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REPORT

Reaction to fire testing of Plasterboard covered with wallpaper treated with 321 Single Burning Item test according to EN 13823:2010 + A1:2014

Report no.	2020-Efectis-R000368
Sponsor	Intumescent Systems Ltd Envirograf House Barfrestone CT15 7JG DOVER UNITED KINGDOM
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Notified body no.	1234
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1. PRODUCT IDENTIFICATION

Plasterboard covered with wallpaper treated with 321, further referred to as 'the product'.

2. ABSTRACT

Determination of the reaction to fire properties of the product, when exposed to the thermal attack by a **Single Burning Item** according to EN 13823:2010 + A1:2014, with the objective to obtain the reaction to fire classification according to EN 13501-1:2018.

3. DETAILS OF THE PRODUCT TESTED

3.1 INTENDED APPLICATION

The product will be used as a fire retardant paint.

3.2 MANUFACTURER/IMPORTER

Intumescent Systems Ltd
Envirograf House
Barfrestone
CT15 7JG DOVER
UNITED KINGDOM

3.3 PRODUCT DESCRIPTION

According to the sponsor the product is from inside out composed of:

- Plasterboard, 15 mm;
- Wallpaper adhered with Polyseal wallpaper paste;
- 2 coats of 321 at 12m² per litre.

The product has a total thickness of 15 mm and a mass per unit area of approx. 13 kg/m^2.

4. DETAILS OF THE EXAMINATION

4.1 SAMPLES

Sampling procedure	The specimens were prepared and submitted by the sponsor.
Age	At the time of receipt: no information received.
Date of receipt	January 15, 2020

4.2 SPECIMENS

Substrate used	Not applicable
Specimen preparation	The long specimen wing was provided with a vertical joint at a distance of 200 mm from the inner corner and a horizontal joint at a distance of 500 mm from the bottom.

4.3 CONDITIONING

Prior to the examinations, the specimens were conditioned over a period of 2 weeks minimum at a temperature of (23 ± 2) ºC and a relative humidity of (50 ± 5) % according to § 4.1 of EN 13238.

4.4 EXAMINATION

Method of mounting and fixing	The panels were positioned with an unventilated air gap of 40 mm to the backing board.
ETAG 028:2012	Guideline for European Technical Approval of Fire Retardant Products
Deviations from the test method	None
Number of tests	A total of three Single Burning Item tests were carried out, all in accordance with EN 13823.
Date of examination:	January 30, 2020
Location of examination	Efectis Nederland BV, Bleiswijk, The Netherlands

The results are given in Table 1.

Table 1: Single Burning Item classification parameter results

Test parameter / Test number		1	2	3	**Classification parameter**
$FIGRA_{0.2\ MJ}$	[W/s]	226	225	220	**224**
$FIGRA_{0.4\ MJ}$	[W/s]	125	100	64	**97**
THR_{600s}	[MJ]	1.7	1.3	1.3	**1.4**
LFS	{Yes, No}	No	No	No	**No**
SMOGRA	[m^2/s^2]	40.9	37.6	32.0	**36.8**
TSP_{600s}	[m^2]	64	63	57	**61**
Flaming droplets/particles					
Flaming ≤ 10 s	{Yes, No}	No	No	No	**No**
Flaming > 10 s	{Yes, No}	No	No	No	**No**

FIGRA Fire growth rate: The maximum of the quotient of heat release rate from the burning specimen and the time of its occurrence, determined during the full test period, using a THR-threshold of 0.2 MJ or 0.4 MJ and a HRR_{av}-threshold of 3 kW.

THR_{600s} Total heat release from the burning specimen during the first 600s of exposure to the main burner flames.

LFS Lateral flame spread over the long specimen wing.

SMOGRA Smoke growth rate: The maximum of the quotient of smoke production rate from the burning specimen and the time of its occurrence (multiplied by 10.000), determined during the full test period, using the TSP-threshold of 6 m^2 and the SPR_{av}-threshold of 0.1 m^2/s.

