

# FIRE PROTECTION SYSTEMS INSPECTION REPORT

## Manufacturer

Bonpet Systems D.O.O.  
Proizvodnja, Trgovina, Pozarni Inzeniring, 1420 Trbovlje, Slovenia, Obrtniska 30

## Place of Inspection

Bonpet Facility in Garbsko 11a 1420 Trbovlje SLOVENIA

## Date of Site Inspection

8-10 November 2010 -Slovenia

## Subject of Inspection

Conformance with NFPA 18

## Total Page of Inspection Report

42 Pages (Attachments are not include)

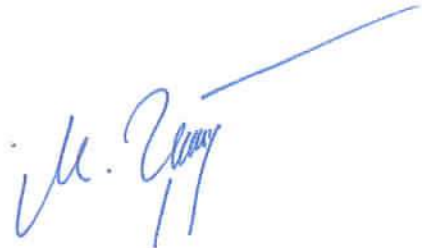
## Attachments (Reviewed Documents)

32 Pages

**Inspected by** : **Mehmet Ali Uęur**  
**Fire Protection Systems Supervisor**

**Approved by** : **Arzu YAęCI**  
**Technical Manager**

**Report Date** : **10 May 2011**



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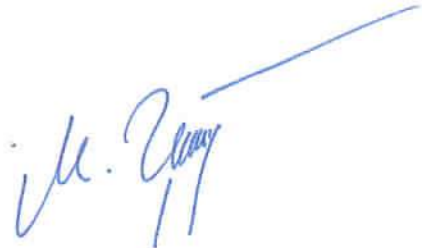
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# 1.COMPANY PROFILE (Customer declaration)



*Mehmet Ali Utay*  
*M. Utay*  
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References- largest achievements on Slovenian market:

- Ampolue is testes on Institute for civil engineering in Ljubljana (P 653-530-2: fire fighting of fire of oil in kitchen, P 651/99-530-1: fire fighting of fire of inflammable liquids).
- Technical agreement for ampoule No. URSZR GS 01 02 01 00, issued by Ministry of Defence Republic of Slovenia in 2001, Administration for protection and rescuing
- Technical agreement for built-in extinguishing device No. STS-06/041, issued by Civil engineering institute of Slovenia in 2002
- Diploma for innovation: stable extinguishing device with low pressure activity, awarded by Bonpet in Maribor
- In 2005 successful ampoule activity in Institute for health care in Maribor
- In 2006 successful ampoule activation in transformator at company Petrol Energetics
- In 2007 successful ampoule activation at company Yulon d.d. Ljubljana
- In 2007 successful ampoule activation in boiler room at company in Sevnica
- In september 2007 first reference about successful activity of stable system at company Gorenje d.d. Velenje
- In 2010 second successful ampoule Bonpet activity in Petrol Energetics.

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## 2.SUBJECT OF THE STANDARD

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**Scope.** This standard addresses qualification tests, methods of evaluation, and general rules for application of wetting agents and wetting agent solutions as related to fire control and extinguishment.

**Purpose.** This standard provides the requirements for the performance and use of wetting agents as related to fire control and extinguishment and is prepared for the guidance of the fire services, authorities having jurisdiction, and others concerned with judging the acceptability and use of any wetting agent offered for such a purpose.

**Application.** This standard applies to wetting agents and wetting agent solutions for use on Class A and Class B fires.

**Retroactivity.** The provisions of this document are considered necessary to provide a reasonable level of protection from loss of life and property from fire. They reflect situations and the state of the art at the time the standard was issued.

**Equivalency.** Nothing in this standard is intended to prevent the use of new methods or devices, provided sufficient technical data are submitted to the authority having jurisdiction to demonstrate that the new method or devices are equivalent in quality, effectiveness, durability, and safety to those prescribed by this standard.

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*M. Uzun*

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# 3.RELATION TO OTHER STANDARDS

**ASTM Publications.** American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM D 97, *Standard Test Method for Pour Point of Petroleum Products*, 2004.

ASTM D 1331, *Standard Test Methods for Surface and Interfacial Tension of Solutions of Surface-Active Agents*, 2001.

ASTM G 1, *Standard Practice for Preparing, Cleaning, and Evaluating Corrosion Test Specimens*, 2003.

ASTM G 31, *Standard Recommended Practice for Laboratory Immersion Corrosion Testing of Metals*, 1999.

**ISO Publication.** International Organization for Standardization, 1 rue de Varembe, Case postale 56, CH-1211 Geneva 20, Switzerland.

ISO/IEC 17025, *General Requirements for the Competence of Testing and Calibration Laboratories*, 1999.

**UL Publications.** Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

UL 162, *Standard for Foam Equipment and Liquid Concentrates*, 1994.

UL 711, *Rating and Testing of Fire Extinguishers*, 2002.

#### **References for Extracts in Mandatory Sections.**

NFPA 10, *Standard for Portable Fire Extinguishers*, 2002 edition.

NFPA 306, *Standard for the Control of Gas Hazards on Vessels*, 2003 edition.

## 4.TERMS and DEFINITIONS

**Class A Fire.** A fire in ordinary combustible materials, such as wood, cloth, paper, rubber, and many plastics.

**Class B Fire.** A fire in flammable liquids, combustible liquids, petroleum greases, tars, oils, oil-based paints, solvents, lacquers, alcohols, and flammable gases.

**Class C Fires.** Fires that involve energized electrical equipment.

**Class D Fires.** Fires in combustible metals, such as magnesium, titanium, zirconium, sodium, lithium, and potassium.

**Combustible Liquid.** A liquid that has a closed-cup flash point at or above 37.8°C (100°F).

**Flammable Liquid.** A liquid that has a closed-cup flash point that is below 37.8°C (100°F) and a maximum vapor pressure of 2068 mm Hg (40 psia) at 37.8°C (100°F).

**Wetting Agent.** A concentrate which, when added to water reduces the surface tension and increases its ability to penetrate and spread.

**Wetting Agent Solution.** Water to which a wetting agent has been added.

## 5.TESTS

**Pour Point.** The pour point is determined in accordance with ASTM D 97. The pour point of the wetting agent is below -20 C.

**Miscibility.** The wetting agent has been tested according to the following procedures at the manufacturer's minimum and maximum use concentrations:

1- Water Temperature : 5C, Wetting Agent Temperature 21C

- (1) Five hundred (500) mL (16.9 oz) of deionized or distilled water at the test temperature was added to a 1 L(0.26 g) glass beaker.
- (2) A stirrer was inserted into the water to the depth shown in the figure.
- (3) The speed of the stirrer motor was adjusted to 60 rpm.
- (4) The required amount of wetting agent was added within 2 seconds.
- (5) After 10 revolutions of the stirrer, rotation was stopped and the liquid mixture has been observed.
- (6) The foam solution was not visually homogeneous, it was stirred for an additional 10 revolutions and afterwards the foam solution was visually homogenous.
- (7) The solution is recorded as miscible.

