

Ljubljana, January 22nd, 2018

TEST REPORT

No. P 0960/17-530-1

Extinguish performance of portable water based
fire extinguisher

OILFighter – fire extinguishing bag

Applicant: Rockstock družba za posredovanje d.o.o., Breg pri Borovnici 56b,
1353 Borovnica, Slovenia

Order: E-mail dated 3rd October 2017

Responsible investigator:
Nataša Knez, Ph.D.



Head of laboratory:
Friderik Knez, B.Sc.



Director:

 Assoc. Prof. Dr Andraž Legat



1. **PRODUCT:** OILFighter – fire extinguishing bag
2. **SUPPLIER:** Rockstock družba za posredovanje d.o.o., Breg pri Borovnici 56b, 1353 Borovnica, Slovenia
3. **MANUFACTURER:** Rockstock družba za posredovanje d.o.o., Breg pri Borovnici 56b, 1353 Borovnica, Slovenia
4. **SAMPLING:** Supplier delivered the specimens to Fire laboratory on 7th of November 2017. Fire laboratory was not involved in sampling procedure.
Quantity of the sample: 4 bags of 60 ml each.
Sample No.: P17/094
Date of production: 12. 10. 2017

5. DESCRIPTION OF THE PRODUCT:

OILFighter – fire extinguishing bag is a fire fighting product to extinguish fires from burning cooking oil or fats. Specimens are water based extinguishers made of wet chemicals. Combination of chemicals is not disclosed to the laboratory. Chemicals are sealed in PET/LDPE (polyethylene terephthalate / low density polyethylene) bag in quantity of 60 ml in each bag.

According to supplier's instructions single extinguishing bag is intended to extinguish up to 1 l of burning cooking oil or fats. Two (2) bags are intended to extinguish up to 2 l of cooking oil or fats burning in kitchenware.

6. PREPARATION OF TESTING APPARATUS:

In the report three tests are described. Different fire trays (commercially available pans or pot) were placed on wire grid over gas burner. 1 or 2 l of vegetable cooking oil was poured into the tray for each test and then the gas burner was set on. Detailed description of pans' or pot's size and quantity of cooking oil is in clause 12.

Approximately 120 seconds after oil started to burn, one bag was put into the tray. In test 094-2 another bag was put into the tray 12 seconds after the first bag.

7. **CONDITIONING:** Specimens were not conditioned before the test.
8. **DATE OF TEST:** November 7th, 2017
9. **TEST METHOD:** the testing principle was based on SIST EN 3-7:2004+A1:2008, annex L. Test procedure is described below in detail and standard requirements are presented with test results in clause 12.

1 or 2 l¹ of vegetable (frying) cooking oil was poured into a tray. It was left for some time and then burner was turned on. Temperature of oil and time of auto-ignition was measured. Temperature of oil was measured in the centre of the pan at mid-height of oil layer. Temperature of hot gases was measured in the centre of the pan ten centimetres above the oil surface. Two minutes after ignition of oil one bag of the tested product was put into a tray by hand protected with fire gloves. In test 094-2 where 2 l of oil were poured into a tray, another bag was put into a tray 12 seconds after the first one. Time to

¹ according to standard SIST EN 3-7, 5 l of oil is required for standard test



extinguishment was measured. After extinguishment oil was observed for 20 minutes for re-ignition.

During extinguishment the height of the flames was observed; 2 m above the upper edge of the tray a horizontal mark was fixed to the vertical steel profile (see photos). The test procedure was video recorded.

10. OBSERVATIONS DURING THE TEST:

Before oil started to burn it started to smoke intensively. Hot oil volume increased. During 120 seconds of burning, flames were increasing fast and intense black smoke occurred. In test 094-3 burning oil spilled over the edge of the pan. In test 094-3 and 094-4 where 1 l of oil was put in a pan, flames started to decrease before the commencement of the firefighting.

When the bag was put into the tray with burning oil the PET bag melted. Some liquid content and burning material started to sprinkle from the tray. During the first seconds after firefighting the flames increased. Extinguisher reacted and the foam started to form, the flames were decreasing and the fire was extinguished. The results of the tests are shown in Table in clause 12.

11. INTENDED USE OF THE PRODUCT:

Fire extinguishing bags are used for extinguishing of burning cooking oil of fat in kitchenware.

