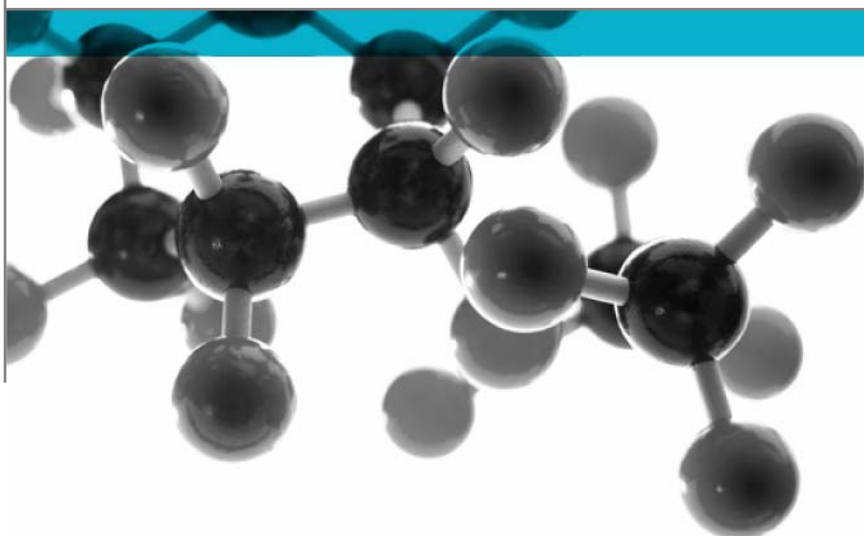


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BS EN 13823: 2010



**Reaction to Fire Tests for Building Products -
Building Products Excluding Floorings Exposed to
the Thermal Attack by a Single Burning Item**

A Report To: Contra Vision

Document Reference: 312979

Date: 25th November 2011

Issue No.: 1

Page 1

Testing
Advising
Assuring



Executive Summary

Objective To determine the fire performance of the following product when tested in accordance with BS EN 13823: 2010.

Generic Description	Product reference	Thickness	Weight per unit area
Self-adhesive perforated window film bonded to toughened glass sheet	"Contra Vision [®] Performance [™] / Translucent"	6.07mm *	14.8kg/m ² *
Individual components used to manufacture composite:			
Film (test face)	"Polymeric calendered PVC"	180 microns	150g/m ²
Solvent acrylic adhesive	Not stated	Not stated	28g/m ²
Toughened glass	"6mm toughened"	6mm	14.61kg/m ² *
* Determined by Exova Warringtonfire			
Please see page 5 and 6 of this test report for the full description of the product tested			

Test Sponsor Contra Vision, Victoria House, 19-21 Ack Lane East, Bramhall, Stockport, Cheshire, SK7 2BE


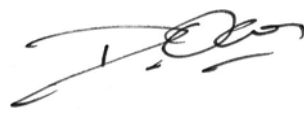

Test Results (average) :

FIGRA (w/s)		THR 600s (MJ)	SMOGRA (m ² /s ²)		TSP 600s (m ²)	
(0.2MJ)	(0.4MJ)	0.41	Original	Recalculated	Original	Recalculated
4.39	0.00			0.00	0.00	29.09

Lateral Flame Spread to End of Specimen? **None**
 Fall of Flaming Drop/Particle? **None**
 Flaming of Fallen Particle Exceeding 10s? **None**

Date of Test: 15th November 2011.

Signatories

	
Responsible Officer K. Hughes * Technical Officer	Approved D. J. Owen * Senior Technical Officer
	* For and on behalf of Exova Warringtonfire .
Authorised T Mort* Senior Technical Officer	Report Issued: 25 th November 2011

