AWTA TEXTILE TESTING

Australian Wool Testing Authority Ltd – trading as AWTA Textile Testing
A.B.N. 43 006 014 106
1st Floor, 191 Racecourse Road, Flemington, Victoria 3031
P.O. Box 240, North Melbourne, Victoria 3051
Phone (03) 9371 2400 Fax (03) 9371 2499

TEST REPORT

CLIENT : KVADRAT A/S
LUNDBERGSVEJ 10
EBELTOFT 8400
DENMARK

TEST NUMBER : 7-551181-BO
DATE : 14/03/2007

SAMPLE DESCRIPTION Clients Ref: "Divina 2"
Nom: wool melton
100% new wool 820g/lin.m x 150cm
End use: wall/furniture covering

AS/NZS 3837:1998 Method of Test for Heat and Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter

Results:-

	Specimen 1	2	3	Mean	
Averate Heat Release Rate	36.9	37.9	37.5	37.4	kW/m2
Average Specific extinction area	26.7	44.2	41.1	37.3	m2/kg

(according to Specification C1.10 of the Building Code of Australia)

BCA Classification:-
Group Classification 2 1 1
(according to Specification A2.4 of the Building Code of Australia)

159326E 1

(CONTINUED NEXT PAGE)

NATA

This Laboratory is accredited by the National Association of Testing Authorities, Australia, for:
- Chemical Testing of Textiles & Related Products : Accreditation No. 983
- Mechanical Testing of Textiles & Related Products : Accreditation No. 985
- Heat & Temperature Measurement : Accreditation No. 1356

The tests reported herein have been performed in accordance with its terms of accreditation. Samples, and their identifying descriptions have been provided by the client unless otherwise stated. AWTA Ltd makes no warranty, implied or otherwise, as to the source of the tested samples. The above test results relate only to the sample or samples tested. This document shall not be reproduced except in full and shall be rendered void if amended or altered. This document, the names AWTA Textile Testing and AWTA Ltd may be used in advertising providing the content and format of the advertisement have been approved in advance by the Managing Director of AWTA Ltd.

AWTA LIMITED

0204/5/05

APPROVED SIGNATORY

MICHAEL A. JACKSON B.Sc.(Hons)
MANAGING DIRECTOR

AWTA TEXTILE TESTING

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TEST REPORT

CLIENT : KVADRAT A/S
LUNDBERGSVEJ 10
EBELTOFT 8400
DENMARK

TEST NUMBER : 7-551181-BO
DATE : 14/03/2007

Test orientation: Horizontal

	Specimen 1	2	3	Mean	
Irradiance	50	50	50	50	kW/m2
Exhaust flow rate	24	24	24	24	l/s
Time to sustained flaming	17	22	21	20	s
Test duration	264	224	264	251	s

Heat release rate curve on attached sheets which form part of this report

Peak heat release after ignition	147.9	136.7	132.3	139.0	kW/m2
Average heat at 60s	108.2	92.4	89.4	96.7	kW/m2
Release rate at 180s	47.1	41.6	47.5	45.4	kW/m2
After ignition at 300s	36.9	N/A	37.5	37.2	kW/m2
Total heat released	9.1	7.7	9.1	8.6	MJ/m2
Average effective heat of combustion	6.8	6.7	7.1	6.9	MJ/kg
Initial thickness	11.5	11.5	11.5	11.5	mm
Initial mass	67.7	67.0	68.5	67.7	g
Mass remaining	56.7	57.5	57.8	57.3	g
Mass percentage pyrolysed	16.2	14.2	15.6	15.3	%
Mass loss	11.0	9.5	10.7	10.4	g
Average rate of mass loss	5.4	5.7	5.3	5.5	g/m2.s

Observations: Samples were loose laid onto a substrate of 10mm thick plasterboard prior to testing

These test results relate only to the behaviour of the product under the conditions of the test, they are not intended to be the sole criterion for the assessment of performance under real fire conditions