TSP_{600s} Total smoke production from the burning specimen during the first 600s of exposure to the main burner flames.

Observations of physical behaviour of the test specimen: None

5. CONCLUSIONS

A formal classification is to be assessed in accordance with EN 13501-1, “Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests”.

Graphs of Rate of Heat Release ($HRR_{av}(t)$), Rate of Smoke Production ($SPR_{av}(t)$), Total Heat release (THR(t)), Total Smoke Production (TSP(t)), $FIGRA_{0.2\ MJ}$, $FIGRA_{0.4\ MJ}$ and SMOGRA, are presented hereafter followed by some photographs of the test setup and test results.

Remarks:
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.

Regarding the estimated precision of the test method, the following information is given in Annex B of EN 13823.

Table B.2 — Average relative standard deviations

	$FIGRA_{0.2\ MJ}$	$FIGRA_{0.4\ MJ}$	$THR_{600\ s}$	SMOGRA	$TSP_{600\ s}$
Average (s_r /m)	14 %	15 %	11 %	15 %	18 %
Average (s_R /m)	23 %	25 %	21 %	40 %	44 %

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APPENDIX: CHARTS

Chart 1	Rate of Heat Release ($HRR_{av}(t)$) [kW]
Chart 2	Rate of Smoke Production ($SPR_{av}(t)$) [m^2/s]
Chart 3	Total Heat release (THR(t)) [MJ]
Chart 4	Total Smoke Production (TSP(t)) [m^2]
Chart 5	$FIGRA_{0.2\ MJ}$ [W/s]
Chart 6	$FIGRA_{0.4\ MJ}$ [W/s]
Chart 7	SMOGRA [m^2/s^2]