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Test Details

Purpose of test	To provide data which, in conjunction with data from other test methods, will enable building products excluding floorings, to be classified in accordance with the Classification requirements specified in BS EN 13501-1: 2007 + A1: 2009. The test was performed in accordance with the procedure specified in BS EN 13823: 2010 and this report should be read in conjunction with that standard.
Scope of test	To determine the reaction-to-fire performance of construction products, excluding floorings and excluding products which are indicated in the EC Decision 2000/147/EC, when exposed to thermal attack by a single burning item (SBI) utilising the test procedures defined in BS EN 13823: 2010.
Fire test study group/EGOLF	Certain aspects of some fire test specifications are open to different interpretations. The Fire Test Study Group and EGOLF have identified a number of such areas and have agreed Resolutions which define common agreement of interpretations between fire test laboratories which are members of the Groups. Where such Resolutions are applicable to this test they have been followed.
Instruction to test	The test was conducted on the 15 th November 2011 at the request of Contra Vision, the sponsor of the test.
Provision of test specimens	The specimens were supplied by the sponsor of the test. Exova Warringtonfire was not involved in any selection or sampling procedure. Exova Warringtonfire supplied the substrate, and bonded the composite together.
Conditioning of specimens	The specimens were received on the 3 rd November 2011 and were conditioned to constant mass at a temperature of $23 \pm 2^{\circ}\text{C}$ and a relative humidity of $50 \pm 5\%$ prior to testing.
Intended application	Window film.
Test facility	The Single Burning Item (SBI) test facility at Exova Warringtonfire is constructed in accordance with the specifications detailed in BS EN 13823: 2010.
Deviations from the test standard	None.
Exposed face	The film face of the specimens was exposed to the heating conditions of the test when the specimens were mounted in the test position.

Description of Test Specimens

Test specimens

The description of the specimens given below has been prepared from information provided by the sponsor of the test. All values quoted are nominal, unless tolerances are given.

The test specimen comprised two walls (or wings) mounted into an aperture in a specimen trolley such that they formed a vertical 90° corner. The dimensions of the walls were as follows:

Short wall	-	495 ± 5 mm long x 1500 ± 5 mm high
Long wall	-	1000 ± 5 mm long x 1500 ± 5 mm high

Each wall (or wing) consisted of the following product:

General description		Self-adhesive perforated window film
Trade name		"Contra Vision [®] Performance [™] / Translucent"
Thickness of film		180 microns (stated by sponsor) 172 microns (determined by Exova Warringtonfire)
Weight per unit area of film inclusive of adhesive		180g/m ² (stated by sponsor) 172g/m ² (determined by Exova Warringtonfire)
Overall Thickness of composite		6.07mm (determined by Exova Warringtonfire)
Overall Weight per unit area of composite		14.8kg/m ² (determined by Exova Warringtonfire)
Name of manufacturer		Contra Vision Supplies Limited
Perforations	Diameter of holes	1.50mm
	Spacing between hole centres	2.60mm
Film (test face)	Generic type	Polyvinyl chloride (PVC)
	Product reference	"Polymeric calendered PVC"
	Name of manufacturer	Renolit
	Colour	"Translucent white"
	Thickness	180 microns
	Weight per unit area	150g/m ²
Flame retardant details		See Note 1
Adhesive	Generic type	Solvent acrylic
	Trade name / product reference	See Note 1
	Name of manufacturer	See Note 1
	Application rate	28g/m ²
	Application method	Transferred from coated release liner
Flame retardant details		See Note 1

Continued on next page

Substrate	Generic type	Toughened glass
	Product reference	"6mm toughened"
	Name of supplier	KLG Glass (Chilwell) Ltd
	Colour reference	"Clear"
	Thickness	6mm
	Weight per unit area	14.61kg/m ² (determined by Exova Warringtonfire)
	Flame retardant details	The substrate is inherently flame retardant
Mounting and fixing details		The specimens were tested sandwiched between to a "window" frame manufactured from 5mm steel. A 180mm ventilated cavity was situated between the reverse face of the specimen and the backing calcium silicate backing board
Brief description of manufacturing process		Translucent white calendered PVC, adhesive coated and then perforated.

Note 1: The sponsor was unwilling to provide this information.

The specimen walls (or wings) were placed in the trolley in accordance with the requirements of section 5.3 of the Standard.

Photographs of the installed product are appended as Plates 1 and 2 in Appendix 1 of this report.

Each wing was retained in the trolley using mechanical clamps which pushed the wing against a lip at the top and bottom of the aperture in the trolley.

The trolley incorporated a triangular propane sand burner of side length 250mm, which was positioned in the base of the corner formed by the two wings of the test specimen, with a horizontal separation of 40mm between the edge of the burner and the lower edges of the wings. The burner is referred to as the primary burner and has an output of 30kW. A secondary propane sand burner was attached to the fixed frame, beneath the hood but at the furthest possible distance from the specimen when the trolley was in place. The purpose of this burner is to obtain base line data without affecting the assembled specimen. The trolley incorporated a grill in its base and this was the sole source of ventilation for the test enclosure whilst the test was in progress.

