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Testing. Advising. Assuring.

Jona Panels Sales, Inc.
625 Devonian Ave.
Kelowna, British Columbia
V1W 4Z8

Report : 10-06-M0030-B
Date: 2010-03-31
Pages: 2

Attn: Joe Shalapata

Mr. Shalapata,

Please find attached our report of testing conducted on your GreenEBoard™ building panel material for the purposes of determining the combustibility according to ASTM E1354 “Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter” at an imposed heat flux of 50 kW/m^2.

The tested material was selected on January 29, 2010 from a production lot by an Exova Technical Representative from the Owl Distribution Inc. facility located in Woodstock, Ontario. The details of the selection are attached herein for your reference.

A summary of test results for the GreenEBoard™ is provided below. Detailed results are attached in Exova report 10-002-090 “ASTM E1354 Caloric Content Determination of “GreenEBoard”” dated 2010-03-08.

Table 1 – Summary of Test Results
ASTM E1354-09
Exova Sample No.: 10-06-M0030

Description	Result	Comment
Initial Mass, g	104.2	--
Final Mass, g	66.2	
Mass Loss, %	36	--
Time to Ignition, sec.	--	Did Not Ignite
Avg. Heat Release, kW/m^2	--	Did Not Ignite
Avg. Effective Heat of Combustion, MJ/kg	--	Did Not Ignite
Caloric Content, MJ/kg	--	Did Not Ignite
Avg. Peak Extinction Area, m^2/kg	309.4	--

Because the material did not ignite during the test, in most applications the material can be considered non-combustible, however local building codes and regulations should be consulted based on the intended use of this material.

Should you have any questions regarding this testing, please feel free to contact me at the coordinates below.

Best Regards,

David Beauchamp, B.Sc.
Supervisor, Building Products Lab
Building Performance Centre

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Production Material
Sample Selection Report

Report No.: 10-006-M0030
Date: January 29, 2010

Jona Panel Sales Inc.
625 Devonian Ave
Kelowna, BC
V1W 4Z8

Joe Shalapata:

On January 29th, 2010 an Exova Technical Representative selected material at the Owl distribution facility, located at 220 Universal Rd., Woodstock Ontario. The selection of the material was witnessed on the above date, and the details of the selection are provided below.

For traceability, the witnessed materials were signed and dated by the Exova Technical Representative and transport by the Exova representaive to the Exova Mississauga facility.

Sample Details

Sample 1 thru 3 – Detailed Information				
Client Sample Name	GreenEBoard™ (CCMC # 13417-R)			
Manufacturing Information	Batch/Lot No.	PO#CL83	Origin	China
	Date of Mfg.	N/A	Time of Mfg.	N/A
Sample Information	No. of Pcs	3	Length & Width	3' x 5'
	Material Type	Boards	Thickness	12.5mm
Selection Information	Markings	*A. Cameron / Jan. 12, 2010 / 10-06-M0030*		

Exova Witness

Witnessing Information	
Location of Selection	Owl Distribution Inc. Woodstock, Ontario 24 avaible skids , 50 pcs. per skid
Exova Technical Representative	Andrew Cameron
Exova Signature	

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ASTM E 1354 Caloric Content Determination of "GreenEBoard"

A Report To:	**Jona Panels Sales, Inc.** 625 Devonian Avenue Kelowna, B.C. V1W 4Z8
Phone:	(205) 764-7595
Email:	joe@jonapanels.com
Attention:	Joe Shalapata
Submitted By:	Fire Testing
Report No.	10-002-090 8 pages + 1 appendix
Date:	March 8, 2010

ACCREDITATION To ISO/IEC 17025 for a defined Scope of Testing by the Standards Council of Canada

SPECIFICATIONS OF ORDER

Determine Effective Heat of Combustion according to ASTM E 1354 and derive Caloric Content, as per Exova Work Order No. 501463 dated January 21, 2010.

IDENTIFICATION

Fibre cement panels, approximately 13 mm in thickness and identified as "GreenEBoard (½")".