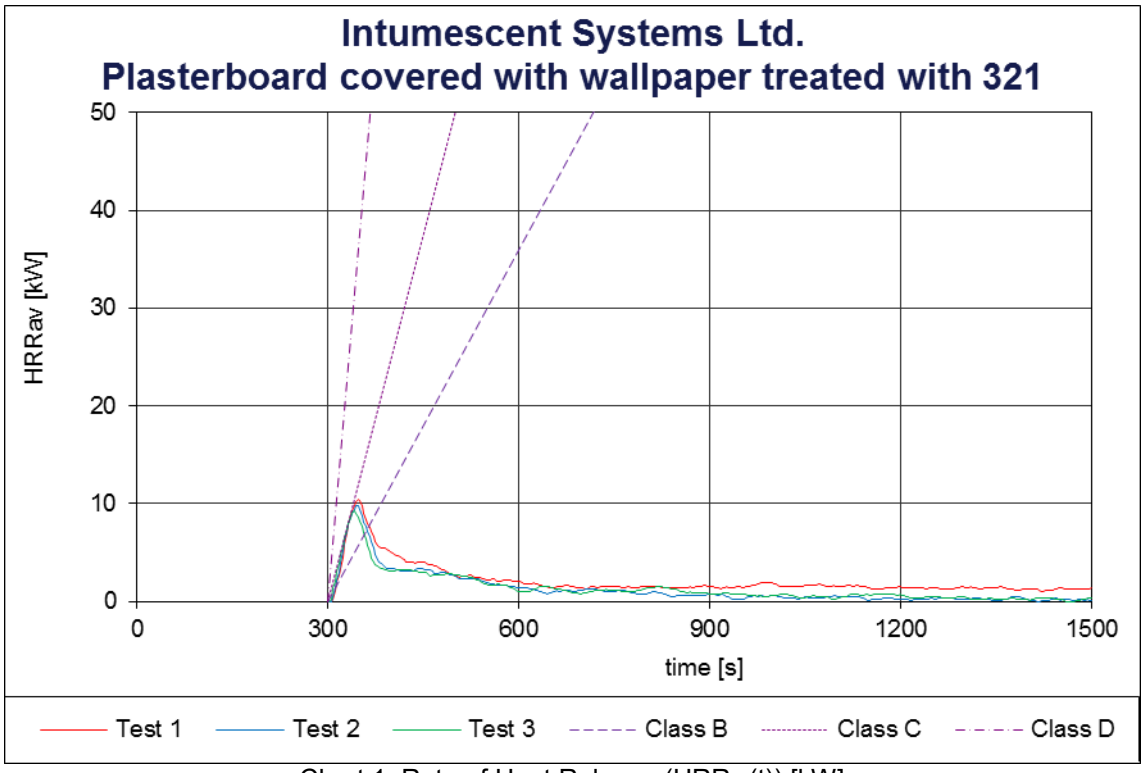


Chart 1: Rate of Heat Release ($HRR_{av}(t)$) [kW]

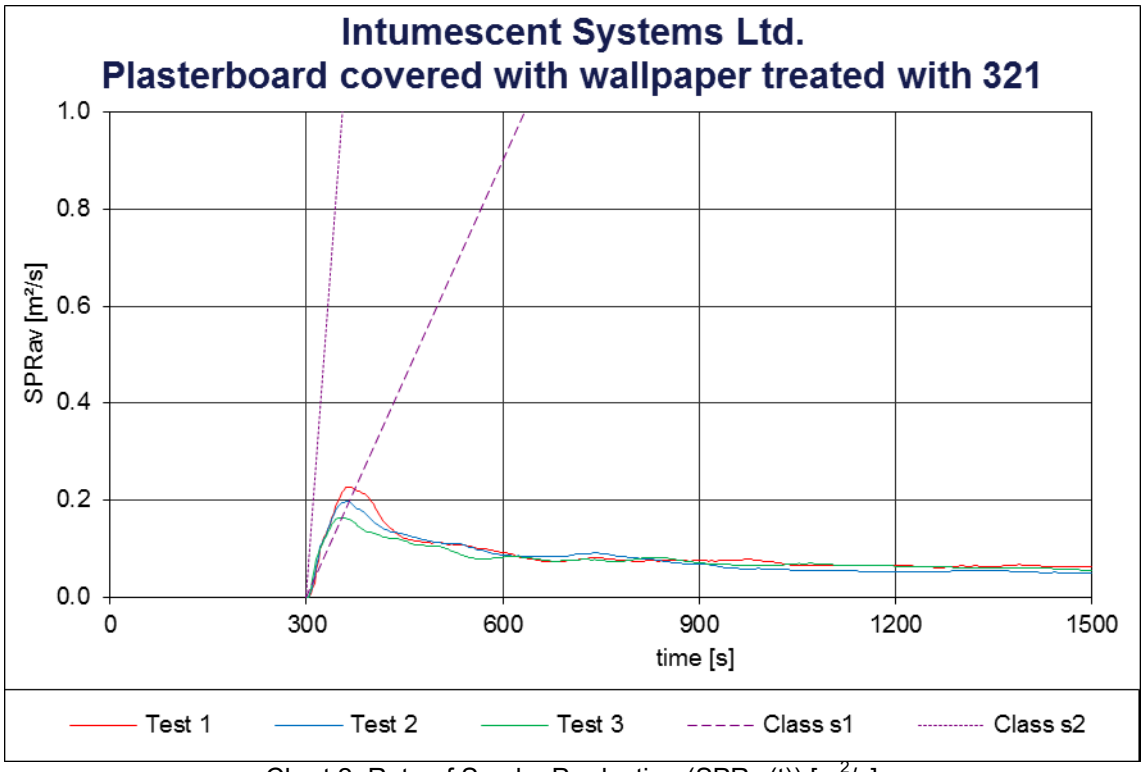


Chart 2: Rate of Smoke Production ($SPR_{av}(t)$) [m^2/s]

