etc.) (continue)



< Occurrence of carbonization and penetration on the return wall finishing material >

Test Report

No : CT22-037327E

■ Test photo and observation (Flame, mechanical response, etc.) (continue)



< Carbonization status of combustion chamber finishing material >

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Test Report

No : CT22-037327E

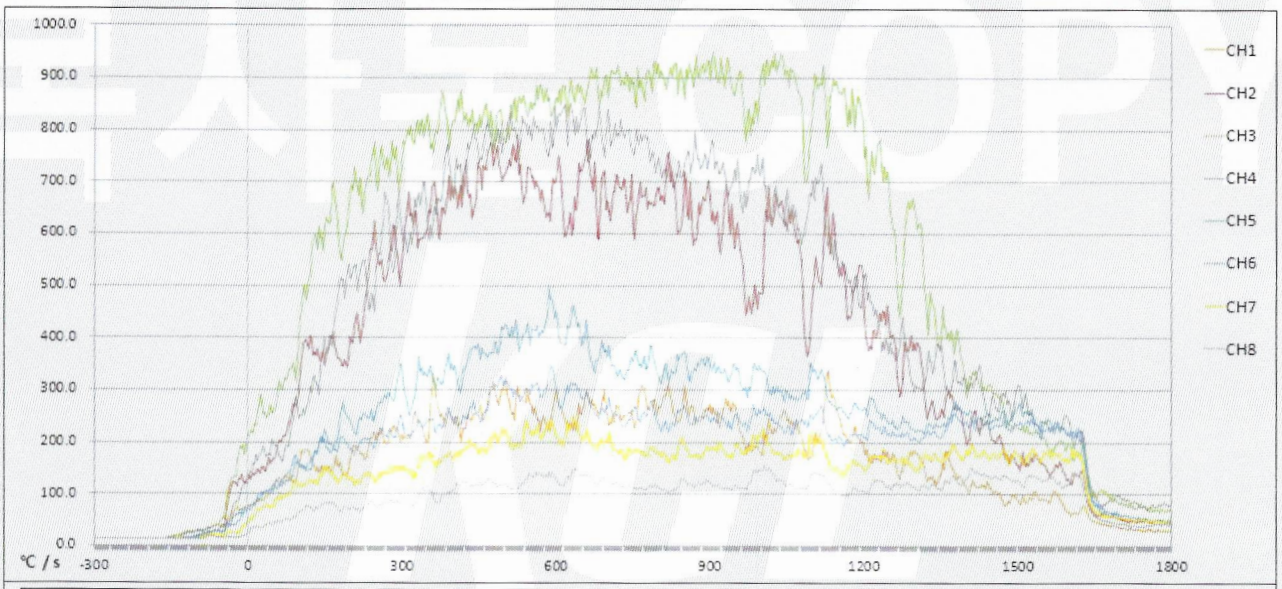
■ Temperature measurement

1) Start time (t_s) : 483 s (Time when the level 1 thermocouples temperature rises 200 K)

2) Start temperature (T_S) : 13.3 ℃

■ Level 1 (External thermocouples / TC 1~8)

* From the thermocouples temperature table and graph, "t = 0" refers to start time (t_s).