NATA

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AWTA LIMITED

0204/5/05

APPROVED SIGNATORY

MICHAEL A. JACKSON B.Sc.(Hons)
MANAGING DIRECTOR

CONE CALORIMETER SINGLE RUN DATA

Material name	DIVINA 2
Sample description	Wool Melton
File name	159326 spec 1
Date of test	Tuesday, March 13, 2007
Specimen thickness	11.50 mm
Specimen surface area	81.0 cm^2
Specimen initial mass	67.70 g
Heat flux	50.00 kW/m^2
Exhaust duct flow rate	24.00 l/s
Orientation	Horizontal
C factor	0.043218
Time to ignition	17 secs
Flameout	133 secs
End of test (for calculation)	264 secs
End of test criterion	User entered
Total heat evolved	9.1 MJ/m^2
Total oxygen consumed	4.5 g
Total Smoke Released	40.4 m^2/m^2
Mass lost	11.0 g
Average specific mass loss rate	5.42 $g/[m^2s]$

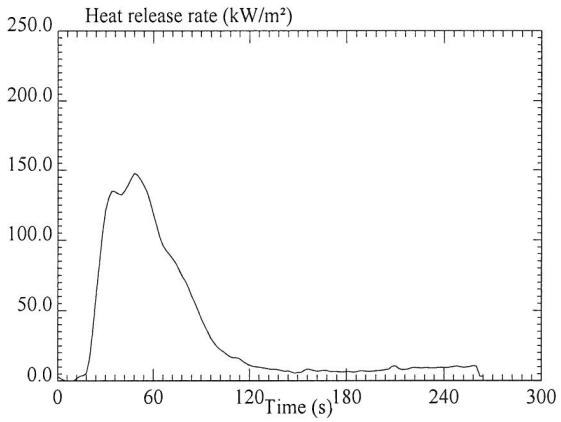
Run Notes

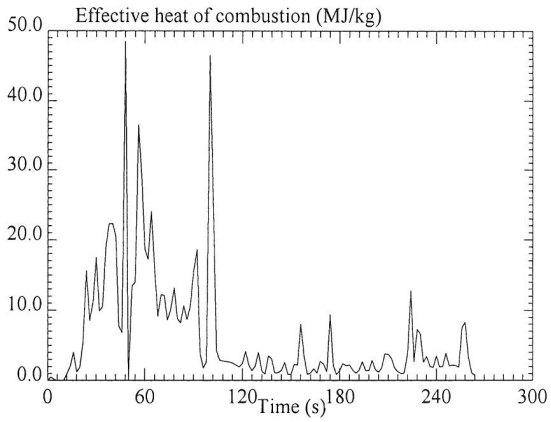
Comment

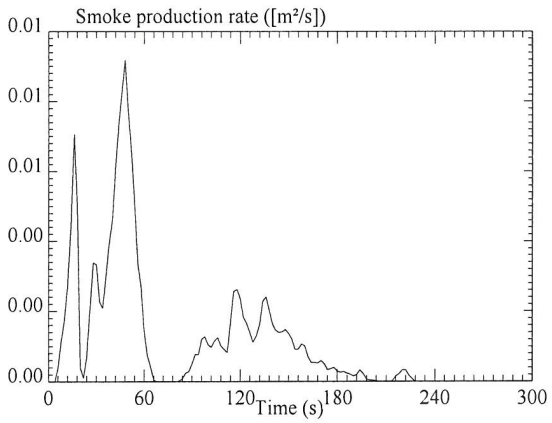
Peak and average values	Average	Peak	at Time(s)
Heat release rate (kW/m^2)	36.88	147.90	48
Effective heat of combustion (MJ/kg)	6.81	48.54	48
Mass loss rate (g/s)	0.044	0.171	46
Specific extinction area (m^2/kg)	26.71	911.32	16

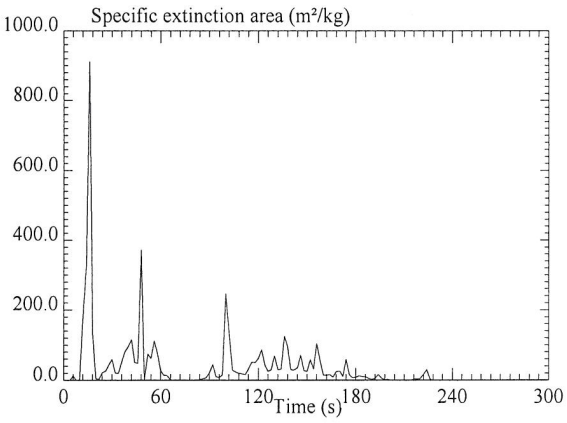
Average during period from ignition to ignition plus:-	1 min	2 min	3 min	4 min	5 min	6 min
Heat release rate (kW/m^2)	108.2	67.2	47.1	37.6	36.9	0.0
Effective heat of combustion (MJ/kg)	13.7	9.9	7.9	6.9	6.8	0.0
Mass loss rate (g/s)	0.064	0.055	0.048	0.044	0.044	0.000
Specific extinction area (m^2/kg)	45.3	37.3	33.1	27.1	26.7	0.0

