TEST REPORT

REPORT NUMBER: 102816357MID-001
ORIGINAL ISSUE DATE: November 30, 2016
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EVALUATION CENTER
Intertek
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RENDERED TO
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Zhejiang Terasun Air Duct Co., Ltd.
(Maren) Chongren Industrial Clustering Area,
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Zhejiang, China

PRODUCT EVALUATED:Terasun Magnesium Board.

EVALUATION PROPERTY: ULC S135-04 standard test method for the determination of combustibility parameters the determination of combustibility parameters of building materials using an oxygen consumption calorimeter (cone calorimeter)

Report for compliance with the applicable requirements in accordance to the National Building Code of Canada for materials used in buildings that are required to be noncombustible.

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2 Introduction

Intertek has conducted testing for Zhejiang Terasun Air Duct Co., Ltd., onTerasun Magnesium Board to evaluate heat and smoke release rates. Testing was conducted following the standard methods of ULC S135-04 Standard Test Method for the Determination of Combustibility Parameters of Building Materials Using an Oxygen Consumption Calorimeter (Cone Calorimeter) in accordance with the National Building Code of Canada for materials used in buildings that are required to be noncombustible. The evaluation began November 29, 2016 and was completed November 29, 2016.

3 Test Samples

3.1. SAMPLE SELECTION

Samples were selected by an Intertek auditor. Samples were received at the Intertek Middleton Evaluation Center on November 15, 2016 in good condition.

3.2. SAMPLE AND ASSEMBLY DESCRIPTION

Sampe name:Terasun Magnesium Board.

Sample description: Model: 12mm thickness. Samples were cut to 100 +/- 1 mm by 100 +/-1 mm dimensions by the client.

Specimens were conditioned to moisture equilibrium (constant mass) at an ambient temperature of 23 ± 3°C and a relative humidity of 50 ± 5%.

4 Testing and Evaluation Methods

4.1. ULC S135-04

The testing was performed in accordance with the ULC S135-04 standard. Specimens in the test are burned in ambient air conditions, while being subjected to a predetermined external heat flux. Testing was done at 50 kW/m^2 with spark ignition.

Collect data for at least 15 minutes.

The total *heat release* per unit area shall be compared for the three specimens. If any of these readings differ by more than 10% from the average of the three readings, then a further set of three specimens shall be tested. In such cases, report the averages for peak heat release rate per unit area, total heat release per unit area, and total smoke extinction area using the set of six readings.

National Building Code of Canada:

Materials used in buildings that are required to be of noncombustible combustible that have been tested in conformance with ULC-S135, “Test for the Determination of Combustibility Parameters of Building Materials Using an Oxygen Consumption Calorimeter (Cone Calorimeter),” at a heat flux of 50 kW/m^2 where:

- The materials' total heat release is not more than 3 MJ/m^2,
- the materials' average total smoke extinction area is not more than 1.0 m^2, and
- the test duration is extended beyond the time stipulated in the referenced standard until it is clear that there is no further release of heat or smoke.

4.2. Deviation from Standard Method

There were no deviations from the standard.

5 Testing and Evaluation Results

5.1. RESULTS AND OBSERVATIONS

Sample description	102816357MID-001 Terasun Mg Board
Material name/ID	102816357MID-001 Terasun Mg Board

Specimen information

E	13.1 MJ/kg	Specimen number	1	Conditioned?	Yes
Thickness	12 mm	Nominal duct flow rate	24 l/s	Temperature	23°C
Initial mass	125.6 g	Edge frame used?	Yes	RH	50%
Surface area	88.4 cm²	Grid used?	No		
Heat flux	50 kW/m²	Manufacturer			
Separation	25 mm	Sponsor			
Orientation	Horizontal				

Test

Standard used	ULC S135
Date of test	29/11/2016
Time of test	07:43
Date of report	29/11/2016

Apparatus specifications

C-factor	0.04298
Duct diameter	0.114 m
O2 delay time	17 s
CO2 delay time	17 s
CO delay time	17 s
OD corr. factor	1.0055

Pre-test conditions

Ambient temperature	18.9°C
Ambient pressure	96.811 kPa
Relative humidity	35%

Initial conditions

Baseline ambient oxygen	20.786%
Baseline oxygen	20.952%
Baseline carbon dioxide	0.0759%
Mass at sustained flaming	125.6 g

Test times

Time to ignition	0 s
Time to flameout	s
End of test criterion	User entered
End of test time (for calculations)	900 s

Heat Release Results

THR (0-300)	0.88 MJ/m²
THR (0-600)	2.40 MJ/m²
THR (0-1200)	-
Fuel load	0.35 MJ/kg

Test results (between 0 and 900 s)

Total heat release	5.0 MJ/m²
Total oxygen consumed	3.7 g
Mass lost	31.5 g
Average specific MLR	4.33 g/(s·m²)
Total smoke release	75.0 m²/m²
Total smoke production	0.7 m²
MAHRE	5.5 kW/m²

	Mean	Peak	at time (s)
Heat release rate (kW/m²)	5.45	13.15	725
Effective heat of comb. (MJ/kg)	1.38	77.51	184
Mass loss rate (g/s)	0.035	0.246	109
Specific extinction area (m²/kg)	18.58	3237.91	14
Carbon monoxide yield (kg/kg)	0.0088	7.7142	900
Carbon dioxide yield (kg/kg)	0.16	120.09	309