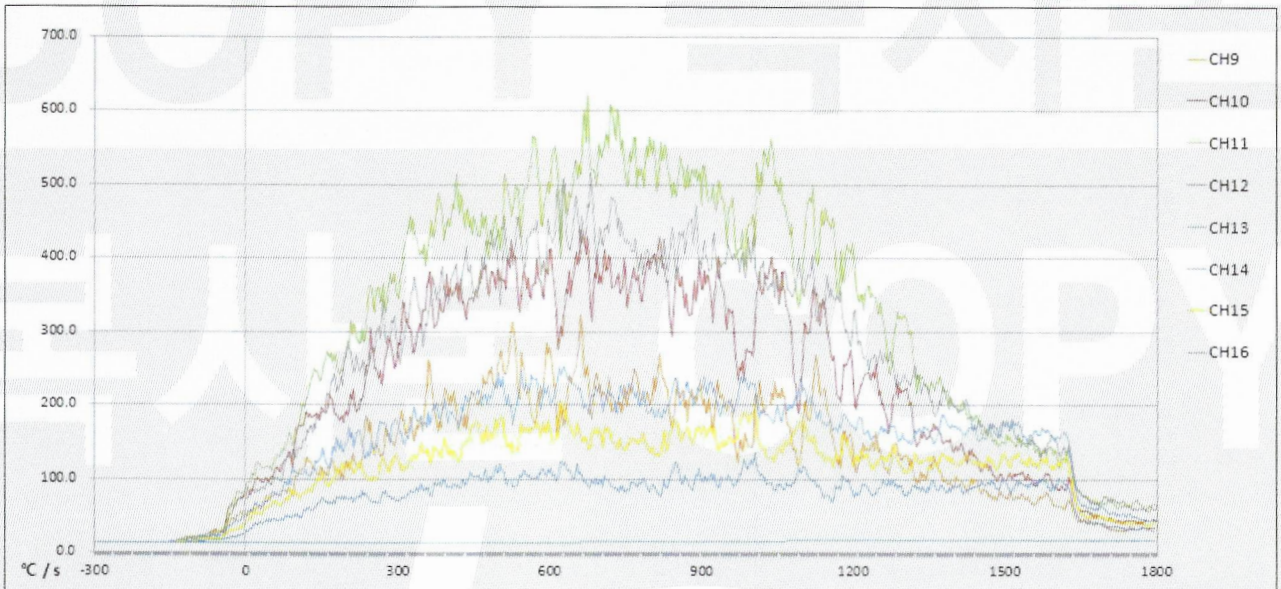
t (s)	TC 1	TC 2	TC 3	TC 4	TC 5	TC 6	TC 7	TC 8	t (s)	TC 1	TC 2	TC 3	TC 4	TC 5	TC 6	TC 7	TC 8
0	72.3	135.6	214.2	132.2	76.5	71.5	46.2	25.8	960	221.0	570.9	915.0	664.3	311.7	240.4	184.3	112.1
60	129.7	200.6	316.1	174.8	113.9	117.9	87.8	46.5	1020	221.4	615.6	933.5	630.9	293.2	242.2	186.0	144.6
120	175.5	403.8	517.3	306.3	147.6	161.7	125.8	74.2	1080	203.6	476.5	791.5	598.0	295.0	242.8	176.9	111.8
180	160.7	357.7	555.3	514.7	250.5	206.6	127.7	67.4	1140	288.9	641.5	896.8	549.8	273.0	203.9	148.6	110.3
240	207.5	571.0	751.7	486.7	262.0	195.5	132.4	86.3	1200	182.8	445.2	746.5	521.7	266.8	210.7	145.8	105.4
300	215.9	545.3	728.2	605.0	350.0	251.1	156.1	86.7	1260	173.6	394.9	608.3	368.4	229.9	215.5	169.9	118.6
360	329.3	696.2	755.0	629.4	316.7	245.0	174.5	95.4	1320	138.3	268.8	480.6	318.2	225.5	214.3	174.4	114.7
420	227.2	712.2	816.9	674.2	338.7	252.0	185.2	123.8	1380	139.0	265.4	394.3	357.7	278.4	256.0	186.6	132.2
480	301.5	739.2	763.7	779.1	388.8	309.7	216.9	120.5	1440	125.1	242.7	302.2	259.1	258.0	238.9	176.3	137.7
540	276.4	680.9	836.0	810.5	413.0	301.9	243.1	127.4	1500	88.0	156.6	229.6	310.6	270.4	236.0	175.5	128.1
600	300.2	704.7	861.7	803.9	450.9	306.4	213.5	130.4	1560	88.5	143.3	191.4	229.6	241.9	227.5	183.3	130.8
660	297.4	781.0	882.2	739.9	409.2	294.0	221.6	136.8	1620	66.7	136.8	171.9	203.4	224.8	219.9	177.4	132.7
720	267.3	713.1	926.0	794.0	325.1	252.6	182.4	123.1	1680	41.7	58.6	96.3	88.1	59.6	66.0	56.2	47.5
780	267.8	662.9	911.3	757.0	359.7	266.7	183.1	114.7	1740	31.9	49.1	84.1	76.6	53.3	54.2	51.5	38.0
840	236.9	606.1	904.6	740.9	356.9	257.4	188.4	115.1	1800	29.0	48.5	72.6	78.2	49.7	46.6	51.6	42.8
900	273.1	669.8	894.2	760.1	346.7	238.8	185.2	122.8									

[Unit : ℃]

Test Report

No : CT22-037327E

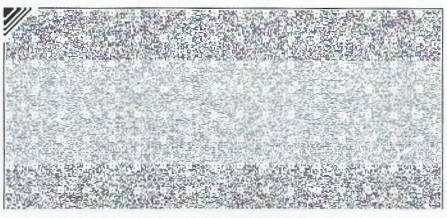
■ Level 2 (External thermocouples / TC 9 ~ 16)