Test Results

Results and observations

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.

The test results relate only to the specimens of the product in the form in which they were tested. Small differences in the composition or thickness of the product may significantly affect the performance during the test and may therefore invalidate the test results. Care should be taken to ensure that any product which is supplied or used is fully represented by the specimens which were tested.

A total of three specimens were tested. The results obtained, relevant to the 'Euroclassification' of Building Products are given in Table 1.

Observations made during the test and comments on any difficulties encountered during the test are given in Table 2.

Table 1

Parameter	Result			
	Specimen 1	Specimen 2	Specimen 3	Mean
FIGRA (W/s) (<i>THR(t) threshold of 0.2MJ</i>)	0.00	13.18	0.00	4.39
FIGRA (W/s) (<i>THR(t) threshold of 0.4MJ</i>)	0.00	0.00	0.00	0.00
THR 600s (MJ)	0.42	0.63	0.18	0.41
SMOGRA (m ² /s ²) (Original results)	0.00	0.00	0.00	0.00
SMOGRA (m ² /s ²) (Recalculated results)	0.00	0.00	0.00	0.00
TSP 600s (m ²) (Original results)	41.30	22.69	23.29	29.09
TSP 600s (m ²) (Recalculated results)	33.28	11.36	14.79	19.81
Lateral Flame Spread to End of Specimen?	None	None	None	-
Fall of Flaming Drop/Particle?	None	None	None	-
Flaming of Fallen Particle Exceeding 10s?	None	None	None	-

Curves of time averaged rate of heat release contribution of the specimen (HRRav(t)), cumulative heat release (THR(t)), and Fire Growth Rate (FIGRA) are appended as Figures 1 to 3. Curves of time averaged rate of smoke production (SPRav(t)), cumulative smoke production (TSP(t)) and smoke growth rate (SMOGRA) are appended as Figures 4 to 6 in appendix 2 of this report.

Interpretation of the test results given above in the context of Euroclassification of building products should be carried out using BS EN 13501-1: 2007 + A1: 2009.

Table 2

Time		Observation
min	Sec	
00	00	Pre-checks performed on analysers
02	00	Auxiliary burner switched on to check correct burner operating conditions
05	00	Gas flow switched from auxiliary burner to main burner & test flames impinge on specimen
05	15	In the case of all three specimens, discolouration of the surface of the product occurred.
06	36	In the case of all three specimens, flaming occurred on the surface of the product.
07	57	In the case of specimen two, the short wall shattered and fell out of test frame.
09	18	In the case of specimen three, the short wall shattered and fell out of test frame.
26	00	End of test conditions. In the case of all three specimens, all flaming ceased.

Note: Impingement of the burner flame onto the specimen commenced at 5 minutes.

Validity

The specification and interpretation of fire test methods is the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over five years old should be considered by the user. The laboratory that issued the report will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test to ensure that they are consistent with current practices, and if required may endorse the test report.

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Appendix 1

Photographs

Plate 1: Total View of the exposed surface of the long wing.



Plate 2: Close up view of the vertical outer edge of the long wing at a height of 500mm



Appendix 2

Graphs

Figure 1. $HRR_{av}(t)$ (kW)