Test averages

from ignition to ignition plus...	1 min	2 min	3 min	4 min	5 min	6 min	0 s - 905 s	0 s - 905 s
Heat release rate (kW/m²)	0.70	0.74	1.58	2.15	2.73	3.00	5.47	5.47
Effective heat of comb. (MJ/kg)	0.20	0.20	0.37	0.48	0.57	0.62	1.38	1.38
Mass loss rate (g/s)	0.031	0.032	0.038	0.040	0.043	0.043	0.035	0.035
Specific extinction area (m²/kg)	15.70	18.36	15.41	13.95	11.79	11.11	18.54	18.54
Carbon monoxide yield (kg/kg)	0.0001	0.0015	0.0025	0.0031	0.0034	0.0038	0.0088	0.0088
Carbon dioxide yield (kg/kg)	0.08	0.09	0.09	0.10	0.11	0.11	0.17	0.17

Smoke results

Total smoke release: non-flaming phase (0 s - 0 s)	0.0 m²/m²
Total smoke release: flaming phase (0 s - 900 s)	75.0 m²/m²
Total smoke release: whole test (0 s - 900 s)	75.0 m²/m²

Sample description	102816357MID-001 Terasun Mg Board
Material name/ID	102816357MID-001 Terasun Mg Board

Specimen information

E	13.1 MJ/kg	Specimen number	2	Conditioned?	Yes
Thickness	12 mm	Nominal duct flow rate	24 l/s	Temperature	23°C
Initial mass	125.9 g	Edge frame used?	Yes	RH	50%
Surface area	88.4 cm²	Grid used?	No		
Heat flux	50 kW/m²	Manufacturer			
Separation	25 mm	Sponsor			
Orientation	Horizontal				

Test

Standard used	ULC S135
Date of test	29/11/2016
Time of test	08:05
Date of report	29/11/2016

Apparatus specifications

C-factor	0.04298
Duct diameter	0.114 m
O2 delay time	17 s
CO2 delay time	17 s
CO delay time	17 s
OD corr. factor	1.0055

Pre-test conditions

Ambient temperature	18.6°C
Ambient pressure	96.811 kPa
Relative humidity	35%

Initial conditions

Baseline ambient oxygen	20.786%
Baseline oxygen	20.948%
Baseline carbon dioxide	0.0787%
Mass at sustained flaming	125.9 g

Test times

Time to ignition	0 s
Time to flameout	s
End of test criterion	User entered
End of test time (for calculations)	900 s

Heat Release Results

THR (0-300)	0.56 MJ/m²
THR (0-600)	0.92 MJ/m²
THR (0-1200)	-
Fuel load	0.08 MJ/kg

Test results (between 0 and 900 s)

Total heat release	1.1 MJ/m²
Total oxygen consumed	1.2 g
Mass lost	31.3 g
Average specific MLR	4.30 g/(s·m²)
Total smoke release	81.2 m²/m²
Total smoke production	0.7 m²
MAHRE	2.0 kW/m²

	Mean	Peak	at time (s)
Heat release rate (kW/m²)	0.70	6.59	126
Effective heat of comb. (MJ/kg)	0.18	66.34	330
Mass loss rate (g/s)	0.035	0.285	625
Specific extinction area (m²/kg)	21.40	4336.10	523
Carbon monoxide yield (kg/kg)	0.0085	7.3949	783
Carbon dioxide yield (kg/kg)	0.12	87.35	135

Test averages

from ignition to ignition plus...	1 min	2 min	3 min	4 min	5 min	6 min	0 s - 946 s	0 s - 946 s
Heat release rate (kW/m²)	0.02	0.64	1.20	1.68	1.64	1.76	0.65	0.65
Effective heat of comb. (MJ/kg)	0.00	0.17	0.29	0.37	0.34	0.37	0.17	0.17
Mass loss rate (g/s)	0.034	0.032	0.037	0.040	0.042	0.042	0.034	0.034
Specific extinction area (m²/kg)	16.12	22.98	19.28	17.63	16.20	16.03	22.42	22.42
Carbon monoxide yield (kg/kg)	0.0002	0.0020	0.0033	0.0036	0.0039	0.0045	0.0091	0.0091
Carbon dioxide yield (kg/kg)	0.06	0.08	0.09	0.10	0.10	0.10	0.12	0.12

Smoke results

Total smoke release: non-flaming phase (0 s - 0 s)	0.0 m²/m²
Total smoke release: flaming phase (0 s - 900 s)	81.2 m²/m²
Total smoke release: whole test (0 s - 900 s)	81.2 m²/m²

Sample description	102816357MID-001 Terasun Mg Board
Material name/ID	102816357MID-001 Terasun Mg Board

Specimen information

E	13.1 MJ/kg	Specimen number	3	Conditioned?	Yes
Thickness	12 mm	Nominal duct flow rate	24 l/s	Temperature	23°C
Initial mass	125.1 g	Edge frame used?	Yes	RH	50%
Surface area	88.4 cm²	Grid used?	No		
Heat flux	50 kW/m²	Manufacturer			
Separation	25 mm	Sponsor			
Orientation	Horizontal				