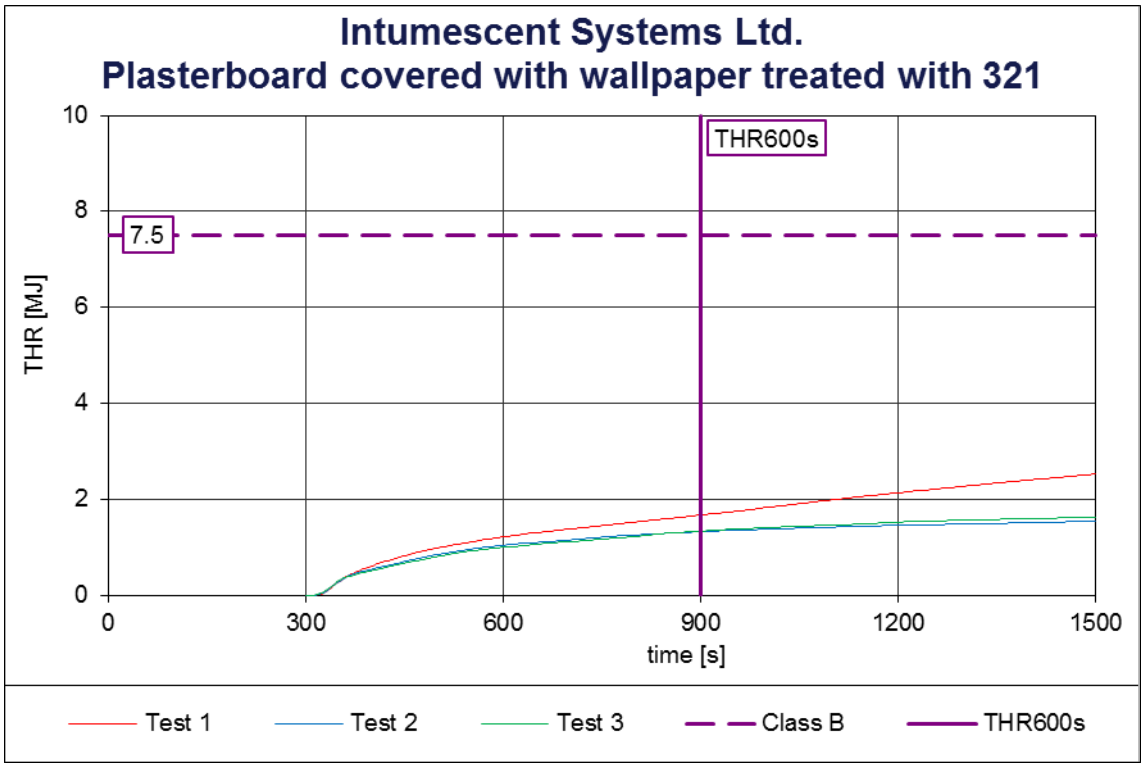


Chart 3: Total Heat release (THR(t)) [MJ]