12. TEST RESULTS:

| TEST SETUP | | | | |
|--|--------|---------|---------|------------------------------------|
| Test number | 094-2 | 094-3 | 094-4 | Standard requirement |
| Date of test | 7. 11. | 7. 11. | 7. 11. | |
| Oil content / l | 2 | 1 | 1 | 5 |
| Tray | | | | |
| Diameter ² / mm | 277 | 279/210 | 300/230 | - |
| height / mm | 80 | 60 | 60 | 170 ± 10 mm |
| Time to ignition / min:sec | 7:08 | 6:05 | 5:38 | < 3,5 h |
| Oil temp. at ignition / °C | 382 | 401 | 399 | between 330 and 380 °C |
| Maximum height of flames before commencement of firefighting | 2 m | 2 m | 2 m | - |
| Height of flame decrease before commencement of firefighting | no | yes | yes | - |
| Burning oil ejected before firefighting | no | yes | yes | - |
| Time ³ to firefighting / s | 122 | 123 | 121 | 120 ⁺¹⁰ ₋₀ s |
| No. of used bags | 2 | 1 | 1 | 1 |

² diameter of tray at upper / at lower edge if different

³ time from auto-ignition of oil to commencement of firefighting



| TEST RESULTS | | | | |
|---|-------|-------|-------|----------------------|
| Test number | 094-2 | 094-3 | 094-4 | Standard requirement |
| Flame increase immediately after firefighting | yes | yes | yes | - |
| Extinguishment ⁴ | yes | yes | yes | yes |
| Time ⁵ to extinguishment | 21 s | 15 s | 20 s | - |
| Enlargement of flames over 2 m ⁶ | yes | no | no | no |
| Burning material ejected ⁷ | yes | yes | yes | no |
| Re-ignition ⁸ in 20 min | no | no | no | no |
| Oil in tray after test ⁹ | yes | - | - | yes |

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.

13. ENCLOSURES:

Enclosure No.:1:..... Measured temperatures for specimen number P17-094-2

Enclosure No.:2:..... Measured temperatures for specimen number P17-094-3

Enclosure No.:3:..... Measured temperatures for specimen number P17-094-4

Enclosure No.:4:..... 16 photographs¹⁰ (4 pages)

1 *Photo: 9 min 12 sec of video: P17-094-2: Commencement of firefighting 122 seconds after the start of the fire.*

2 *Photo: 9 min 16 sec of video: P17-094-2: Ejection of burning material after firefighting (full view and detail).*

3 *Photo: 9 min 25 sec of video: P17-094-2: 9 seconds after commencement of firefighting the second bag was inserted.*

4 *Photo: 9 min 30 sec of video: P17-094-2: 5 seconds after end of firefighting.*

5 *Photo: 9 min 34 sec of video: P17-094-2: Extinguishment of the fire 21 s after commencement of firefighting.*

6 *Photo: 7 min 51 sec of video: P17-094-3: 42 seconds after the start of the fire.*

7 *Photo: 9 min 11 sec of video: P17-094-3: Commencement of firefighting 123 seconds after the start of the fire.*

8 *Photo: 9 min 12 sec of video: P17-094-3: Ejection of burning material after firefighting (full view and detail).*

⁴ in test 094-2 and 094-4 ejected burning material still burned after the burning oil in the tray was extinguished. In test 094-4 ejected burning material extinguished by itself 14 s after oil extinguishment

⁵ time from commencement of firefighting to extinguishment

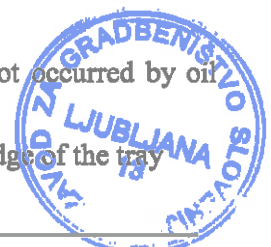
⁶ flames over 2 m in height constitute enlargement

⁷ burning material ejected from the tray after firefighting

⁸ re-ignition of fire in period of 20 minutes after extinguishment

⁹ oil shall remain in the tray at the end of the test to prove that extinguishment has not occurred by oil starvation – when testing with 1 l of oil presence of oil was not observed

¹⁰ The horizontal mark on the vertical profile in the photos is at 2 m height above upper edge of the tray