Test

Standard used	ULC S135
Date of test	29/11/2016
Time of test	08:28
Date of report	29/11/2016

Apparatus specifications

C-factor	0.04298
Duct diameter	0.114 m
O2 delay time	17 s
CO2 delay time	17 s
CO delay time	17 s
OD corr. factor	1.0055

Pre-test conditions

Ambient temperature	18.8°C
Ambient pressure	96.821 kPa
Relative humidity	36%

Initial conditions

Baseline ambient oxygen	20.783%
Baseline oxygen	20.952%
Baseline carbon dioxide	0.0741%
Mass at sustained flaming	no ignition

Test times

Time to ignition	not recorded
Time to flameout	s
End of test criterion	User entered
End of test time (for calculations)	900 s

Heat Release Results

THR (0-300)	0.44 MJ/m²
THR (0-600)	1.24 MJ/m²
THR (0-1200)	-
Fuel load	0.16 MJ/kg

Test results (between 0 and 900 s)

Total heat release	2.2 MJ/m²
Total oxygen consumed	2.0 g
Mass lost	32.2 g
Average specific MLR	4.46 g/(s·m²)
Total smoke release	24.4 m²/m²
Total smoke production	0.2 m²
MAHRE	3.5 kW/m²

	Mean	Peak	at time (s)
Heat release rate (kW/m²)	2.36	7.54	856
Effective heat of comb. (MJ/kg)	0.58	78.32	660
Mass loss rate (g/s)	0.036	0.360	626
Specific extinction area (m²/kg)	-3.28	2086.32	209
Carbon monoxide yield (kg/kg)	0.0076	14.9949	786
Carbon dioxide yield (kg/kg)	0.12	158.40	786

Test averages

between time 0 and...	1 min	2 min	3 min	4 min	5 min	6 min		0 s - 908 s	0 s - 908 s
Heat release rate (kW/m²)	0.68	0.81	0.89	0.96	1.18	1.31		2.39	2.39
Effective heat of comb. (MJ/kg)	0.26	0.22	0.22	0.21	0.24	0.27		0.60	0.60
Mass loss rate (g/s)	0.023	0.033	0.036	0.041	0.043	0.044		0.035	0.035
Specific extinction area (m²/kg)	-4.33	-2.36	-3.41	-4.40	-4.72	-4.29		-3.33	-3.33
Carbon monoxide yield (kg/kg)	0.0009	0.0015	0.0026	0.0029	0.0032	0.0034		0.0078	0.0078
Carbon dioxide yield (kg/kg)	0.10	0.08	0.08	0.08	0.08	0.08		0.12	0.12

Smoke results

Total smoke release: whole test (0 s - 900 s) 24.4 m²/m²

Sample description	102816357MID-001 Terasun Mg Board
Material name/ID	102816357MID-001 Terasun Mg Board

Specimen information

E	13.1 MJ/kg	Specimen number	4	Conditioned?	Yes
Thickness	12 mm	Nominal duct flow rate	24 l/s	Temperature	23°C
Initial mass	124.7 g	Edge frame used?	Yes	RH	50%
Surface area	88.4 cm²	Grid used?	No		
Heat flux	50 kW/m²	Manufacturer			
Separation	25 mm	Sponsor			
Orientation	Horizontal				

Test

Standard used	ULC S135
Date of test	29/11/2016
Time of test	10:24
Date of report	29/11/2016

Apparatus specifications

C-factor	0.04298
Duct diameter	0.114 m
O2 delay time	17 s
CO2 delay time	17 s
CO delay time	17 s
OD corr. factor	1.0055

Pre-test conditions

Ambient temperature	21.3°C
Ambient pressure	97.15 kPa
Relative humidity	32%

Initial conditions

Baseline ambient oxygen	20.771%
Baseline oxygen	20.946%
Baseline carbon dioxide	0.0756%
Mass at sustained flaming	no ignition

Test times

Time to ignition	not recorded
Time to flameout	s
End of test criterion	User entered
End of test time (for calculations)	900 s

Heat Release Results

THR (0-300)	0.12 MJ/m²
THR (0-600)	0.43 MJ/m²
THR (0-1200)	-
Fuel load	0.07 MJ/kg

Test results (between 0 and 900 s)

Total heat release	1.0 MJ/m²
Total oxygen consumed	1.1 g
Mass lost	32.0 g
Average specific MLR	4.33 g/(s·m²)
Total smoke release	29.3 m²/m²
Total smoke production	0.3 m²
MAHRE	1.1 kW/m²

	Mean	Peak	at time (s)
Heat release rate (kW/m²)	0.48	5.50	717
Effective heat of comb. (MJ/kg)	0.12	75.33	566
Mass loss rate (g/s)	0.036	0.416	207
Specific extinction area (m²/kg)	0.15	4527.03	787
Carbon monoxide yield (kg/kg)	0.0063	20.1034	459
Carbon dioxide yield (kg/kg)	0.12	372.46	459