(Exova sample identification number 10-06-M0030)

SAMPLE PREPARATION

The test specimens, each approximately 100 mm x 100 mm in size, were conditioned at a temperature of 23 ± 3°C and a relative humidity of 50 ± 5% prior to testing.

SUMMARY OF TEST PROCEDURE

Each specimen is mounted into a holder and placed horizontally below a cone-shaped radiant heat source which has been previously calibrated to emit a predetermined heat flux. Testing can occur with or without a spark ignition source. The test is performed in ambient air conditions, while a load cell continuously monitors specimen weight loss.

Exhaust gas flow rate and oxygen concentration are used to determine the amount of heat release, based on the observation that the net heat of combustion is directly related to the amount of oxygen required for combustion. The relationship is that approximately 13.1 x 10^3 kJ of heat are released per 1 kg of oxygen consumed.

In addition to rate of heat release, other specified measurements include mass-loss rate, time to sustained flaming and smoke obscuration.

Exova

TEST RESULTS

ASTM E 1354-09

Standard Test Method for Heat and Visible Smoke Release Rates
for Materials and Products Using an Oxygen Consumption Calorimeter

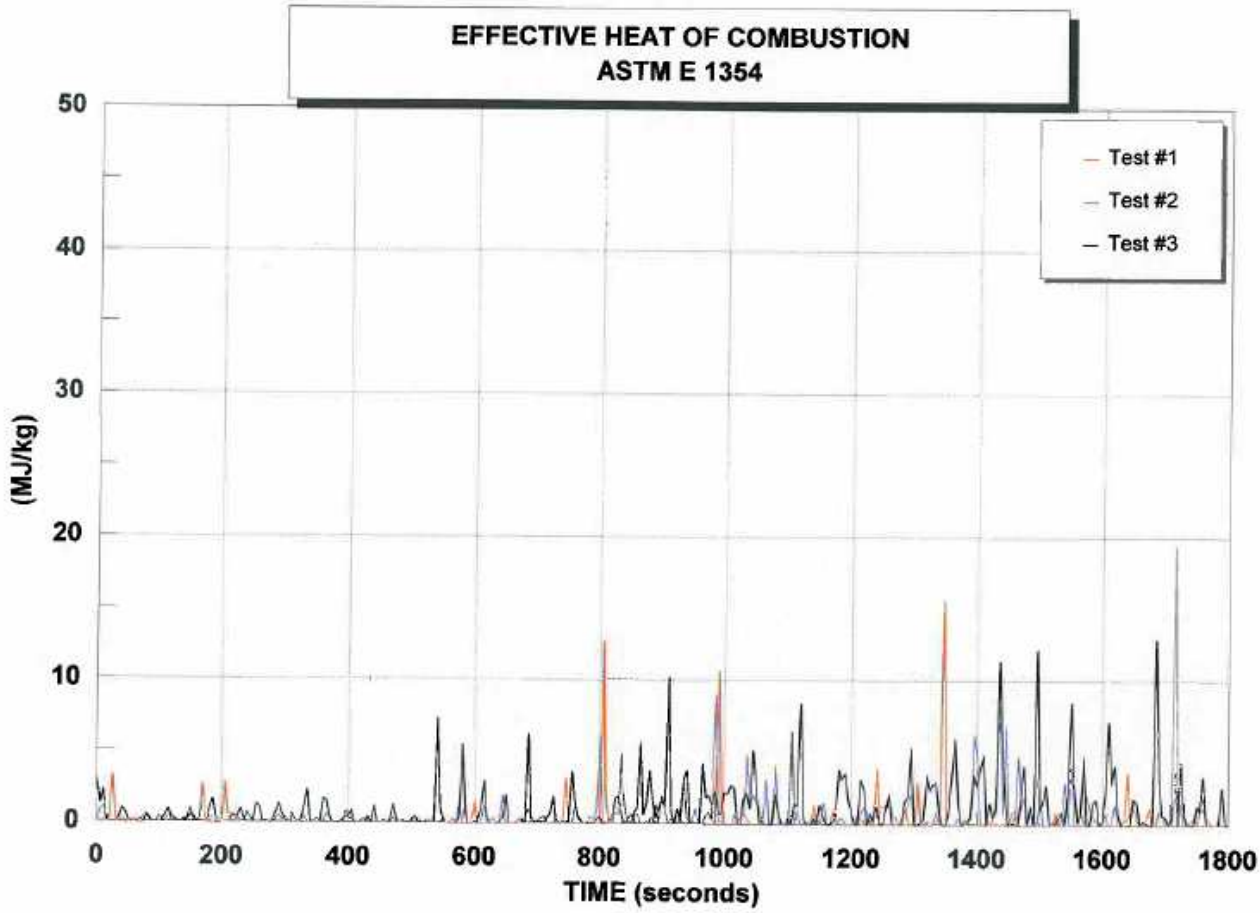
Heat Flux (kW/m²): 50 Exhaust Flow Rate (l/s): 24