2- Water Temperature : 5C, Wetting Agent Temperature 5C

- (1) Five hundred (500) mL (16.9 oz) of deionized or distilled water at the test temperature was added to a 1 L(0.26 g) glass beaker.
- (2) A stirrer was inserted into the water to the depth shown in the figure.
- (3) The speed of the stirrer motor was adjusted to 60 rpm.
- (4) The required amount of wetting agent was added within 2 seconds.
- (5) After 10 revolutions of the stirrer, rotation was stopped and the liquid mixture has been observed.
- (6) The foam solution was not visually homogeneous, it was stirred for an additional 10 revolutions and afterwards the foam solution was visually homogenous.
- (7) The solution is recorded as miscible.

3- Water Temperature : 21C, Wetting Agent Temperature 21C

- (1) Five hundred (500) mL (16.9 oz) of deionized or distilled water at the test temperature was added to a 1 L(0.26 g) glass beaker.
- (2) A stirrer was inserted into the water to the depth shown in the figure.
- (3) The speed of the stirrer motor was adjusted to 60 rpm.
- (4) The required amount of wetting agent was added within 2 seconds.
- (5) After 10 revolutions of the stirrer, rotation was stopped and the liquid mixture has been observed.
- (6) The foam solution was not visually homogeneous, it was stirred for an additional 10 revolutions and afterwards the foam solution was visually homogenous.
- (7) The solution is recorded as miscible.

4-Water Temperature : 21C, Wetting Agent Temperature 5 C

- (1) Five hundred (500) mL (16.9 oz) of deionized or distilled water at the test temperature was added to a 1 L(0.26 g) glass beaker.
- (2) A stirrer was inserted into the water to the depth shown in the figure.
- (3) The speed of the stirrer motor was adjusted to 60 rpm.
- (4) The required amount of wetting agent was added within 2 seconds.
- (5) After 10 revolutions of the stirrer, rotation was stopped and the liquid mixture has been observed.
- (6) The foam solution was not visually homogeneous, it was stirred for an additional 10 revolutions and afterwards the foam solution was visually homogenous.

Conclusion: The solution is recorded as miscible.

**Separation.** The separation test was conducted in a sealable, 100 cc transparent container. The test was conducted for 30 days. No visible separation, stratification, or precipitation has occurred during the course of the test.

Conclusion: Wetting agent does not separate at temperatures of 0°C and 48.9°C (32°F and 120°F).

**Impact of Low Temperature on Surface Tension.** Surface tension of wetting agent solution prepared from wetting agents stored at -18°C (0°F) does not vary more than 5 dynes/cm from the initial measurement.

### Viscosity.

The viscosity of the wetting agent was measured at the temperatures of 2°C (35°F), 21°C (70°F), and 49°C (120°F) according to the following:

- (1) A Brookfield viscometer, model LVT or LVF, or the equivalent, set at 60 rpm with the appropriate spindle was used to measure the viscosity.
- (2) A straight-sided glass beaker that contains approximately 800 mL (27 oz) of the test sample was positioned under the viscometer.
- (3) The spindle was immersed in the concentrate to the indicated depth.
- (4) The viscometer then was be turned on, and the spindle was allowed to rotate for 1 minute prior to taking the measurement.
- (5) Triplicate measurements was made, stirring gently between each measurement, and the viscosity of the sample was calculated in centipoise, using the applicable.

The results of viscosity testing is 1.25 . 10E6 (mE2/s) at 20 deg C.



**Toxicity.** Under the guidance of the given test results (EXPERTISE no: 295/98), it is concluded that the wetting agent comply with the following EPA OPPTS tests or their equivalent:

- (1) 870.1100 Acute Oral Toxicity
- (2) 870.1200 Acute Dermal Toxicity
- (3) 870.2400 Acute Eye Irritation
- (4) 870.2500 Acute Dermal Irritation

**Corrosion.** The results of the testing is included in the manufacturer's technical data sheet. (pH:8,5)

### Class A Fire Extinguishment Tests.

**Wood Crib Test.** Wetting agent solutions at the concentrations specified by the manufacturer was evaluated to, and comply with, the requirements of UL711 for Class A fires utilizing a 3A wood crib. ( Project No. 06CA56344)

**Deep-Seated Fire Test.** The tests were conducted using a cylindrical basket of perforated sheet steel, 114 mm (4 1/2 in.) in diameter and 178 mm (7 in.) high, and ginned cotton weighing 100 g (3.5 oz) was used and the test was conducted as follows:

- (1) 50 g (1.75 oz) of cotton was stuffed into the bottom half of the basket.
- (2) The steel rod 35 mm (1 3/8 in.) in diameter and 33 mm (1 5/16 in.) long was heated to 593°C (1100°F).
- (3) The rod was placed on the cotton in the basket.
- (4) 50 g (1.75 oz) of cotton was inserted into the basket on top of the rod.
- (5) 250 cc of test liquid (water or wetting agent solution) was poured onto the cotton and catch the runoff in a pan placed below the basket.
- (6) The volume of runoff has been recorded, the results are as given below:

AGENT	Cotton QTY.(g)	Poured Liquid (ml)	Runoff Liquid (ml)	Fire presence after 5 min
Water	50 + 50	250	50	Smouldering
Water	50 + 50	250	25	Smouldering
Water	50 + 50	250	40	Smouldering
Bonpet liquid	50 + 50	250	Few drops	Extinguished Without
Bonpet liquid	50 + 50	250	Few drops	Extinguished Without
Bonpet liquid	50 + 50	250	Few drops	Extinguished Without

Conclusion: Wetting agent solutions do extinguish deep-seated cotton fires and exhibit less runoff than water.



**Wood Fiber Board Penetration.** Penetration tests has been conducted as follows:

- (1)The fiber insulation board squares measuring 305 mm × 305 mm × 13 mm (12 in. × 12 in. × 1/2 in.) have been placed on a wire grid.
- (2)Each insulating board sample has been exposed to an alcohol flame from a burning pan that is placed immediately below the sample board.
- (3)The board has been exposed to flame for 13/4 minutes (105 seconds).
- (4)The fuel pan has been removed and a clean, dry pan has been placed under the board to collect the water or agent runoff.
- (5)250 mL (8.5 oz) of test liquid (water or wetting agent solution) has been sprayed on the upper surface of the insulation board using a small sprinkler bottle.
- (6)The pans have been placed underneath the board to catch any runoff that occurred. The volume of runoff has been measured and recorded.
- (7)The boards have been dried and weighed and the weight loss was calculated. The results are as given below:

AGENT	Weight of the boards (g) - before	Poured Liquid	Runoff Liquid (ml)	Weight of the boards (g) - after
Water	830	250	60	760
Water	821	250	56	755
Water	828	250	50	760
Bonpet liquid	817	250	35	785
Bonpet liquid	811	250	25	782
Bonpet liquid	827	250	30	788

Conclusion: Wetting agent solutions do extinguish wood fiber board fires and exhibit less runoff and weight loss than water.

