

 	<b>LABORATORY OF FIRE ALARM SYSTEMS AND FIRE AUTOMATION</b>	
	<b>Józef Tuliszowski SCIENTIFIC AND RESEARCH CENTRE FOR FIRE PROTECTION Józef Tuliszowski - National Research Institute</b>	
ul. Nadwiślańska 213, 05-420 Józefów k. Otwocka, Poland PHONES: switchboard: +48 22 769 32 00 Administrative Office: +48 22 769 33 00 FAX: +48 22 769 33 56 <a href="http://www.cnbop.pl">www.cnbop.pl</a> e-mail: cnbop@cnbop.pl		

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<b>ORDERING PARTY</b> Name and address	<b>Relpol S.A.</b> ul. 11 Listopada 37, 68-200 Żary, Poland
<b>DESCRIPTION AND IDENTIFICATION OF THE TESTED PRODUCT SAMPLE / TESTED OBJECT</b>	Synres-Almoco AMC 2568, Kingfa PBT-RG301, LEXAN3412R, Starflam RF0097P
<b>MANUFACTURER OF THE TESTED PRODUCT/OBJECT</b> Name and address	<b>Relpol S.A.</b> ul. 11 Listopada 37, 68-200 Żary, Poland

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p.o. Z-ca Dyrektora  
 ds. Badań i Rozwoju  
*mgr Sylwia Krawezyńska*

Józefów, Poland, 22 December 2015

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## 1. THE FORMAL BACKGROUND FOR THE PERFORMANCE OF THE TESTS

The Client's written request dated 02.12.2015.

Internal Order No. 1573/BW/15.

## 2. TESTED SAMPLES / TESTED OBJECTS

### 2.1. Name of product /object, type (type) size and other designations

The test covers samples of the following materials:

- Synres-Almoco AMC 2568

20 samples in the form of 1.65 mm thick rods, measuring 13 mm x 13 cm.

- Kingfa PBT-RG301

20 samples in the form of 1.65 mm thick rods, measuring 13 mm x 13 cm.

- LEXAN3412R

20 samples in the form of 1.65 mm thick rods, measuring 13 mm x 13 cm.

- Starflam RF0097P

20 samples in the form of 1.65 mm thick rods, measuring 13 mm x 13 cm.

The samples have been prepared in compliance with the requirements.

### 2.2. A brief technical description of the product / object

- Synres-Almoco AMC 2568

Glass fibre reinforced polyester material.

Density: from 2 to 2.2 g/cm<sup>3</sup>

The measured specimen thickness in accordance with item 7.2 of the standard: 1.63 mm

- Kingfa PBT-RG301

Material: polybutylene terephthalate reinforced with 30% of glass fibre

Specific weight: 1.64 g/cm<sup>3</sup>

The measured specimen thickness in accordance with item 7.2 of the standard: 1.66 mm

- LEXAN 3412R

Material reinforced with 20% of glass fibre.

Density: 1.35 g/cm<sup>3</sup>

The measured specimen thickness in accordance with item 7.2 of the standard: 1.66 mm

- Starflam RF0097P

Material: 66/6 Polyamide 66/6 Copolymer, halogen, and red phosphorus free, reinforced with glass fibre.

Density: 1.58 g/cm<sup>3</sup>

The measured specimen thickness in accordance with item 7.2 of the standard: 1.66 mm

The thickness of the samples has been provided within the tolerance of  $\pm 0.15$  mm, in accordance with item 7.2 of the standard.

The description of the products was prepared based on the documentation provided by the Ordering Party.

### 2.3. Method of collecting/receiving the sample of the product/object for testing and its storage

The samples were delivered by the Ordering Party on 4 December 2015. A written protocol of acceptance of the samples for testing was drafted upon receipt.

The Ordering Party provided the technical documentation for the Synres-Aipioco AMC 2568, Kingfa PBT-RG301, LEXAN 3412R and Starflam RF0097P materials tested.

Prior to testing, 10 pieces of each sample material were stabilised in a climate chamber at 23° C and a relative humidity of 50% for a minimum of 48 h. The remaining 10 samples were aged at 70 ± 2°C for 168 h.

### 3. TESTS AND TEST METHODS

#### 3.1. Test methods

The tests were carried out in accordance with method B of EN 60695-11-10:2014-02 "Fire hazard testing - Part 11-10: Test flames. 50 W horizontal and vertical flame test methods."