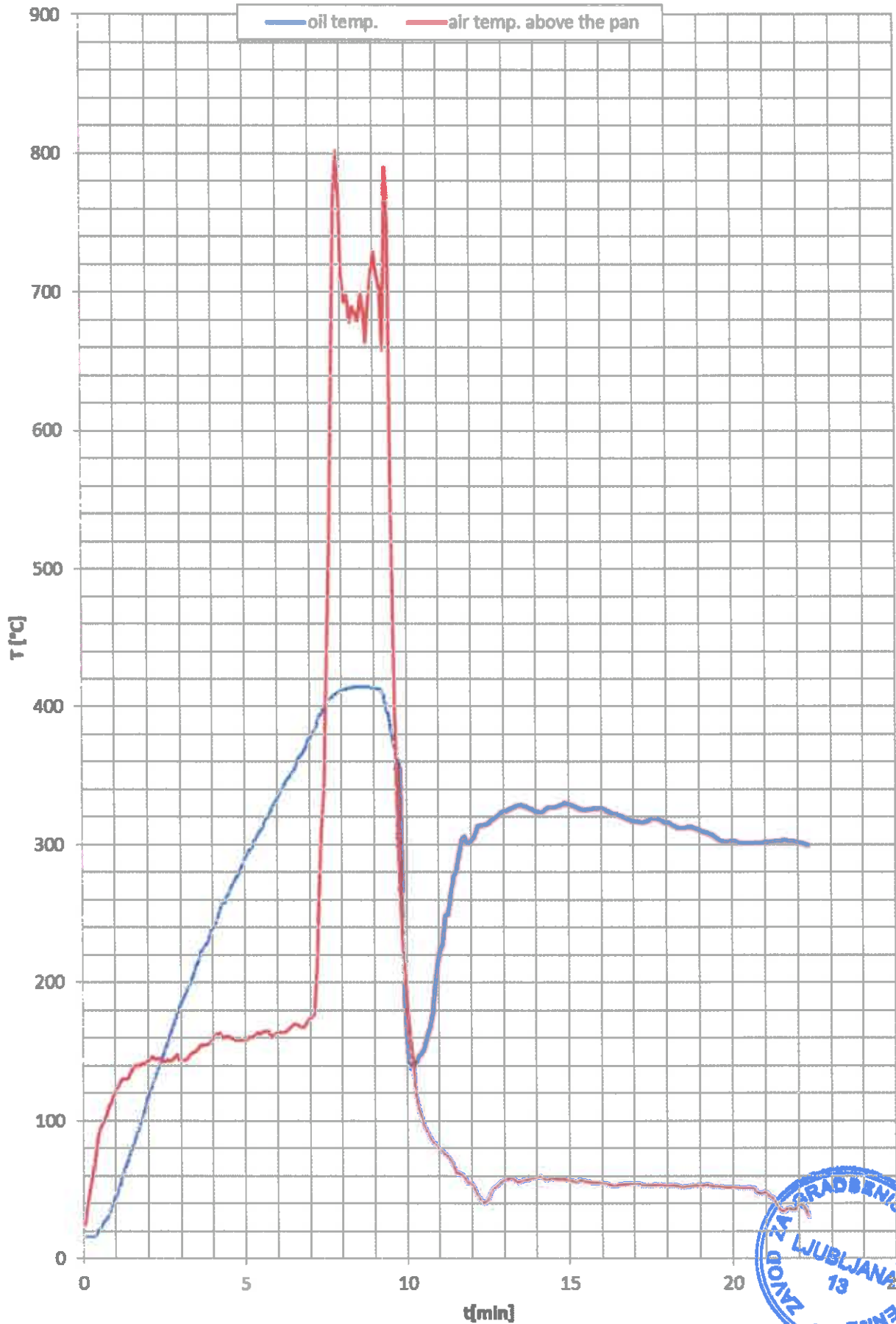


- 9... *Photo: 9 min 14 sec of video: P17-094-3: Enlargement of flames after firefighting.*
- 10.. *Photo: 9 min 19 sec of video: P17-094-3: 8 seconds after end of firefighting.*
- 11.. *Photo: 9 min 27 sec of video: P17-094-3: Extinguishment of the fire 15 s after commencement of firefighting.*
- 12.. *Photo: 7 min 20 sec of video: P17-094-4: 90 seconds after the start of the fire.*
- 13.. *Photo: 7 min 51 sec of video: P17-094-4: Commencement of firefighting 121 seconds after the start of the fire.*
- 14.. *Photo: 7 min 54 sec of video: P17-094-4: Enlargement of flames and ejection of burning material after firefighting (full view and detail).*
- 15.. *Photo: 8 min 1 sec of video: P17-094-4: 10 seconds after commencement of firefighting*
- 16.. *Photo: 8 min 11 sec of video: P17-094-4: Extinguishment of the fire 20 s after commencement of firefighting.*