**Class B Fire Extinguishment Tests.** Tests for Class B fires have been conducted as follows:

- (1)A 4.65 m2 (50 ft2) 20 B pan fitted as described in UL 711 with a backboard that is the width of the pan and 0.9 m (3 ft) high has been used.
  - (2)A 51 mm (2 in.) layer of heptane fuel has been floated on a 102 mm (4 in.) depth of water. The fuel in the pan was ignited and allowed to free burn for 60 seconds.
  - (3)A 37.9 L/min (10 gpm) nozzle has been used to apply the wetting agent solution to the fire using the following method: The nozzle has been fixed in position at an angle above the horizontal in order to direct the discharge across the pan on to the backboard for the entire duration of the test.
- The result has been achieved in two consecutive tests. The fire was extinguished within 2 minutes of the start of application of the wetting agent solution.

Conclusion: Wetting agent solutions at the concentrations specified by the manufacturer were evaluated to and they comply with the requirements of UL 711 for Class B fires.



**Reaction.** The BONPET fire extinguishing device is designed for extinguishing fires as an autonomous system replacing portable fire extinguishers or as a complementing means to be for fire fighting in close rooms. The BONPET device is an air-tight glass flask made of the safety glass and filled with the special BONPET liquid.

At fire when the temperature builds up a chemical reaction starts in the BONPET liquid flask. As a result of the reaction the flask pressure grows. At the liquid temperature of 90°C the flask breaks down and its contents are sprayed over the fire site. In this case a part of the liquid converts into a gaseous phase. The fire quenching liquid affects the burning zone in two ways: by the cooling effect and oxygen expulsion from the fire volume. A thin film-type liquid layer is formed on the quenched surface preventing further inflammation.

**BONPET** liquid solution contain agents, which become an active after inflammation, forms gases expelling a greater part of oxygen from the burning surface and cooling the surface, and practically instantaneously quenche the fire .

Urea, ammonium chloride, soda ash, sodium silicate, ammonium sulphate, alunite.

When ignition and the temperature growing up, next chemical reactions make a start: Carbon dioxide and ammonia (cooling effect and deoxygenation) form under Urea with water decomposition.



$\text{NH}_3 + \text{O}_2 \Rightarrow \text{NO}_x + \text{H}_2\text{O}$  — excreted ammonia compound with oxygen, and it could not squib , because the concentration more than SME (16 vol %)

Ammonia (cooling effect ) and hydrochloric acid also form under ammonium chloride heating.



Soda ash react with hydrochloric acid and form the salt, water and Carbon dioxide (deoxygenation).



Soda ash react with sulphuric acid and go over to salt cake and carbonic acid. Carbonic acid fission to water and carbon dioxide, and reduce to cooling effect . Consonantly with salt cake and water it make an air outthrust from the burning surface.



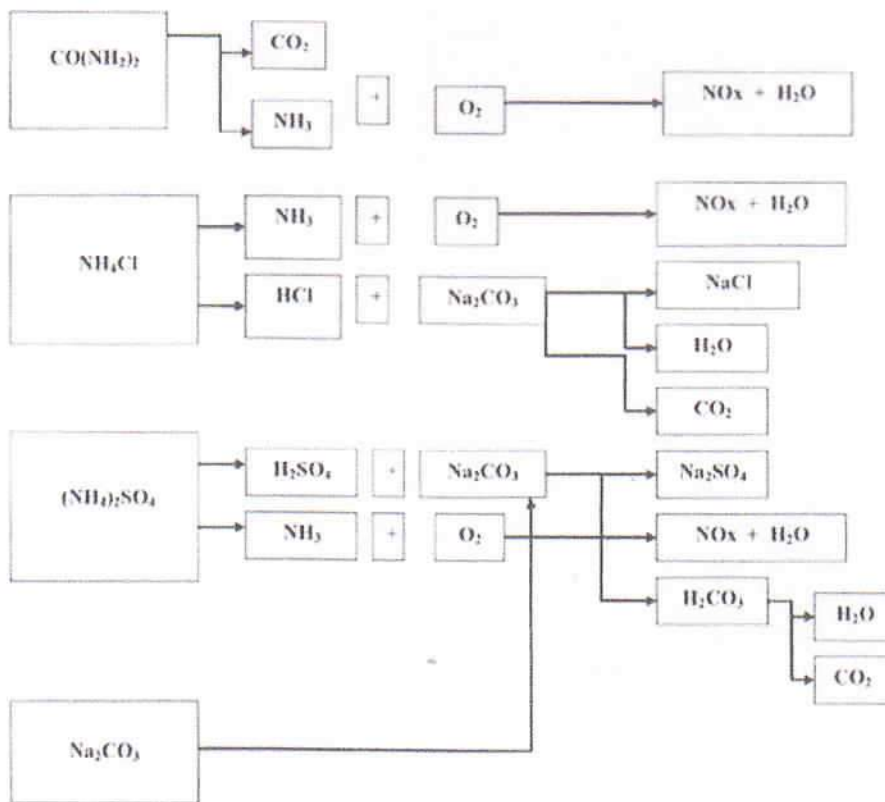
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From above-listed we can see, as a result of chemical reaction a lot of gas and harsh substances was released during the fire. The fire quenches practically instantaneously due to cooling effect from water evaporation and released air outthrust gases. When salt cake reacting with alunite, then anhydrous aluminium sulphate forms. It has an excellent nebulise characteristics. The aluminium sulphate formed due to reaction cover on the quenched surface with a microfilm which prevents further inflammation.



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## 6. PICTURES DURING INSPECTION AND TESTS



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**PGM Inspected following BONPET Fire Protection Fixed Systems in SLOVENIA:**

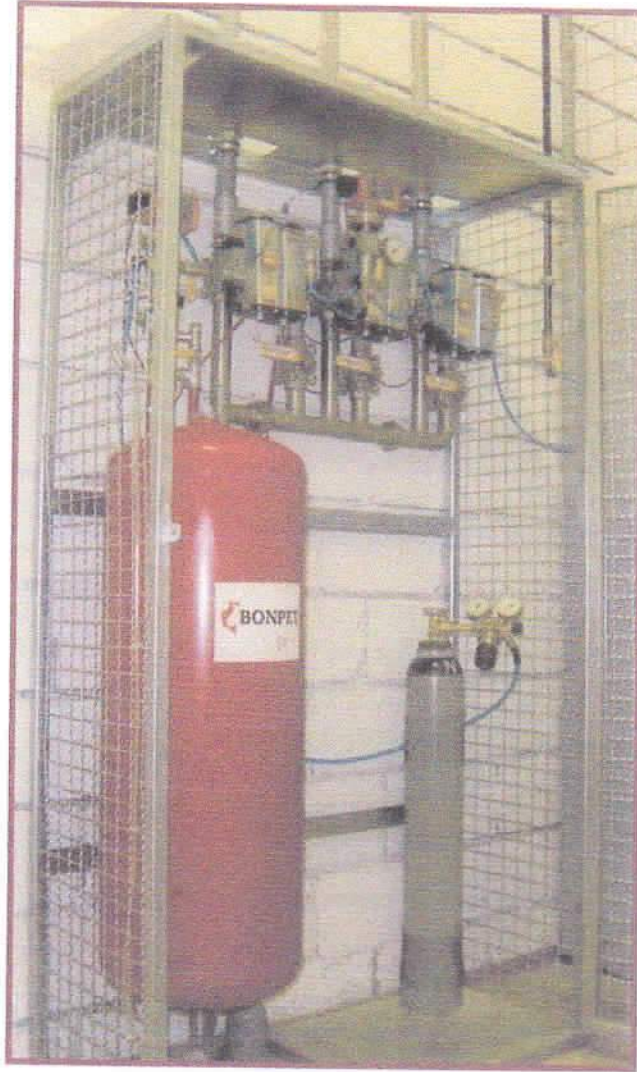
- 1- OMV Slovenia Petrol Station
- 2- ARCONT, Gornja Radgona, IVECO Paintshop
- 3- DARS d.d. (National motorway companies) Diesel Generators and Transformers Stations
- 4- KEMIS VRHINKA - storing the dangerous waste, such as oil and other dangerous
- 5- SAVSKE ELEKTRARNE Hydro Power Plant Transformer Station

