

# SEOHAN ANTAMIN CO., LTD TEST REPORT

## SCOPE OF WORK

NFPA 285 TESTING ON EXTERIOR NON-LOADING BEARING WALL ASSEMBLY CONTAINING  
SEOHAN ANTAMIN ALFA-FR 8-MM NON-COMBUSTIBLE PANELS

## REPORT NUMBER

G105484501SAT-003 R0

## TEST DATE

08/06/24

## ISSUE DATE

08/15/24

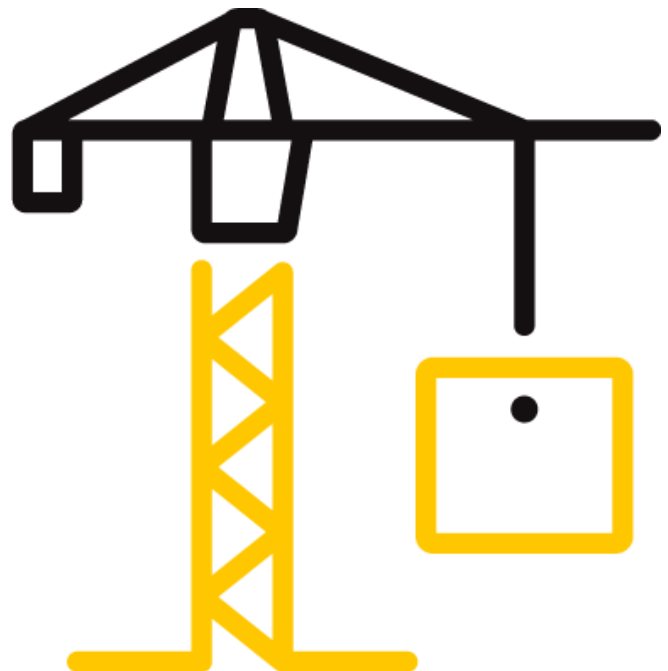
## PAGES

44

## DOCUMENT CONTROL NUMBER

GFT-OP-10c (09/29/20)

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## TEST REPORT FOR SEOHAN ANTAMIN CO., LTD

Report No.: G105484501SAT-003 R0

Date: 08/15/24

### REPORT ISSUED TO

**SEOHAN ANTAMIN CO., LTD**

165B-6L Namdong Ind.

Complex 741-8 Gojan-Dong

Namdong-Gu, Incheon

KOREA

### SECTION 1

#### SCOPE

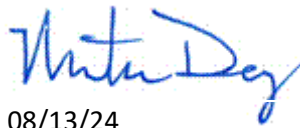
Intertek Testing Services NA, Inc. dba Intertek Building & Construction (B&C) was contracted by Seohan Antamin Co., Ltd, 165B-6L Namdong Ind., Complex 741-8 Gojan-Dong, Namdong-Gu, Incheon, Korea to perform testing in accordance with **NFPA 285, Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components** on their 8 mm Alfa-FR, Non-Combustible panels. Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at Intertek test facility in Elmendorf, Texas.

Unless differently required, Intertek reports apply the "Simple Acceptance" rule also called "Shared Risk approach," of ILAC-G8:09/2019, Guidelines on Decision Rules and Statements of Conformity.

Intertek B&C will service this report for the entire test record retention period. The test record retention period ends four years after the test date. Test records, such as detailed drawings, datasheets, representative samples of test specimens (where required by Certification or Accreditation bodies), or other pertinent project documentation, will be retained for the entire test record retention period.

For INTERTEK B&C:

<b>COMPLETED BY:</b>	Abel de Hoyos
	Manager – Project Engineering – Fire Resistance
<b>TITLE:</b>	
<b>SIGNATURE:</b>	
<b>DATE:</b>	08/12/24

<b>REVIEWED BY:</b>	Mike Dey
<b>TITLE:</b>	Senior Project Engineer
<b>SIGNATURE:</b>	
<b>DATE:</b>	08/13/24

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### SECTION 2

#### SUMMARY OF TEST RESULTS

The Seohan Antamin Co., Ltd, assembly with 8mm Non-Combustible panels **met** the requirements set forth by NFPA 285-23

### SECTION 3

#### TEST METHOD(S)

The specimen was evaluated in accordance with the following:

**NFPA 285-2023**, *Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components*

### SECTION 4

#### MATERIAL SOURCE/INSTALLATION

The panel samples were received by the test facility on 05/13/24 and assigned Intertek Sample ID SAT2405131353-001. The weather proofing products arrived on 03/01/24 and assigned Intertek Sample ID SAT2403011018-001 through -003 and the gasket material arrived on 07/24/24 and assigned Intertek Sample ID SAT2407241641-001. The J-channels arrived on 07/29/24 and assigned Intertek Sample ID SAT2407151007-001.

The wall assembly was constructed by Intertek personnel under the supervision of Chris Shin of Eastern Glass and Aluminum (EGA).

### SECTION 5

#### EQUIPMENT

ASSET #	DESCRIPTION	CAL DUE DATE
99LE006	DAQ	10/12/24
10319133	Thermo Hygrometer	12/12/24
170199534	Stopwatch	04/17/25

### SECTION 6

#### LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Jasmine Anguiano	Intertek B&C
Cooper Adams	Intertek B&C
Klarissa Gonzalez	Intertek B&C
Abel de Hoyos	Intertek B&C

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### SECTION 7

#### TEST PROCEDURE

The wall assembly was instrumented with thermocouples (TCs) in accordance with Figures 6.1(a) and 6.1(b); Detail H, of NFPA 285-2023 test method. 18 GA, Type K TCs were used in the burn room and 24 GA, Type K were used on the exterior façade and air space. The window burner was positioned in the center of the opening and 4.5-in. of the exterior face of the wall assembly. Testing was performed on 08/06/2024 in accordance with NFPA 285-2023 test method. The ambient conditions were 87.8°F and 67.6% relative humidity. Video recording, digital photographs, visual observations, and data collection were performed prior, during and after testing was completed. Temperature data was recorded every 15 seconds. The test was initiated at 09:36 am with the burners on for 30 minutes. All observations are recorded in the table located in Section 8. The apparatus is under calibrated conditions when the time average temperatures and the time average heat flux readings obtained for calibration wall match the requirements of Table 1.1.11 of NFPA 285-2023. Calibration data for the test furnace which was conducted on 04/07/23 is displayed below.

<b>Calibration Date:</b>	04/07/2023
<b>Window Burner Distance from Wall:</b>	4.5 in.

**Table 1 – Average Burner Output and Heat Flux Information**

TIME INTERVAL (MIN:SEC)	Gas Flow Values		Heat Flux Locations		
	ROOM BURNER (SCFM)	WINDOW BURNER (SCFM)	2 FT FLUX (W/cm <sup>2</sup> )	3 FT FLUX (W/cm <sup>2</sup> )	4 FT FLUX (W/cm <sup>2</sup> )
0:00-5:00	16.5	0	1	1.2	1
5:00-10:00	16.5	5.6	1.1	2.4	1.2
10:00-15:00	16.5	6.3	2.3	3.1	1.6
15:00-20:00	17.2	7.2	3.5	3.8	2
20:00-25:00	17.1	7.9	4.1	4.4	2.4
25:00-30:00	17.7	8.2	4.6	4.8	2.7

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**Table 2 – Average Time Temperature Values**

TIME INTERVAL (MIN:SEC)	Thermocouple Locations							
	BURN ROOM	INT. WALL	1FT	2FT	3FT	4FT	5FT	6FT
	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)
0:00-5:00	1075	1118	593	796	708	610	525	485
5:00-10:00	1281	1278	837	961	1001	945	847	773
10:00-15:00	1357	1320	940	1010	1044	990	879	798
15:00-20:00	1493	1434	1059	1078	1152	1140	1016	924
20:00-25:00	1535	1488	1150	1171	1241	1160	1000	897
25:00-30:00	1570	1581	1168	1224	1293	1283	1122	1022

## SECTION 8

### TEST SPECIMEN DESCRIPTION

**Interior Cladding** – 5/8-in. Type X gypsum

**Framing** – Framing consisted of 3-5/8-in. × 18 ft. × 20 GA steel studs fastened to 14-ft × 3-5/8-in. × 20 GA steel track at the top and the bottom of the assembly using #6 1/2-in. long self-drilling screws per stud flange. 18-ft × 3-5/8-in, 20 GA steel studs were placed vertically along the full height and space 16 in. oc.

**Exterior Cladding** – 5/8-in. DensGlass Exterior Sheathing installed horizontally and secured with 1-1/4-in. long self tapping screws spaced 8-in and 12-in. oc (perimeter and field)

**Weather Barrier** – Pecora Corporation ProPerm VP was applied with a roller to a wet thickness of 10-16 mils (7-12 DFT).

**Z-Girts** – 2-in high with 3-in. legs, secured directly over the weatherproofing and placed vertically on the wall.

**J-Channel** – 2-in deep channels used at the perimeter of the window and placed horizontally at panel intersections.

**Insulation** – 2-in. thick Rockwool® Roxul Cavityrock® attached vertically, and friction fitted between z-girts and J-channel

**Panels** – 8 mm thick Seohan Antamin Co., Ltd, Alfa-FR non-combustible panels. Refer to assembly drawings in Section 14. The assembly incorporated a vertical seam 6-in. from vertical centerline.

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**Window Flashing** – 0.04-in. thick aluminum flashing with a 2-in. lip on the interior face and extending flush to the exterior finish. Secured with 1/4-in. self-tapping screws at 6-in oc.

### SECTION 9

#### TEST RESULTS

TIME (Min: Sec)	OBSERVATIONS
Pre-Test	All thermocouples reading correctly
00:00	Test start at 09:36 am
00:23	Smoke coming from window
01:32	Flame tips out of window
01:56	Flashing header sagging
02:12	Smoke exiting right side perimeter as viewed
05:00	Window burner lit
05:34	Popping noises from panels
07:50	Pieces of flashing falling off
13:52	Smoke coming out from left joint as viewed
15:43	Flame on right side of window
16:16	Flame on left side of window
17:02	Warping panels on left side
26:07	Smoke coming out from middle joint above window
27:58	Outer skin on panels flaking off
30:00	End of test, burners off

#### SECOND FLOOR OBSERVATIONS

TIME (Min: Sec)	OBSERVATIONS
00:00	Test start at 09:36 am
02:00	Light smoke coming from bottom perimeter
05:00	Window burner lit
06:00	Light smoke continues. Room visibility at 100%
11:00	Smoke subsided. Room visibility at 100%
15:00	No change
22:00	Light smoke coming from lower center wall
27:00	Light smoke continues. Room visibility at 100%
30:00	End of test

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### SECTION 10

#### CONCLUSION

Test Requirements	Test Results	PASS/FAIL
Flames did not reach 10 ft. above the window opening header	Flames did not reach 10 ft above the window opening header	PASS
Flames did not reach a lateral distance of 5 ft from the vertical centerline	Flames did not reach a lateral distance of 5 ft from the vertical centerline	PASS
Flames did not propagate beyond the limits of the first story test room	Flames did not propagate beyond the limits of the first story test room	PASS
No visible flaming in the second story test room	No visible flaming in the second story test room	PASS
TCs 11 and 14-17 (1000°F)	TCs 11 and 14-17 did not exceed their 1000°F limit	PASS
TCs 18-19, 28, and 31-40 (1000°F) Air cavity temps	TCs 18-19, 28, and 31-40 did not exceed their 1000°F limit	PASS
TCs 49-54 (500°F above ambient) 2 <sup>nd</sup> floor temps	TCs 49-54 did not exceed 500°F above their ambient temperatures	PASS

The assembly described containing 8 mm thick Seohan Antamin Co., Ltd, Alfa-FR non-combustible panels **met** the Conditions of Acceptance of NFPA 285-23.