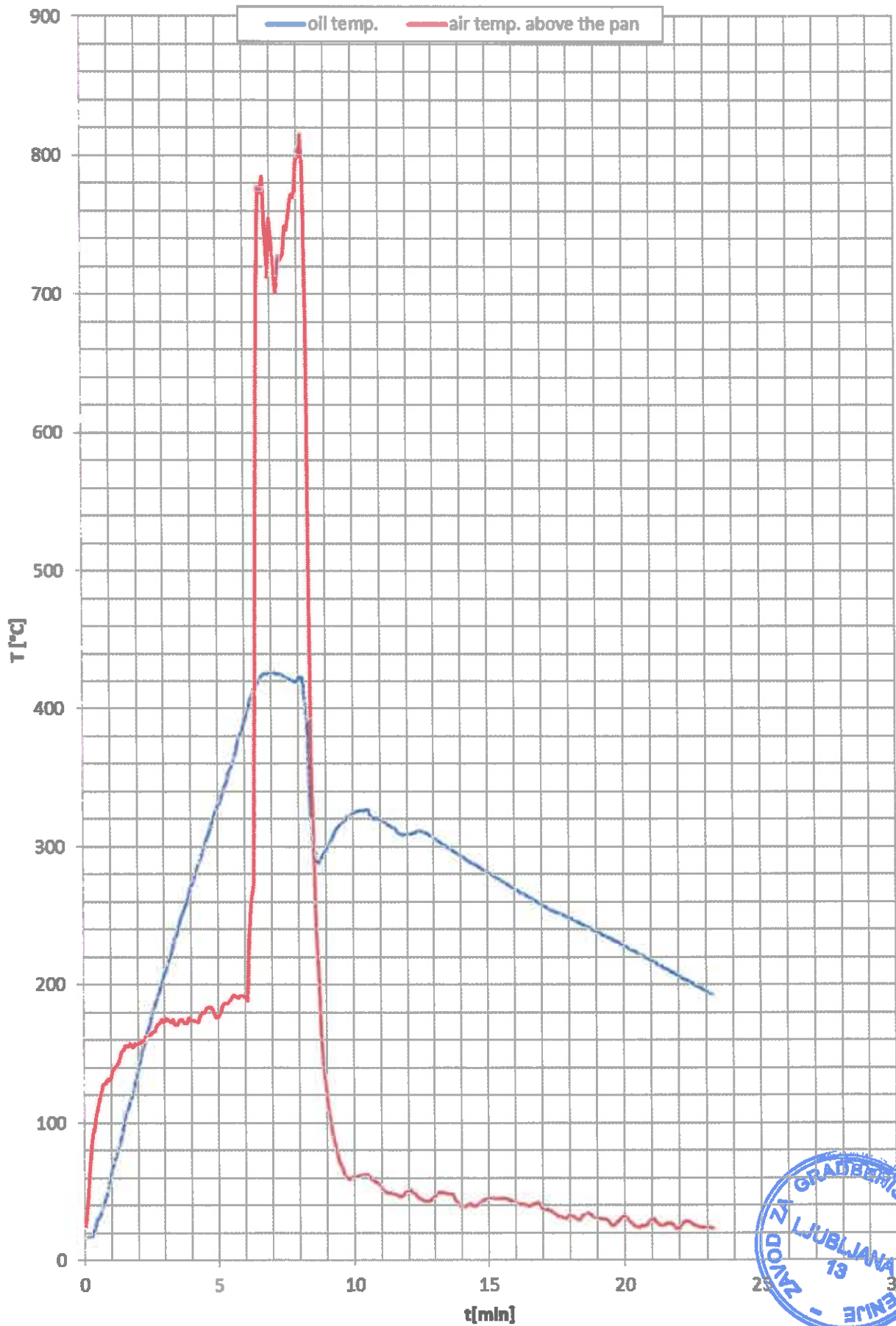
Report was prepared by: Nataša Knez, Ph.D.