Image 1 View of the test stand used by WCNBOP-PIB in accordance with EN 60695-11-10:2014-02.

#### 3.2. The date (dates) on which the tests were performed.

The test was performed on 21.12.2015.

### 4. Test results

Test results were obtained after testing in accordance with item 9 of EN 60695-11-10:2014-02.

Test environment conditions: temperature 22°C, humidity 45%.

1. Material name: Synres-Almoco AMC 2568

- Method B - Vertical burning test (conditioned samples)

The measured value	Unit	Sample no.				
		1	2	3	4	5
t <sub>1</sub> first burning time (after the first application of the flame)	[s]	0	0	0	0	0
t <sub>2</sub> second burning time (after the second application of the flame)	[s]	3	0	0	0	4
t <sub>3</sub> incandescence time (measured after the sample is extinguished by the second flame application)	[s]	0	0	0	0	0
t <sub>1</sub> + t <sub>2</sub>	[s]	3	0	0	0	4
t <sub>2</sub> + t <sub>3</sub>	[s]	3	0	0	0	4
Has the flame or glow moved to the handle clamp	[Yes/No]	No	No	No	No	No
Did the cotton pad catch fire	[Yes/No]	No	No	No	No	No

$t_f$ the total burning time, calculated as the sum of times $t_1$ and $t_2$ taken at all five measurements	<b>[s]</b>	
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- Method B - Vertical burning test (aged samples)

The measured value	Unit	Sample no.				
		1	2	3	4	5
$t_1$ first burning time (after the first application of the flame)	[s]	0	0	0	0	0
$t_2$ second burning time (after the second application of the flame)	[s]	6	5	2	6	5
$t_3$ incandescence time (measured after the sample is extinguished by the second flame application)	[s]	0	0	0	0	0
$t_1 + t_2$	[s]	6	5	2	6	5
$t_2 + t_3$	[s]	6	5	2	6	5
Has the flame or glow moved to the handle clamp	[Yes/No]	No	No	No	No	No
Did the cotton pad catch fire	[Yes/No]	No	No	No	No	No
$t_f$ the total burning time, calculated as the sum of times $t_1$ and $t_2$ taken at all five measurements	[s]	24				

2. Material name: Kingfa PBT-RG301

- Method B - Vertical burning test (conditioned samples)

The measured value	Unit	Sample no.				
		1	2	3	4	5
$t_1$ first burning time (after the first application of the flame)	[s]	0	0	1	1	1
$t_2$ second burning time (after the second application of the flame)	[s]	0	0	0	0	0
$t_3$ incandescence time (measured after the sample is extinguished by the second flame application)	[s]	0	0	0	0	0
$t_1 + t_2$	[s]	0	0	1	1	1
$t_2 + t_3$	[s]	0	0	0	0	0
Has the flame or glow moved to the handle clamp	[Yes/No]	No	No	No	No	No
Did the cotton pad catch fire	[Yes/No]	No	No	No	No	No
$t_f$ the total burning time, calculated as the sum of times $t_1$ and $t_2$ taken at all five measurements	[s]	3				

- Method B - Vertical burning test (aged samples)

The measured value	Unit	Sample no.				
		1	2	3	4	5
$t_1$ first burning time (after the first application of the flame)	[s]	2	0	0	0	0
$t_2$ second burning time (after the second application of the flame)	[s]	3	1	0	2	0
$t_3$ incandescence time (measured after the sample is extinguished by the second flame application)	[s]	0	0	0	0	0
$t_1 + t_2$	[s]	5	1	0	2	0
$t_2 + t_3$	[s]	3	1	0	2	0
Has the flame or glow moved to the handle clamp	[Yes/No]	No	No	No	No	No
Did the cotton pad catch fire	[Yes/No]	No	No	No	No	No
$t_f$ the total burning time, calculated as the sum of times $t_1$ and $t_2$ taken at all five measurements	[s]	8				

3. Material name: LEXAN 3412R

- Method B - Vertical burning test (conditioned samples)

