

## Test report

# PVC foil cladding on 30 mm thick glass wool linear pipe insulation including elbows

Danmat Industri A/S  
Roskildevej 23  
DK-3650 Ølstykke  
Denmark

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## **INDICATIVE TEST**

### **1 SPONSOR**

Danmat Industri A/S  
Roskildevej 23  
DK-3650 Ølstykke  
Denmark

### **2 PRODUCT**

PVC foil cladding on 30 mm thick glass wool linear pipe insulation including elbows.

#### **Product description:**

Foil used for linear sections: Calandered Rigid PVC film Type 707\_6A/IF 75-M1

Foil used for thermoformed insulations parts (elbows): Type TA S17

### **3 NAME OF MANUFACTURER**

The sponsor is the manufacturer.

### **4 NATURE OF TEST**

The sponsor desired indicative test in accordance with EN 13823:2010. The purpose of this report was to show the possibilities of classification for this type of product taking into account the influence of elbows, where as yet there is no product standard, no mounting and fixing procedure and no decision on classification regime for this type of product. The general mounting and fixing procedure of linear pipe insulation of EN 15715 was used together with the procedure of EN 15701:2009 clause 5.3. An experimental setup including elbows was chosen as both a realistic and a worse case scenario. The test report gives indicative classification result in relation to clause 10 in EN 13501-1:2007 +A1:2009 with the actual test setup.

### **5 SAMPLE**

2013-09-10 DBI - Danish Institute of Fire and Security Technology received the following sample:

1 specimen consisting of 8 steel pipes with 22 mm bore covered with 30 mm glass wool pipe insulation clad with PVC foil. The horizontal pipe sections were mounted to a 10 mm thick steel bar. The overall dimension of the specimen was 1500 mm x 1000 mm.

1 specimen consisting of 4 steel pipes with 22 mm bore covered with 30 mm glass wool pipe insulation clad with PVC foil. The horizontal pipe sections were mounted to a 10 mm thick steel bar. The overall dimension of the specimen was 1500 mm x 560 mm.

All pipes of the specimens were constructed with a 90 ° elbow.

The distance between the cladding of the adjacent pipes was approx. 25 mm.

When mounted in the test equipment of EN 13823 the pipes were fixed in the top to the equipment. The 10 mm steel bars were fixed to the side panels of the equipment. The distance from the floor to the cladding of the lowest positioned pipe was approx. 60 mm.

The cladding of the pipes was positioned flush with the U-profile of the equipment.

The distance between the cladding of the pipes and the backing board was approx. 25 mm.

## **6 CONDITIONING**

No conditioning was performed.

## **7 TEST METHOD**

The test was performed in accordance with:

EN 13823:2010	Reaction to fire tests for building products – Building products excluding flooring exposed to the thermal attack by a single burning item.
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## **8 TEST RESULTS**

Date of test: 2013-09-10

1 test was performed.

During the test the following measurements were made: Volume flow in the exhaust duct, production of carbon dioxide, concentration of oxygen, and production of light-obscuring smoke. Based on these measurements the rate of heat release and the rate of smoke production were calculated.

The graphs, enclosures 1-4, show for the test performed:

Enclosure 1

- Average Heat Release Rate  $HRR_{av}(t)$
- Total Heat Release THR (t)

Enclosure 2

- Average Heat Release Rate per unit time  $[1000 \times HRR_{av}(t)/(t-300)]$
- $Fig_{0.2MJ}$ -values

#### Enclosure 3

- $Figra_{0.4 MJ}$ -values
- Smoke Production Rate  $SPR_{av}(t)$

#### Enclosure 4

- Total Smoke Production  $TSP(t)$
- Smoke Production Rate per unit time  $[10000 \times SPR_{av}(t)/(t-300)]$

The test results are shown in table 1.