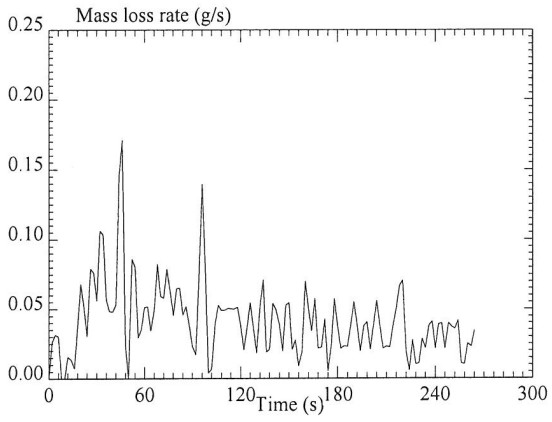
CONE CALORIMETER SINGLE RUN DATA

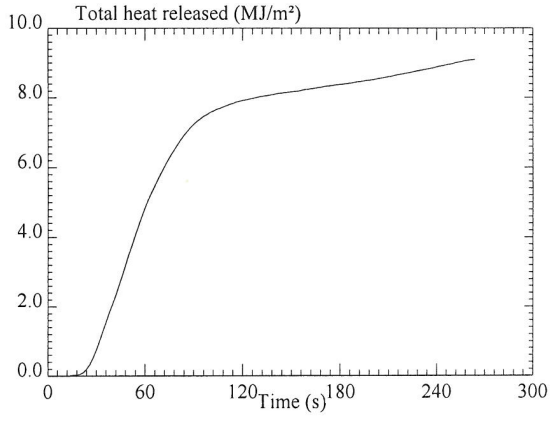






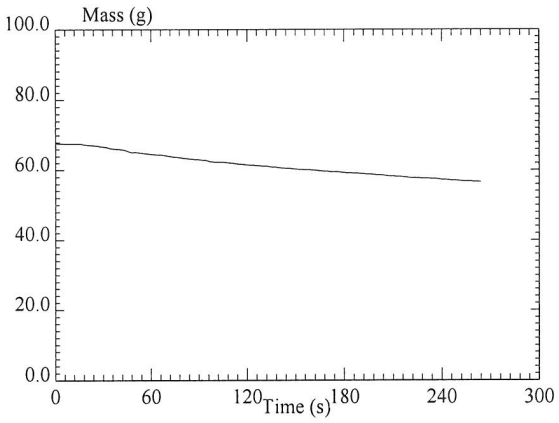


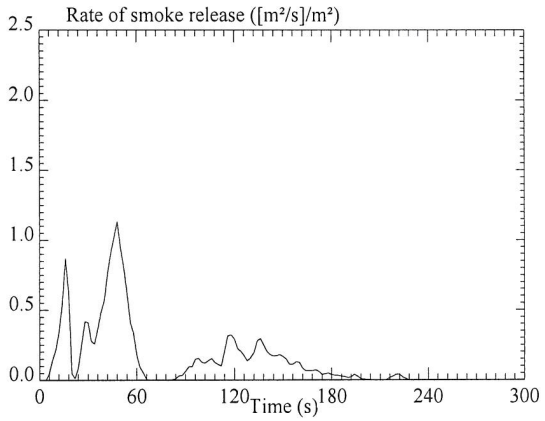




These results relate only to the behaviour of the product under the conditions of the test, they are not intended to be the sole criterion for the assessment of performance under real fire conditions.