Test averages

between time 0 and...	1 min	2 min	3 min	4 min	5 min	6 min		0 s - 903 s	0 s - 903 s
Heat release rate (kW/m²)	-1.23	-1.31	-1.01	-0.86	-0.82	-0.81		0.48	0.48
Effective heat of comb. (MJ/kg)	-0.33	-0.31	-0.23	-0.18	-0.16	-0.16		0.12	0.12
Mass loss rate (g/s)	0.032	0.037	0.038	0.043	0.044	0.044		0.035	0.035
Specific extinction area (m²/kg)	-4.83	-1.28	1.04	0.19	-0.34	-0.40		0.14	0.14
Carbon monoxide yield (kg/kg)	0.0008	0.0011	0.0023	0.0025	0.0028	0.0031		0.0063	0.0063
Carbon dioxide yield (kg/kg)	0.08	0.08	0.09	0.09	0.09	0.09		0.12	0.12

Smoke results

Total smoke release: whole test (0 s - 900 s) 29.3 m²/m²

Sample description	102816357MID-001 Terasun Mg Board
Material name/ID	102816357MID-001 Terasun Mg Board

Specimen information

E	13.1 MJ/kg	Specimen number	5	Conditioned?	Yes
Thickness	12 mm	Nominal duct flow rate	24 l/s	Temperature	23°C
Initial mass	126.6 g	Edge frame used?	Yes	RH	50%
Surface area	88.4 cm²	Grid used?	No		
Heat flux	50 kW/m²	Manufacturer			
Separation	25 mm	Sponsor			
Orientation	Horizontal				

Test

Standard used	ULC S135
Date of test	29/11/2016
Time of test	09:13
Date of report	29/11/2016

Apparatus specifications

C-factor	0.04298
Duct diameter	0.114 m
O2 delay time	17 s
CO2 delay time	17 s
CO delay time	17 s
OD corr. factor	1.0055

Pre-test conditions

Ambient temperature	19.3°C
Ambient pressure	96.901 kPa
Relative humidity	35%

Initial conditions

Baseline ambient oxygen	20.779%
Baseline oxygen	20.949%
Baseline carbon dioxide	0.0735%
Mass at sustained flaming	no ignition

Test times

Time to ignition	not recorded
Time to flameout	s
End of test criterion	User entered
End of test time (for calculations)	900 s

Heat Release Results

THR (0-300)	0.22 MJ/m²
THR (0-600)	0.53 MJ/m²
THR (0-1200)	-
Fuel load	0.10 MJ/kg

Test results (between 0 and 900 s)

Total heat release	1.4 MJ/m²
Total oxygen consumed	1.5 g
Mass lost	32.6 g
Average specific MLR	4.47 g/(s·m²)
Total smoke release	31.5 m²/m²
Total smoke production	0.3 m²
MAHRE	1.6 kW/m²

	Mean	Peak	at time (s)
Heat release rate (kW/m²)	1.18	7.66	749
Effective heat of comb. (MJ/kg)	0.29	53.42	877
Mass loss rate (g/s)	0.036	0.230	895
Specific extinction area (m²/kg)	0.58	3269.41	601
Carbon monoxide yield (kg/kg)	0.0082	19.9390	799
Carbon dioxide yield (kg/kg)	0.12	208.65	799

Test averages

between time 0 and...	1 min	2 min	3 min	4 min	5 min	6 min		0 s - 903 s	0 s - 903 s
Heat release rate (kW/m²)	-0.49	-0.59	-0.31	-0.12	-0.02	0.01		1.19	1.19
Effective heat of comb. (MJ/kg)	-0.16	-0.16	-0.08	-0.03	-0.00	0.00		0.29	0.29
Mass loss rate (g/s)	0.028	0.034	0.037	0.041	0.043	0.044		0.036	0.036
Specific extinction area (m²/kg)	-2.20	0.00	0.59	-0.91	0.19	-0.07		0.65	0.65
Carbon monoxide yield (kg/kg)	0.0017	0.0019	0.0032	0.0036	0.0038	0.0040		0.0083	0.0083
Carbon dioxide yield (kg/kg)	0.08	0.07	0.07	0.08	0.08	0.08		0.12	0.12

Smoke results

Total smoke release: whole test (0 s - 900 s) 31.5 m²/m²

Sample description	102816357MID-001 Terasun Mg Board
Material name/ID	102816357MID-001 Terasun Mg Board

Specimen information

E	13.1 MJ/kg	Specimen number	6	Conditioned?	Yes
Thickness	12 mm	Nominal duct flow rate	24 l/s	Temperature	23°C
Initial mass	123.5 g	Edge frame used?	Yes	RH	50%
Surface area	88.4 cm²	Grid used?	No		
Heat flux	50 kW/m²	Manufacturer			
Separation	25 mm	Sponsor			
Orientation	Horizontal				

Test

Standard used	ULC S135
Date of test	29/11/2016
Time of test	09:32
Date of report	29/11/2016

Apparatus specifications

C-factor	0.04298
Duct diameter	0.114 m
O2 delay time	17 s
CO2 delay time	17 s
CO delay time	17 s
OD corr. factor	1.0055

Pre-test conditions

Ambient temperature	20.9°C
Ambient pressure	96.976 kPa
Relative humidity	34%

Initial conditions

Baseline ambient oxygen	20.767%
Baseline oxygen	20.949%
Baseline carbon dioxide	0.0741%
Mass at sustained flaming	no ignition