	Test No. 1
<b>FIGRA<sub>0.2 MJ</sub> [W/s]</b>	359
<b>FIGRA<sub>0.4 MJ</sub> [W/s]</b>	223
<b>THR<sub>600s</sub> [MJ]</b>	2.3
<b>SMOGRA [m<sup>2</sup>/s<sup>2</sup>]</b>	258
<b>TSP<sub>600 s</sub> [m<sup>2</sup>]</b>	119
<b>FDP<sub>f≤10s</sub> [yes/no]</b>	No
<b>FDP<sub>f&gt;10s</sub> [yes/no]</b>	No
<b>LFS &lt; edge of specimen [yes/no]</b>	Yes

Table 1.

- FDP<sub>f≤10s</sub>: Flaming Droplets/Particles burning less than 10 seconds  
 FDP<sub>f>10s</sub>: Flaming Droplets/Particles burning more than 10 seconds  
 LFS: Lateral Flame Spread on the long wing of the test specimen

Photographs of the test specimen before the test are shown on enclosure 5. The photographs on enclosure 6 show the effect of the damages after the test.

## 9 STATEMENT

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.

## 10 REMARKS

With this experimental setup of the sampled PVC foil cladded linear pipe insulation including elbows the possible classification is: C<sub>L</sub>-s2,d0 in accordance with EN 13501-1:2007 +A1:2009 clause 10.

This test report is only indicative and can not be used for classification purposes, as:

- No conditioning of the products was performed
- Only one EN 13823 test was performed

EN 13501-1 classification also demands testing in accordance with EN ISO 11925-2:2010 for this type of product.



Rikke Bille  
M.Sc.Civ.Eng.

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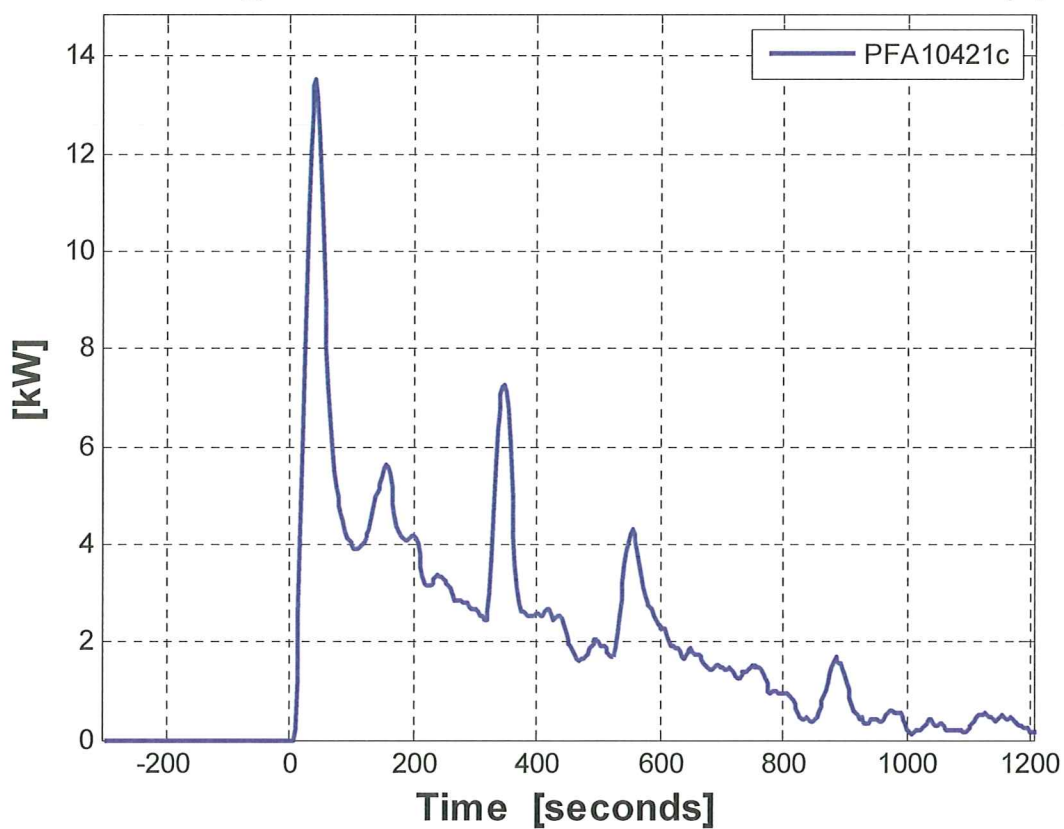