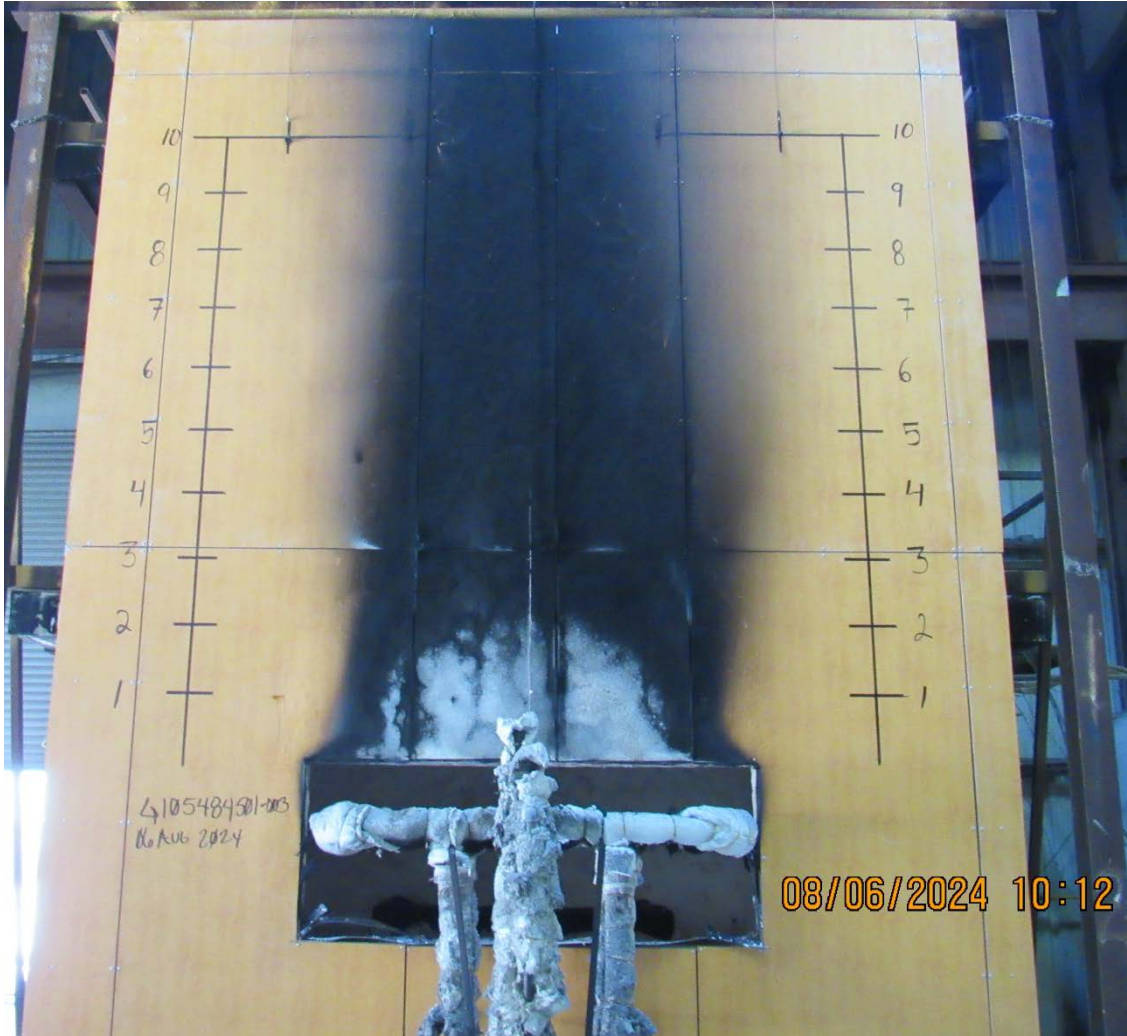
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### SECTION 11

#### PHOTO OF EXTERIOR BURN PATTERN





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### SECTION 12

#### PHOTOGRAPHS



Photo No. 1  
J-Channel Used



Photo No. 2  
Z-Girt Used

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Photo No. 3  
Weather Barrier Used



Photo No. 4  
Caulking Used on Joints and Window Perimeter

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**Photo No. 5**  
**Intumescent Tape used Behind Panel Edges**



**Photo No. 6**  
**Window Perimeter after Treatment**

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**Photo No. 7**  
**Panel Installation in Progress**



**Photo No. 8**  
**Exterior View Prior to Testing**



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**Photo No. 9**  
**Second Floor View Prior to Testing**



**Photo No. 10**  
**Ignition of Burn Room**

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**Photo No. 11**  
**Window Burner Ignition**



**Photo No. 12**  
**Exterior View During Test**

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**Photo No. 13**

**Exterior View During Test**



**Photo No. 14**

**View of Wall Post Burners Off**

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**Photo No. 15**

**Post-Test View of Wall with Panels Removed**



**Photo No. 16**

**Post Test View of Interior Side of Panels**



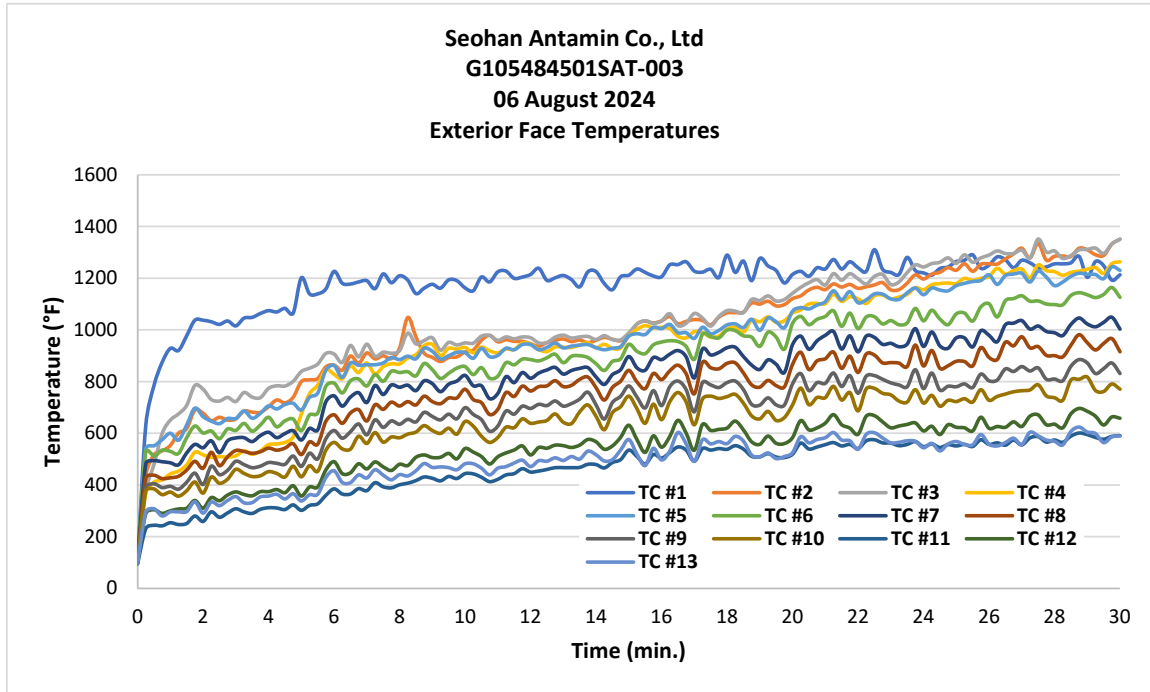
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**SECTION 13**