Test times

Time to ignition	not recorded
Time to flameout	s
End of test criterion	User entered
End of test time (for calculations)	900 s

Heat Release Results

THR (0-300)	0.18 MJ/m²
THR (0-600)	0.61 MJ/m²
THR (0-1200)	-
Fuel load	0.08 MJ/kg

Test results (between 0 and 900 s)

Total heat release	1.2 MJ/m²
Total oxygen consumed	1.3 g
Mass lost	32.4 g
Average specific MLR	4.37 g/(s·m²)
Total smoke release	17.1 m²/m²
Total smoke production	0.2 m²
MAHRE	1.4 kW/m²

	Mean	Peak	at time (s)
Heat release rate (kW/m²)	0.87	6.39	891
Effective heat of comb. (MJ/kg)	0.21	64.08	322
Mass loss rate (g/s)	0.036	0.279	233
Specific extinction area (m²/kg)	-8.64	3315.56	321
Carbon monoxide yield (kg/kg)	0.0064	3.5049	539
Carbon dioxide yield (kg/kg)	0.13	59.50	539

Test averages

between time 0 and...	1 min	2 min	3 min	4 min	5 min	6 min	0 s - 903 s	0 s - 903 s
Heat release rate (kW/m²)	-0.58	-0.63	-0.78	-0.61	-0.37	-0.02	0.88	0.88
Effective heat of comb. (MJ/kg)	-0.16	-0.16	-0.17	-0.12	-0.07	-0.00	0.22	0.22
Mass loss rate (g/s)	0.031	0.035	0.039	0.044	0.045	0.045	0.036	0.036
Specific extinction area (m²/kg)	-14.27	-12.30	-10.44	-8.87	-7.80	-8.24	-8.64	-8.64
Carbon monoxide yield (kg/kg)	0.0004	0.0010	0.0021	0.0023	0.0026	0.0029	0.0065	0.0065
Carbon dioxide yield (kg/kg)	0.09	0.09	0.09	0.09	0.10	0.10	0.13	0.13

Smoke results

Total smoke release: whole test (0 s - 900 s) 17.1 m²/m²

Heat flux	50 kW/m²	Surface area	88.4 cm²
Orientation	Horizontal	Retainer frame used?	Yes

Test averages

Test	t(ig) (s)	t(fo) (s)	t(end) (s)	HRR(peak) (kW/m²)	tpeak (s)	THR (MJ/m²)	HRR(60) (kW/m²)	HRR(180) (kW/m²)	HRR(300) (kW/m²)
Mean	**0**	**0**	**900**	**7.81**	**677.5**	**2.00**	**-0.14**	**0.27**	**0.73**
1	0		900	13.15	725	4.96	0.70	1.58	2.73
2	0		900	6.59	126	1.12	0.02	1.20	1.64
3	0		900	7.60	857	2.26	0.72	0.95	1.24
4	0		900	5.50	717	1.01	-1.23	-1.01	-0.82
5	0		900	7.66	749	1.44	-0.49	-0.31	-0.02
6	0		900	6.39	891	1.18	-0.58	-0.78	-0.37

Test	Flux (kW/m²)	t (mm)	Area (cm²)	m(i) (g)	m(s) (g)	m(f) (g)	Δm (g)	Ave MLR (g/s·m²)	EHC(av) (MJ/kg)
Mean		**12**		**125.2**	**125.2**	**93.3**	**32.0**	**4.4**	**0.46**
1	50	12	88.4	125.6	125.6	94.1	31.5	4.3	1.38
2	50	12	88.4	125.9	125.9	94.6	31.3	4.3	0.18
3	50	12	88.4	125.1	125.1	93.0	32.1	4.5	0.60
4	50	12	88.4	124.7	124.7	92.7	32.0	4.3	0.12
5	50	12	88.4	126.6	126.6	94.0	32.6	4.5	0.29
6	50	12	88.4	123.5	123.5	91.1	32.4	4.4	0.21

Test	THR(0-300) (MJ/m²)	THR(0-600) (MJ/m²)	THR(0-1200) (MJ/m²)	SPR(av) (m²/s)	SEA(av) (m²/kg)	Fuel load (MJ/kg)	MARHE (kW/m²)
Mean	**0.40**	**1.02**	**-**	**0.0002**	**4.80**	**0.14**	**2.40**
1	0.88	2.40	-	0.0007	18.58	0.35	5.51
2	0.56	0.92	-	0.0007	21.40	0.08	1.98
3	0.45	1.26	-	-0.0001	-3.28	0.16	2.84
4	0.12	0.43	-	0.0000	0.15	0.07	1.12
5	0.22	0.53	-	0.0000	0.58	0.10	1.60
6	0.18	0.61	-	-0.0003	-8.64	0.08	1.36