Martin Ankjer Pauner  
M.Sc.Civ.Eng.

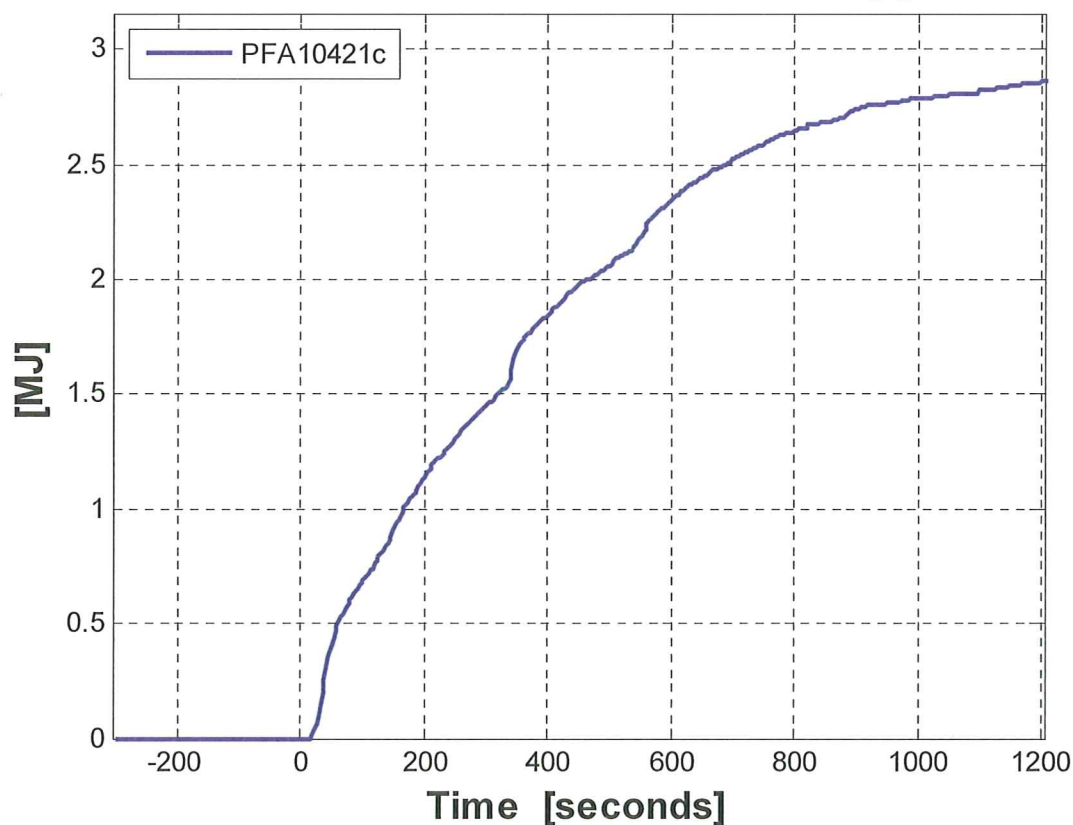
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Roskildevej 23  