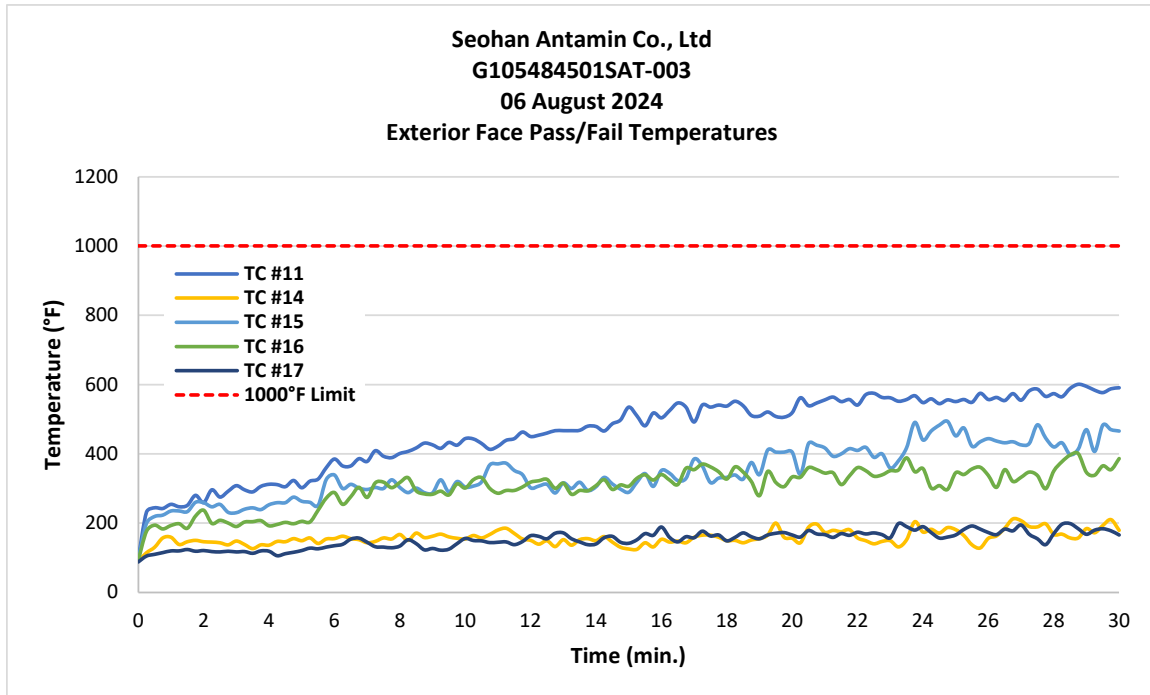
**GRAPHS**



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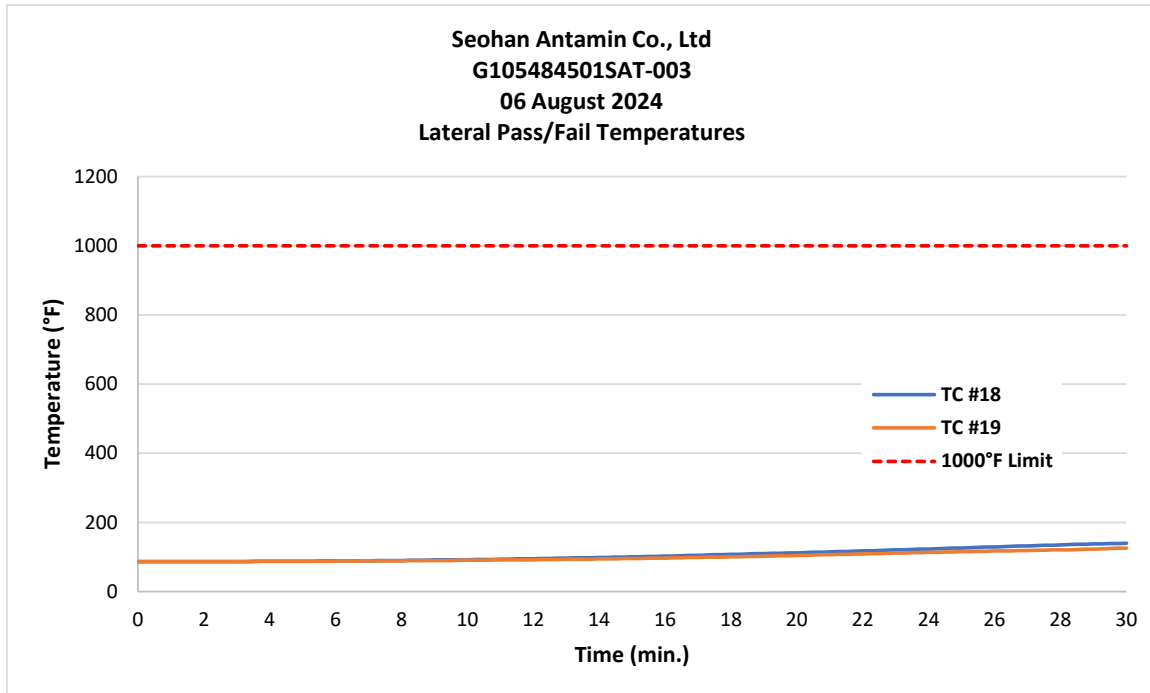
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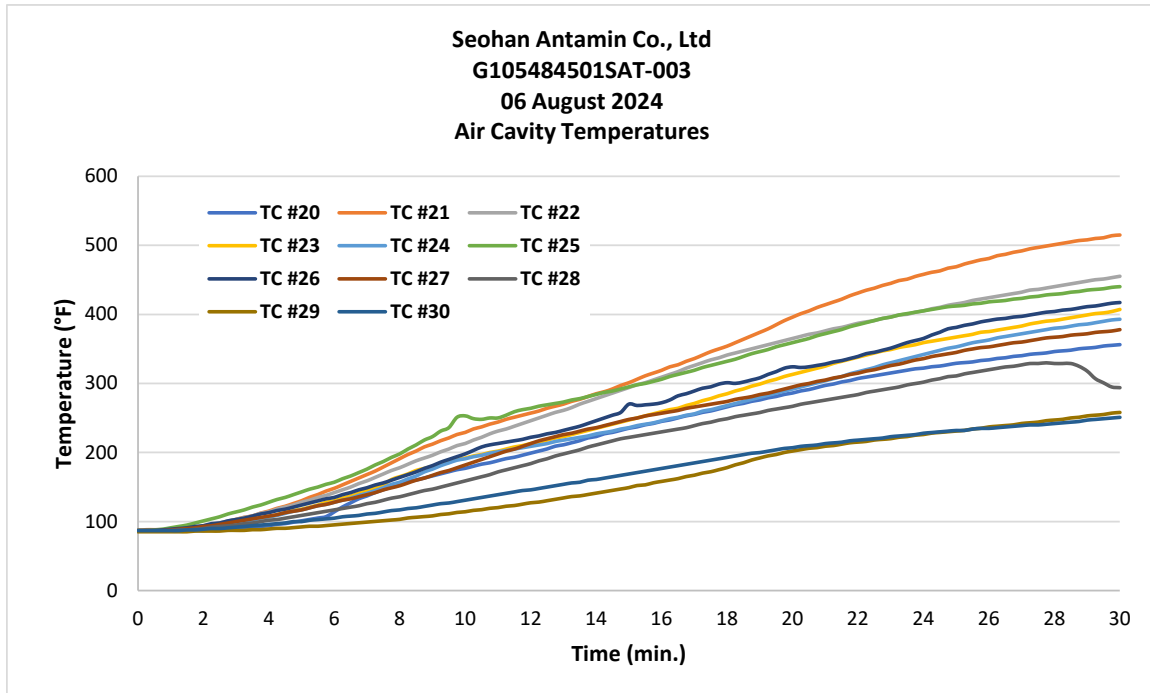
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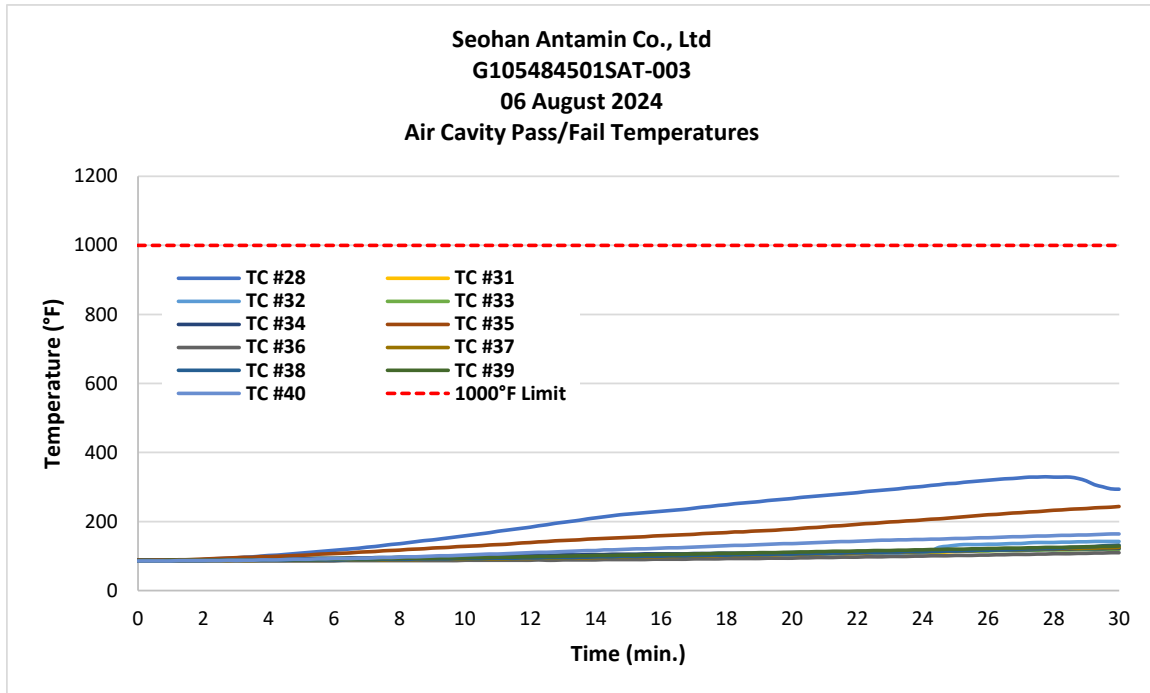
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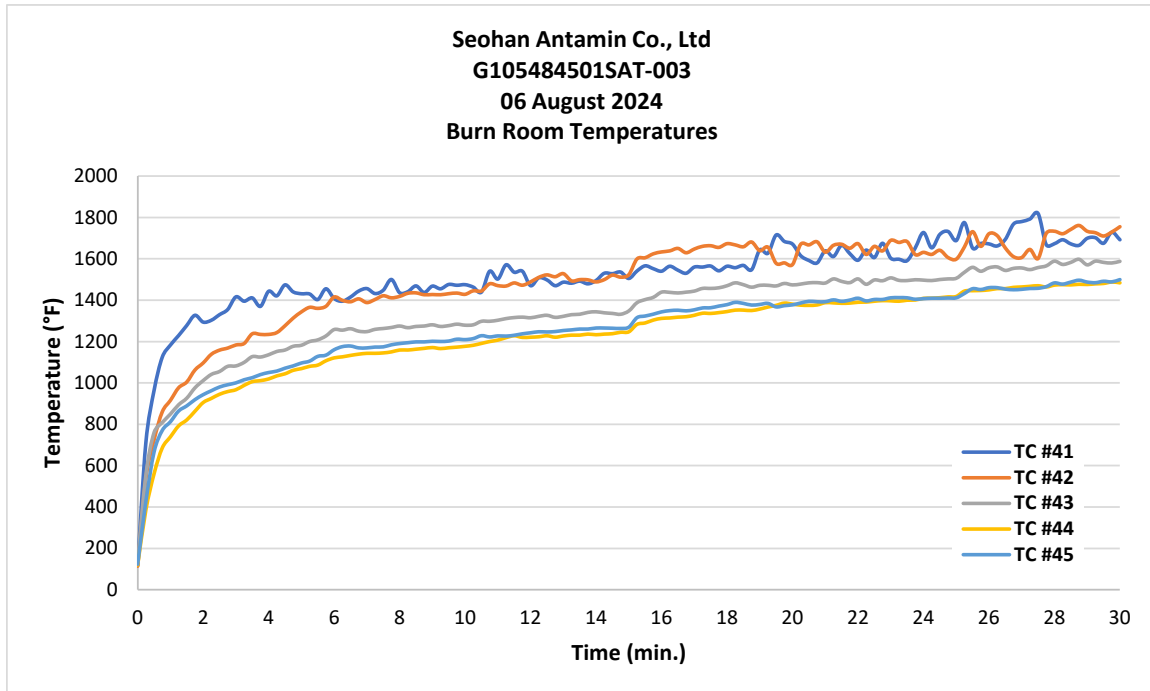
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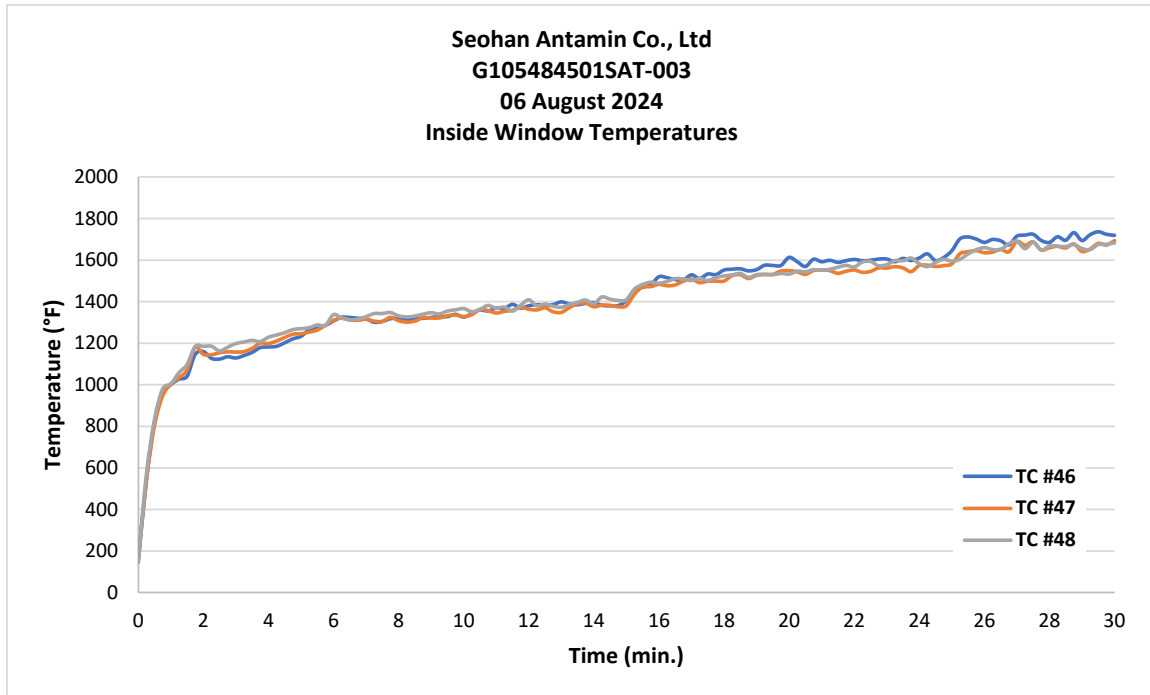
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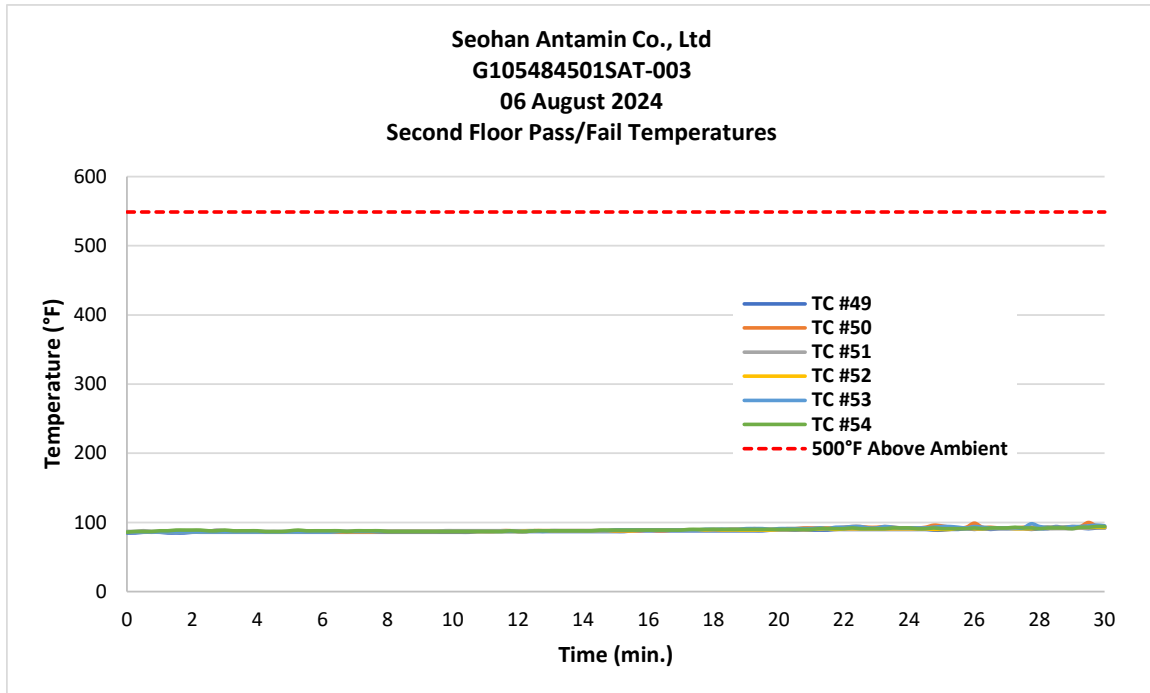
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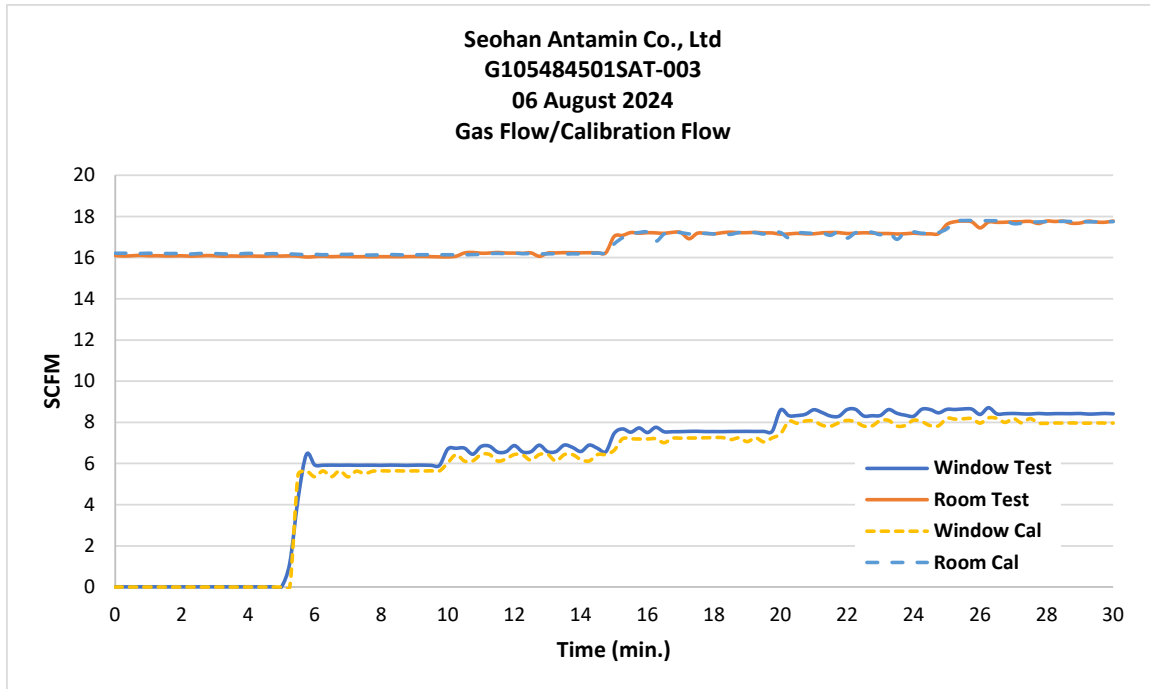