Testing was performed on March 4, 2010 with the sample in the horizontal configuration, utilizing the specimen holder edge frame and also the specified spark ignition source.

	Test #1	Test #2	Test #3	Average
Specimen Thickness (mm)	13.0	13.0	13.0	
Initial Mass (g)	104.6	103.3	104.8	
Mass at Sustained Flaming (g)	104.6	103.3	104.8	
Final Mass (g)	64.80	66.85	67.11	
Total Mass Loss (kg/m²)	3.98	3.65	3.76	3.80
Peak Specific Mass Loss Rate (g/s·m²)	21.88	21.88	9.85	17.87
Average Mass Loss Rate (g/s·m²)	2.54	2.54	2.51	2.53
Time to Ignition (s)	D.N.I*	D.N.I*	D.N.I*	-
Time to Flame-out (s)	1800	1800	1800	1800
Time of Peak Rate of Heat Release (s)	N/A	N/A	N/A	N/A
Peak Rate of Heat Release (kW/m²)	N/A	N/A	N/A	N/A
Average Rate of Heat Release (kW/m²)	N/A	N/A	N/A	N/A
Total Heat Released (MJ/m²)	N/A	N/A	N/A	N/A
Average Effective Heat of Combustion (MJ/kg)	N/A	N/A	N/A	N/A
Average Effective Heat of Combustion (BTU/lb)	N/A	N/A	N/A	N/A
Caloric Content (MJ/kg)	N/A	N/A	N/A	N/A
Caloric Content (BTU/lb)	N/A	N/A	N/A	N/A
Peak Extinction Area (m²/kg)	428.1	149.5	350.7	309.4

* Did not ignite therefore no calculations could be performed.

TEST RESULTS (Cont..)