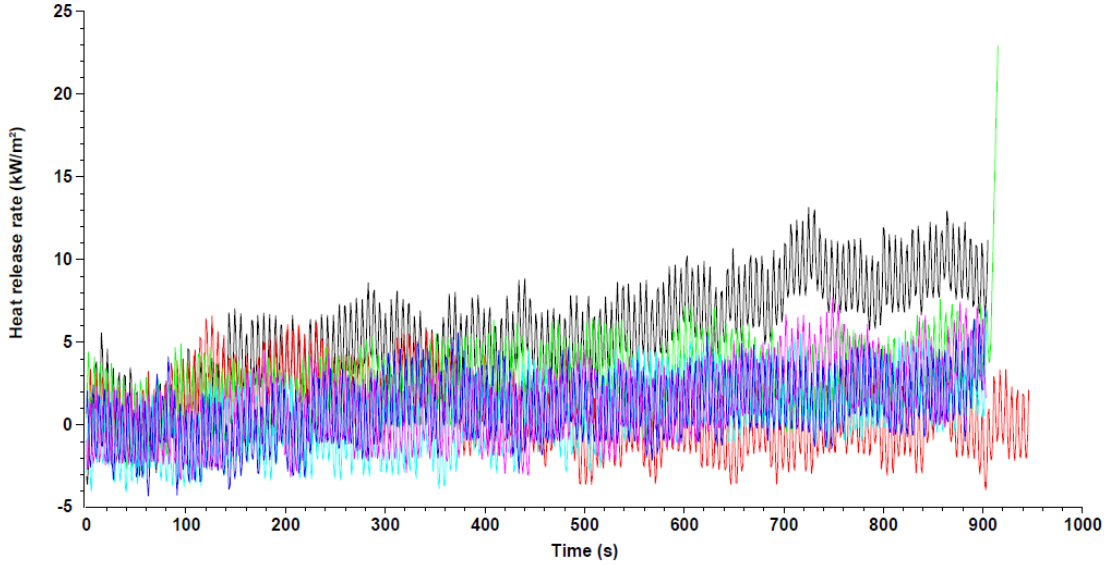
Test	Date	Specimen #	Line colour	Filename
1	29/11/2016	1		C:\CC5\Data\Intertek Shanghai\102816357\102816357MID-001 Terasun Mg Board 1.csv
2	29/11/2016	2		C:\CC5\Data\Intertek Shanghai\102816357\102816357MID-001 Terasun Mg Board 2.csv
3	29/11/2016	3		C:\CC5\Data\Intertek Shanghai\102816357\102816357MID-001 Terasun Mg Board 3.csv
4	29/11/2016	4		C:\CC5\Data\Intertek Shanghai\102816357\102816357MID-001 Terasun Mg Board 4.csv
5	29/11/2016	5		C:\CC5\Data\Intertek Shanghai\102816357\102816357MID-001 Terasun Mg Board 5.csv
6				Board 6.csv

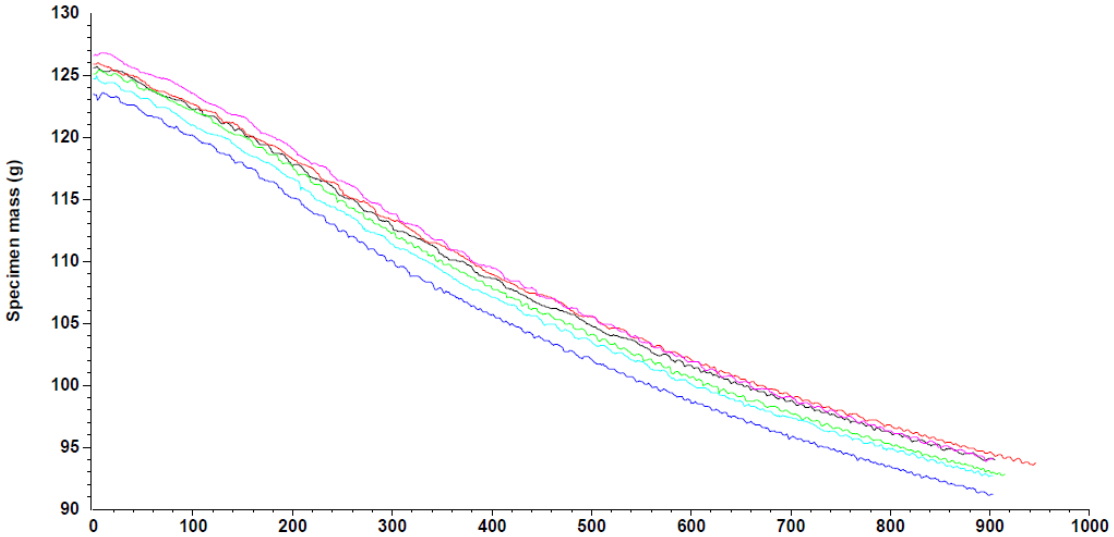
The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

Observations for all of the samples:

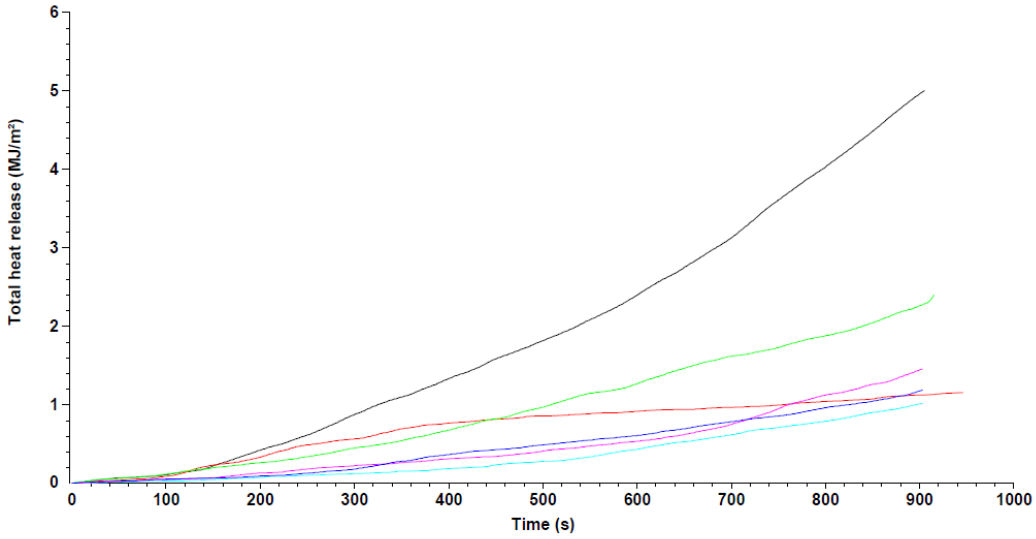
All specimens visibly darkened bu did not ignite.

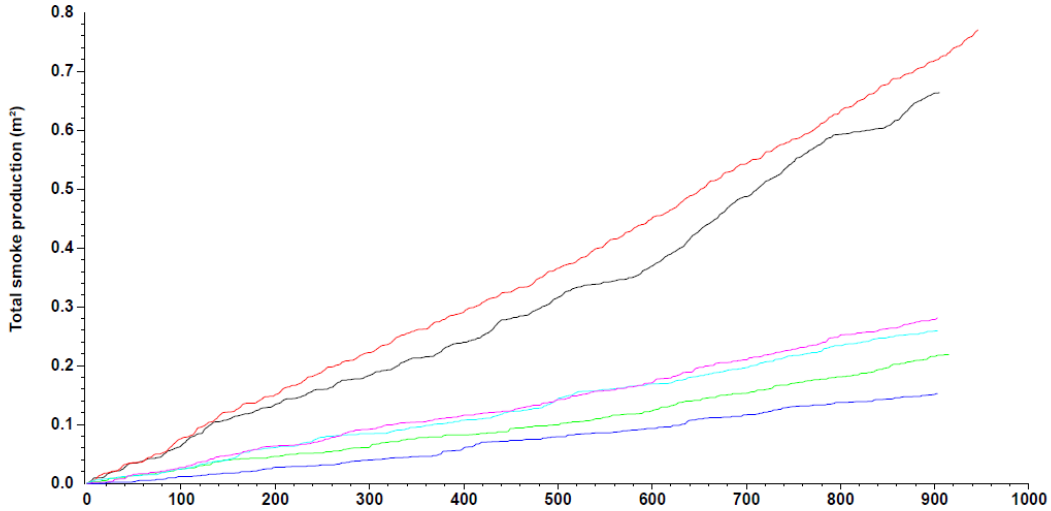
Graphs





The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.





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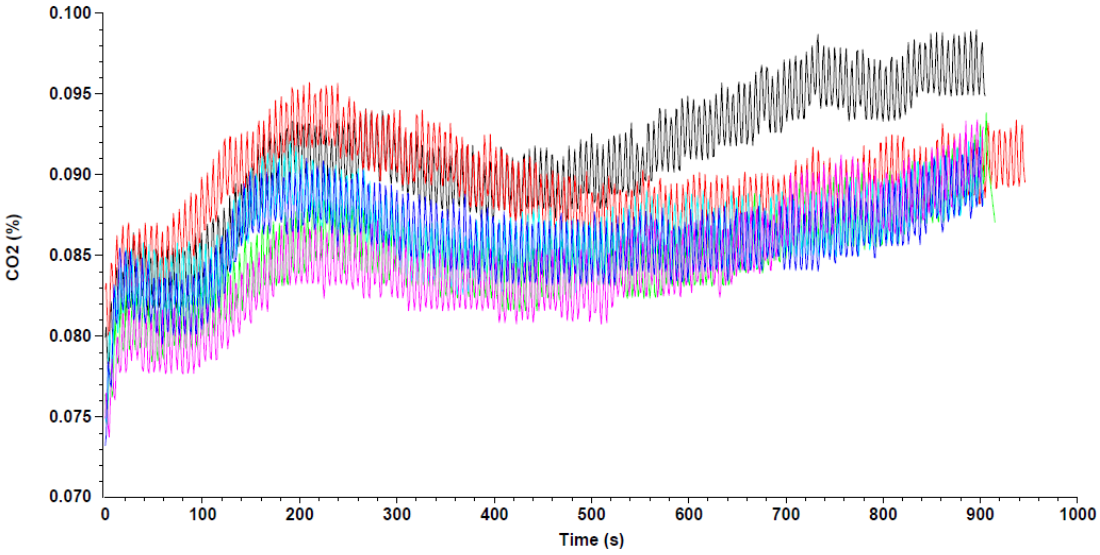