**Following Products tested in BONPET Facility in Garbsko 11 a 1420 Trbovlje-Slovenia**

- 1- AUTOMATIC FIRE EXTINGUISHER (BONPET AMPOULE)
- 2- CLASSIC TUBE FIRE EXTINGUISHER (PORTABLE) BONPET 2 LITRES
- 3- FIXED FIRE EXTINGUISHING SYSTEMS



## STATIONARY FIRE EXTINGUISHING DEVICE BONPET



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### BONPET CLASSIC TUBE FIRE EXTINGUISHER



### BONPET AMPOULE



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Mehmet Ali Ergin



**Pictures from Class A Fire Extinguishment Tests  
Wood Crib Test- Deep-Seated Fire Test- Wood Fiber Board Penetration**



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**Pictures from Class A Fire Extinguishment Tests  
Wood Crib Test- Deep-Seated Fire Test- Wood Fiber Board Penetration**



### Pictures from Class B Fire Extinguishment Tests



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### Class A Fire Test (Bonpet Ampoule)



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**BONPET FIX SYSTEM DEMO TRANSFORMER OIL FIRE TEST**



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### Pictures from OMV Slovenia Petrol Station



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**Pictures from ARCONT, Gornja Radgona, IVECO Paintshop**

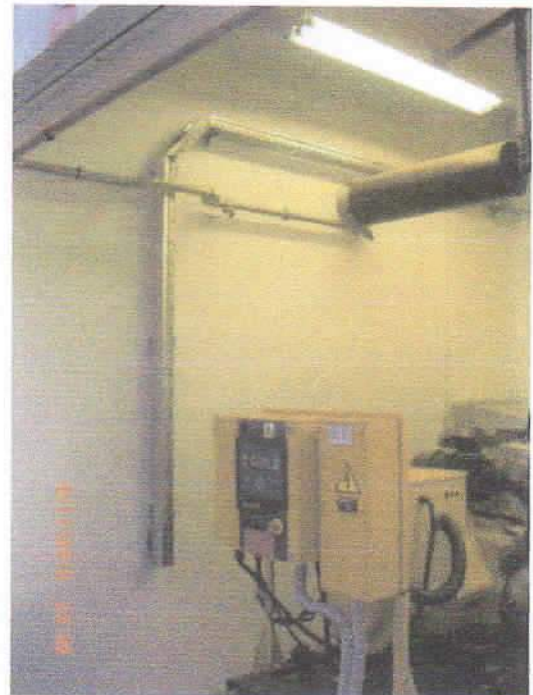


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**Pictures from DARS d.d. (National motorway companies)  
 Diesel Generators and Transformers Stations**



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**Pictures from KEMIS VRHINKA - storing the dangerous waste, such as oil  
and other dangerous**



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### Pictures from SAVSKE ELEKTRARNE Hydro Power Plant Transformer Station



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*Mehmet Ali Ufuk*  
*M. Ufuk*

## 7.PACKAGING and LABELING

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**Packaging Regulations.** Under the guidance of the provided documents attached, it is concluded that the packaging of water additive concentrates do conform with regulations governing ground and air transport of materials.

**Labeling.** The manufacturer has provided the following information on the label permanently attached to the concentrate container:


- (1) Manufacturer name and address
- (2) Product name, lot number, and date of manufacture
- (3) Manufacturer's listed concentrations for each listed application
- (4) Recommended minimum and maximum storage temperatures
- (5) Suitability for premixing
- (6) Emergency and first aid instructions
- (7) Volume of wetting agent in container
- (8) Listing agency mark

**Container Test.** Containers do comply with the accelerated storage test in UL 162 Section 22 using the wetting agent.

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Obrtniška 30, 1420 Trbovlje, SLOVENJA  
 Tel.: +386 356 14 720  
 www.bonpet.si

## BONPET FIRE EXTINGUISHING LIQUID

LOT NUMBER:.....  
 DATE OF MANUFACTURE:.....

**APPLICATIONS CONCENTRATION:**  
 AMPULE BONPET 100%, FIX SYSTEM 100%, BONPET EXTINGUISHER 2 LITRES (or others)100%  
 STORAGE TEMPERATURE RANGE FROM 0°C TO 40°C

**PREMIXING WITH WATER RATIOS:**  
 A TYPE FIRE FROM 6% (FIRES IN THE NATURE), A TYPE FIRE IN THE OBJECTS, BUILDINGS 100%  
 B FIRE TYPE for liquids with flash point above 150 C minimum 25%, OTHER FLAMMABLE LIQUIS 100%

**EMERGENCY AND FIRST AID INSTRUCTIONS:**  
 IN CASE OF CONTACT WITH THE SKIN WASH OUT WITH THE CLEAN WATER  
 IN CASE OF THE CONTACT WITH THE EYES WASH OUT WITH CLEAN WATER  
 IN CASE OF THE CONTACT WITH THE MUCOSA WASH OUT WITH CLEAN WATER.  
 IRRITATION NOT EXPECTED, IF ANY IRRITATION OCCURED PLEASE CONSULT THE DOCTOR  
 NOTE: NOT FOR DRINKING!

VOLUME

20L	25L	100L	200L	1000L

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# 8. TECHNICAL DATA SHEET

## (Customer declaration)

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Tel.: +386 356 14 720, Fax.: +386 356 14 722  
E-mail: bonpet@siol.net, www.bonpet.si

## TECHNICAL DATA SHEET

### SECTION 1: RECOGNITION ELEMENTS OF THE CHEMICAL SOLUTION AND OF THE MANUFACTURER

The manufacturer of the chemical solution and of the automatic fire extinguisher: BONPET. The chemical solution (extinguishing substance) BONPET is not hazardous for the environment

### SECTION 2: INFORMATION ON COMPOSITION

The chemical solution in the ampoule BONPET is neutral, soluble in water and harmless to the environment.

### SECTION 3: INFORMATION ON HAZARDS

The fire extinguishing liquid BONPET is harmless to human body. If the fire extinguishing liquid BONPET comes in contact with human skin it does not cause injuries.

### SECTION 4: EMERGENCY INFORMATION

Should the fire extinguishing liquid BONPET come into contact with human skin or eyes it must be washed out with clean water. The fire extinguishing liquid BONPET is harmless for breathing.