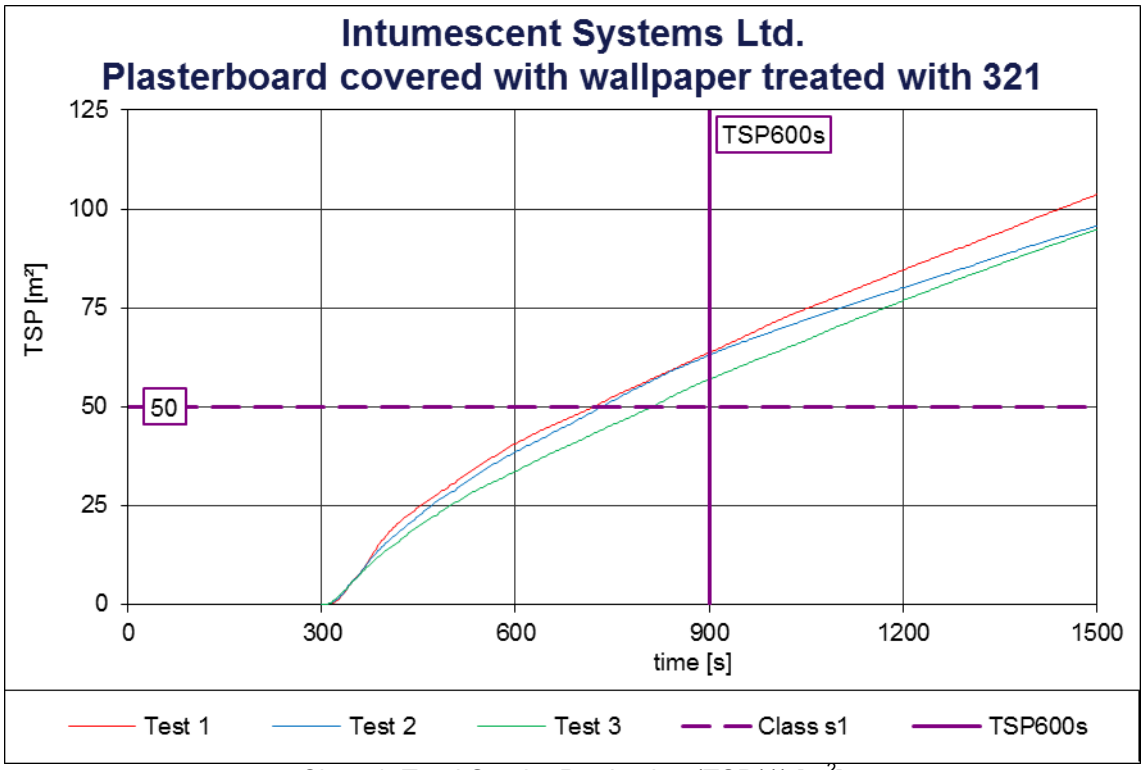


Chart 4: Total Smoke Production (TSP(t)) [m^2]

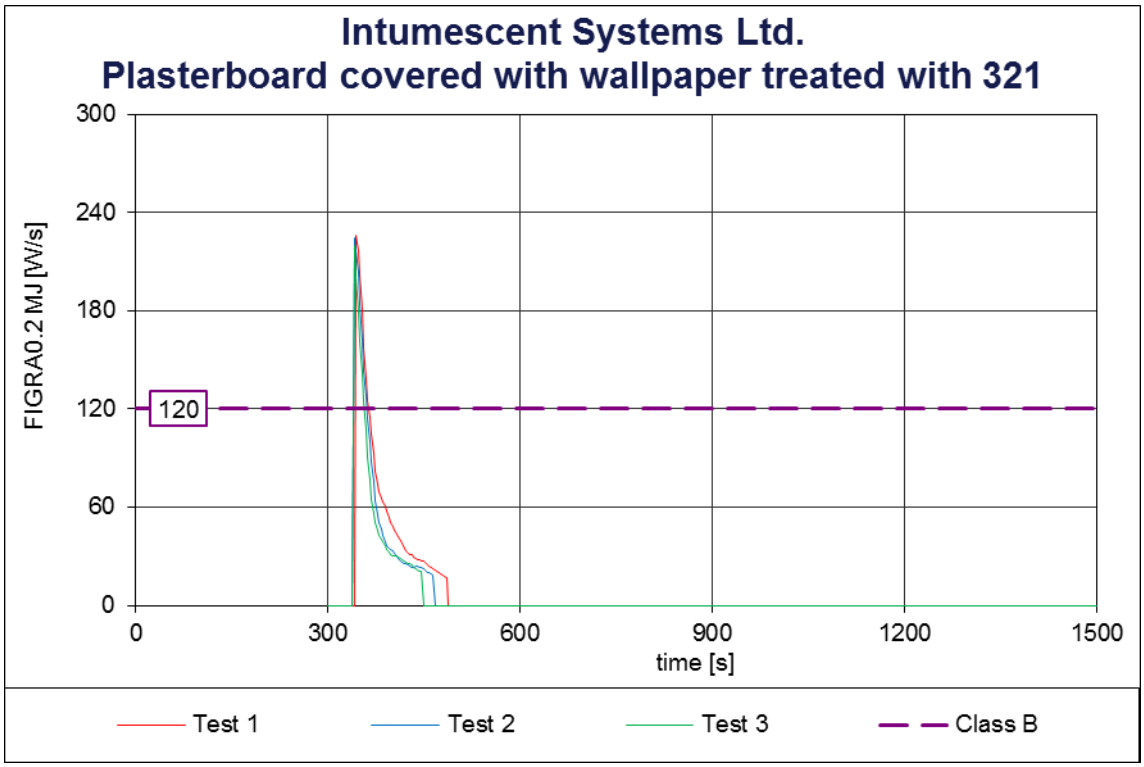


Chart 5: $FIGRA_{0.2\ MJ}$ [W/s]