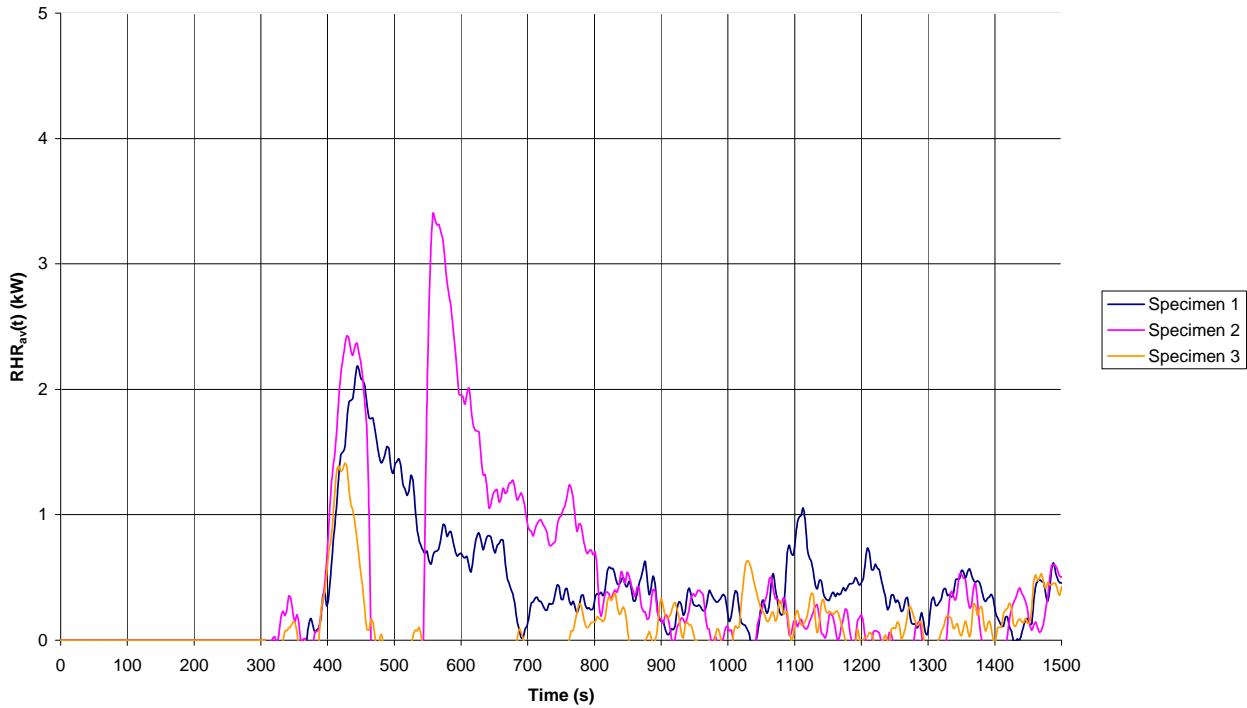


Figure 2. $THR(t)$ (MJ)