### SECTION 5: FIRE PROTECTION INFORMATION

The fire extinguishing liquid BONPET is not inflammable and does not cause fire. The instruction to use are enclosed to each BONPET ampoule.

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**BONPET SYSTEMS, d.o.o.**  
proizvodnja, trgovina, požarni inženiring,  
1420 Trbovlje, Slovenija, Obrtniška 30  
Tel.: +386 356 14 720, Fax.: +386 356 14 722  
E-mail: bonpet@siol.net, www.bonpet.si

## SECTION 6: INFORMATION FOR A CASE OF ACCIDENTAL SPILLING

The fire extinguishing liquid BONPET is harmless to the environment. It is not hazardous if spilt near a fire since it is not inflammable.

## SECTION 7: HANDLING AND STORING

The fire extinguishing liquid BONPET is stored in plastic containers and the storage does not require any special ventilation equipment or warehouses.

## SECTION 8: CONTROL OF EXPOSURE / PERSONAL PROTECTION

There is no need for additional safety precautions or protection clothing for personnel and for the users because the fire extinguishing liquid BONPET is harmless even in case of prolonged exposure.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

The physical and chemical properties are:

Appearance:	lightly coloured liquid
Smell:	soft ammonia smell
pH:	8.5
Density:	1.1 kg/l
Inflammability:	not inflammable
Solubility:	soluble in water

## SECTION 10: STABILITY AND REACTIVITY

In the air the chemical solution will be decomposed to CO<sub>2</sub> and H<sub>2</sub>O. The process of decomposition is faster with higher temperatures.

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M. Uğur

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ID št. za DDV: SI50929062, Matična št.: 1695444, Transakcijski račun



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1420 Trbovlje, Slovenija, Obrtniška 30  
Tel.:+386 356 14 720, Fax.:+386 356 14 722  
E-mail: bonpet@siol.net, www.bonpet.si

## SECTION 11: INFORMATION REGARDING THE TOXICITY

The liquid is not toxic and is biodegradable.

## SECTION 12: INFORMATION REGARDING THE IMPACT ON ENVIRONMENT

The fire extinguishing liquid BONPET is environmentally friendly to the aquatic environment and to animals and plants.

## SECTION 13: INFORMATION ON DESTRUCTIVITY

It causes no destruction and only needs washing out with water.

## SECTION 14: INFORMATION REGARDING THE TRANSPORTATION

The fire extinguishing liquid BONPET may be transported in plastic containers with regular means of transportation. There is no need for special marking signalling perils.

## SECTION 15: WARRANTY FOR THE FIRE EXTINGUISHING LIQUID BONPET

If not exposed to the air and kept in a sealed ampoule 10 (ten) years or in plastic container 2 (two) years.

## SECTION 16: INFORMATION ON REGULATIONS

Each fire extinguishing ampoule carries a label with a serial number.

FR.10.05.21 (rev.0)

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1420 Trbovlje, Slovenija, Obrtniška 30  
Tel.: +386 356 14 720, Fax.: +386 356 14 722  
E-mail: bonpet@siol.net, www.bonpet.si

**SECTION 17: OTHER INFORMATION**

None.

**SECTION 18: SPECIFICATION OF THE AMPOULE AND OF THE LIQUID**

- Ampoule: low expansion glass, heat resistant
- Dimensions: 280 mm x  $\phi$  80 mm
- The edges present no hazard.

BONPET SYSTEMS d.o.o.

Manager: Matej Škerbic



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# 9.ATTACHMENTS (REVIEWED DOCUMENTS)

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mehtmet Ali ceylan  
M. Ceylan



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**YANGIN GÜVENLİĞİ BELGELENDİRME (SERTİFİKALAMA) SİSTEMİ**

**YANGIN GÜVENLİĞİ SERTİFİKASI**

No: ССРБ.СІ.ОП014.Н.01214 (SSPB. SI.OP014.H.01214)

Yangın Güvenliği Belgelendirme Sistemi  
Sicili'nde tescillidir: **14 Mayıs 2008**

Geçerlilik süresi: **06 Mayıs 2011.**

İşbu sertifika,

usulüne uygun şekilde tanımlanan aşağıdaki numune:

**Fabrika standardı 1695444 nolu "BONPET" Yangın Söndürme Tertibatı 'nın**

(ürün)

OKP kodu

**3813000000**

TN VED (G.T.P.İ.) kodu

**A,B,C,E sınıf yangın söndürülmesine yönelik taleplere  
(ihtiyari belgelendirme-sertifikaştırma işleminde)**

(normlar ve standartlar)

İşbu sertifika seri imalat ürünleri için geçerlidir.

(seri imalat, mal partisi, tek adet ürün)

Sertifikayı alan şirket:

**"G S Trading" LTD.ŞTİ., İNN kodu 7722527751**

**111033, Moskova şehri, Samokatnaya sok., No:2A,  
blok 1, tel./faks: (495) 964-64-08**

(şirket veya kuruluşun bilgileri, adresi)

İmalatçı:

**"BONPET SYSTEMS" d.o.o., Slovenya**

**1420 Trbovlje, Obrtniska cesta 30,**

**tel. +386 3 56 34 460**

(şirket veya kuruluşun bilgileri, adresi)

(resmi mühür)

No: 0222096

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*Mehmet Ali YERLİ*  
*M. YERLİ*

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*TRAD.  
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Translation

## REPORT

No.: P 653/99-530-1

**ABOUT RESEARCH**  
of fire extinction efficiency

**Automatic fire extinguishing system BONPET**

---

Ordered by: **BONPET d.o.o., Ravne 100, 8281 SENOVO**

---

---

Order/contract: **No. 3/99 from 11.05.1999**

---

In Charge of Project:  
Marijan Kavčič

Chief of Laboratory:  
Milan Hajdukovič, univ.dipl.ing.

Director  
Prof.dr. Miha Tomažević, univ.dipl.ing.

Authorization: Accreditation document No. F-028/11, domain for certificate issue No. 950-1/96-50

Other: BUREAU VERITAS (Certificate of Recognition No. SMR.1183HK/2900/1 AD)  
CROATIAN REGISTER OF SHIPPING (Certificate for Approval of Testing Institution No. 01000979/010740)  
RUSSIAN MARITIME REGISTER OF SHIPPING (Certificate of Accreditation of Testing Laboratory No.98.001.275)

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Mehmet Ali Uğur

M. Uğur

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1. **PRODUCT:** Automatic Fire Extinguishing Expedient BONPET
2. **SUPPLIER:** BONPET d.o.o, Ravne 100, 8281 SENOVO, Slovenia
3. **PRODUCER:** Kabo Kogyo Co. Ltd, TAD Corporation, Japan
4. **SAMPLING:** Testing pieces were supplied and assembled by orderer's representative

5. **DESCRIPTION OF EXTINGUISHNIG EXPEDIENT BONPET:**

BONPET extinguishing liquid is in red coloured glass ampoules dimensions  $\phi 60 \times 280$  mm. The liquid is transparent pink coloured. By temperature increase of the liquid ( $85-90^{\circ}\text{C}$ ) increases pressure in the ampoule that causes a burst of ampoule and liquid sprays into the room. Ampoules are fixed with special tin-iron holders that are placed in the room by producer's instructions. In general on  $8 \text{ m}^3$  or approximately  $4 \text{ m}^2$  of space one BONPET ampoule should be placed.