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### SECTION 14

#### NUMERICAL DATA

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Seohan Antamin Co., Ltd

06-Aug-2024

Time (min)	Pass/ Fail												TC #13 (°F)
	TC #1 (°F)	TC #2 (°F)	TC #3 (°F)	TC #4 (°F)	TC #5 (°F)	TC #6 (°F)	TC #7 (°F)	TC #8 (°F)	TC #9 (°F)	TC #10 (°F)	TC #11 (°F)	TC #12 (°F)	
0	97	123	106	100	108	106	105	103	102	102	95	97	97
0.25	630	437	374	369	541	530	482	427	389	377	231	289	295
0.5	784	517	479	411	551	511	494	438	405	385	244	304	308
0.75	874	532	599	420	575	535	490	425	390	363	242	290	280
1	928	553	651	443	600	530	486	428	395	373	254	300	296
1.25	920	601	675	454	573	522	478	434	384	357	247	307	296
1.5	977	618	708	478	632	583	524	458	411	378	251	310	297
1.75	1037	690	785	527	697	628	557	492	446	412	280	340	335
2	1037	678	771	517	664	601	544	465	402	369	259	310	291
2.25	1031	649	731	507	647	609	571	527	473	431	296	351	334
2.5	1021	662	725	510	637	579	525	475	440	407	275	339	320
2.75	1034	651	739	508	657	617	571	510	457	423	292	361	340
3	1015	656	723	513	657	611	582	534	492	461	308	373	355
3.25	1045	686	758	532	686	638	583	530	479	445	296	363	331
3.5	1048	682	740	519	658	608	568	523	467	433	290	358	332
3.75	1063	681	738	532	677	632	591	529	473	436	306	374	354
4	1074	703	774	556	706	662	604	543	487	452	312	374	357
4.25	1069	729	784	559	694	625	583	535	484	445	311	382	364
4.5	1083	718	783	565	711	648	599	543	480	431	305	370	346
4.75	1064	739	801	586	716	655	610	560	512	473	323	397	366
5	1201	800	839	674	690	610	574	518	472	432	302	357	338
5.25	1139	807	852	753	739	671	619	567	523	475	321	392	362
5.5	1139	812	868	786	755	678	613	558	501	453	327	392	364
5.75	1158	857	909	847	844	782	722	647	579	535	360	458	429
6	1226	864	907	828	862	794	745	672	611	565	385	490	455
6.25	1180	844	874	811	816	756	705	639	581	540	365	444	410
6.5	1177	899	940	860	872	803	740	679	606	539	365	447	409
6.75	1185	871	896	835	863	810	757	692	636	589	386	482	439
7	1190	911	945	872	865	783	719	648	594	561	378	462	427
7.25	1159	888	898	829	865	827	785	711	652	603	409	489	459
7.5	1216	900	914	858	872	801	750	693	623	566	393	470	438
7.75	1182	889	910	869	893	840	787	721	648	586	389	456	420
8	1209	930	920	868	885	835	778	706	635	583	401	480	440
8.25	1192	1048	988	891	898	838	786	723	654	597	407	475	435
8.5	1140	973	946	904	888	822	765	710	644	605	417	507	455
8.75	1161	910	959	939	929	870	803	744	681	630	431	516	483
9	1176	894	970	944	917	846	792	723	665	611	426	506	468
9.25	1161	878	922	900	887	812	761	715	652	600	416	507	470
9.5	1193	893	952	929	900	832	790	737	674	620	433	522	467
9.75	1190	896	942	925	913	852	802	737	656	597	425	501	459
10	1162	915	950	932	912	858	824	771	699	646	444	541	482
10.25	1151	922	949	911	890	827	784	731	673	628	443	527	482
10.5	1204	960	976	933	928	854	784	719	653	589	430	510	465
10.75	1185	979	979	919	896	813	734	673	608	565	413	481	439
11	1224	954	960	911	901	821	754	693	628	584	422	509	465
11.25	1227	962	973	926	929	873	819	758	686	624	439	524	471
11.5	1199	956	966	924	923	865	796	743	674	622	444	535	485
11.75	1204	956	973	949	943	887	835	783	705	656	463	551	496



Total Quality. Assured.

16015 Shady Falls Road  
Elmendorf, Texas 78112  
Telephone: 210-635-8100  
Facsimile: 210-635-8101  
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Seohan Antamin Co., Ltd

06-Aug-2024

Time (min)	Pass/ Fail												TC #13 (°F)
	TC #1 (°F)	TC #2 (°F)	TC #3 (°F)	TC #4 (°F)	TC #5 (°F)	TC #6 (°F)	TC #7 (°F)	TC #8 (°F)	TC #9 (°F)	TC #10 (°F)	TC #11 (°F)	TC #12 (°F)	
12	1214	947	970	945	943	885	813	764	696	639	450	516	471
12.25	1238	937	950	924	923	880	833	781	712	644	454	545	494
12.5	1191	951	951	916	932	892	845	784	707	650	460	542	492
12.75	1201	960	972	934	949	906	855	804	725	675	467	554	505
13	1210	965	980	933	930	873	829	781	705	643	467	552	495
13.25	1194	955	969	932	937	898	843	786	715	638	467	545	510
13.5	1166	961	973	941	941	900	851	809	732	683	468	554	500
13.75	1224	951	975	950	943	893	854	818	759	710	480	576	531
14	1225	960	963	931	931	869	818	777	710	666	479	567	517
14.25	1179	971	978	944	923	843	789	729	655	614	466	538	493
14.5	1155	964	963	928	929	878	827	778	719	680	487	551	498
14.75	1205	958	962	930	935	888	846	802	743	703	498	584	535
15	1211	977	989	976	976	944	897	844	783	744	535	631	576
15.25	1235	1023	1023	1002	985	917	853	799	740	695	510	575	519
15.5	1222	1034	1036	1016	982	908	844	773	698	639	481	526	475
15.75	1208	1027	1026	1008	1010	942	893	832	765	713	518	590	542
16	1205	1035	1035	1010	1005	953	885	808	707	653	504	546	497
16.25	1251	1052	1063	1005	1021	958	906	842	780	722	525	587	531
16.5	1252	1024	1017	975	989	955	920	864	802	758	547	650	603
16.75	1263	1033	1026	969	989	936	896	831	769	722	535	601	559
17	1227	1040	1064	993	967	886	814	753	683	633	492	534	492
17.25	1223	1037	1046	989	1010	983	926	875	796	733	541	634	575
17.5	1234	1020	1015	972	985	974	903	854	787	744	535	611	559
17.75	1202	1049	1052	976	998	969	913	850	777	735	541	615	568
18	1289	1066	1075	1003	1019	999	931	871	796	742	538	620	560
18.25	1222	1067	1073	1010	1023	997	933	873	802	751	552	647	588
18.5	1266	1069	1067	991	1009	977	897	834	769	717	539	613	570
18.75	1190	1104	1118	1038	1041	972	864	788	712	668	511	567	516
19	1276	1100	1114	1031	998	936	847	779	709	656	509	557	509
19.25	1247	1111	1132	1050	1046	991	884	805	737	685	521	589	524
19.5	1229	1093	1112	1029	1031	972	867	785	710	650	508	561	502
19.75	1181	1098	1118	1035	1008	925	835	780	709	661	506	560	510
20	1214	1121	1142	1065	1072	1025	943	867	791	710	519	583	525
20.25	1226	1132	1165	1077	1086	1052	976	914	831	775	562	649	587
20.5	1207	1155	1183	1100	1081	1020	925	847	765	711	539	613	563
20.75	1240	1165	1195	1102	1096	1041	958	881	796	739	547	621	576
21	1235	1156	1174	1101	1109	1052	979	889	793	738	556	639	583
21.25	1272	1178	1218	1138	1151	1074	994	915	833	782	564	672	603
21.5	1235	1166	1193	1110	1116	1014	926	852	781	729	551	633	574
21.75	1263	1176	1218	1128	1148	1065	977	899	823	758	557	620	571
22	1240	1161	1198	1120	1105	1005	915	836	755	687	541	596	538
22.25	1226	1167	1178	1102	1116	1050	976	907	821	772	571	666	596
22.5	1310	1174	1207	1132	1139	1051	971	903	823	774	575	668	602
22.75	1234	1183	1215	1135	1138	1023	944	873	809	755	563	644	582
23	1222	1155	1176	1120	1120	1036	948	874	795	749	562	621	563
23.25	1214	1156	1186	1127	1118	1020	935	872	787	725	552	628	565
23.5	1280	1181	1222	1137	1143	1027	945	859	780	721	557	634	571
23.75	1229	1213	1252	1163	1162	1083	1005	942	846	769	568	640	569



Total Quality. Assured.

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Report No.: G105484501SAT-003 R0

Date: 08/15/24

G105484501SAT-003

Seohan Antamin Co., Ltd

06-Aug-2024

Time (min)	Pass/ Fail												
	TC #1 (°F)	TC #2 (°F)	TC #3 (°F)	TC #4 (°F)	TC #5 (°F)	TC #6 (°F)	TC #7 (°F)	TC #8 (°F)	TC #9 (°F)	TC #10 (°F)	TC #11 (°F)	TC #12 (°F)	TC #13 (°F)
24	1220	1197	1244	1155	1136	1035	936	861	773	717	548	609	544
24.25	1211	1216	1257	1174	1162	1076	992	921	833	747	559	627	561
24.5	1237	1223	1262	1179	1154	1042	938	852	767	705	545	595	532
24.75	1243	1241	1279	1181	1151	1020	929	862	782	728	556	633	559
25	1264	1231	1258	1179	1171	1062	969	879	780	723	551	623	568
25.25	1269	1256	1291	1199	1180	1065	969	878	791	734	557	621	557
25.5	1290	1227	1262	1191	1187	1034	934	861	777	721	549	609	555
25.75	1238	1254	1279	1199	1191	1089	997	932	829	769	575	662	595
26	1250	1256	1290	1206	1213	1101	979	894	803	728	557	619	558
26.25	1282	1255	1306	1238	1176	1050	954	886	806	743	563	626	551
26.5	1271	1275	1296	1215	1210	1113	1020	953	849	752	554	623	564
26.75	1240	1294	1296	1229	1216	1121	1026	939	839	761	574	644	581
27	1269	1316	1309	1235	1219	1132	1036	974	858	765	555	626	557
27.25	1259	1278	1279	1200	1185	1111	1003	931	841	768	582	666	604
27.5	1240	1335	1352	1251	1227	1112	1015	936	853	788	587	671	590
27.75	1243	1270	1302	1229	1204	1100	994	902	809	745	566	633	574
28	1255	1285	1306	1225	1171	1098	989	901	810	738	574	635	569
28.25	1255	1286	1277	1211	1185	1097	978	896	803	728	565	621	555
28.5	1259	1284	1288	1222	1207	1133	1021	941	859	806	589	675	607
28.75	1284	1316	1310	1227	1219	1144	1046	982	885	809	601	696	624
29	1203	1310	1312	1234	1215	1136	1023	951	872	818	595	685	605
29.25	1264	1291	1317	1241	1214	1125	1012	923	831	766	584	666	599
29.5	1248	1288	1296	1218	1198	1137	1029	948	850	762	577	632	564
29.75	1192	1332	1333	1256	1244	1164	1049	967	872	791	588	663	586
30	1213	1351	1352	1263	1230	1126	1003	916	831	771	591	658	590
Max Temp	601												
Max Allw	1000												