CONE CALORIMETER SINGLE RUN DATA





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CONE CALORIMETER SINGLE RUN DATA

Material name	DIVINA 2
Sample description	Wool Melton
File name	159326 spec 2
Date of test	Tuesday, March 13, 2007
Specimen thickness	11.50 mm
Specimen surface area	81.0 cm^2
Specimen initial mass	67.00 g
Heat flux	50.00 kW/m^2
Exhaust duct flow rate	24.00 l/s
Orientation	Horizontal
C factor	0.043218
Time to ignition	22 secs
Flameout	114 secs
End of test (for calculation)	224 secs
End of test criterion	User entered
Total heat evolved	7.7 MJ/m^2
Total oxygen consumed	3.8 g
Total Smoke Released	65.7 m^2/m^2
Mass lost	9.5 g
Average specific mass loss rate	5.68 $g/[m^2s]$

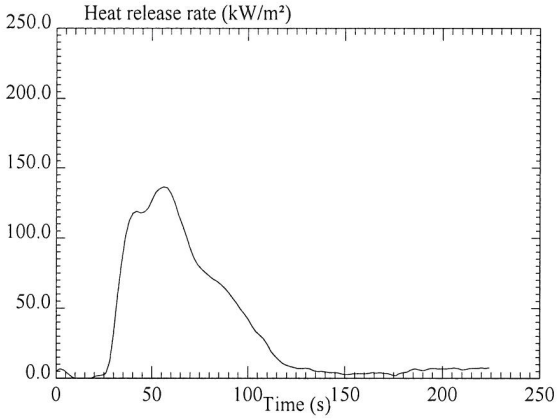
Run Notes

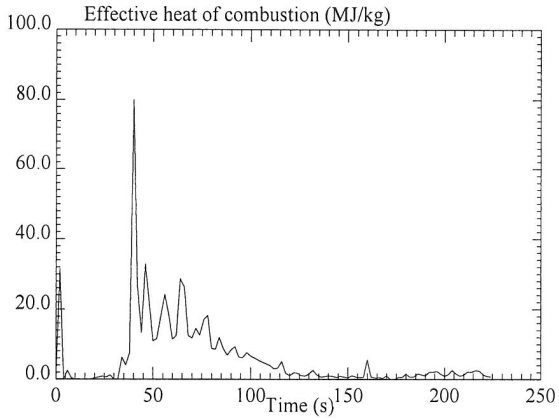
Comment

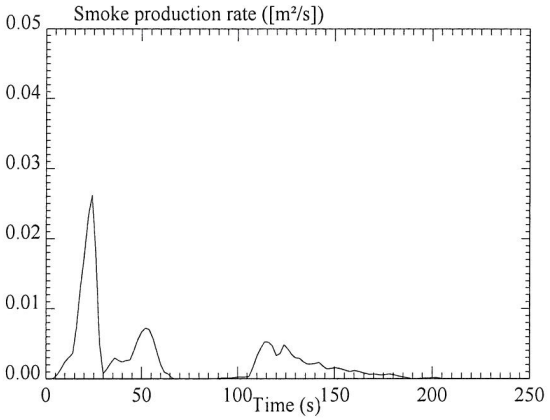
Peak and average values	Average	Peak	at Time(s)
Heat release rate (kW/m^2)	37.86	136.69	56
Effective heat of combustion (MJ/kg)	6.66	80.00	40
Mass loss rate (g/s)	0.046	0.197	36
Specific extinction area (m^2/kg)	44.16	1227.39	24

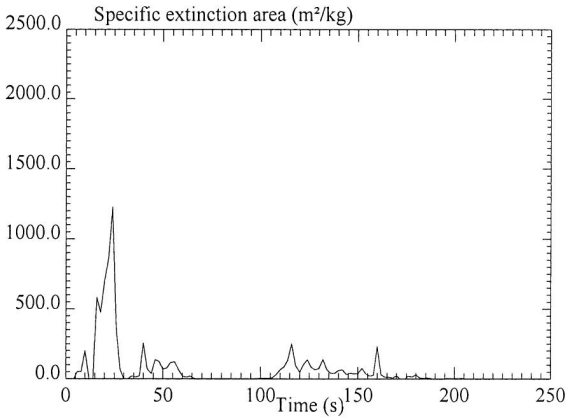
Average during period from ignition to ignition plus:-	1 min	2 min	3 min	4 min	5 min	6 min
Heat release rate (kW/m^2)	92.4	60.2	41.6	37.9	0.0	0.0
Effective heat of combustion (MJ/kg)	13.0	9.2	7.1	6.7	0.0	0.0
Mass loss rate (g/s)	0.057	0.053	0.047	0.046	0.000	0.000
Specific extinction area (m^2/kg)	70.6	57.7	48.5	44.2	0.0	0.0