6. **CONDITIONING OF SAMPLES:**

Conditioning is not required.

Date of testing: 31.5.1999, environment temperature:  $21^{\circ}\text{C}$ , relative humidity: 62%

7. **TESTING PROCEDURE:**

While there is no standard testing prescribed for testing efficiency of extinguishing expedients for fire extinguishing in closed spaces we made the test in the room built in accordance with standard SIST ISO 9705. This is a room 2,4m width, 3,6m length and 2,4m height made of gas-concrete blocks. In one wall there is a opening 0,8m x 2m.

With a test we should find out how BONPET extinguishes a fire of liquids in a closed room.

Two tests were made:

1. Test fire extinguishing with two ampoules of BONPET
2. Test fire extinguishing with one ampoule of BONPET

7.1 **FIRE BURDEN:**

By both of the tests a pot of diameter 92 cm ( $0,72\text{m}^2$ ), filled with 17l of water and 7l of heptane was placed on the back side of the testing room.

7.2 **FIRE EXTINGUISHING EXPEDIENT:**

By he first test two ampoules of BONPET were fixed under the ceiling side by side, by the second test one ampoule of BONPET was placed under der ceiling on the same place.

7.3 **MEASUREMENTS:**

Temperature of the air is measured as shown in appendices No.1 and No.3. Measuring place No.8 is beside ampoule(s), measuring place No 7 is 30cm under the ceiling, No.5 is 83cm under the ceiling, No.3 is 113cm under the ceiling and No.1 is 173cm under the ceiling.

7.4 **VENTILATION**

Testing room is closed under test. A 6cm width rift above the door is left (air hole  $0,06\text{m} \times 0,12\text{m}^2$ ) Outgoing smoke is scooped and forced-led away.

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## 8. TEST OBSERVATIONS.

### 1. test (two BONPET ampoules):

Time (min:s)	Observation
0:0	Heptane ignition
0:10	Door closing
	Quick increasing of temperature in the test room caused by burning heptane. Th room is heavily filled with smoke.
2:45	Sound of crack (after room cooling we find out that both of ampoules cracked at the same time). Temperature close to ampoules was about 400°C. Immediate extinguishing of fire.
	Room cooling. No re-ignition.

After test end the height of heptane in the pot is about 8mm. A thin layer of foam is all over the surface of liquid. By the re-ignition of heptane with a burning piece of cotton-wool the whole surface burns instantly but only for about 2 seconds, then it continues on the place where cotton-wool is placed. Burning is non intensive and stops immediately after door closing. Heptane height is still 4mm.

The test is repeated with the same amount of fuel and the same air conditions (door closed) without extinguishing expedient. Total heptane burns out .

### 2. test (one BONPET ampoule):

Time (min:s)	Observation
0:0	Heptane ignition
0:10	Door closing
	Quick increasing of temperature in the test room caused by burning heptane. Th room is heavily filled with smoke.
0:48	Sound of crack . Temperature close to ampoule is about 800°C. Immediate extinguishing of fire.

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T.A. no.  
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Tel.: +386 356 14 720, Fax.: +386 356 14 722  
E-mail: bonpet@ski.net, www.bonpet.si

## STATEMENT

Company BONPET SYSTEMS d.o.o., Obrtniška cesta 30, 1420 Trbovlje, Slovenia as manufacturer of Automatic fire extinguish ampoule BONPET declares that activation of the ampoule causes no damage to the computer or electronic components. The damage which was caused as the result of the fire is excluded from our responsibility.

BONPET SYSTEMS d.o.o.

General manager:  
Matej ŠKERBIC



IN št. za DDV: SI50929062, Matična št.: 1695444, Transakcijski račun: 33000 - 50 92 90 622

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Proje İşleri ve İnşaat

BÜYÜK İNŞAAT / DEĞERLENDİRME

Mehmet Ali Uğur

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(logo) **EBETAM (MIRTEC)**

METALLURGICAL INDUSTRIAL RESEARCH & TECHNOLOGICAL DEVELOPMENT CENTRE S.A.

**SERTİFİKA**

**97/23/EC Direktifi Uyarınca Tip Uygunluğu (Modül C1)**

**Sertifika No: EX-C-273/PED/C1/01/09**

**Sertifikalandırma Kurumu Kimlik No : 0437**

**Düzenleme Tarihi: 30 Kasım 2009**

**Test Raporu No: QA-R-551/01/09**

**Değerlendirme Tarihi: 30/11/2009**

**İmalatçı Fabrikasının Adı ve Adresi:**

**"İFAISTOS" MPATZIOS A. & S. KOLL.ŞTI**

**Sirmali 20, Elevsina, P.K. 192 00**

Uygunluk Sertifikası, aşağıda belirtilen Tip Onay Sertifikasına No.'suna sahip 2 lt., BONPET Kimyasal Çözeltili Taşınabilir Yangın Söndürücünün üretimini kapsar:

**EX-C-273/PED/B/01/09**

**Sertifika Geçerlilik Tarihi:**

**: 29 Kasım 2010**

**BEYAN**

İmalatçı veya acente – önkoşulların incelenmesinden sonra -, inceleme kapsamında imal edilmiş olan basınçlı ekipmanı üzerinde kimlik numaramızı **CE** işaretinin yanında ve aşağıda gösterildiği şekilde kullanmaya yetkili kılınmıştır.

**CE 0437**

MIRTEC S.A. Adına

Değerlendirme Departmanı Adına

(imza)

(imza)

(mühür)

EBETAM A.E.

CERT-ped / EN 02 (4.1 / 3.6.09)

EX-C-273-PED-C1-01-09

Sayfa 1 / 1

TAKB  
02/11/2015

<b>Atina Ofisi:</b> 76, M.Mercouri, Ag.Dimitrios, GR 173 42 Atina <b>Tel:</b> +30 210 9961408, <b>Faks:</b> +30 210 9969850 <b>E-posta:</b> <a href="mailto:athens.office@ebetam.gr">athens.office@ebetam.gr</a>	<b>Merkez Ofis:</b> A'Industrial Area, GR – 385 00 Volos <b>Tel:</b> +30 242 1095340 /1/2, <b>Faks:</b> +30 242 1095364 <b>E-posta:</b> <a href="mailto:volos.office@ebetam.gr">volos.office@ebetam.gr</a> <b>Web sitesi:</b> <a href="http://www.ebetam.gr">http://www.ebetam.gr</a>	<b>Selanik Ofisi:</b> Industrial Area, GR – 570 22 Sindria <b>Tel:</b> +302310797 887, <b>Faks:</b> +302310 723117 <b>E-posta:</b> <a href="mailto:thess.office@ebetam.gr">thess.office@ebetam.gr</a>
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Mehmet Ali Uğur

**DOKÜMAN İNCELENDİ / REVIEWED**

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İşbu STDS Slovenya Standartlarına ve düzenleme koşullarına bağlı olup,  
diğer ülkelerdeki düzenleme koşullarına uymayabilir.