The measured value	Unit	Sample no.				
		1	2	3	4	5
$t_1$ first burning time (after the first application of the flame)	[s]	4	0	1	2	2
$t_2$ second burning time (after the second application of the flame)	[s]	0	4	1	0	4
incandescence time (measured after the sample is extinguished by the second flame application)	[s]	0	0	0	0	0
$t_1 + t_2$	[s]	4	4	2	2	6
$t_2 + t_3$	[s]	0	4	1	0	4
Has the flame or glow moved to the handle clamp	[Yes/No]	No	No	No	No	No
Did the cotton pad catch fire	[Yes/No]	No	No	No	No	No
$t_f$ the total burning time, calculated as the sum of times $t_1$ and $t_2$ taken at all five measurements	[s]	18				

- Method B - Vertical burning test (aged samples)

The measured value	Unit	Sample no.				
		1	2	3	4	5
<b>t<sub>1</sub></b> first burning time (after the first application of the flame)	[s]	0	1	1	2	1
<b>t<sub>2</sub></b> second burning time (after the second application of the flame)	[s]	3	7	10	2	1
<b>t<sub>3</sub></b> incandescence time (measured after the sample is extinguished by the second flame application)	[s]	0	0	0	0	0
<b>t<sub>1</sub> + t<sub>2</sub></b>	[s]	3	8	11	4	2
<b>t<sub>2</sub> + t<sub>3</sub></b>	[s]	3	7	10	2	1
Has the flame or glow moved to the handle clamp	[Yes / No]	No	No	No	No	No
Did the cotton pad catch fire	[Yes / No]	No	No	No	No	No
<b>t<sub>r</sub></b> the total burning time, calculated as the sum of times t <sub>1</sub> and t <sub>2</sub> taken at all five measurements	[s]	28				

4. Material name: Starflam RF0097P

- **Method B** - Vertical burning test (conditioned samples)

The measured value	Unit	Sample no.				
		1	2	3	4	5
<b>t<sub>1</sub></b> first burning time (after the first application of the flame)	[s]	0	0	0	0	0
<b>t<sub>2</sub></b> second burning time (after the second application of the flame)	[s]	3	0	0	1	0
<b>t<sub>3</sub></b> incandescence time (measured after the sample is extinguished by the second flame application)	[s]	0	0	0	0	0
<b>t<sub>1</sub> + t<sub>2</sub></b>	[s]	3	0	0	1	0
<b>t<sub>2</sub> + t<sub>3</sub></b>	[s]	3	0	0	1	0
Has the flame or glow moved to the handle clamp	[Yes/No]	No	No	No	No	No
Did the cotton pad catch fire	[Yes/No]	No	No	No	No	No
<b>t<sub>r</sub></b> the total burning time, calculated as the sum of times t <sub>1</sub> and t <sub>2</sub> taken at all five measurements	[s]	4				

- Method B - Vertical burning test (aged samples).

The measured value	Unit	Sample no.				
		1	2	3	4	5
$t_1$ first burning time (after the first application of the flame)	[s]	0	0	0	0	0
$t_2$ second burning time (after the second application of the flame)	[s]	2	0	0	0	0
$t_3$ incandescence time (measured after the sample is extinguished by the second flame application)	[s]	0	0	0	0	0
$t_1 + t_2$	[s]	2	0	0	0	0
$t_2 + t_3$	[s]	2	0	0	0	0
Has the flame or glow moved to the handle clamp	[Yes/No]	No	No	No	No	No
Did the cotton pad catch fire	[Yes/No]	No	No	No	No	No
$t_f$ the total burning time, calculated as the sum of times $t_1$ and $t_2$ taken at all five measurements	[s]	2				

## 5. CLASSIFICATION

Based on the results obtained, in accordance with item 9.4 of the EN 60695-11-10:2014-02 test standard, the tested materials were classified as:

- Synres-Almoco AMC 2568

**V-0 @ 1,63 mm**

- Kingfa PBT-RG301

**V-0 @ 1,66 mm**

- LEXAN3412R

**V-0 @ 1,66 mm**

- StarflamRF0097P

**V-0 @ 1,66 mm**

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**6. DECLARATIONS AND WARNINGS**

The test results relate only to the tested sample of the tested product/object. The Report shall only be copied in its entirety, unless the Laboratory of Fire Alarm Systems and Fire Automation provides otherwise in writing. The research report was produced in thee copies.

**END**

<b>The report was drawn up by:</b>	M.Sc. Eng. Anna Dziechciarz	2015-12-22 <i>A. Dziechciarz</i> Date and signature
<b>Person authorising the test report</b>	M.Sc. Eng. Wojciech Klapsa, Senior Captain	22.12.2015 <i>W. Klapsa</i> Date and signature