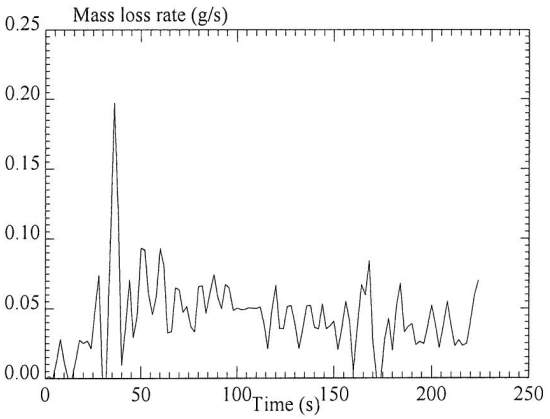
CONE CALORIMETER SINGLE RUN DATA

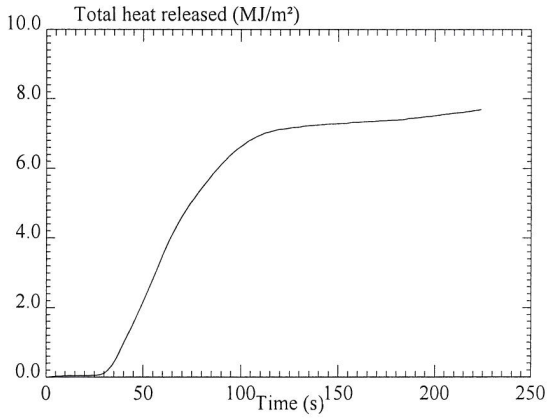












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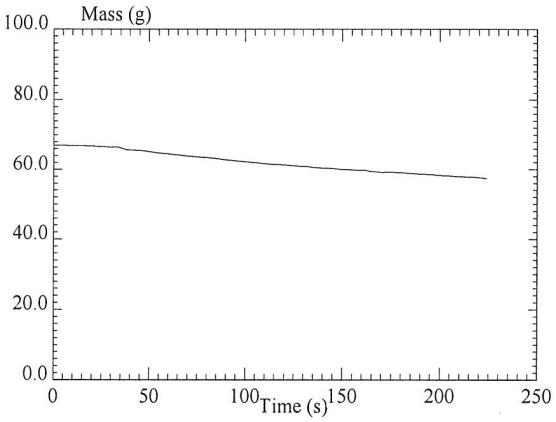

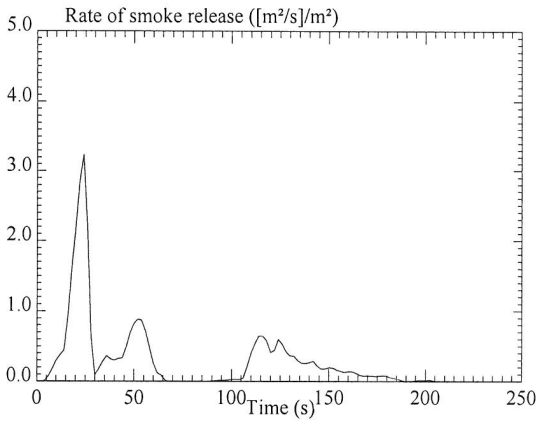

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CONE CALORIMETER SINGLE RUN DATA

Material name	DIVINA 2
Sample description	Wool Melton
File name	159326 spec 3
Date of test	Tuesday, March 13, 2007
Specimen thickness	11.50 mm
Specimen surface area	81.0 cm^2
Specimen initial mass	68.50 g
Heat flux	50.00 kW/m^2
Exhaust duct flow rate	24.00 l/s
Orientation	Horizontal
C factor	0.043218
Time to ignition	21 secs
Flameout	151 secs
End of test (for calculation)	264 secs
End of test criterion	User entered
Total heat evolved	9.1 MJ/m^2
Total oxygen consumed	4.5 g
Total Smoke Released	67.0 m^2/m^2
Mass lost	10.7 g
Average specific mass loss rate	5.28 $g/[m^2s]$