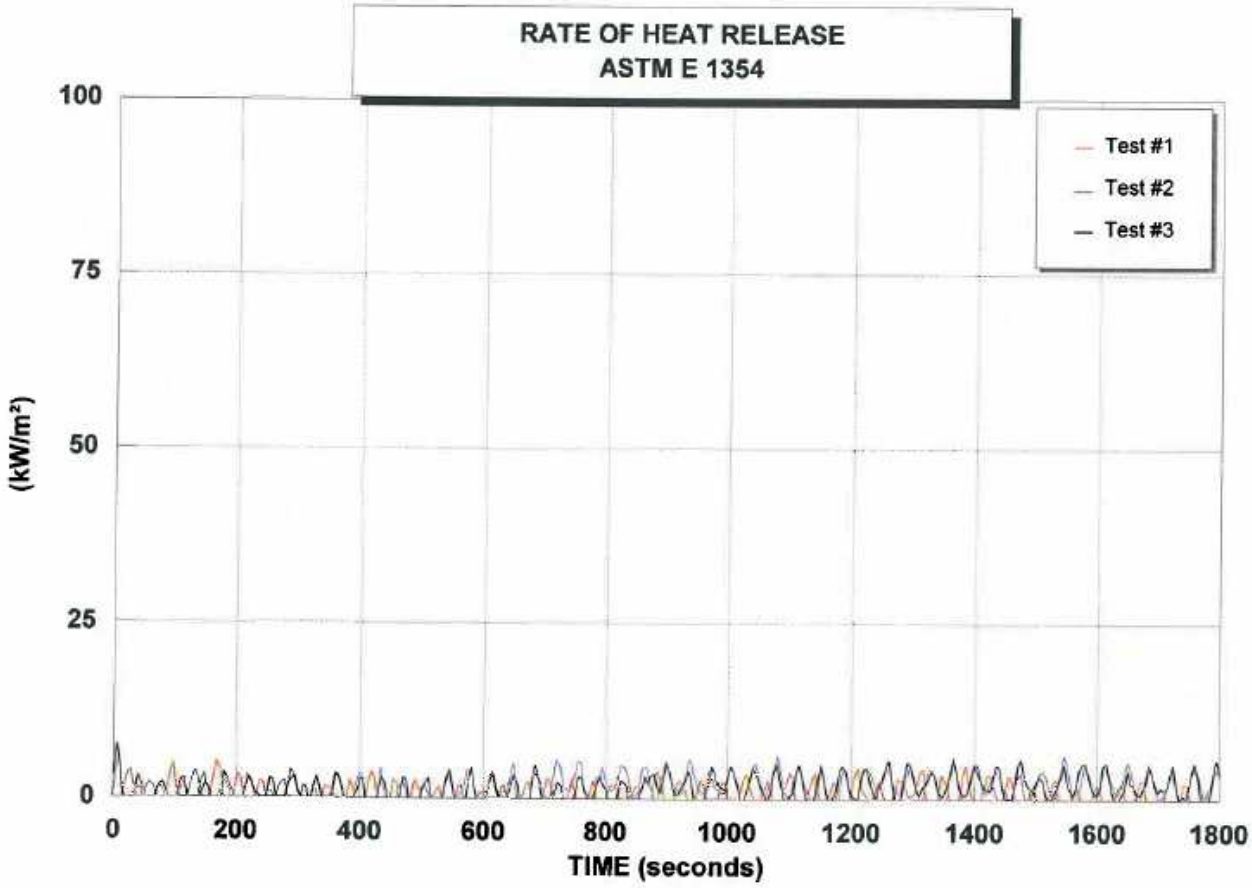


	Test #1	Test #2	Test #3	Average
Average Heat of Combustion (MJ/kg)*	N/A	N/A	N/A	N/A
Heat of Combustion @ 60 s (MJ/kg)**	N/A	N/A	N/A	N/A
Heat of Combustion @ 180 s (MJ/kg)**	N/A	N/A	N/A	N/A
Heat of Combustion @ 300 s (MJ/kg)**	N/A	N/A	N/A	N/A

* Averaged over the period starting when 10% of the ultimate mass loss occurred and ending at the time when 90% of the ultimate mass loss occurred.

** Averages, or projected averages over the 60, 180 or 300 second periods starting when 10% of the ultimate mass loss occurred.

TEST RESULTS (Cont..)

