LOW RADIANT HEAT TRANSFER ("PARTIAL INSULATION") FIRE CURTAINS

NEW PRODUCT

Supported by full scale fire test data

FIBERSHIELD EW

GENERAL

Fibershield EW is a NEW and INNOVATIVE low radiation attenuation and partially insulating automatic fire curtain. It was developed to meet the requirements of Fire Safety Engineering projects, where architectural requirements are demanding automatic concealed fire separation barriers but want to use them in areas where radiant heat transfers and temperatures in close vicinity of the curtain material on deployment need to be minimized.

Fibershield EW incorporates a new composite fabric which has been engineered to be both durable, to allow thousands of trouble free operations, but also to provide a remarkable fire performance, keeping temperatures and radiant heat transfer levels adjacent to the fabric below levels where combustibles will ignite or where people passing near the opening might be subjected to untenable conditions.

Note: the EW rating is widely used in Europe and according to EN 13501-2, requires radiant heat transfer to not exceed 15 kW/m2 for the relevant duration.

KEY FEATURES

- Developed for Fire Safety Engineers
- Highest performance available at present
- Full EW120 European fire rating
- Fire tested to AS 1530 Part 4
- More than 2 hours Integrity
- Low radiant heat transfer
- "Partial insulation"
- No drenchers required

Please refer to our Fibershield EW Technical Supplement for relevant performance data

0 Minute

60 Minutes

90 Minutes

120 Minutes

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Overview:

Architects are discovering the benefits of using automatic fire curtain technology to provide open plan areas, yet maintain fire separation.

One of the limitations of conventional integrity only fire curtains, just like conventional fire shutters is the radiant heat transfer through the thin and flexible fabric barrier.

Fire Safety Engineers and other fire protection designers have been specifying fire curtains, but to minimize the radiant heat transfer they are forced to use fire sprinklers to cool the curtain in the advent of a fire, and reduce the potential for radiant heat transfer through the barrier which can potentially cause ignition of combustibles or untenable condition for occupants in its vicinity.

Stoebich is proud to have developed, fire tested and now launched a suite of low radiant heat transfer, ("partially" insulating) automatic fire curtains.

These new product are being marketed under the Fibershield EW name, as the mechanical and electrical operational characteristics are essentially the same as the standard Fibershield, but incorporate some engineered high performance flexible barrier fabric materials.

The Fibershield EW product does not provide full insulation, as defined in the Building Code of Australia, requiring temperature measurements directly on the surface of the barrier to not rise more than 140 degrees C during fire testing to AS1530 Part 4, however many would consider this a conservative acceptance criteria.

So what sort of information is important to a fire safety engineer when assessing the suitability of Fibershield EW?

- Radiant heat transfer through the assembly
- Ignition times for combustible elements in the vicinity of the assembly
- Temperatures measured close to the surface


0 Minute


60 Minutes


90 Minutes


120 Minutes

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Summary of fire testing conducted on Fibershield EW:

A full scale representative assembly was fire tested to the principles of AS1530 Part 4 and achieved over 2 hours integrity (resistance to spread of flames and hot gases with perimeter gaps verified with cotton wool pad test).

To provide data that Fire Safety Engineers can use, the following additional equipment and instrumentation was provided:

- Radiant heat measurement at the centre at 500mm and 1000 mm away from the assembly where the radiant heat would be highest.
- Paper, cotton wool and wood, mounted 100mm from the face of the assembly to observe their ignition times
- Temperature measurement at 60mm from the face of the assembly measured using AS1530 Part 4 thermocouples (copper disks covered in ceramic insulation pads) mounted on a thin mesh grid.
- Temperature measurement at 20mm and 30mm from the face of the assembly measured using mantle thermocouples which are different to those specified in AS1530 Part 4.

Radiant heat transfer through the assembly:

The radiant heat measurements (radiant heat flux) in kW/m^2 during the fire test measured at 500mm and 1000mm yielded the following results:

Radiant heat flux in kW/m^2 measurement versus proximity		
Time (minutes)	**Distance from assembly**	
	500mm	1000mm
30	2.0 kW/m^2	0.1 kW/m^2
60	5.0 kW/m^2	0.7 kW/m^2
90	8.4 kW/m^2	2.2 kW/m^2
120	12.8 kW/m^2	4.0 kW/m^2

The actual graphs from the fire test are shown as Appendices 1 & 2.