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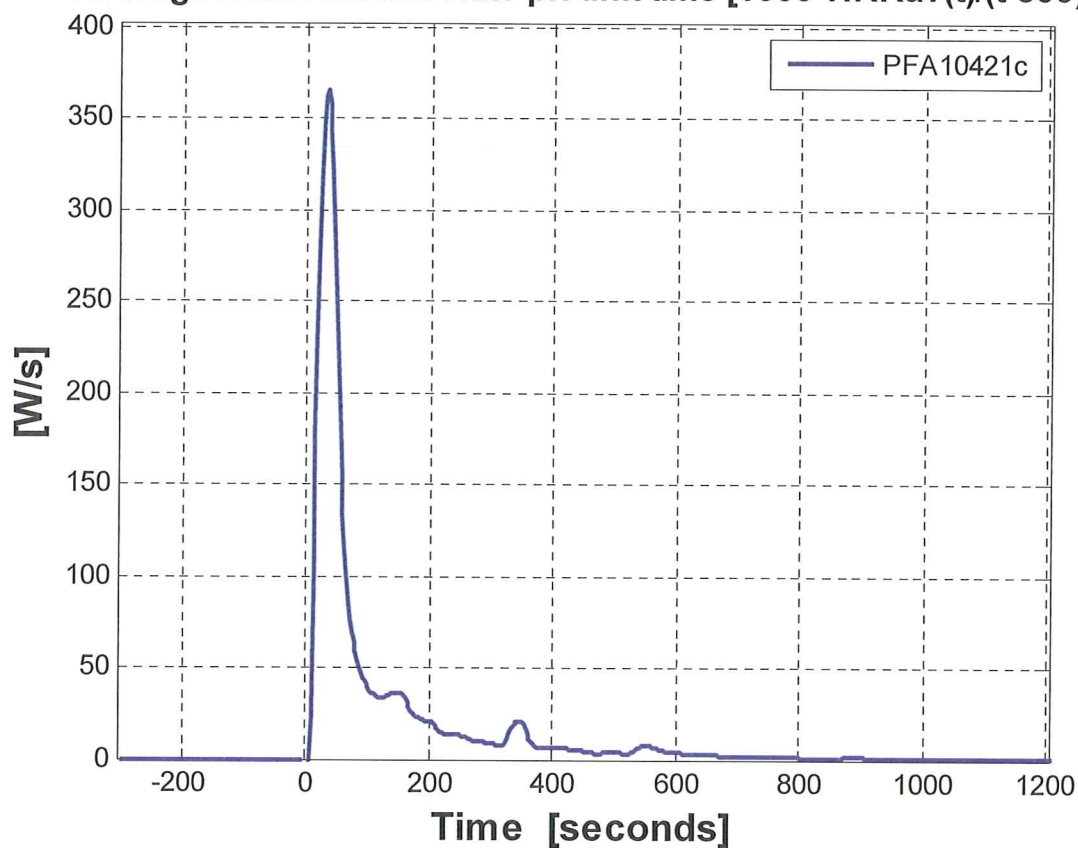
## Average Heat Release Rate $HRR_{av}(t)$