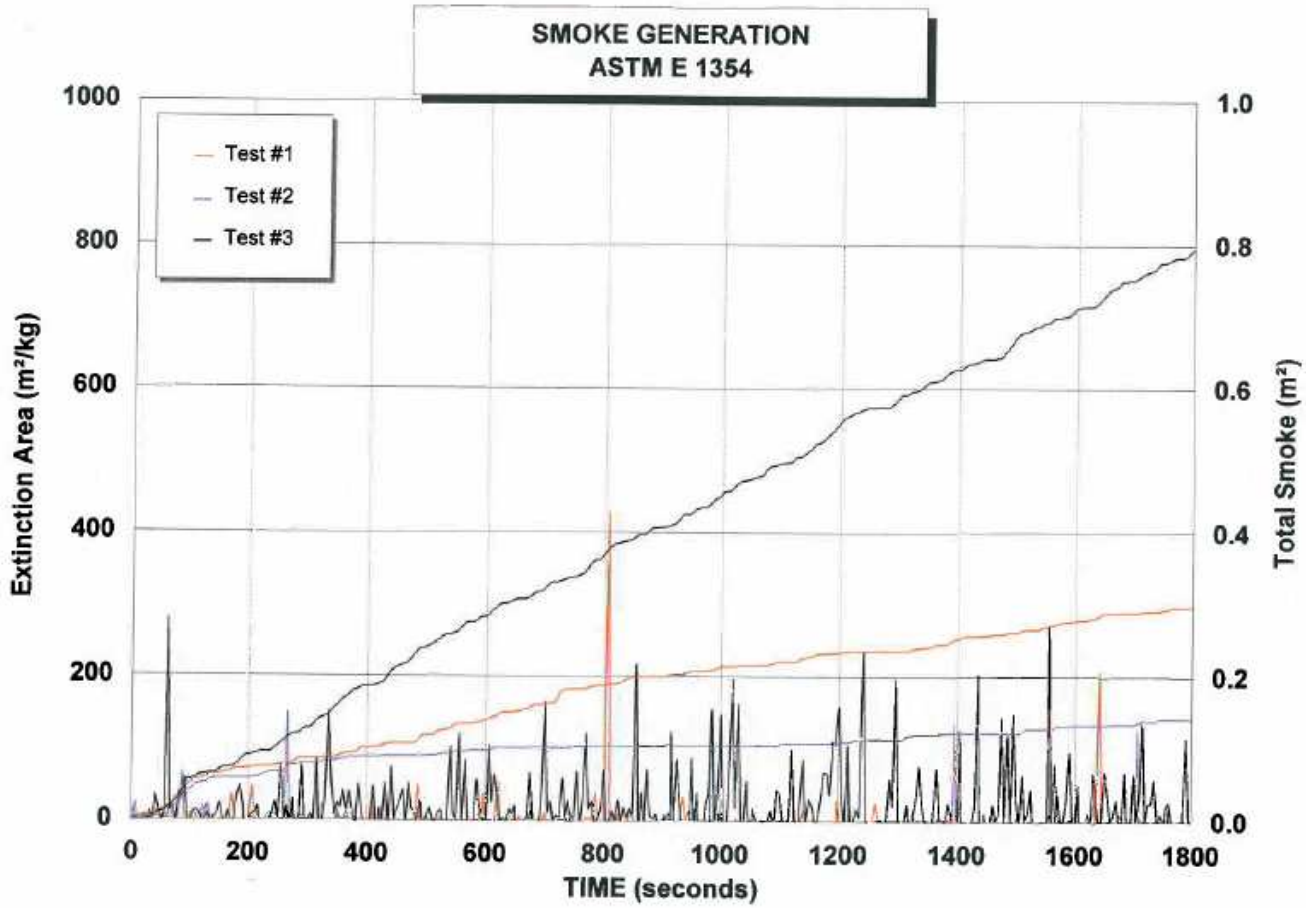


	Test #1	Test #2	Test #3	Average
Peak Rate of Heat Release (kW/m²)	N/A	N/A	N/A	N/A
Average Heat Release Rate (kW/m²)*	N/A	N/A	N/A	N/A
Heat Release Rate @ 60 s (kW/m²)**	N/A	N/A	N/A	N/A
Heat Release Rate @ 180 s (kW/m²)**	N/A	N/A	N/A	N/A
Heat Release Rate @ 300 s (kW/m²)**	N/A	N/A	N/A	N/A

* Averaged over the test period (from ignition to flameout).

** Averages, or projected averages over the first 60, 180 or 300 seconds after ignition.

TEST RESULTS (Cont..)