## TEST REPORT FOR SEOHAN ANTAMIN CO., LTD

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Time (min)	Pass/ Fail	Pass/ Fail	Pass/ Fail	Pass/ Fail	Pass/ Fail	Pass/ Fail	TC #14	TC #15	TC #16	TC #17	TC #18	TC #19	TC #20	TC #21	TC #22	TC #23	TC #24	TC #25	TC #26	TC #27
	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)
0	90	96	92	88	87	87	86	87	87	87	87	87	87	87	87	87	87	87	87	87
0.25	114	199	176	105	87	87	86	88	87	87	87	87	87	87	87	87	87	87	87	87
0.5	130	219	194	110	87	87	86	88	87	87	87	87	87	87	87	87	87	87	87	87
0.75	157	223	183	115	87	87	86	88	88	87	87	87	87	87	87	87	87	87	87	87
1	159	235	193	120	87	87	86	88	88	88	87	87	87	87	87	87	87	87	87	87
1.25	138	235	198	120	87	87	86	89	89	88	88	87	87	87	87	87	87	87	87	87
1.5	146	233	185	124	87	87	87	90	91	89	89	89	89	89	89	89	89	89	89	89
1.75	150	260	220	119	87	87	87	91	92	90	90	90	90	90	90	90	90	90	90	90
2	146	259	237	121	87	87	87	93	94	91	91	91	91	91	91	91	91	91	91	91
2.25	145	247	199	118	87	87	88	95	96	93	93	93	93	93	93	93	93	93	93	93
2.5	143	254	208	117	87	87	88	97	98	94	94	94	94	94	94	94	94	94	94	94
2.75	137	231	200	119	87	87	89	100	101	96	97	111	101	98	97	97	97	97	97	97
3	148	230	190	117	87	87	90	103	103	98	98	114	103	100	98	98	98	98	98	98
3.25	138	240	203	118	87	87	91	106	106	100	100	117	105	102	100	100	100	100	100	100
3.5	126	244	204	113	88	87	92	108	108	103	102	121	108	104	103	103	103	103	103	103
3.75	137	239	207	120	88	88	93	112	112	105	105	124	111	106	105	105	105	105	105	105
4	136	253	192	119	88	88	94	115	114	107	107	128	113	108	107	107	107	107	107	107
4.25	147	259	196	106	88	88	96	119	118	110	109	132	116	110	109	109	109	109	109	109
4.5	146	259	202	112	88	88	97	122	121	113	112	135	118	113	112	112	112	112	112	112
4.75	155	275	198	116	88	88	99	126	124	116	115	139	121	115	115	115	115	115	115	115
5	149	263	205	121	88	88	101	130	128	118	117	143	124	117	117	117	117	117	117	117
5.25	157	260	203	128	88	88	103	135	131	121	120	147	127	120	120	120	120	120	120	120
5.5	141	251	237	126	89	88	105	139	135	124	123	150	130	123	123	123	123	123	123	123
5.75	154	326	272	131	89	88	107	144	138	128	125	154	133	125	125	125	125	125	125	125
6	155	339	288	135	89	88	114	148	142	130	128	157	135	128	128	128	128	128	128	128
6.25	162	300	254	139	89	89	121	153	146	134	131	162	139	131	131	131	131	131	131	131
6.5	155	312	276	154	89	88	127	158	150	137	134	166	142	133	134	134	134	134	134	134
6.75	152	301	303	157	89	89	133	163	155	141	138	171	146	136	138	138	138	138	138	138
7	143	297	274	145	89	89	137	168	159	145	141	176	149	139	145	145	145	145	145	145
7.25	147	303	316	132	90	89	142	173	164	149	145	182	153	142	149	149	149	149	149	149
7.5	157	300	318	131	90	89	146	179	169	153	149	187	156	146	153	153	153	153	153	153
7.75	154	325	302	129	90	89	150	185	174	161	154	193	160	149	154	154	154	154	154	154
8	167	303	317	134	90	89	154	191	178	165	157	198	164	152	157	157	157	157	157	157
8.25	150	288	331	152	91	90	158	197	183	169	162	205	168	156	169	169	169	169	169	169
8.5	171	301	293	141	91	90	160	202	188	174	166	211	172	160	174	174	174	174	174	174
8.75	158	288	284	123	91	90	163	208	192	177	172	218	177	163	177	177	177	177	177	177
9	162	287	283	127	92	90	166	212	196	180	176	223	181	167	180	180	180	180	180	180
9.25	168	325	292	122	92	90	169	217	201	184	181	231	186	171	201	201	201	201	201	201
9.5	160	290	281	125	92	90	172	221	205	188	185	236	190	174	205	205	205	205	205	205
9.75	156	320	313	141	92	91	175	226	210	190	189	251	194	178	210	210	210	210	210	210
10	154	304	301	156	92	91	177	229	213	192	191	253	198	182	213	213	213	213	213	213
10.25	164	307	325	150	93	91	180	234	218	195	194	249	203	186	218	218	218	218	218	218
10.5	157	319	331	149	93	91	183	237	222	197	196	248	208	190	222	222	222	222	222	222
10.75	167	368	300	144	93	92	185	241	227	200	199	250	211	194	227	227	227	227	227	227
11	180	371	286	145	94	92	188	244	231	202	201	250	213	198	231	231	231	231	231	231
11.25	185	373	294	146	94	92	191	248	234	205	203	254	215	202	234	234	234	234	234	234
11.5	170	352	294	138	95	92	193	251	238	208	205	259	217	205	238	238	238	238	238	238
11.75	154	340	304	147	95	92	196	254	242	210	207	262	219	209	242	242	242	242	242	242



## TEST REPORT FOR SEOHAN ANTAMIN CO., LTD

Report No.: G105484501SAT-003 R0

Date: 08/15/24

G105484501SAT-003

Seohan Antamin Co., Ltd

06-Aug-2024

Time (min)	Pass/ Fail	Pass/ Fail	Pass/ Fail	Pass/ Fail	Pass/ Fail	Pass/ Fail	TC #14	TC #15	TC #16	TC #17	TC #18	TC #19	TC #20	TC #21	TC #22	TC #23	TC #24	TC #25	TC #26	TC #27
	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)
12	150	302	318	164	95	92	199	257	246	213	209	264	222	213						
12.25	139	307	322	162	96	93	202	260	250	215	211	267	224	217						
12.5	149	312	326	155	96	93	205	264	254	218	213	269	227	220						
12.75	132	287	300	171	97	93	209	267	258	221	216	271	229	223						
13	152	316	315	172	97	94	211	270	261	223	218	273	232	226						
13.25	136	300	283	155	98	94	214	274	265	226	220	276	235	228						
13.5	152	318	294	146	98	94	217	277	270	229	222	278	238	231						
13.75	155	294	293	138	98	94	221	281	274	232	224	281	242	234						
14	149	305	308	140	99	95	223	285	278	235	227	284	246	236						
14.25	161	332	325	158	99	95	227	288	282	238	229	287	250	239						
14.5	145	313	297	162	100	95	229	292	286	241	231	289	254	242						
14.75	130	298	310	145	100	96	232	297	290	244	234	292	258	245						
15	125	289	306	142	101	96	235	301	294	247	236	295	270	248						
15.25	124	318	329	152	101	96	237	306	298	250	239	298	268	250						
15.5	143	343	339	170	102	97	240	311	301	253	241	300	269	253						
15.75	131	306	324	165	102	97	242	315	305	256	243	303	270	255						
16	153	352	340	189	103	97	245	319	309	259	246	306	272	257						
16.25	145	344	324	159	103	98	247	324	313	262	249	310	276	259						
16.5	148	323	311	146	104	98	250	327	317	264	251	313	282	261						
16.75	143	329	358	161	105	99	253	332	322	268	254	316	285	264						
17	159	385	354	158	105	99	255	336	326	271	256	319	289	266						
17.25	165	365	370	177	106	100	258	341	330	275	260	323	293	268						
17.5	165	317	362	163	107	100	260	346	334	278	262	326	295	270						
17.75	159	330	348	166	107	100	263	350	337	282	265	329	299	272						
18	149	332	327	149	108	101	266	354	341	285	268	332	301	274						
18.25	150	339	362	159	108	101	269	359	344	289	271	335	300	277						
18.5	143	327	347	172	109	102	271	364	347	292	274	339	302	279						
18.75	151	375	320	161	110	102	274	369	350	296	277	343	305	281						
19	155	340	279	155	110	103	276	374	353	299	280	346	308	284						
19.25	165	411	349	166	111	103	279	379	356	303	283	349	313	286						
19.5	200	405	317	171	111	104	281	385	359	306	286	353	317	289						
19.75	159	405	305	173	112	104	284	391	362	310	289	356	322	292						
20	156	405	333	166	112	105	286	396	365	313	292	359	324	295						
20.25	143	341	332	160	113	105	289	401	368	316	295	362	323	298						
20.5	188	430	360	179	114	106	291	405	371	319	298	365	324	300						
20.75	197	425	354	169	114	107	294	410	373	322	301	369	326	303						
21	173	417	344	167	115	107	297	414	376	325	304	372	328	305						
21.25	179	393	345	159	116	108	299	418	379	329	307	375	331	308						
21.5	175	400	311	170	116	108	302	422	381	332	310	378	333	310						
21.75	181	415	336	165	117	109	304	427	384	335	314	382	336	313						
22	157	410	360	174	118	109	307	431	387	338	317	385	339	315						
22.25	149	419	351	169	118	110	309	435	389	341	320	388	343	318						
22.5	140	390	335	172	119	110	311	438	391	344	323	391	345	320						
22.75	147	400	339	167	120	111	313	442	394	347	327	394	348	323						
23	149	359	351	158	121	112	315	445	396	349	330	396	351	326						
23.25	131	380	353	199	121	112	317	449	399	352	333	399	355	328						
23.5	152	418	388	190	122	113	319	451	400	354	336	401	359	331						
23.75	204	491	348	180	123	113	321	455	403	356	339	403	362	334						



Total Quality. Assured.

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Date: 08/15/24

G105484501SAT-003

Seohan Antamin Co., Ltd

06-Aug-2024

	Pass/ Fail	Pass/ Fail	Pass/ Fail	Pass/ Fail	Pass/ Fail	Pass/ Fail									
Time (min)	TC #14 (°F)	TC #15 (°F)	TC #16 (°F)	TC #17 (°F)	TC #18 (°F)	TC #19 (°F)	TC #20 (°F)	TC #21 (°F)	TC #22 (°F)	TC #23 (°F)	TC #24 (°F)	TC #25 (°F)	TC #26 (°F)	TC #27 (°F)	
24	174	440	357	190	123	114	322	458	405	359	342	405	365	336	
24.25	182	466	301	173	124	114	324	461	408	361	345	407	370	339	
24.5	171	483	308	157	125	115	325	463	410	363	348	409	374	341	
24.75	187	494	297	160	126	115	327	467	413	365	351	411	379	343	
25	181	452	345	166	126	116	329	469	415	367	353	412	381	345	
25.25	164	475	340	182	127	116	330	473	417	369	356	413	384	348	
25.5	137	422	356	192	128	117	331	476	420	371	359	415	386	350	
25.75	128	435	361	183	129	117	333	479	422	374	361	416	389	352	
26	156	444	337	173	129	118	334	481	424	375	363	418	391	353	
26.25	163	437	303	167	130	118	336	485	426	377	366	419	393	355	
26.5	185	432	354	183	131	118	337	487	428	379	368	420	394	357	
26.75	212	435	320	178	132	119	339	490	430	381	370	422	396	359	
27	207	426	332	195	132	119	340	492	432	383	372	423	397	360	
27.25	190	430	347	168	133	120	342	495	435	386	374	425	399	362	
27.5	189	484	337	155	134	120	343	497	436	388	376	426	401	364	
27.75	198	446	299	138	134	121	344	499	438	390	378	428	403	366	
28	167	420	350	170	135	121	346	501	440	391	380	429	404	367	
28.25	168	432	377	197	136	121	347	503	442	393	381	430	406	368	
28.5	157	398	396	199	137	122	348	505	444	395	383	432	407	370	
28.75	157	414	400	184	137	123	350	507	446	397	385	433	409	371	
29	184	470	346	168	138	123	351	508	448	399	386	435	411	372	
29.25	172	407	338	180	138	124	352	510	450	401	388	436	412	374	
29.5	193	483	365	184	139	125	354	511	451	402	390	437	414	375	
29.75	210	470	354	178	139	126	355	514	453	404	392	439	416	376	
30	179	466	386	166	140	126	356	515	455	407	393	440	417	378	
Max Temp	212	494	400	199	140	126									
Max Allw	1000	1000	1000	1000	1000	1000									



Total Quality. Assured.

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Time (min)	Pass/ Fail	Pass/ Fail	Pass/ Fail	Pass/ Fail	Pass/ Fail	Pass/ Fail	Pass/ Fail	Pass/ Fail	Pass/ Fail	Pass/ Fail	Pass/ Fail	Pass/ Fail	Pass/ Fail
	TC #28 (°F)	TC #29 (°F)	TC #30 (°F)	TC #31 (°F)	TC #32 (°F)	TC #33 (°F)	TC #34 (°F)	TC #35 (°F)	TC #36 (°F)	TC #37 (°F)	TC #38 (°F)	TC #39 (°F)	TC #40 (°F)
0	86	85	87	88	88	88	88	88	86	87	87	87	86
0.25	87	85	87	88	88	88	88	87	86	87	87	87	86
0.5	87	85	87	88	88	88	88	88	86	87	87	87	86
0.75	87	85	87	88	88	88	88	88	86	87	87	87	86
1	87	85	87	88	88	88	88	88	86	87	87	88	86
1.25	88	85	87	88	88	88	88	89	86	87	87	88	87
1.5	88	85	88	88	88	89	88	89	86	87	87	88	87
1.75	89	86	88	88	88	89	88	90	86	87	87	88	87
2	90	86	89	88	88	89	89	91	86	87	87	88	87
2.25	92	86	90	89	89	89	89	92	86	87	88	88	87
2.5	93	86	90	89	89	90	89	93	86	87	88	88	87
2.75	94	87	91	89	89	90	89	94	86	87	88	89	88
3	95	87	92	89	89	90	90	95	86	88	88	89	88
3.25	97	87	93	89	89	91	90	96	86	87	88	89	88
3.5	98	88	94	89	89	91	90	96	86	87	88	89	88
3.75	100	88	95	89	89	91	91	98	86	88	88	89	89
4	102	89	96	89	90	91	91	98	86	88	88	89	89
4.25	103	90	97	89	90	91	91	99	86	88	88	89	89
4.5	105	90	98	89	90	92	91	100	86	88	88	90	90
4.75	107	91	100	90	90	92	92	101	86	88	89	90	91
5	109	92	100	90	90	92	92	102	86	88	89	90	91
5.25	111	93	102	90	91	93	92	103	86	88	89	90	91
5.5	113	93	103	90	91	93	93	105	86	88	89	90	92
5.75	115	94	104	90	91	93	93	106	86	88	89	91	92
6	117	95	105	90	91	93	93	107	86	89	89	91	93
6.25	119	96	107	91	91	94	93	108	87	89	89	91	93
6.5	121	97	108	91	91	94	94	109	87	89	90	91	93
6.75	123	98	109	91	92	94	94	111	87	89	90	92	94
7	126	99	111	91	92	94	94	112	87	89	90	92	94
7.25	128	100	112	91	92	95	95	113	87	89	90	92	95
7.5	131	101	114	91	92	95	95	115	87	89	91	93	96
7.75	134	102	116	92	92	95	95	116	87	90	91	93	96
8	136	103	117	92	93	96	96	117	87	90	91	93	97
8.25	139	105	119	92	93	96	96	119	87	90	91	94	98
8.5	142	106	120	92	93	96	96	120	87	90	92	94	98
8.75	145	107	122	92	93	96	97	121	87	91	92	94	99
9	147	108	124	92	93	97	97	123	87	91	92	94	100
9.25	150	110	126	93	93	97	98	124	87	91	92	95	101
9.5	153	111	127	93	94	97	98	125	87	91	92	95	101
9.75	156	113	129	93	94	98	98	127	87	91	93	95	102
10	159	114	131	93	94	98	99	128	88	91	93	95	103
10.25	162	116	133	93	94	98	99	129	88	92	93	96	104
10.5	165	117	135	94	95	99	99	130	88	92	93	96	105
10.75	168	119	137	94	95	99	100	132	88	92	94	96	106
11	172	120	139	94	95	99	100	133	88	92	94	97	106
11.25	175	122	141	94	95	100	100	134	88	92	94	97	107
11.5	178	123	143	94	96	100	101	136	88	93	94	97	108
11.75	181	125	145	95	96	100	101	138	88	93	95	98	109