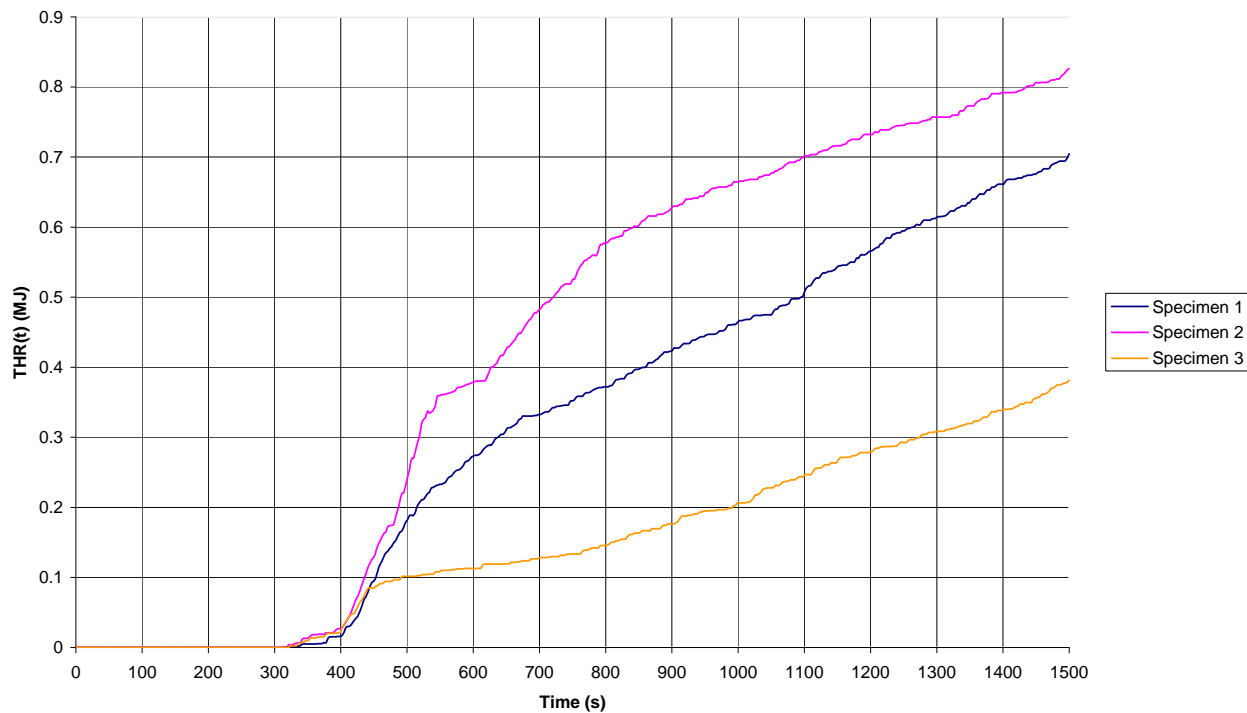


Figure 3. FIGRA

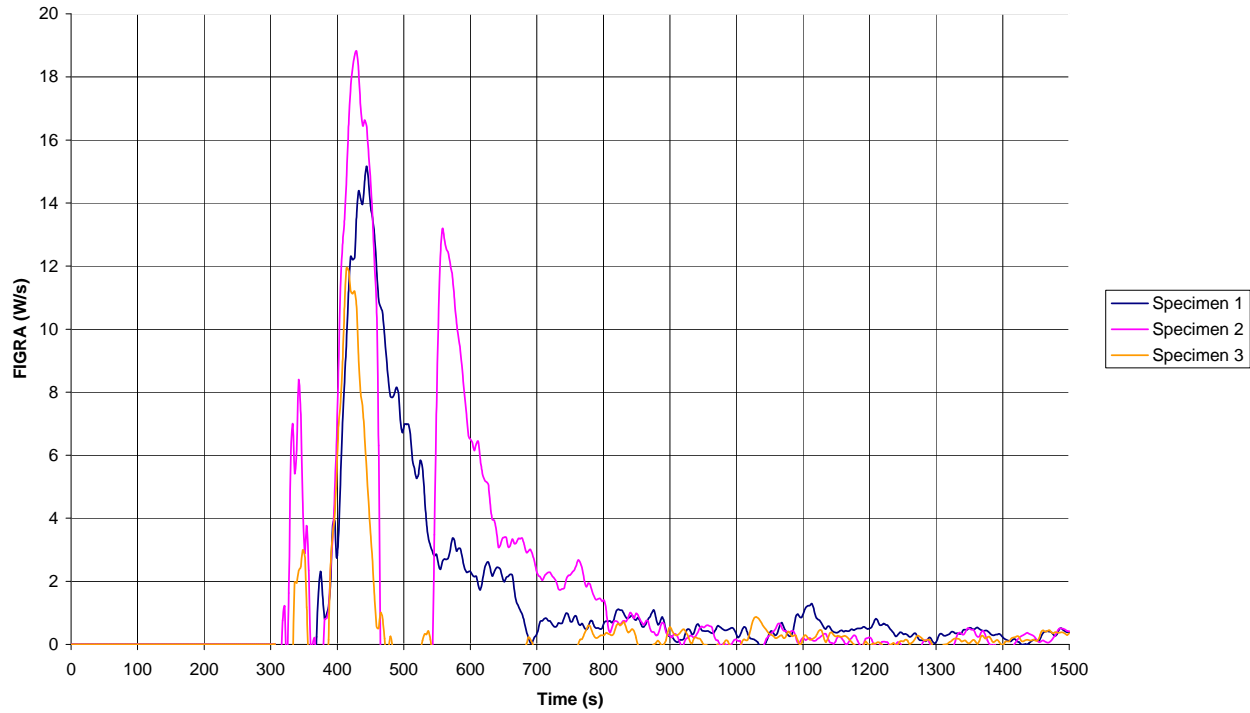


Figure 4. $SPR_{av}(t)$ (m^2/s)