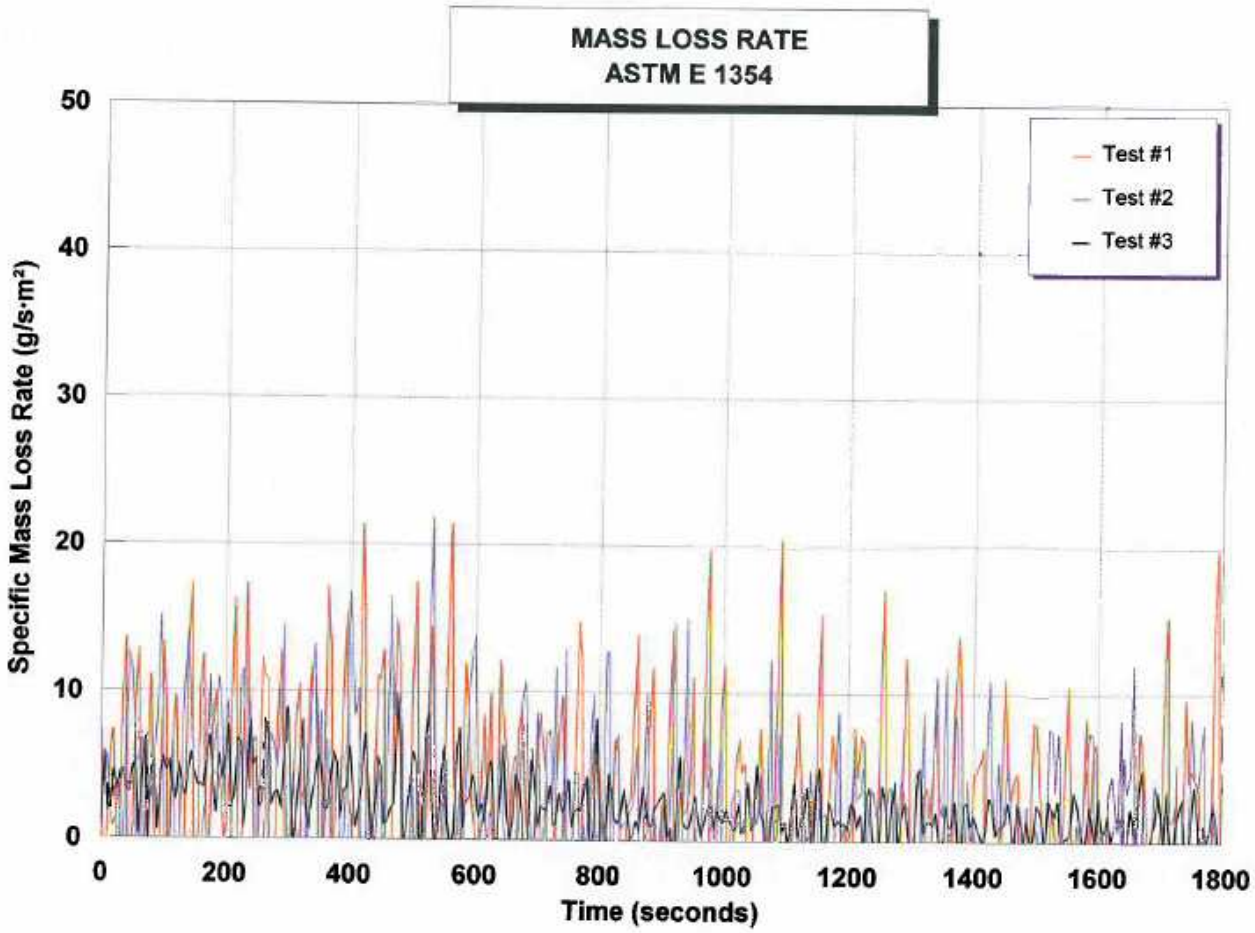


	Test #1	Test #2	Test #3	Average
Peak Extinction Area (m²/kg)	428.1	149.5	350.7	309.4
Extinction Area @ 60 s (m²/kg)**	N/A	N/A	N/A	N/A
Extinction Area @ 180 s (m²/kg)**	N/A	N/A	N/A	N/A
Extinction Area @ 300 s (m²/kg)**	N/A	N/A	N/A	N/A
Total Smoke (m²)	0.3	0.1	0.8	0.4

* Averaged over the test period (from ignition to flameout).