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Date: 08/15/24

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Seohan Antamin Co., Ltd

06-Aug-2024

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	TC #28 (°F)	TC #29 (°F)	TC #30 (°F)	TC #31 (°F)	TC #32 (°F)	TC #33 (°F)	TC #34 (°F)	TC #35 (°F)	TC #36 (°F)	TC #37 (°F)	TC #38 (°F)	TC #39 (°F)	TC #40 (°F)		
12	184	127	146	95	96	101	101	139	88	93	95	98	110		
12.25	188	128	148	95	97	101	102	141	89	94	95	99	111		
12.5	191	130	150	95	97	101	102	142	88	94	96	99	111		
12.75	195	132	152	96	97	101	102	144	88	94	96	99	112		
13	198	134	154	96	97	102	103	145	89	94	96	100	113		
13.25	201	136	156	96	97	102	103	146	89	95	96	100	114		
13.5	204	137	157	97	98	102	103	147	89	95	97	101	115		
13.75	208	139	160	97	98	102	104	149	89	95	97	101	116		
14	211	141	161	97	98	103	104	150	89	96	98	102	116		
14.25	214	143	163	97	98	103	104	151	90	96	98	102	118		
14.5	217	145	165	97	98	103	105	152	90	97	98	102	118		
14.75	220	147	167	98	99	103	105	153	90	97	99	103	119		
15	222	149	169	98	99	104	105	154	90	97	99	103	120		
15.25	224	152	171	98	99	104	105	155	90	98	99	103	121		
15.5	226	153	173	98	99	104	106	156	90	98	100	104	121		
15.75	228	156	175	98	99	104	106	158	91	98	100	104	122		
16	230	158	177	99	100	105	106	159	91	98	100	105	123		
16.25	232	160	179	99	100	105	106	160	91	99	101	105	124		
16.5	234	162	181	100	100	105	106	161	91	99	101	105	124		
16.75	236	165	183	100	100	105	106	162	91	100	101	106	125		
17	239	167	185	100	100	105	107	163	92	100	102	106	126		
17.25	242	170	187	100	101	105	107	165	92	100	102	107	127		
17.5	244	172	189	101	101	106	107	166	92	101	103	107	128		
17.75	247	175	191	101	101	106	108	167	92	101	103	108	129		
18	249	178	193	101	102	106	108	168	93	102	103	108	130		
18.25	252	182	195	101	102	106	108	170	93	102	104	108	131		
18.5	254	185	197	102	102	107	108	170	93	102	104	109	131		
18.75	256	189	199	102	102	107	108	172	93	103	105	109	132		
19	258	192	200	102	102	107	109	173	93	103	105	110	133		
19.25	261	195	202	102	103	107	109	174	94	104	105	110	134		
19.5	263	197	204	103	103	108	109	175	94	104	106	110	135		
19.75	265	200	206	103	103	108	109	177	94	105	106	111	136		
20	267	202	207	103	103	108	110	178	94	105	106	111	136		
20.25	270	204	209	103	104	108	110	180	95	105	107	112	137		
20.5	272	206	210	104	104	109	110	182	95	106	107	112	138		
20.75	274	207	211	104	105	109	111	183	96	106	108	113	139		
21	276	209	213	104	105	109	111	185	96	107	108	113	140		
21.25	278	210	214	105	106	110	111	187	96	108	109	114	141		
21.5	280	212	215	105	106	110	112	188	97	108	109	114	142		
21.75	282	214	217	106	107	110	112	190	97	108	110	114	142		
22	284	215	218	106	107	111	112	192	97	109	110	115	143		
22.25	287	216	219	107	107	111	113	194	98	109	111	115	144		
22.5	289	218	220	107	108	111	113	195	98	110	111	116	145		
22.75	291	219	221	107	108	112	113	197	98	110	111	116	146		
23	293	220	223	108	108	112	113	199	99	111	112	116	146		
23.25	295	222	224	108	108	112	114	200	99	111	112	117	147		
23.5	298	223	225	108	109	112	114	202	99	112	113	117	147		
23.75	300	225	226	108	109	112	114	203	100	112	113	118	148		



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24	302	226	228	109	109	113	115	205	100	113	113	118	148		
24.25	305	228	229	109	114	113	115	207	101	113	114	119	149		
24.5	307	229	230	110	125	113	115	208	101	114	114	119	149		
24.75	310	230	231	112	128	114	115	210	101	114	115	120	150		
25	311	231	232	113	131	114	116	212	102	115	115	120	151		
25.25	314	232	232	114	133	114	116	214	102	115	116	120	151		
25.5	316	234	234	114	133	115	116	216	102	116	116	121	152		
25.75	318	235	235	115	133	115	117	218	103	117	117	121	153		
26	320	237	235	116	134	115	117	220	103	117	117	122	153		
26.25	322	238	236	117	134	116	117	221	104	118	118	122	154		
26.5	324	239	237	117	135	116	118	223	104	118	118	123	155		
26.75	325	240	238	118	136	116	118	225	105	119	119	123	156		
27	327	242	239	118	136	116	118	226	105	119	120	123	156		
27.25	329	243	240	119	138	117	118	228	105	120	121	124	157		
27.5	329	244	240	120	139	117	119	229	106	120	121	124	158		
27.75	330	246	241	121	139	118	119	231	106	121	122	125	158		
28	329	247	242	121	139	118	119	233	107	121	122	125	159		
28.25	329	248	243	122	140	118	120	234	107	121	123	125	160		
28.5	329	250	244	123	140	118	120	236	107	122	125	126	160		
28.75	325	251	245	123	141	119	121	237	108	122	126	126	161		
29	318	253	247	123	141	119	121	238	108	123	127	127	161		
29.25	307	254	248	124	142	119	121	240	109	123	128	127	162		
29.5	301	255	249	125	142	120	121	241	109	124	130	128	163		
29.75	295	257	250	125	142	120	122	242	110	124	131	128	164		
30	294	258	251	126	142	120	122	244	110	125	132	129	164		
Max Temp	330			126	142	120	122	244	110	125	132	129	164		
Max Allw	1000			1000	1000	1000	1000	1000	1000	1000	1000	1000	1000		

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0	117	113	134	119	124	148	161	145	85	86	87	86	86	86
0.25	711	537	552	385	426	540	542	570	85	86	87	86	86	87
0.5	963	724	759	560	666	822	804	833	86	86	88	86	86	87
0.75	1124	859	808	685	770	962	946	981	86	86	87	86	86	87
1	1183	915	849	739	812	1001	1002	1005	86	86	87	86	86	88
1.25	1229	976	894	792	864	1027	1033	1058	85	86	87	86	86	88
1.5	1278	1004	926	821	889	1041	1072	1098	85	86	87	86	86	89
1.75	1327	1062	976	863	919	1147	1180	1185	85	86	88	86	86	89
2	1294	1096	1011	905	943	1160	1146	1185	86	86	87	86	86	89
2.25	1303	1138	1041	925	962	1127	1144	1186	86	86	87	86	86	89
2.5	1330	1158	1055	945	980	1124	1154	1163	86	86	87	86	86	88
2.75	1355	1168	1080	958	991	1135	1158	1181	86	86	89	86	86	88
3	1416	1183	1082	967	1000	1129	1157	1199	86	86	88	86	86	89
3.25	1395	1190	1099	988	1015	1141	1159	1206	86	86	87	86	86	88
3.5	1411	1237	1127	1006	1025	1156	1175	1214	86	86	87	86	86	88
3.75	1370	1234	1125	1011	1040	1179	1200	1208	86	87	87	86	86	88
4	1443	1234	1136	1019	1050	1182	1198	1229	86	86	87	86	86	88
4.25	1421	1243	1152	1034	1057	1185	1210	1240	86	86	87	86	86	87
4.5	1474	1276	1159	1044	1071	1202	1227	1251	86	86	87	86	86	87
4.75	1440	1313	1177	1061	1082	1221	1243	1266	86	86	87	86	86	87
5	1431	1343	1182	1069	1096	1233	1245	1270	86	86	87	86	86	88
5.25	1430	1365	1200	1080	1105	1264	1253	1275	86	86	87	86	86	89
5.5	1403	1360	1208	1086	1128	1274	1263	1288	86	86	87	87	86	88
5.75	1455	1370	1227	1107	1134	1285	1286	1286	86	86	87	87	86	88
6	1408	1415	1258	1121	1160	1307	1309	1338	86	86	87	87	86	88
6.25	1395	1399	1255	1126	1175	1325	1322	1321	86	86	87	87	86	88
6.5	1415	1392	1262	1133	1178	1324	1312	1313	86	86	87	87	87	88
6.75	1444	1406	1250	1139	1169	1320	1310	1316	86	86	87	87	87	87
7	1456	1388	1248	1143	1169	1317	1315	1328	86	86	87	87	87	88
7.25	1432	1403	1259	1143	1173	1301	1306	1343	86	86	87	87	87	88
7.5	1448	1421	1263	1145	1174	1305	1304	1343	86	86	87	87	87	88
7.75	1500	1411	1268	1150	1184	1318	1324	1348	86	87	87	87	87	88
8	1436	1418	1275	1159	1190	1320	1308	1332	86	87	87	87	87	87
8.25	1441	1433	1267	1159	1194	1312	1301	1327	86	87	87	87	87	87
8.5	1469	1435	1273	1163	1198	1321	1306	1331	86	87	87	87	87	87
8.75	1437	1426	1275	1167	1198	1320	1322	1340	86	87	87	87	87	87
9	1468	1427	1281	1171	1201	1324	1321	1347	86	87	87	87	87	87
9.25	1455	1426	1273	1166	1200	1328	1321	1341	86	87	87	87	87	87
9.5	1476	1431	1277	1170	1202	1328	1332	1355	86	87	87	87	87	87
9.75	1472	1434	1284	1173	1211	1339	1335	1361	86	87	88	87	87	87
10	1475	1428	1279	1177	1209	1326	1328	1367	86	87	88	87	87	87
10.25	1463	1445	1281	1182	1214	1342	1337	1352	86	87	88	87	87	87
10.5	1439	1444	1298	1191	1228	1360	1362	1363	86	87	88	87	87	87
10.75	1540	1479	1298	1200	1222	1355	1356	1382	87	87	88	87	87	87
11	1502	1470	1303	1207	1227	1369	1345	1368	87	87	88	87	87	87
11.25	1571	1468	1311	1219	1226	1367	1353	1374	87	87	88	87	87	87
11.5	1535	1483	1316	1228	1230	1387	1358	1355	87	88	88	87	87	87
11.75	1540	1472	1318	1220	1237	1369	1373	1383	87	88	88	87	87	88