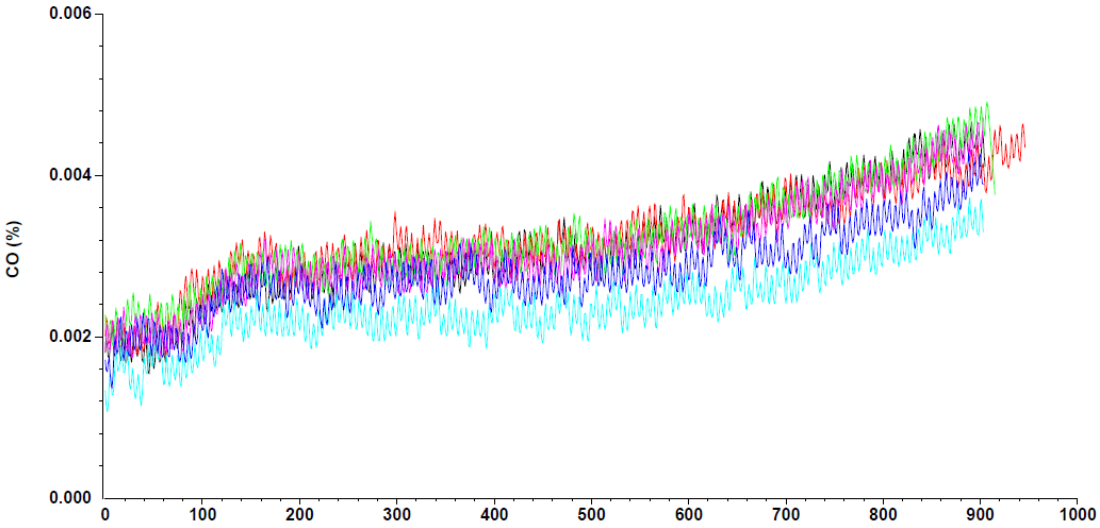

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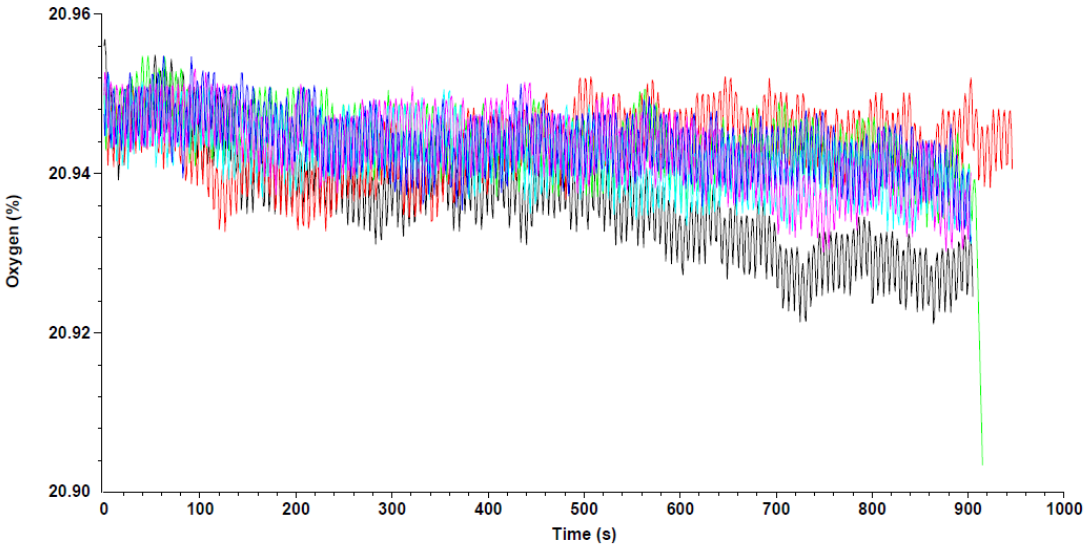

Summary of Total Smoke Production

	Total Smoke Production
Specimen #	m^2
1	0.7
2	0.7
3	0.2
4	0.3
5	0.3
6	0.2
Average	0.4

6 Conclusion

Intertek has conducted testing for Zhejiang Terasun Air Duct Co., Ltd., onTerasun Magnesium Board to evaluate heat and smoke release rates. Testing was conducted following the standard methods of ULC S135-04 Standard Test Method for the Determination of Combustibility Parameters of Building Materials Using an Oxygen Consumption Calorimeter (Cone Calorimeter) in accordance with the National Building Code of Canada for materials used in buildings that are required to be of noncombustible.

There are no pass/fail criteria for ULC S135-04.

With reference to the National Building Code of Canada, the material had an average total heat release of 2.00 MJ/m^2 (3 MJ/m^2 maximum allowable) and average total smoke extinction area of 0.4 m^2 (1.0 m^2 maximum allowable). It therefore **passed** the National Building Code of Canada for materials used in buildings that are required to be noncombustible.

The conclusions of this test report may be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

INTERTEK

Reported by:

Tolu Bamikunle
Lab Technician III, Verification Center

Reviewed by:

Bryan Bowman
Chemist, Verification Center

REVISION SUMMARY

DATE	SUMMARY
November 30, 2016	Original date of report