** Averages, or projected averages over the first 60, 180 or 300 seconds after ignition.

TEST RESULTS (Cont..)



	Test #1	Test #2	Test #3	Average
Peak Mass Loss Rate (g/s·m²)	21.88	21.88	9.85	17.87
Avg. Specific Mass Loss Rate (g/m²·s)*	2.54	2.54	2.51	2.53
Mass Loss Rate @ 60 s (g/s)**	0.03	0.04	0.03	0.03
Mass Loss Rate @ 180 s (g/s)**	0.03	0.03	0.04	0.03
Mass Loss Rate @ 300 s (g/s)**	0.03	0.04	0.04	0.04

* Averaged over the period starting when 10% of the ultimate mass loss occurred and ending at the time when 90% of the ultimate mass loss occurred.

** Averages, or projected averages over the 60, 180 or 300 second periods starting when 10% of the ultimate mass loss occurred.

CONCLUSIONS

In all three tests, the specimens did not ignite over the 30 minute test duration at an imposed irradiance of 50 kW/m2. In all cases, the spark ignitor was in place for the full test period. Although some heat evolution and and some mass loss were recorded, no appreciable calculation could be made for Effective Heat of Combustion.

For projected values, ASTM E 1354-09, section 14.1.15 states (in part), "For specimens that do not show sustained flaming, report the above quantities tabulated for periods beginning with the next reading after the last negative rate of heat release reading at the beginning of the test". Since no negative readings were obtained, those calculations could not be performed.

Mel Garces,
Fire Testing.

Ian Smith,
Fire Testing.

Note: This report and service are covered under Exova Canada Inc. Standard Terms and Conditions of Contract which may be found on the Exova website (www.exova.com), or by calling 1-866-263-9268.

APPENDIX

(1 Page)

ASTM E 1354 Definitions

ASTM E 1354 DEFINITIONS

In evaluating the data produced by the oxygen consumption (cone) calorimeter, the following definitions and comments are offered:

Effective Heat of Combustion	This is the measured heat release divided by the mass loss for a specified time period and represents, therefore, the calorific value of the consumed portion only of the tested material. Caloric content under the test conditions can be derived by dividing the total heat released by the original mass of the material under test. It generally differs from the theoretical heat of combustion, since the latter involves complete combustion - a phenomenon which rarely takes place in an actual fire.
Time to Ignition	Also known as ignition delay time, this parameter provides a measure of a material's propensity to ignition as measured by the time to sustained ignition at a given heat flux. It can also be considered to be related to the volatility of the degradation products and the time required to achieve a critical fuel concentration in the vapour phase. This gasification rate is temperature dependent: the higher the imposed heat flux the shorter the time to ignition.
Heat Release Rate (HRR)	HRR is the heat evolved per unit time and is highly dependent on applied heat flux: the higher the flux the greater the HRR. HRR curves can fluctuate significantly with time and it is generally considered that the average HRR can be a better predictor of full-scale fire performance than the peak value.
Total Heat Release	This is the integrated area under the HRR curve over the test period, expressed in MJ/m^3. If one knows the surface area of a material used in a room or transit vehicle, this value is more properly used to estimate "potential heat load" than is the more commonly used "caloric content" based upon the weight of material used.
Mass Loss Rate	This is roughly correlatable with heat release rate because it is the rate at which the test material is degraded to produce combustible fuels. The peak mass loss rate and average mass loss rate are derivative terms generated by the load cell.
Extinction Area	This refers to the "yield" of smoke which is, through mathematical manipulation, expressed as an area per unit mass.

In addition to average values for the test, data averaged to the 60, 180 and 300 second marks after ignition are also typically provided. Where materials burn for different lengths of time, for example, it is more technically sound to compare the average heat release rates over the first 1, 3 or 5 minutes of burning than to compare the test average results which encompass differing time periods.