Note: For the purposes of European Standardisation, EW is a criteria that applies to product which achieve integrity and reduced radiation, the latter defined as radiant heat flux not exceeding 15 kW/m^2 measured at 1000mm from the assembly. Fibershield EW is classified in European terms as a full EI 120 assembly, having not exceeded these radiant heat flux threshold for over 120 minutes (2 hours). Refer EN 13501-2

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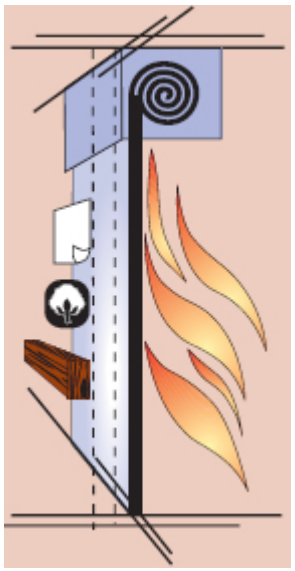
Ignition times for combustible elements in the vicinity of the assembly:

Paper, cotton wool and wood were mounted adjacent to the curtain assembly for the duration of the fire test to measure the ignition time for these combustible materials and the following results were observed:



Ignition times for materials placed 100mm from the assembly	
Material	**Ignition time** (minutes)
Paper	148
Cotton Wool	163
Wood	164

Temperatures measured close to the surface:

Temperature rise measurements were taken for the duration of the fire test at locations adjacent to, but not directly on the surface of the assembly.

Measurements were recorded with two different types of thermocouples:

1. AS1530 Part 4 thermocouples (copper disks covered with ceramic fibre insulating pads) fixed onto a thin mash grid, and

2. Mantle type thermocouples (non compliant with AS1530 Part 4).

A summary of the temperature rise readings is as follows for the respective distances:

Temperature rise in Degrees C at distances close to the assembly			
Time (minutes)	**Proximity to assembly**		
	20mm	30mm	60mm
30	16 *	22 *	56 **
60	22 *	29 *	83 **
90	32 *	43 *	120 **
120	43 *	53 *	153 **

* Temperature measurement using mantle thermocouple
** Temperature measurement using AS1530 Part 4 thermocouples

The actual graphs from the fire test are shown as Appendices 3, 4 & 5.

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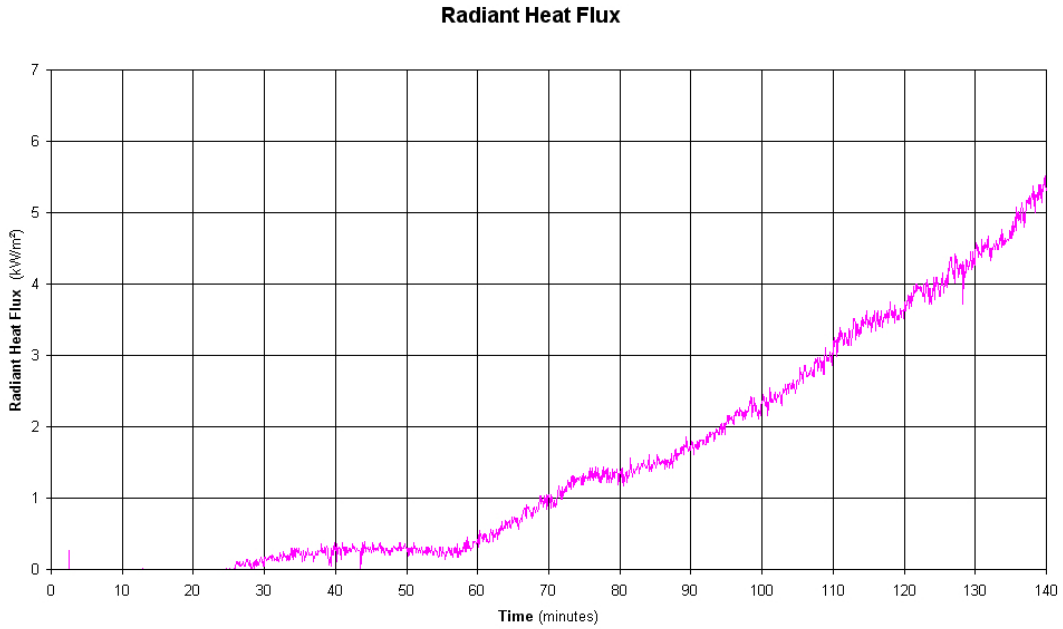
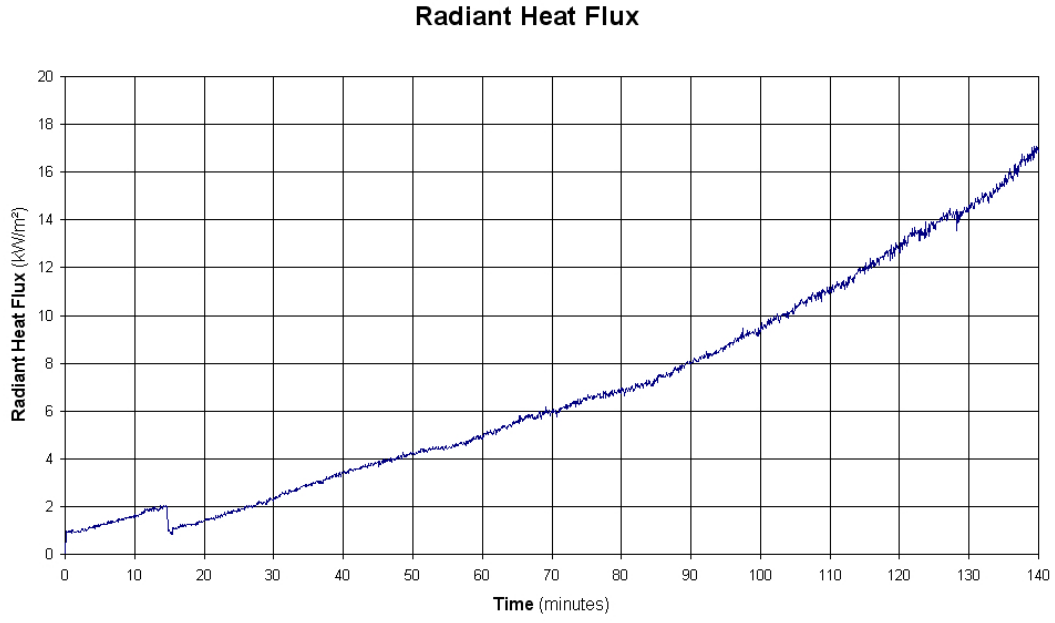
Appendix 1: Radiant heat transfer measured at 1000mm from assembly