Run Notes

Comment

Peak and average values	Average	Peak	at Time(s)
Heat release rate (kW/m^2)	37.49	132.32	44
Effective heat of combustion (MJ/kg)	7.10	80.00	72
Mass loss rate (g/s)	0.043	0.140	30
Specific extinction area (m^2/kg)	41.10	1217.64	20

Average during period from ignition to ignition plus:-	1 min	2 min	3 min	4 min	5 min	6 min
Heat release rate (kW/m^2)	89.4	67.2	47.5	37.7	37.5	0.0
Effective heat of combustion (MJ/kg)	14.0	10.7	8.5	7.2	7.1	0.0
Mass loss rate (g/s)	0.051	0.051	0.046	0.043	0.043	0.000
Specific extinction area (m^2/kg)	68.7	38.3	45.0	41.4	41.1	0.0

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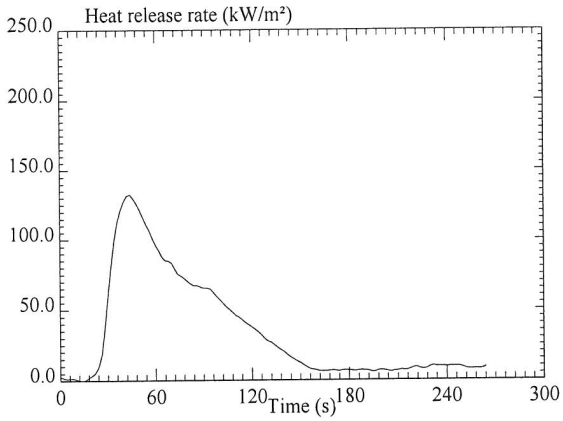