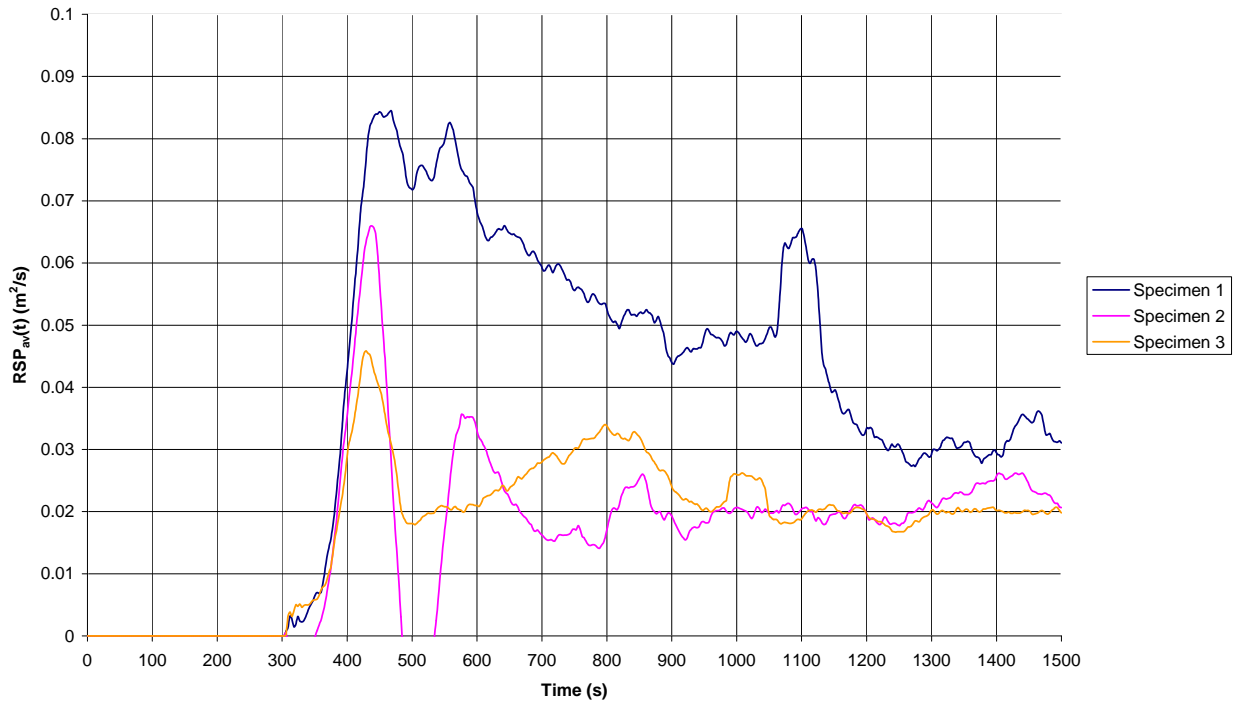


Figure 5. TSP(t) (m²)