Üretici: BONPET SYSTEMS d.o.o., Trbovlje, SLOVENIA

Ürün: Bonpet Yangın Söndürücü Sıvısı, Bonpet ampul

## TEKNİK GÜVENLİK BİLGİLERİ

### BÖLÜM 1 : KİMYASAL SOLÜSYONUN VE ÜRETİCİNİN ELEMENTLERİNİ TANIMA

Üretici : Bonpet Systems d.o.o. Trbovlje, Slovenija

Kimyasal solüsyonun ve otomatik yangın söndürücünün üreticisi BONPET.

Kimyasal Solüsyon (söndürücü madde) BONPET çevreye zararlı değildir.

### BÖLÜM 2 : BİLEŞİM BİLGİSİ

BONPET ampulündeki kimyasal solüsyon nötrdür, suda çözünebilir ve çevreye zararlı değildir.

#### KİMYASAL KARAKTER

Asıl bileşenler	Yüzdesi	CAS No.
Amonyum sülfat H8-N2-O4-S	15 %	CAS 7783-20-2
Sodyum silisat H2-O3-Si.2Na	25 %	CAS 6834-92-0
Alunite karışımı	35 %	CAS 10043-67-1
EMPICOL-ESB-3	10 %	CAS 9004-82-4
SODYUM-FOSFAT-	10 %	CAS 7558-80-7
Diğer Maddeler (B,T, PS)	30 %	CAS 107-40-4, 108-30-5

### BÖLÜM 3 : TEHLİKE BİLGİSİ

BONPET yangın söndürücü sıvısı insan vücuduna zararlı değildir. Eğer BONPET yangın söndürücüsü sıvısı cilde temas ederse, herhangi bir zarar vermez.

300 °C üzerinde ısıya maruz kalırsa, N<sub>2</sub> & CO<sub>2</sub> dönüşür.

### BÖLÜM 4 : ACİL DURUM BİLGİSİ

GENEL BİLGİ : İnsanlara, hayvanlara, bitkilere ve çevreye zara vermez.

SOLUMA : Sıvı uçucu değildir (hafif amonyak kokusu)

ÇİLT TEMASI : Sıvı zararlı değildir. (Suyla yıkanabilir)

GÖZ TEMASI : Suyla yıkanabilir.

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BONPET yangın söndürücü sıvısının cilt ve göz teması durumunda temiz su ile yıkanmalıdır. BONPET yangın söndürücü sıvısı solumaya etki etmez.

#### **BÖLÜM 5 : YANGIN TEDBİRİ BİLGİSİ**

BONPET yangın söndürücü sıvısı hiçbir durumda parlayıcı değildir.  
BONPET yangın söndürücü sıvısı parlayıcı değildir ve yangına sebebiyet vermez.

Her BONPET ampulü kullanım kılavuzu içerir.

#### **BÖLÜM 6 : KAZARA DÖKME BİLGİSİ**

BONPET yangın söndürücü sıvısı çevreye zarar vermez.Parlayıcı olmadığı için ateşe yakın bir yere döküldüğünde herhangi bir zarar vermez.

İNSANLAR	Cilde teması halinde bol su ile yıkayınız
ÇEVRE	Cilde teması halinde bol su ile yıkayınız
TEMİZLEME	Cilde teması halinde bol su ile yıkayınız

#### **BÖLÜM 7 : İŞLEM VE DEPOLAMA**

BONPET yangın söndürücü sıvısı ve ampulü iyi kapanmış haznelerde muhafaza edilmelidir. Depolama işlemi özel bir havalandırma sistemi ya da depo gerektirmez.

DEPOLAMA : Depolarda 60°C'den yüksek ısıya maruz kalmamalıdır.

PAKETLEME: Plastik, metal ya da cam hazneler su geçirmeyecek şekilde kapatılmalıdır.

#### **BÖLÜM 8 : MARUZ KALMAYI KONTROL ETME / KİŞİSEL KORUNMA**

Kullanıcılar ya da personel için, ek önlem ya da güvenlik sağlayacak giysilere gerek yoktur çünkü BONPET yangın söndürücü sıvısı uzun süren temas halinde dahi zararlı değildir.

Koruyucu donanım gerektirmez.

#### **BÖLÜM 9 : FİZİKSEL VE KİMYASAL ÖZELLİKLER**

Fiziksel ve kimyasal özellikler aşağıdaki gibidir:

Görünüm	: Hafif renkli sıvı
Koku	: Hafif amonyak kokusu
pH	: 8 - 8.5
Yoğunluk	: 1.1 kg/l
Parlama	: Parlamaz
Çözünürlük	: Su ile herhangi temasında çözünür

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TC MİLLÎ EĞİTİM BAKANLIĞI  
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Proje İnceleme ve Denetim

DÖKÜMAN İNCELEME DEĞERLENDİRME

mehmet Ali Uğur  
*(Handwritten signature)*

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Donma Noktası : - 20 °C  
Kaynama Noktası : 103 °C  
Parlama Noktası : YOK  
Patlama Seviyesi : YOK  
Alev Alma Noktası : YOK  
Termal Değişim : above 300 °C  
Termal Değişim : N<sub>2</sub>, CO<sub>2</sub>, H<sub>2</sub>O

#### **BÖLÜM 10 : DEĞİŞMEZLİK VE REAKTİVİTE**

Kimyasal solüsyon, havada CO<sub>2</sub> and H<sub>2</sub>O dönüşür. Dönüşme süresi yüksek ısılarda daha hızlıdır.

#### **BÖLÜM 11 : ZEHİRLEME BİLGİSİ**

Sıvı zehirli değildir ve biyolojik olarak çözünebilir.

Şiddetli Zehirlilik	Bilgi Yok
Bölgesel Etkiler	Bilinmiyor
Uzun Süre Maruz Kalma	Bilinmiyor

#### **BÖLÜM 12 : ÇEVRE ÜZERİNDEKİ ETKİ BİLGİSİ**

BONPET yangın söndürücü sıvısı suda yaşayan canlılara ve hayvanlara ve bitkilere zarar vermez.

#### **BÖLÜM 13 : ATIK EHEMMİYETLERİ**

Zarar vermez ve sadece bol suyla yıkanması gerekir.

Boş Kap – suyla yıkandıktan sonra başka amaçlarla kullanılabilir.  
Kullanılmayan Sıvı – kanalizasyona atılabilir.

#### **BÖLÜM 14 : TAŞIMA BİLGİSİ**

BONPET yangın söndürücü sıvısı genel taşıma kurallarıyla **cam ampullerde ve plastik kaplarda**. Özel imleç ya da tehlike etiketleri kullanmaya gerek yoktur.

#### **BÖLÜM 15 : DENETİM BİLGİLERİ**

Plastik kaplarda hava ile temas etmeden on yıl.

BONPET yangın söndürücüsü ampulünde on yıl.

#### **BÖLÜM 16 : DÜZENLEME BİLGİLERİ**

Her bir yangın söndürücü ampul seri numarası içeren bir etiket, kullanım kılavuzu ve garanti belgesi içerir.

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TARİH:  
0047/2015



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## BÖLÜM 17 : DİĞER BİLGİLER

Yok.