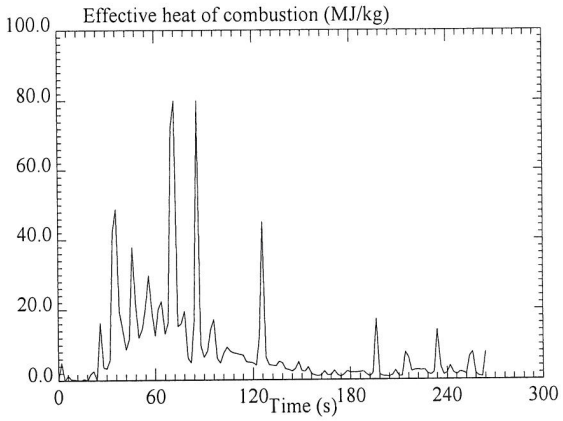

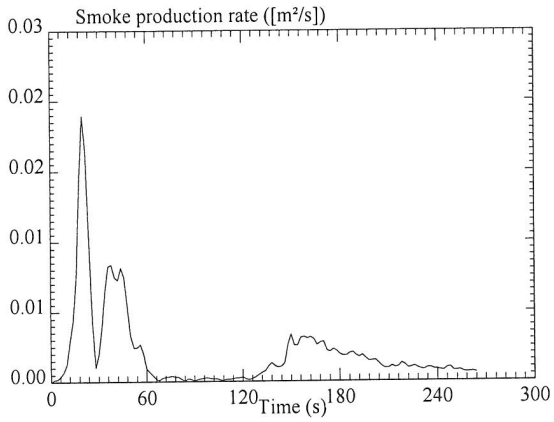

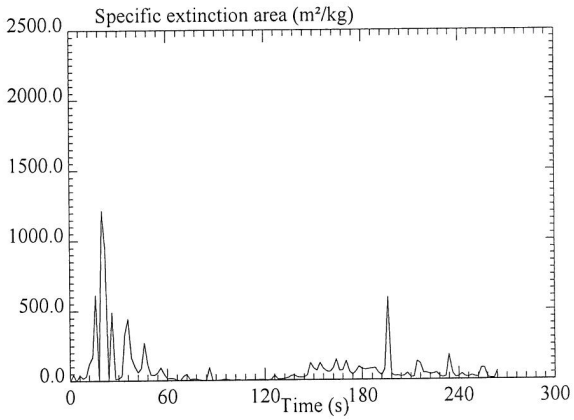

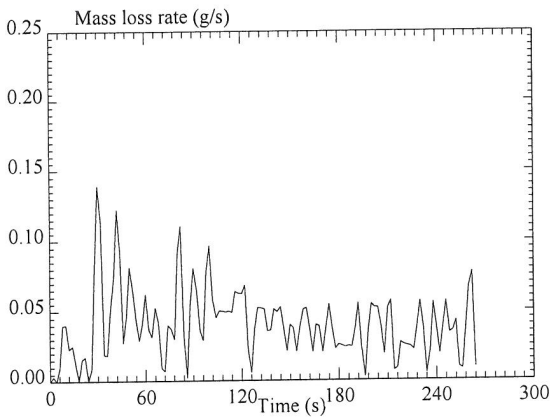

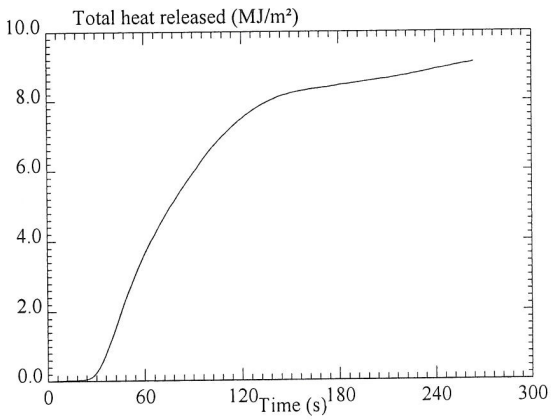

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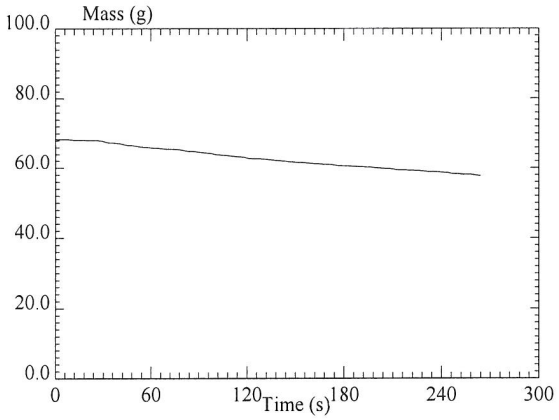

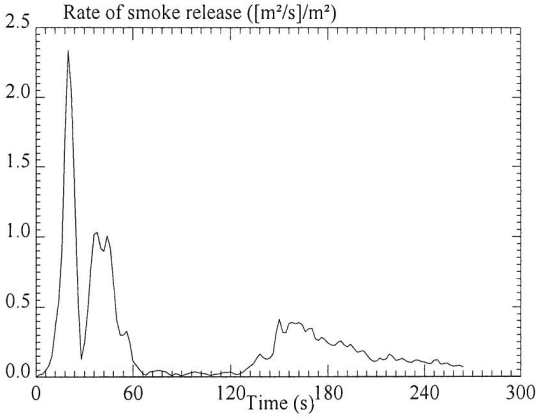

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Classification of Fire Performance of Wall and Ceiling Lining Materials

Using the Method of Kokkala, Thomas and Karlsson

Reference: Kokkala, M.A. Thomas, P.H. and Karlsson, B. Rate of Heat Release and Ignitability Indices for Surface Linings. Fire and Materials Vol 17, 209-216 (1993)

Instructions: **User input areas are those shaded in light-blue. Before entering or pasting new data into the two columns, it is best to clear any existing data by clicking on the 'Clear Data' button. If necessary, formatting of the cells can be restored by clicking on the 'Formatting' button.**

Material Identification/Description: 159326 Spec 1

Clear Data Formatting

INPUT DATA BELOW Data from AS/NZS 3837:1998 Test Heat Flux = 50 kW/m²	
Time (sec)	**Rate of Heat Release (kW/m²)**
0	3.09397
2	1.61972
4	0.613327
6	0.167706
8	0
10	0.0299556
12	1.80518
14	3.46573
16	3.86725
18	5.66322
20	15.9573
22	35.5347
24	59.485
26	83.4371
28	105.432
30	121.644
32	130.627
34	135.049
36	134.858
38	133.074
40	132.487
42	135.428
44	139.417
46	143.993
48	147.902
50	146.746
52	143.138
54	139.144
56	134.392
58	127.149
60	118.297
62	110.67
64	102.271
66	95.8954
68	92.7277