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12	1470	1488	1315	1221	1242	1380	1363	1409	87	87	88	87	87	87
12.25	1508	1510	1322	1223	1247	1385	1360	1380	87	87	88	88	87	87
12.5	1498	1522	1327	1228	1246	1382	1370	1389	87	88	88	88	88	88
12.75	1470	1513	1317	1221	1248	1386	1351	1378	87	88	88	88	87	88
13	1487	1528	1322	1227	1253	1399	1348	1373	87	88	88	88	88	88
13.25	1482	1493	1330	1231	1256	1388	1371	1387	87	88	88	88	88	88
13.5	1492	1499	1332	1231	1260	1385	1390	1397	87	88	88	88	88	88
13.75	1479	1498	1341	1236	1260	1392	1392	1408	87	88	88	88	88	88
14	1495	1488	1344	1233	1265	1395	1375	1390	87	88	88	88	88	88
14.25	1530	1499	1339	1236	1265	1382	1383	1423	87	88	88	88	88	88
14.5	1528	1521	1336	1238	1264	1380	1382	1412	87	88	88	88	88	89
14.75	1536	1511	1332	1245	1263	1381	1375	1406	87	88	88	88	88	89
15	1505	1523	1348	1247	1269	1406	1380	1409	87	88	89	88	89	89
15.25	1541	1599	1388	1283	1315	1456	1436	1461	87	88	89	88	89	89
15.5	1566	1605	1403	1290	1323	1469	1470	1483	88	88	89	88	89	89
15.75	1552	1624	1414	1304	1332	1481	1472	1494	88	88	89	89	89	89
16	1540	1633	1439	1312	1343	1520	1483	1489	88	89	89	89	89	89
16.25	1564	1638	1438	1314	1349	1515	1476	1497	88	88	89	89	89	89
16.5	1545	1650	1435	1318	1351	1506	1480	1511	88	88	89	89	89	89
16.75	1530	1629	1439	1320	1348	1504	1498	1509	88	89	89	89	89	89
17	1560	1647	1444	1327	1353	1529	1508	1502	88	89	89	89	89	89
17.25	1560	1660	1457	1337	1362	1511	1491	1512	88	89	89	89	89	90
17.5	1565	1663	1457	1336	1363	1533	1498	1502	88	89	89	89	89	90
17.75	1542	1655	1460	1340	1371	1530	1498	1516	88	89	89	89	90	90
18	1564	1673	1470	1345	1378	1552	1499	1524	88	89	89	90	90	90
18.25	1557	1667	1484	1352	1389	1556	1525	1529	88	89	90	89	90	90
18.5	1568	1658	1475	1352	1384	1558	1529	1536	88	90	89	89	90	90
18.75	1547	1681	1463	1350	1376	1548	1511	1517	88	90	89	89	90	90
19	1643	1639	1472	1357	1379	1554	1526	1530	88	90	89	89	91	90
19.25	1627	1656	1472	1367	1384	1575	1530	1532	88	91	89	89	91	90
19.5	1715	1578	1469	1375	1367	1574	1531	1530	88	90	90	89	91	90
19.75	1684	1580	1481	1386	1373	1574	1547	1536	89	90	89	89	90	90
20	1671	1572	1474	1381	1377	1613	1549	1533	89	90	89	90	91	90
20.25	1615	1670	1478	1376	1386	1592	1543	1547	89	91	89	90	91	90
20.5	1592	1667	1484	1375	1394	1569	1531	1544	89	91	90	90	91	90
20.75	1580	1682	1485	1377	1392	1604	1549	1554	89	92	89	90	91	90
21	1638	1632	1483	1388	1392	1592	1552	1552	89	92	90	90	91	90
21.25	1611	1665	1503	1387	1401	1599	1549	1556	89	92	90	91	92	91
21.5	1665	1670	1491	1385	1394	1589	1536	1566	89	92	90	91	91	91
21.75	1625	1651	1485	1386	1400	1597	1546	1575	90	92	90	90	93	91
22	1593	1673	1503	1390	1409	1603	1552	1567	90	93	90	91	93	91
22.25	1642	1621	1477	1391	1396	1597	1541	1591	90	94	90	91	94	92
22.5	1606	1660	1498	1395	1403	1599	1545	1594	90	94	90	91	94	91
22.75	1675	1638	1494	1398	1403	1605	1562	1573	90	93	90	91	92	91
23	1603	1689	1508	1397	1411	1605	1561	1578	90	93	90	91	92	91
23.25	1598	1679	1496	1395	1412	1592	1568	1598	90	94	90	91	94	91
23.5	1591	1683	1495	1400	1411	1608	1562	1597	90	93	90	91	93	92
23.75	1653	1620	1499	1401	1404	1598	1544	1610	90	92	90	91	92	92





Total Quality. Assured.

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G105484501SAT-003

Seohan Antamin Co., Ltd

06-Aug-2024

Time (min)	TC #41 (°F)	TC #42 (°F)	TC #43 (°F)	TC #44 (°F)	TC #45 (°F)	TC #46 (°F)	TC #47 (°F)	TC #48 (°F)	TC #49 (°F)	TC #50 (°F)	TC #51 (°F)	TC #52 (°F)	TC #53 (°F)	TC #54 (°F)
24	1727	1631	1497	1409	1407	1610	1574	1583	90	92	90	91	92	92
24.25	1653	1621	1495	1410	1409	1630	1575	1569	90	92	90	91	92	91
24.5	1718	1641	1500	1412	1409	1597	1569	1589	90	93	90	91	92	91
24.75	1732	1606	1503	1416	1410	1612	1573	1604	89	96	91	90	93	92
25	1688	1598	1506	1418	1411	1645	1581	1595	89	95	90	90	94	91
25.25	1775	1657	1535	1444	1432	1702	1630	1604	90	93	91	90	94	91
25.5	1652	1731	1559	1446	1455	1711	1640	1630	90	92	91	92	93	91
25.75	1674	1660	1540	1447	1451	1701	1645	1650	91	93	91	92	92	91
26	1672	1721	1557	1450	1460	1685	1635	1660	90	99	91	91	94	92
26.25	1662	1712	1561	1456	1460	1699	1638	1651	91	93	91	91	93	91
26.5	1694	1652	1544	1456	1453	1693	1652	1650	90	93	91	92	92	92
26.75	1768	1610	1554	1462	1450	1673	1639	1679	91	92	91	92	92	92
27	1780	1606	1556	1464	1452	1715	1689	1691	91	92	91	92	92	92
27.25	1792	1645	1548	1467	1456	1720	1671	1655	91	92	92	91	92	93
27.5	1819	1601	1558	1470	1457	1724	1687	1686	91	93	92	91	92	92
27.75	1668	1723	1566	1464	1465	1694	1648	1649	90	93	91	91	98	92
28	1673	1733	1589	1473	1483	1685	1659	1668	91	92	92	92	94	91
28.25	1692	1721	1573	1475	1477	1712	1666	1667	91	93	91	93	93	92
28.5	1672	1742	1583	1474	1487	1695	1658	1665	94	92	91	93	93	92
28.75	1665	1761	1598	1477	1496	1732	1677	1675	92	93	91	93	93	92
29	1699	1733	1571	1476	1487	1694	1641	1656	92	94	91	93	94	91
29.25	1702	1726	1589	1479	1484	1722	1653	1651	92	94	92	93	94	93
29.5	1675	1710	1583	1481	1491	1736	1680	1675	91	100	92	93	95	93
29.75	1728	1729	1580	1488	1488	1724	1672	1676	92	95	93	93	96	94
30	1692	1755	1588	1484	1499	1719	1693	1683	92	94	92	93	95	94
Max Temp									94	100	93	93	98	94
Max Allw									585	586	587	586	586	586



Total Quality. Assured.

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## TEST REPORT FOR SEOHAN ANTAMIN CO., LTD

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### SECTION 15

#### DRAWINGS

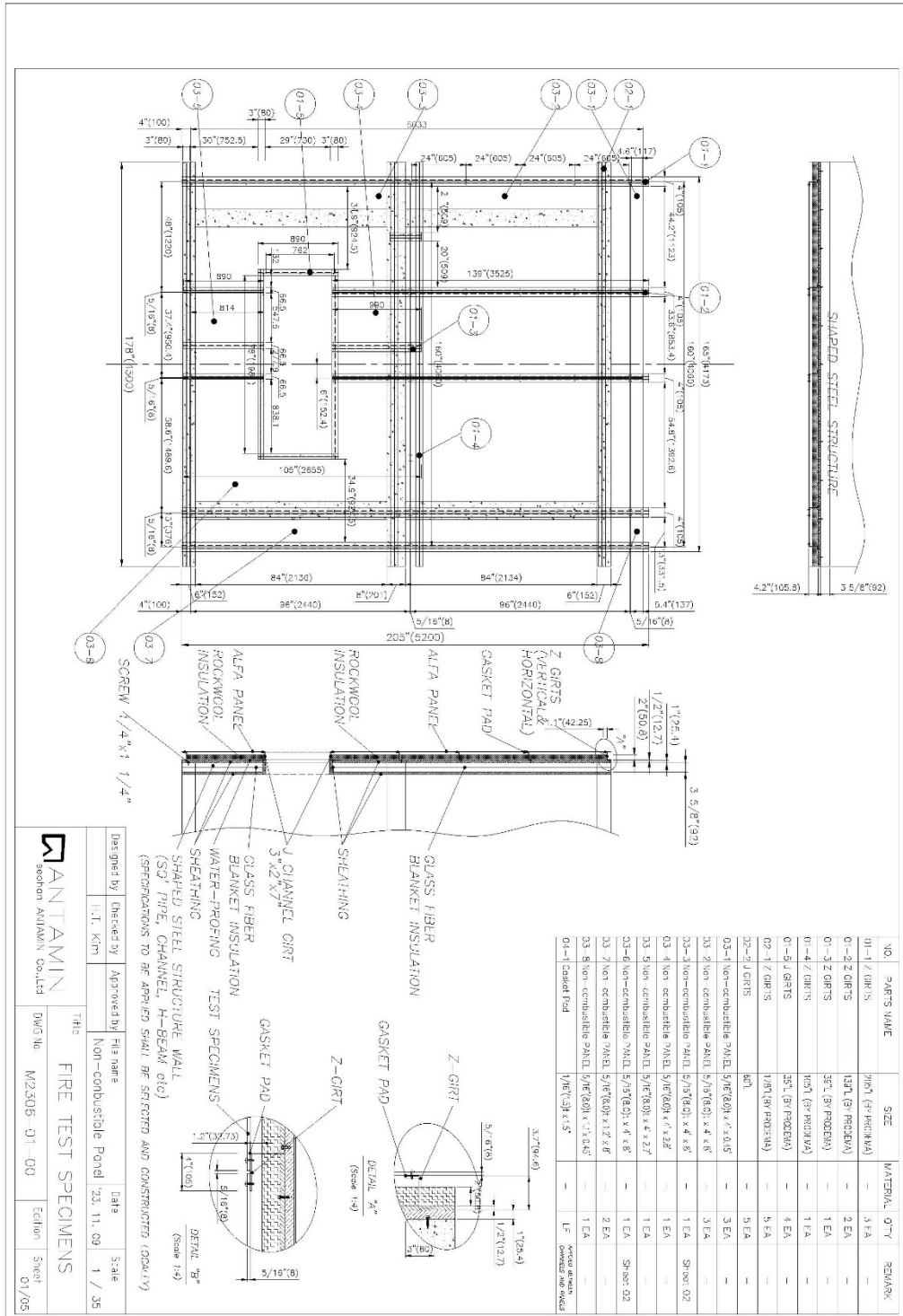
The "As-Built" drawings for Seohan Antamin Co., which follow have been reviewed by Intertek B&C and are representative of the project reported herein. Project construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.

**NOTE** – The Z-girts and J-Channel used were only 2-in. deep thus no significant airspace was created behind panels.

# TEST REPORT FOR SEOHAN ANTAMIN CO., LTD

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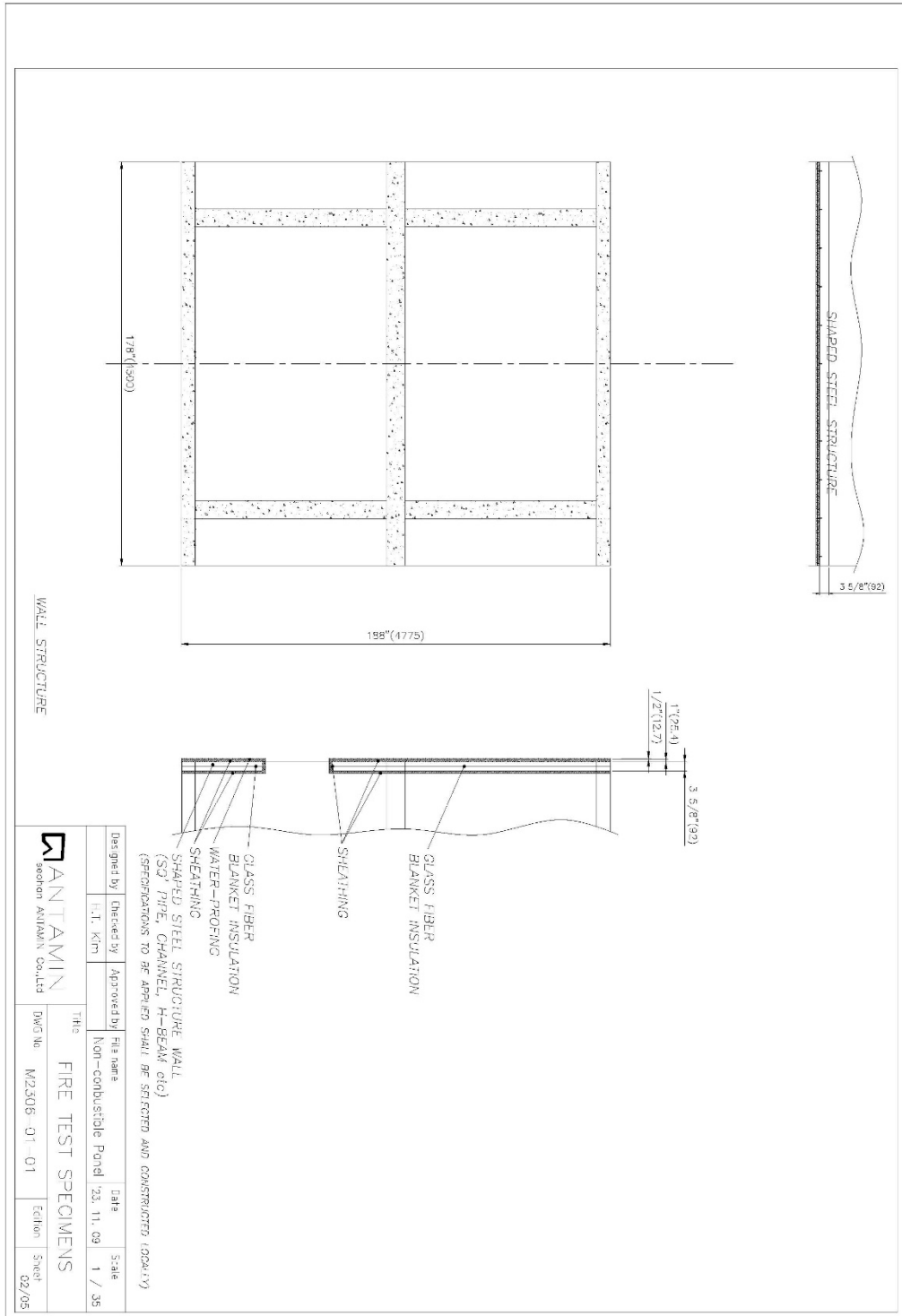
Date: 08/15/24