Appendix 2 – Radiant heat transfer measured at 500mm from assembly



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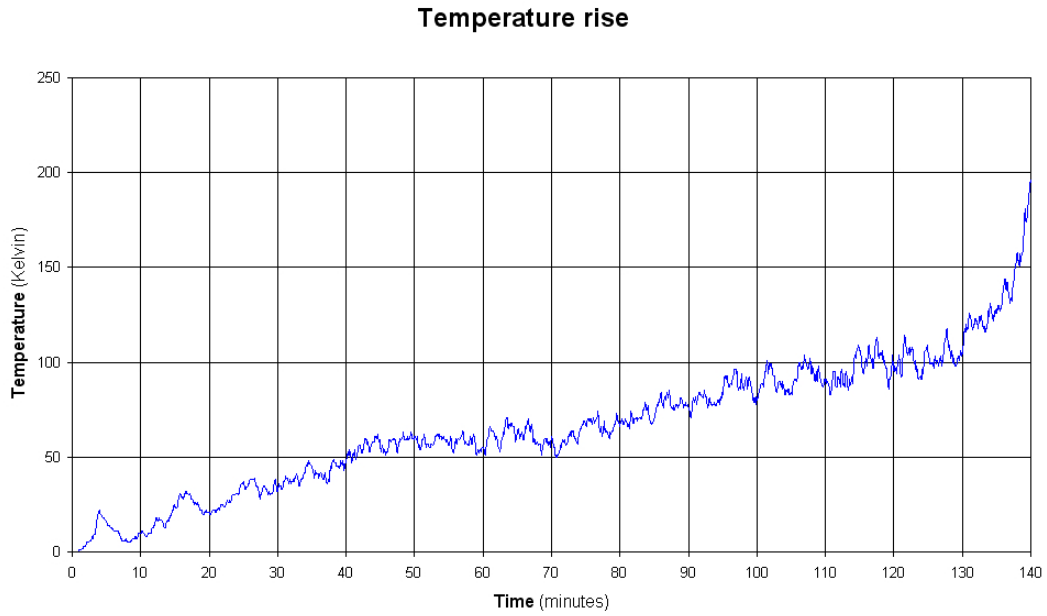
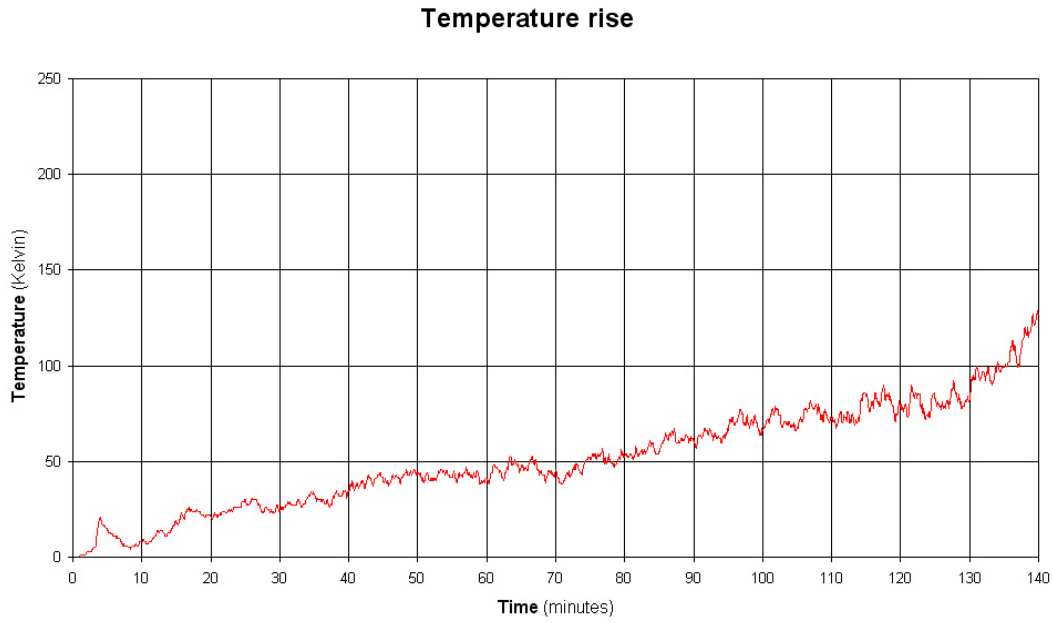
Appendix 3: Temperature rise at 20mm from assembly