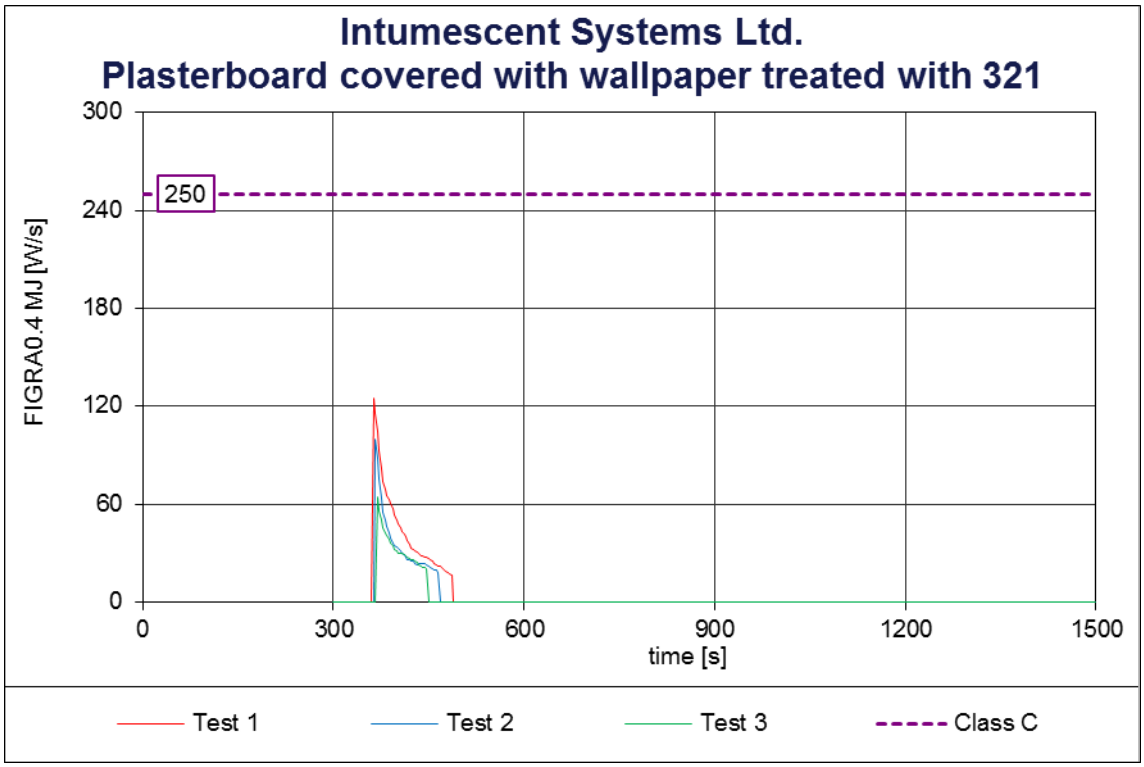


Chart 6: $FIGRA_{0.4\ MJ}$ [W/s]