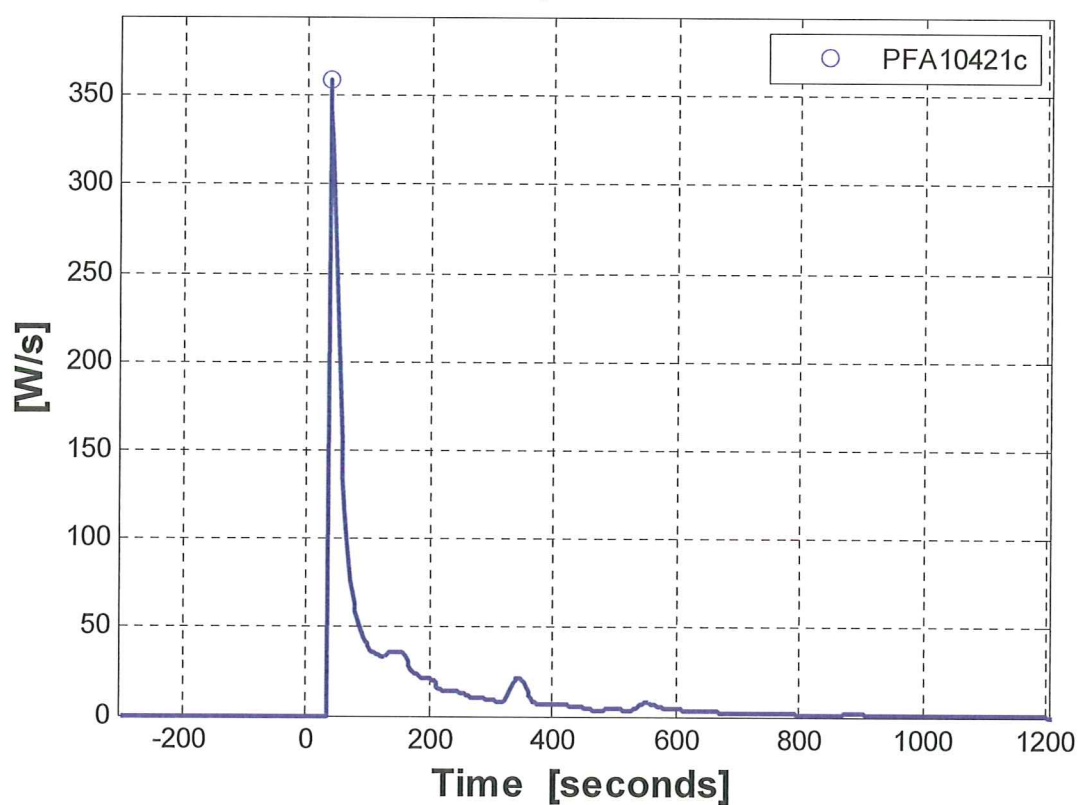
## Total Heat Release $THR(t)$



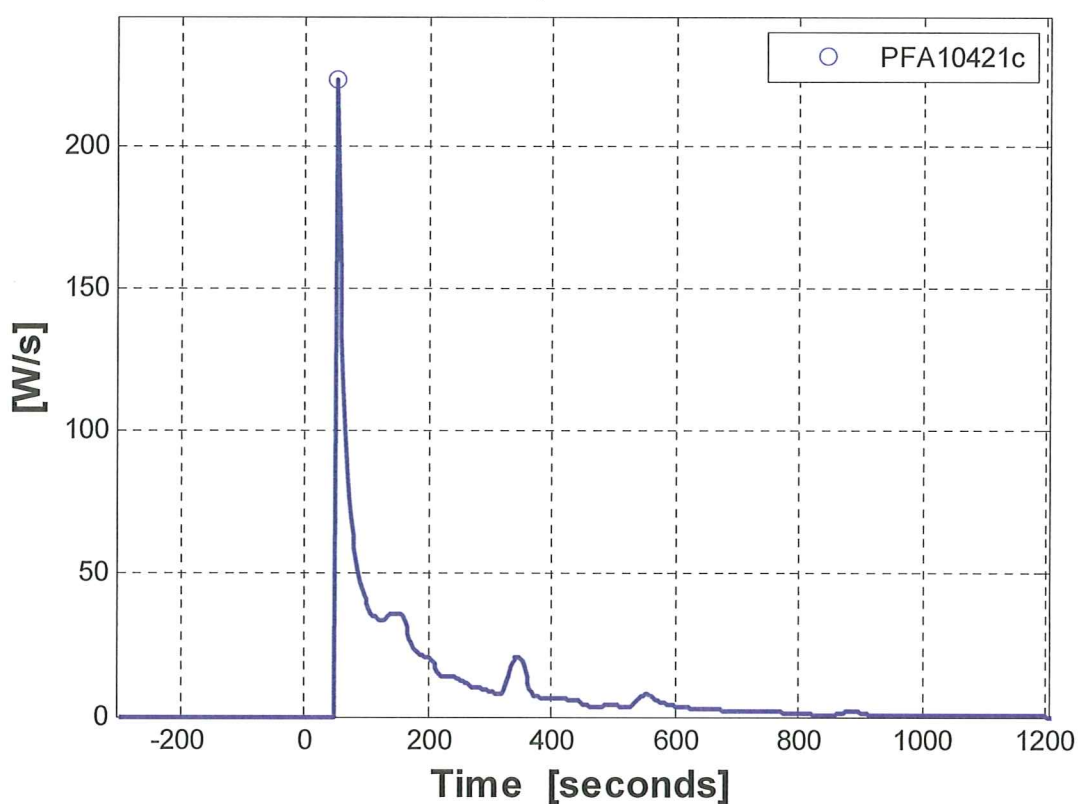
# Average Heat Release Rate pr. unit time $[1000 \cdot HRR_{av}(t)/(t-300)]$