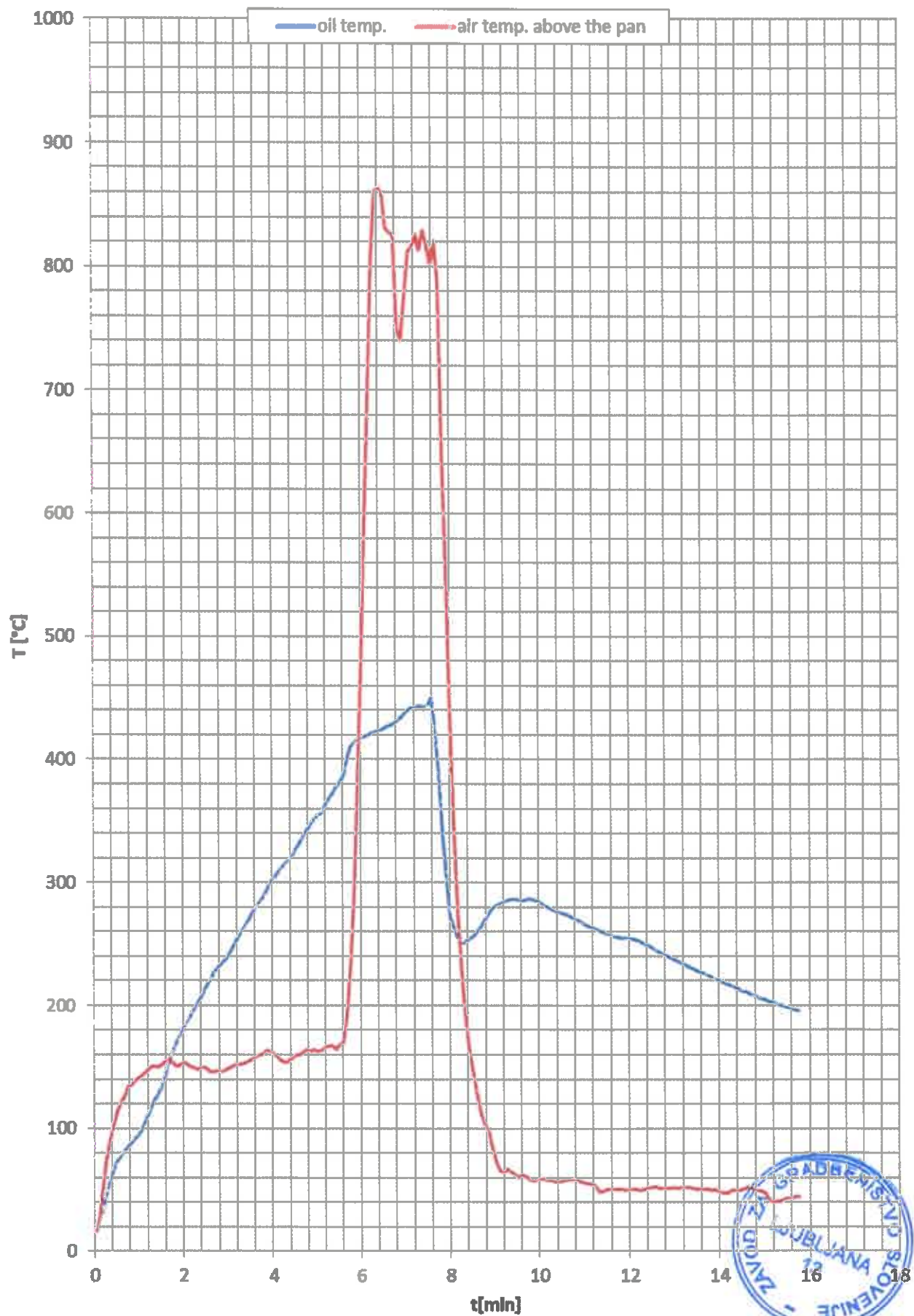
P17-094-2



P17-094-3



P17-094-4





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Commencement of firefighting 122 seconds
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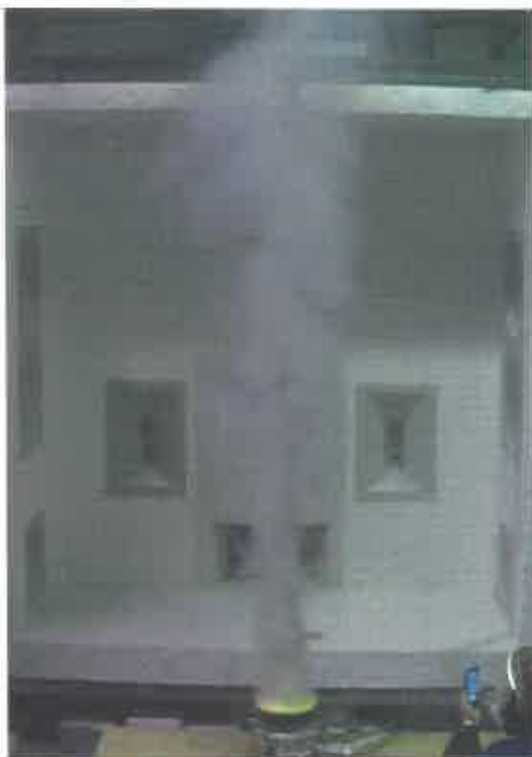
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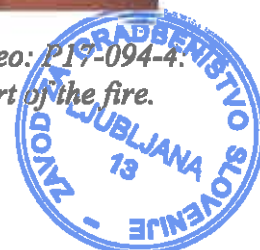
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Extinguishment of the fire 20 s after
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