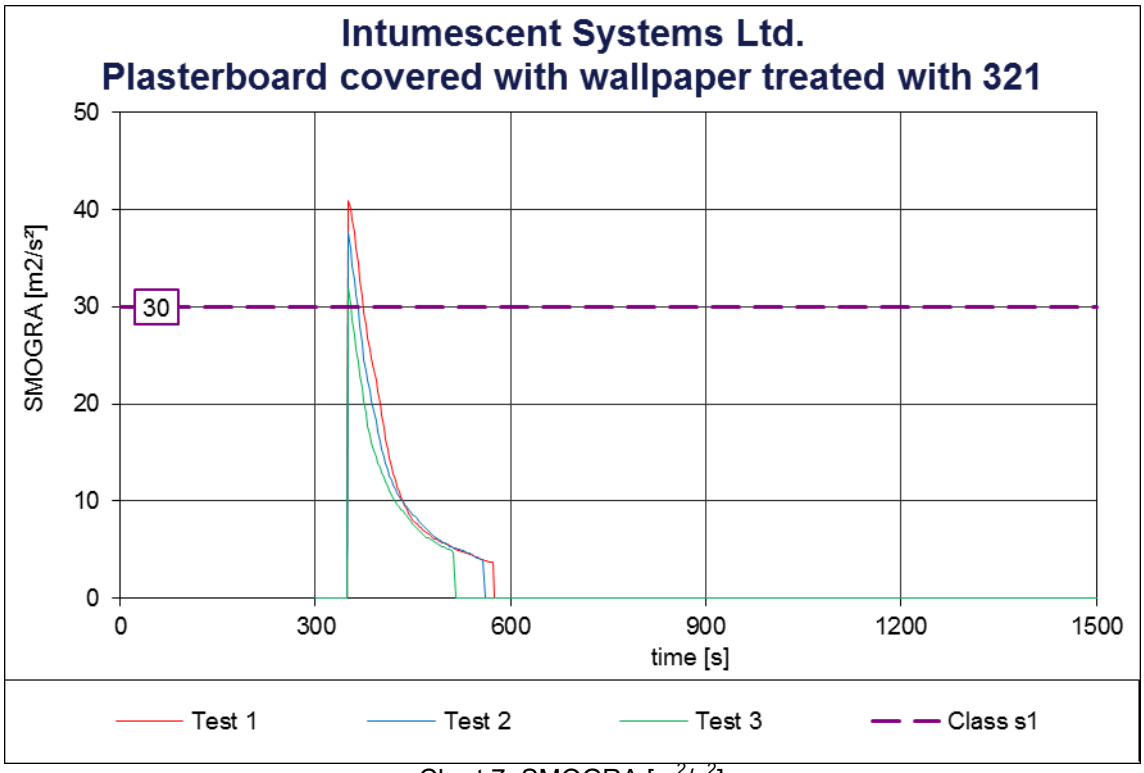
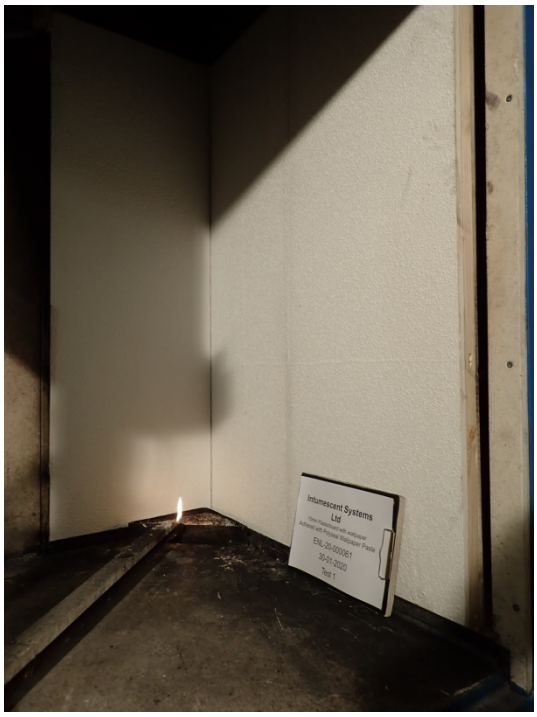


Chart 7: SMOGRA [m^2/s^2]

APPENDIX: PHOTOGRAPHS



Photographs 1 and 2: Specimen 1 prior to testing

Photographs 3 and 4: Specimen 1 after testing