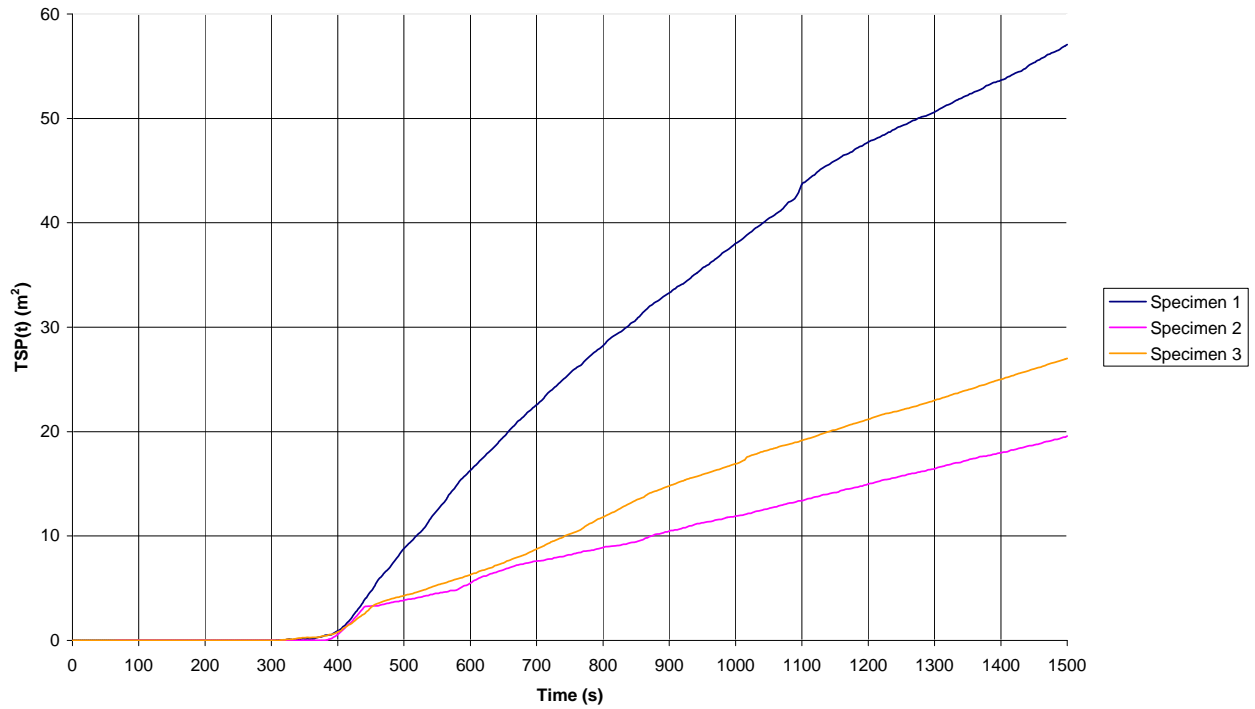
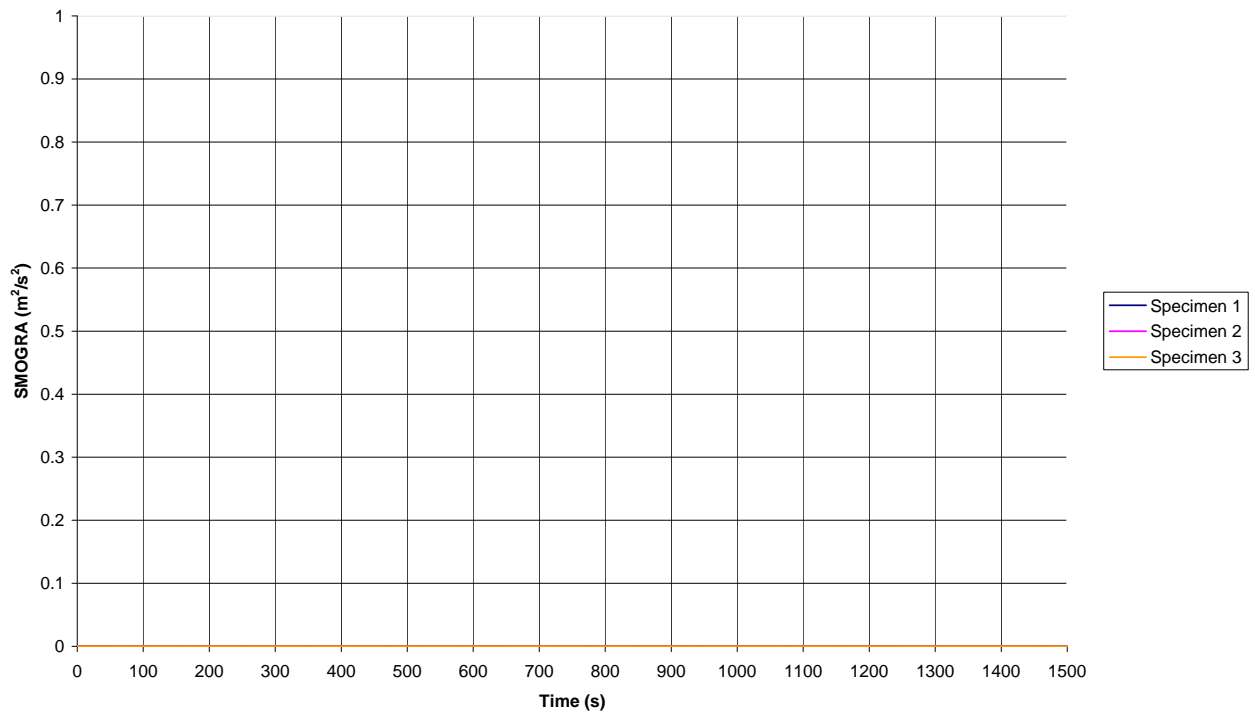


Figure 6. SMOGRA Graph.



Revision History

Issue No :	Re-issue Date:
Revised By:	Approved By:
Authorised By:	
Reason for Revision:	

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