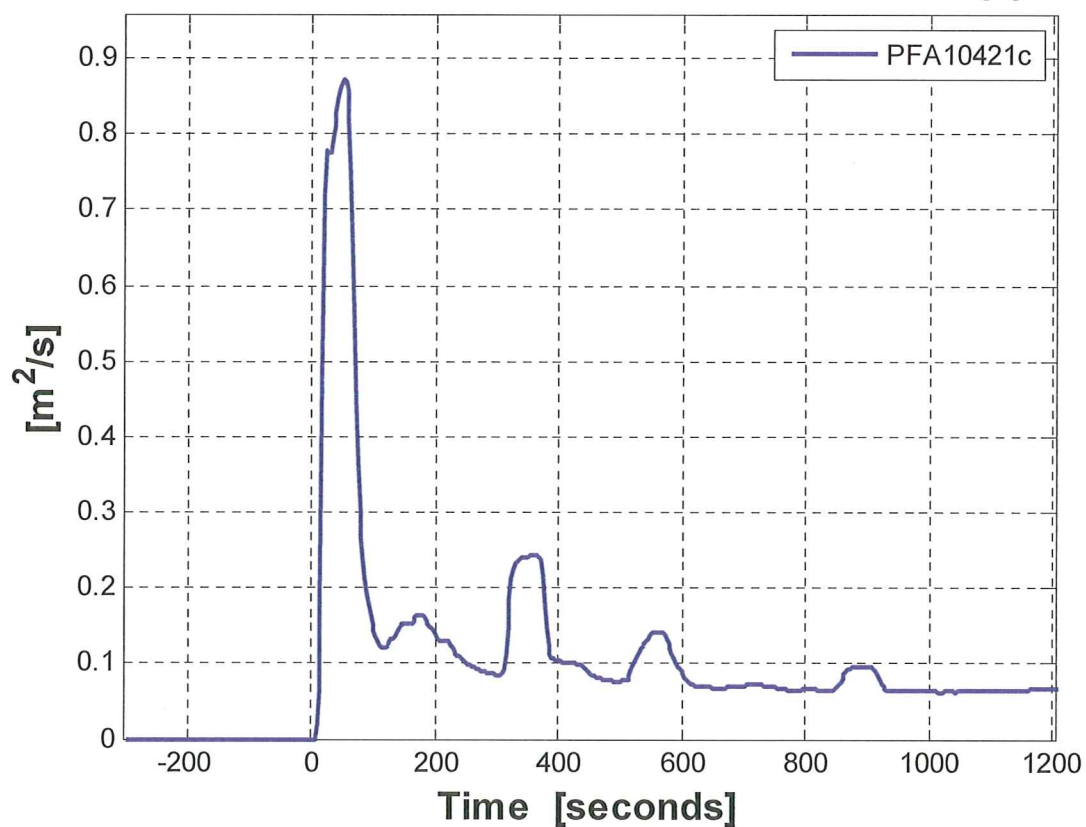
## FIGRA<sub>0,2MJ</sub>-values



## FIGRA<sub>0,4MJ</sub>-values

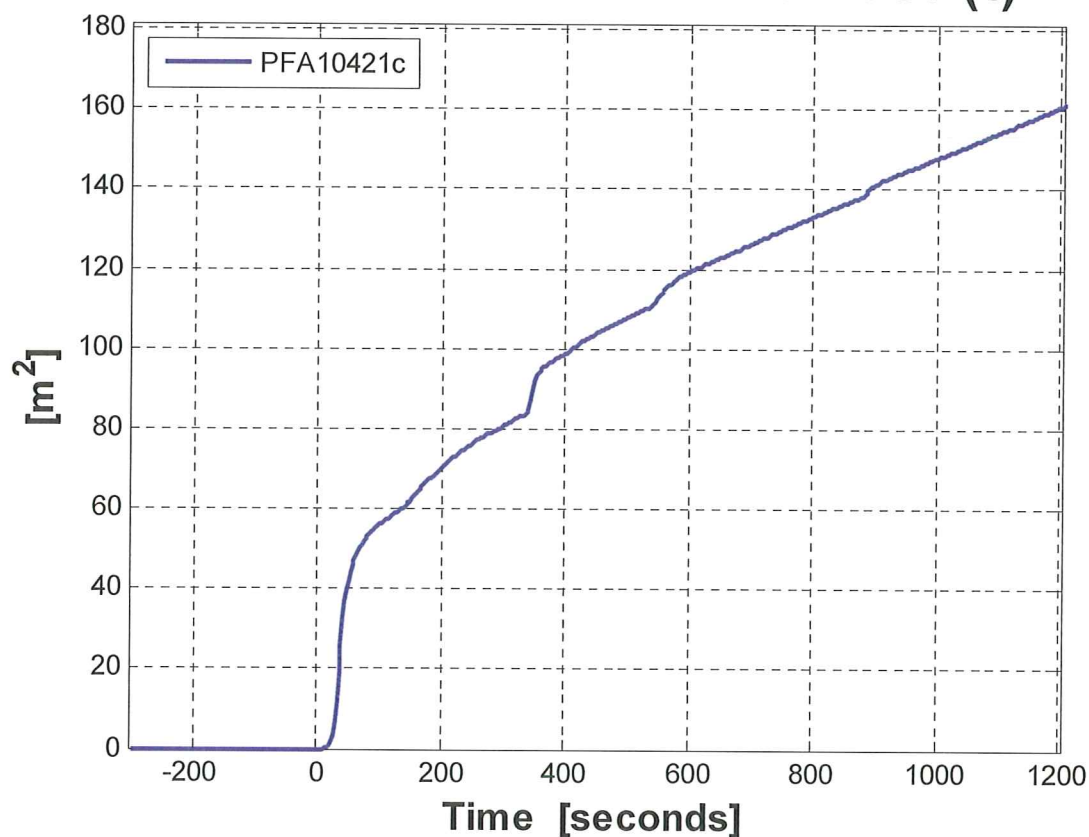