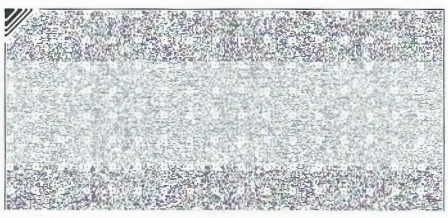


t (s)	TC 9	TC 10	TC 11	TC 12	TC 13	TC 14	TC 15	TC 16	t (s)	TC 9	TC 10	TC 11	TC 12	TC 13	TC 14	TC 15	TC 16
0	50.3	72.8	91.9	80.6	12.9	51.6	42.0	28.5	960	186.8	328.1	484.0	399.2	15.8	200.3	151.9	93.6
60	77.3	113.8	131.4	98.7	12.9	79.8	64.9	44.7	1020	202.7	350.0	499.8	389.4	16.0	189.6	141.6	105.8
120	128.8	188.4	209.0	166.6	13.0	106.9	85.2	59.1	1080	138.5	250.1	384.3	349.3	16.2	198.4	163.3	94.7
180	110.1	187.2	252.3	217.4	13.0	153.6	113.9	73.5	1140	221.3	344.8	446.2	342.2	16.4	174.9	132.2	78.1
240	181.1	252.9	340.8	245.0	13.1	136.7	98.2	76.5	1200	133.1	231.2	407.5	326.9	16.6	170.7	117.2	78.2
300	170.5	283.6	344.6	265.2	13.1	172.0	124.5	69.7	1260	121.5	202.9	314.9	257.6	16.8	163.1	129.6	97.7
360	260.8	368.4	419.6	325.7	13.2	190.1	138.2	87.5	1320	104.1	163.0	254.7	240.8	16.9	158.5	126.6	89.8
420	174.9	358.2	458.5	340.2	13.4	169.5	125.2	87.5	1380	96.3	148.1	218.7	224.5	17.0	186.9	132.6	87.0
480	246.8	349.2	399.2	419.0	13.6	214.4	152.8	94.8	1440	99.6	133.9	181.5	169.4	17.1	173.2	120.5	89.1
540	208.3	326.2	446.7	432.9	13.8	230.4	168.6	104.3	1500	74.5	98.7	149.6	171.9	17.2	174.0	131.9	98.6
600	277.7	412.0	488.7	433.7	14.0	210.9	164.9	108.3	1560	67.4	92.4	138.0	148.5	17.4	164.9	122.9	94.7
660	322.6	438.9	514.3	405.2	14.2	221.1	159.2	109.4	1620	62.5	85.1	127.1	133.3	17.5	161.5	123.0	92.6
720	220.7	398.7	608.7	466.3	14.5	212.3	160.8	92.6	1680	41.5	52.7	70.3	67.6	17.5	59.1	46.9	40.8
780	204.6	343.0	522.7	406.9	14.9	204.8	150.8	93.2	1740	31.3	43.3	65.4	65.3	17.5	49.9	39.8	32.1
840	166.8	292.9	482.1	442.5	15.3	216.5	167.3	108.0	1800	28.3	44.0	64.8	61.8	17.5	43.6	39.4	34.2
900	212.4	357.8	471.9	387.6	15.6	221.7	159.5	98.4								[Unit : ℃]	

■ Time of exceeding 600 ℃ continuously for 30 seconds at level 2 external thermocouples (TC 9 ~ 16)

TC 9	TC 10	TC 11	TC 12
Non	Non	3 s	Non
TC 13	**TC 14**	**TC 15**	**TC 16**
Non	Non	Non	Non