**TEST REPORT FOR SEOHAN ANTAMIN CO., LTD**

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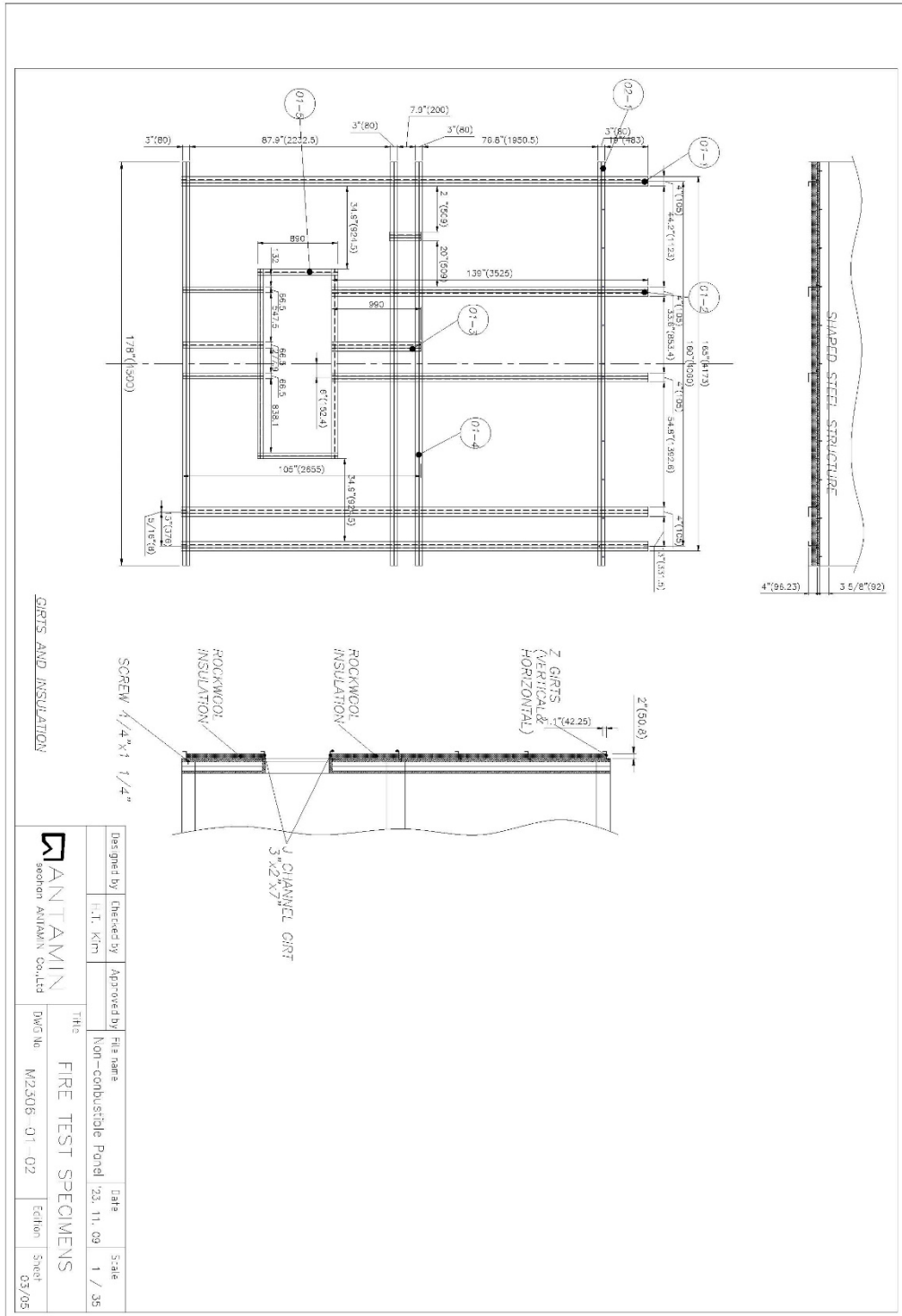




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Report No.: G105484501SAT-003 R0

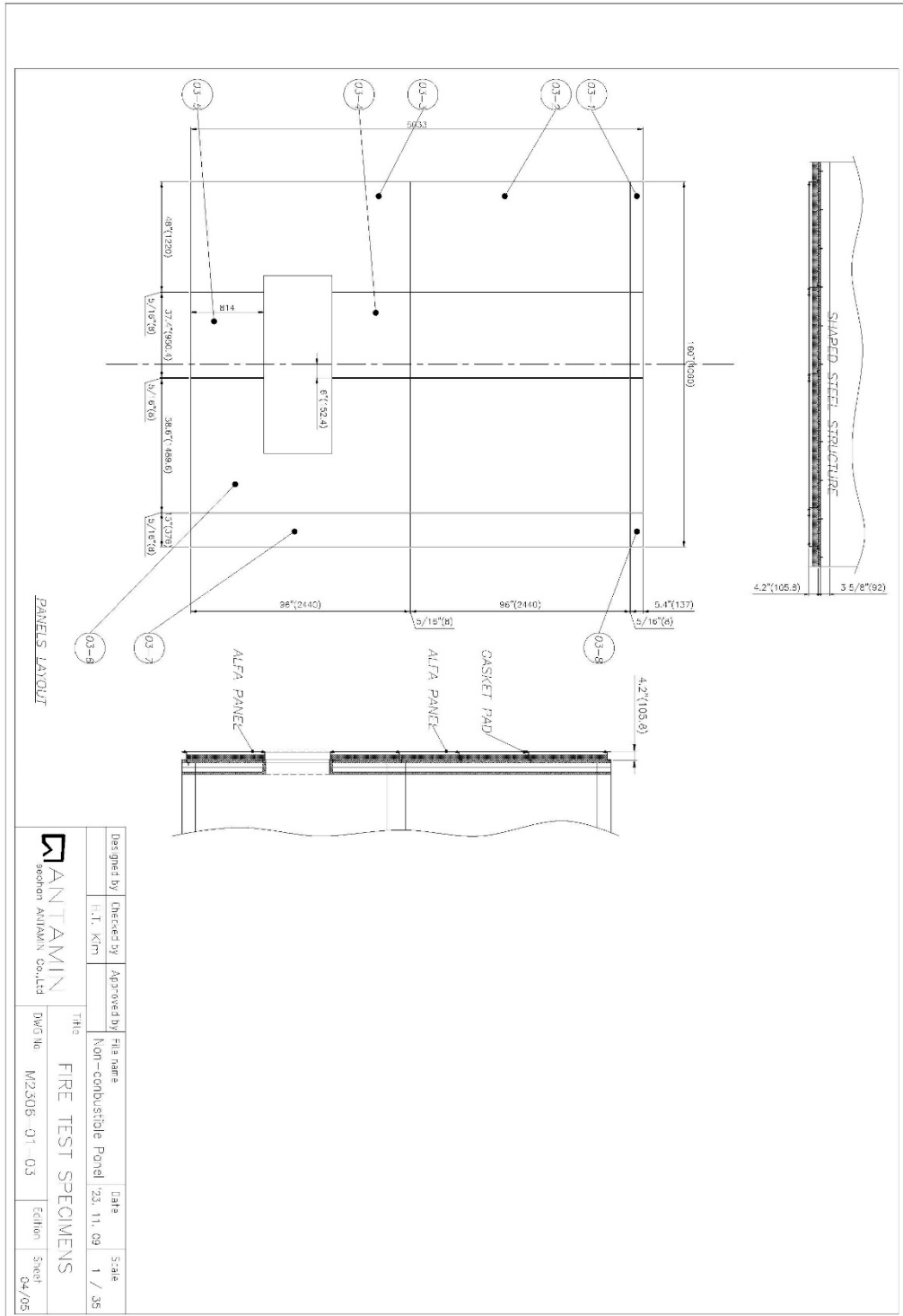
Date: 08/15/24



## TEST REPORT FOR SEOHAN ANTAMIN CO., LTD

Report No.: G105484501SAT-003 R0

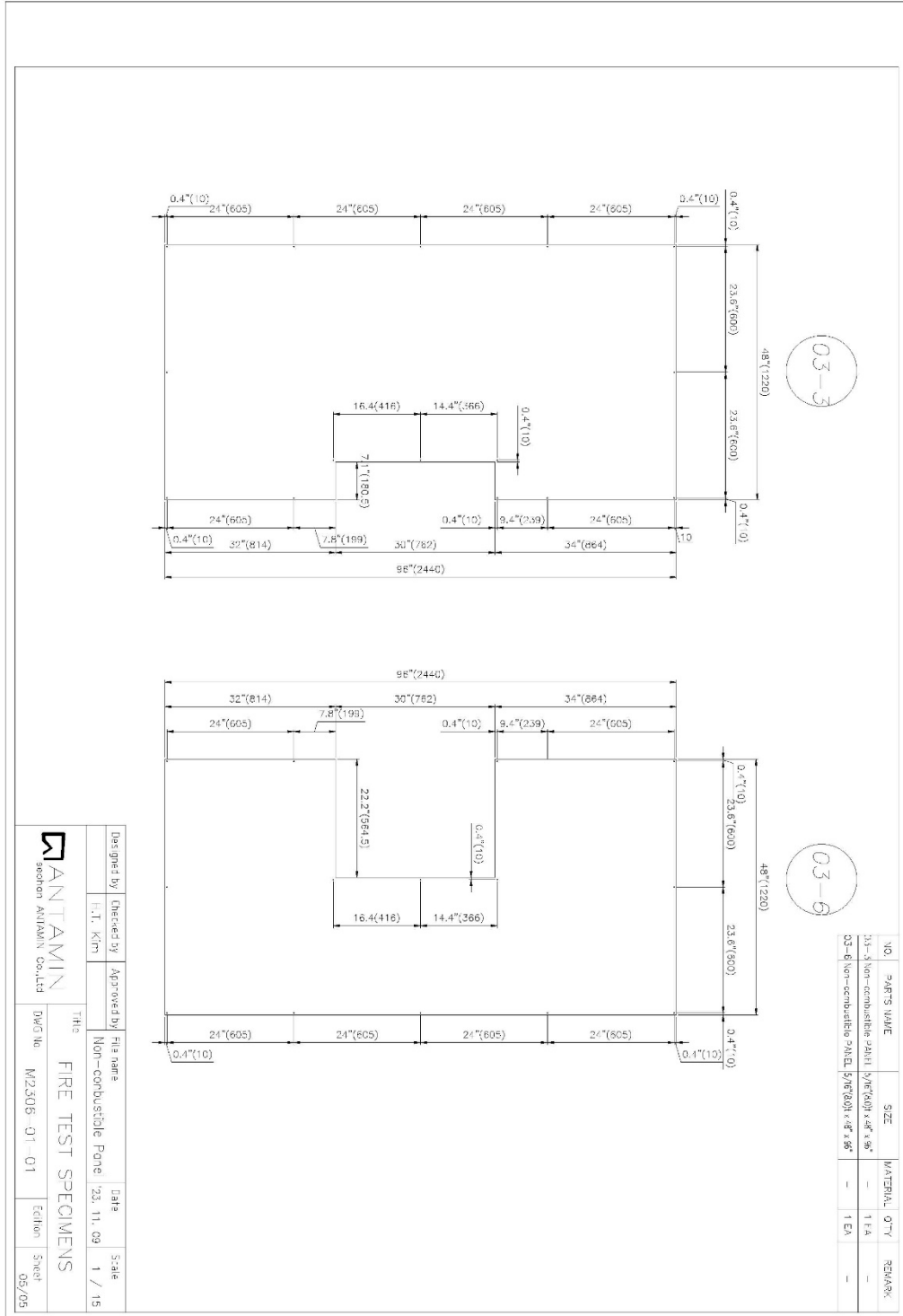
Date: 08/15/24



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### SECTION 16

#### REVISION LOG

REVISION #	DATE	SECTION	REVISION
0	08/15/24	N/A	Original Report Issue