Appendix 4: Temperature rise at 30mm from assembly



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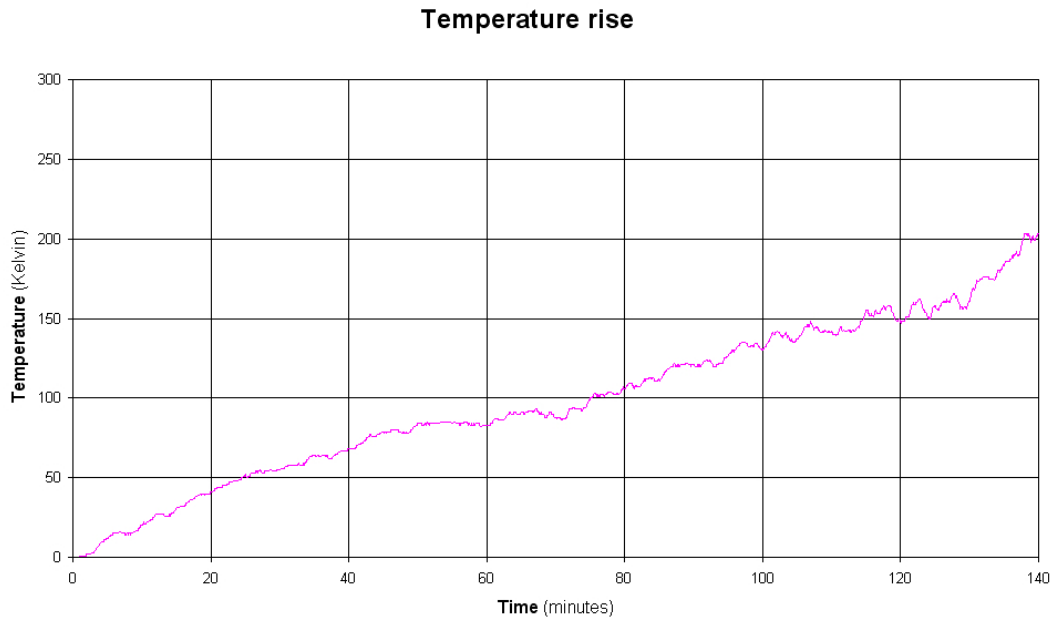
Appendix 5: Temperature rise at 60mm from assembly

Thermocouples are mounted on a thin mesh grid.



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