## Smoke Production Rate SPR<sub>av</sub>(t)

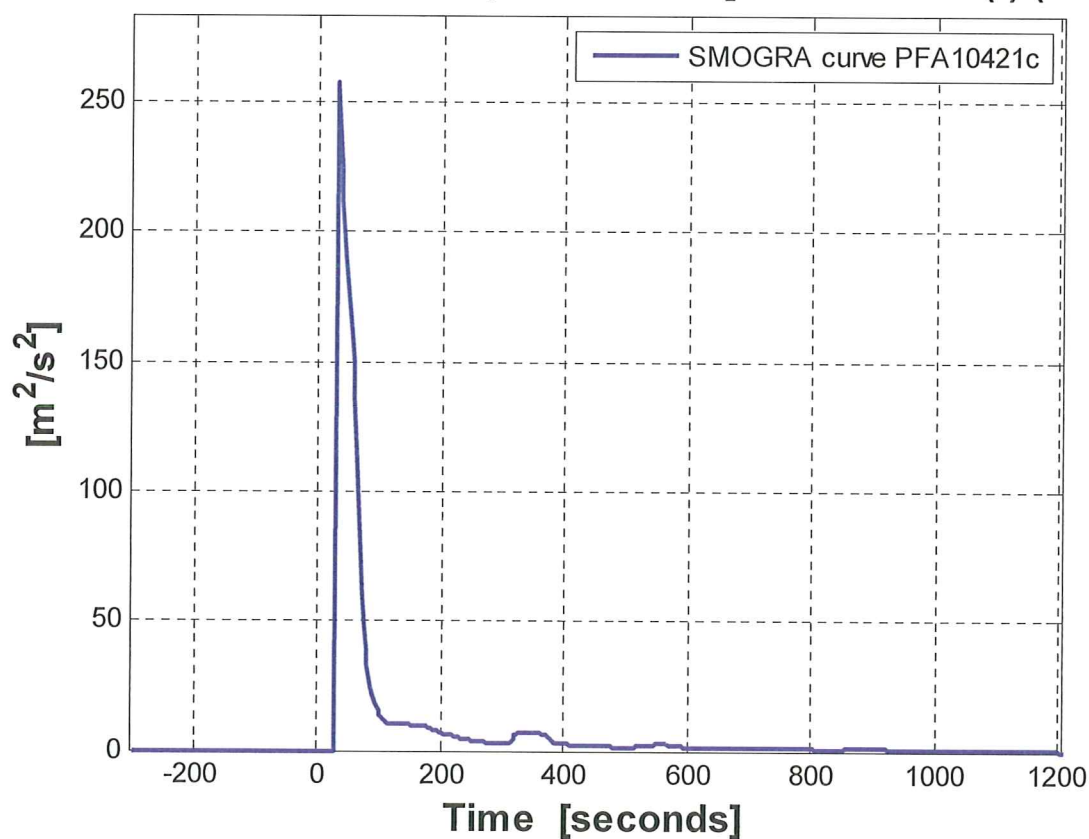




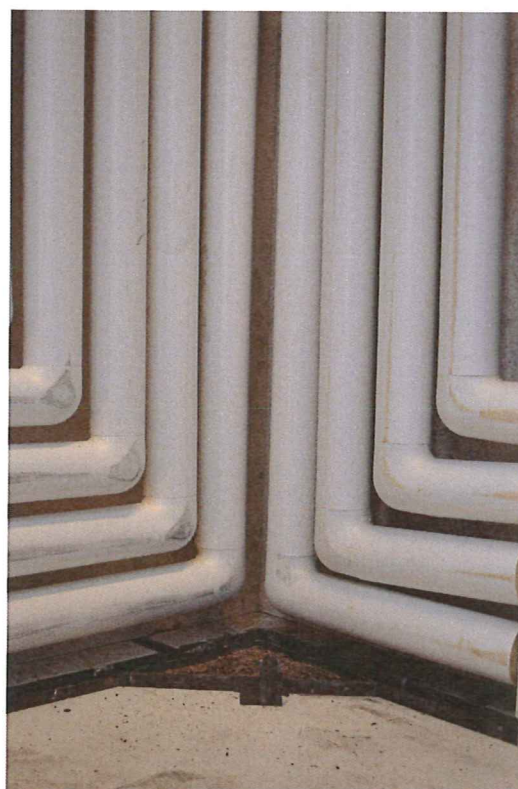
## Total Smoke Production TSP(t)



## Smoke Production Rate pr. unit time $[10000 \cdot \text{SPRav}(t)/(t-300)]$



### Specimen before the test



### Specimen after the test