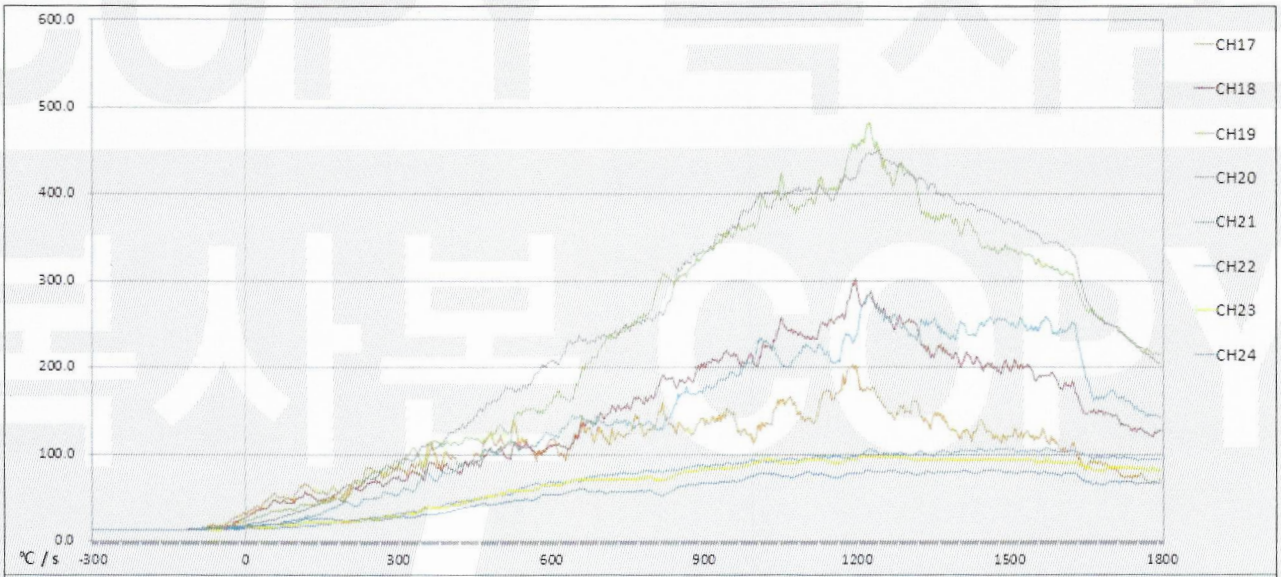




Test Report

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■ Level 2 (Insulation internal thermocouples / TC 17 ~ 24)



t (s)	TC 17	TC 18	TC 19	TC 20	TC 21	TC 22	TC 23	TC 24	t (s)	TC 17	TC 18	TC 19	TC 20	TC 21	TC 22	TC 23	TC 24
0	31.4	26.8	22.3	18.7	16.9	14.1	14.4	15.3	960	139.3	213.8	354.4	363.4	190.2	88.7	84.0	69.0
60	52.3	45.3	34.4	25.4	19.1	15.2	16.8	19.0	1020	131.2	223.3	392.6	402.1	229.2	91.2	92.9	78.0
120	64.8	54.9	42.6	36.8	27.2	17.7	21.4	25.7	1080	155.1	240.5	378.0	406.0	210.8	93.7	89.6	74.3
180	57.2	48.6	48.4	55.7	41.3	21.3	21.2	24.0	1140	174.8	250.6	405.6	400.0	214.8	96.8	92.5	75.9
240	84.1	66.8	73.9	72.7	48.0	26.6	25.1	25.7	1200	195.3	289.4	452.2	422.1	237.9	97.4	94.2	77.9
300	87.4	74.2	91.5	89.6	53.6	32.0	29.5	28.1	1260	149.7	256.9	423.6	439.6	258.8	100.6	96.3	81.1
360	112.8	89.9	99.5	111.8	78.4	37.6	37.9	31.5	1320	158.1	243.0	400.1	418.3	238.5	101.7	92.3	76.8
420	85.7	80.1	110.6	129.0	89.7	45.4	43.0	37.6	1380	131.4	214.1	374.3	400.6	236.4	102.0	94.2	79.7
480	124.7	107.1	123.2	158.2	102.4	51.5	52.0	42.8	1440	136.9	207.4	345.6	381.5	248.9	105.7	92.8	79.6
540	111.8	105.4	145.2	173.1	108.5	61.3	57.1	47.1	1500	119.7	196.0	337.7	371.1	250.7	104.6	92.2	79.3
600	117.0	109.5	160.3	207.6	124.0	67.9	64.3	53.6	1560	118.6	189.9	322.6	351.6	247.5	103.2	90.4	77.9
660	144.4	133.1	195.3	231.2	143.8	69.2	71.3	60.2	1620	103.4	177.9	308.1	333.6	250.1	104.1	89.6	78.5
720	123.5	155.1	239.6	235.1	135.5	76.8	70.8	57.4	1680	91.5	149.9	256.9	255.5	164.6	95.9	81.4	65.8
780	127.6	158.8	258.3	255.5	133.7	80.3	72.5	57.9	1740	72.3	126.8	227.2	230.4	157.7	95.2	84.9	68.0
840	131.9	184.3	294.0	293.9	154.1	82.1	75.2	59.0	1800	68.7	125.4	215.0	204.4	141.7	93.8	79.8	66.1
900	141.3	204.7	331.2	334.6	172.8	87.3	82.1	66.1	[Unit : ℃]								

■ Time of exceeding 600 ℃ continuously for 30 seconds at level 2 insulation internal thermocouples (TC 17 ~ 24)

TC 17	TC 18	TC 19	TC 20
Non	Non	Non	Non
TC 21	TC 22	TC 23	TC 24
Non	Non	Non	Non

----- End of report -----