Results

Time to Ignition (sec) =	23.2
Ignitability Index (1/min) =	2.585
End of Test (sec) =	260
Rate of Heat Release Index (m=0.34) =	2928.3
10 minute limit =	5404
Rate of Heat Release Index (m=0.93) =	1265.1
2 minute limit =	2048
12 minute limit =	1223

THE BCA CLASSIFICATION GROUP IS:

*
*
Group 2
*

This method assumes that no materials lead to flashover after 12 and before 20 minutes.
Materials that are predicted not to flashover within 12 minutes are put into Group 1.

Classification of Fire Performance of Wall and Ceiling Lining Materials

Using the Method of Kokkala, Thomas and Karlsson

Reference: Kokkala, M.A. Thomas, P.H. and Karlsson, B. Rate of Heat Release and Ignitability Indices for Surface Linings. Fire and Materials Vol 17, 209-216 (1993)

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Material Identification/Description: 159326 Spec 2

Clear Data Formatting

INPUT DATA BELOW Data from AS/NZS 3837:1998 Test Heat Flux = 50 kW/m²	
Time (sec)	Rate of Heat Release (kW/m²)
0	5.34157
2	6.75364
4	5.92992
6	3.73273
8	1.42002
10	0
12	0
14	0
16	0
18	0.249065
20	1.39145
22	2.0038
24	2.40529
26	3.73995
28	11.7804
30	31.9488
32	58.0635
34	81.8703
36	100.777
38	112.155
40	117.974
42	119.097
44	118.145
46	118.571
48	121.262
50	127.043
52	132.642
54	135.212
56	136.689
58	135.925
60	131.985
62	125.065
64	116.25
66	108.944
68	101.039

Results

Time to Ignition (sec) =	31.4
Ignitability Index (1/min) =	1.912
End of Test (sec) =	224
Rate of Heat Release Index (m=0.34) =	2575.2
10 minute limit =	5768
Rate of Heat Release Index (m=0.93) =	1222.8
2 minute limit =	2160
12 minute limit =	1335

THE BCA CLASSIFICATION GROUP IS:

*
*
*

Group 1

This method assumes that no materials lead to flashover after 12 and before 20 minutes.
Materials that are predicted not to flashover within 12 minutes are put into Group 1.

Classification of Fire Performance of Wall and Ceiling Lining Materials

Using the Method of Kokkala, Thomas and Karlsson

Reference: Kokkala, M.A. Thomas, P.H. and Karlsson, B. Rate of Heat Release and Ignitability Indices for Surface Linings. Fire and Materials Vol 17, 209-216 (1993)

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Material Identification/Description: 159326 Spec 3

Clear Data Formatting

INPUT DATA BELOW Data from AS/NZS 3837:1998 Test Heat Flux = 50 kW/m²	
Time (sec)	**Rate of Heat Release (kW/m²)**
0	2.96247
2	2.17434
4	1.48654
6	1.65297
8	1.87467
10	1.20028
12	0.422305
14	0.00147698
16	0.733459
18	2.35598
20	3.50168
22	5.70266
24	9.3824
26	18.2765
28	36.6403
30	59.5622
32	80.7695
34	99.4183
36	112.552
38	121.104
40	127.872
42	131.877
44	132.325
46	129.719
48	126.101
50	121.725
52	115.833
54	110.897
56	106.998
58	101.118
60	96.0519
62	92.5943
64	87.7832
66	85.2073
68	84.9096

Results

Time to Ignition (sec) =	29.2
Ignitability Index (1/min) =	2.057
End of Test (sec) =	264
Rate of Heat Release Index (m=0.34) =	2825.4
10 minute limit =	5689
Rate of Heat Release Index (m=0.93) =	1229.6
2 minute limit =	2136
12 minute limit =	1311

THE BCA CLASSIFICATION GROUP IS:

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Group 1

This method assumes that no materials lead to flashover after 12 and before 20 minutes.
Materials that are predicted not to flashover within 12 minutes are put into Group 1.