Daha fazla bilgi için, lütfen bölgesel dağıtıcınız ya da BONPET SYSTEMS d.o.o., Trbovlje, SLOVENIA üreticisiyle görüşünüz.

## BÖLÜM 18 : AMPUL CAMI VE SIVI ÖZELLİKLERİ

- Ampul : Az genişleyen cam, ısı geçirmez
- Hacim : cca 0.6 l
- Ebatları : 280 mm x  $\phi$  80 mm
- Ağzıları zararlı değildir.

BONPET SYSTEMS d.o.o.,

Müdür: Matej Škerbic

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Proje Geliştirme Mühendislik  
Proje Geliştirme Mühendislik

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Corporate Headquarters

**Underwriters' Laboratories of Canada®**

7 Underwriters Road Toronto, ON M1R 3B4 Canada www.ulc.ca tel:1 4167573611 fax:1 4167578915 An affiliate of Underwriters Laboratories Inc.

NC9283  
06CA56344

December 7, 2006

Mr. Tony Fernando  
Bonpet Canada U.S.A. Corporation  
5226 Micmac Crescent  
Mississauga, ON  
L5R 2C8

Subject: Use of Fire Extinguisher Test Facility -  
Bonpet Fire Extinguishing Demonstration

Dear Mr. Fernando:

This is regarding the fire extinguishing demonstrations Conducted at our facility on November 29, 2006.

Enclosed is the video recording of the Bonpet demonstrations conducted on November 29, 2006. The following is a description of these demonstrations and the results observed. As you are aware, the following does not indicate acceptance by Underwriters' Laboratories of Canada nor does it imply any Listing or certification by ULC. The observations are provided for information only and do not represent the opinion or judgement of ULC regarding the performance of the product.

A plywood enclosure, supplied by Bonpet, measuring 71-3/4 inches in width, 79 inches in length and 77-1/2 inches in height, with an opening in the front of 51-1/4 inches in width and 65-3/4 inches in height, was used in the demonstrations.

Demonstration 1

A one-liter Bonpet ampoule unit was mounted 58-1/4 inches from the floor in the center of the wall opposite the opening.

A piece of paper dipped in gasoline was ignited and placed at the Back of the enclosure under the Bonpet unit.

At 10, 20, 35 and 60 seconds after the ignition of the paper, approximately one cup of gasoline/diesel fuel mixture was thrown into the enclosure, which was ignited by the flame from the paper. At 65 seconds from ignition of the paper, the Bonpet unit activated. The flaming was extinguished on the walls and ceiling of the enclosure, with a residual flame left on the floor of the enclosure, which was manually extinguished.

TANA  
0047/2015

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RCM Mehmet Ali Uğur  
Proje Gözetim Mühendisi  
Project Inspection Engineering  
DOKÜMAN İNCELEME/REVIEW  
*[Signature]*



Page 2  
December 7, 2006  
Mr. Tony Fernando

Demonstration 2

A piece of paper dipped in gasoline was ignited and placed at the back of the enclosure opposite the enclosure opening. At 6, 17, and 30 seconds after the ignition of the paper, approximately one cup of gasoline/diesel fuel mixture was thrown into the enclosure, which was ignited by the flame from the paper. At 37 seconds from ignition of the paper, a one-liter Bonpet ampoule unit was thrown against the back wall of the enclosure. The flaming was extinguished on the walls and ceiling of the enclosure, with a residual flame left on the floor of the enclosure, which was manually extinguished.

Demonstration 3

A piece of paper dipped in gasoline was ignited and placed at the back of the enclosure opposite the enclosure opening. At 10, 20, and 31 seconds after the ignition of the paper, approximately one cup of gasoline/diesel fuel mixture was thrown into the enclosure, which was ignited by the flame from the paper. At 41, 50 and 60 seconds from ignition of the paper, approximately one cup of solution (6 parts water to one part Bonpet liquid agent) was manually thrown on the flames in the enclosure. All flaming was extinguished within the enclosure.

Demonstration 4

A one-liter Bonpet ampoule unit was mounted 58-1/4 inches from the floor in the center of the wall opposite the opening. A piece of paper dipped in heptane was ignited and placed at the back of the enclosure under the Bonpet unit.

At 8, 14, 20, 26 and 34 seconds after the ignition of the paper, approximately one cup of heptane was thrown into the enclosure, which was ignited by the flame from the paper. At 37 seconds from ignition of the paper, the Bonpet unit activated. The flaming was extinguished on the walls and ceiling of the enclosure, with a residual flame left on the floor of the enclosure, which was manually extinguished.

Demonstration 5

A 12 inch diameter, 2-1/2 inches deep, cast iron skillet was placed on the floor of the enclosure in front of the enclosure opening. 1/4 inch of cooking oil was poured into the skillet with a small amount of heptane to ignite the cooking oil. The heptane and cooking oil were ignited. At 12 seconds from ignition of the skillet fuel, a 1/2 liter manual spray unit containing the Bonpet liquid agent was used. After approximately 7 pulses of the unit, the fire was extinguished at 33 seconds after ignition.

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TAAD  
0047/2015

Prof. Bunny Gustavo Pereira  
Associação Federativa do Brasil  
Associação Brasileira de Engenharia

RGIM  
Prof. Gustavo Menezes  
Associação Brasileira de Engenharia

Mehmet Ali Uğur

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Page 3  
December 7, 2006  
Mr. Tony Fernando

This completes Project No. 06CA56344. If we may be of further assistance, please contact us.

Yours very truly,

Reviewed by:

George Unger, P.Eng. (Ext. 61277) Senior Project Engineer  
Fire Protection Division  
George.unger@ca.ul.com

Working for a safer world

Robert Sculthorp, P. Eng. Engineering Group Leader Fire  
Protection Division

George Unger, P.Eng. (Ext. 61277)  
P.Eng. Senior Project Engineer  
Leader Fire Protection Department 3000BTRT  
Department [George.Unger@ca.ul.com](mailto:George.Unger@ca.ul.com)

Robert Sculthorp,  
Engineering Group  
Fire Protection

TRAD  
0097/2015



mehmet Ali Uğur

*[Handwritten signature]*

DÜĞÜMAN İNCELENDİ / REVIEWED



# IMO SOLAS

Form HA-2



NIPPON HAKUYOHIN KENTEI KYOKAI

INSPECTION CERTIFICATE  
FOR  
ARTICLES FOR SHIP USE OF APPROVED TYPE

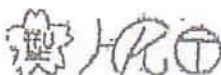
No. 94TK-E 2514

Date MAY 26, 1994

THIS IS TO CERTIFY that the following articles were tested and inspected by the Society's Surveyor in accordance with the Rules for Type Approval of Ships and Articles for Ship Use under the Ship Safety Law of Japan and were found to conform to the Approved Type.

Type Approval No. : 685  
Description and Type : AUTOMATIC DISPERSION TYPE LIQUID EXTINGUISHER (BONPET BDE)  
Quantity : 1,500 pieces  
Date of Manufacture : MAY, 1994  
Manufacturer's Serial Nos. : 4,001 ~ 5,500  
Manufacturer : KABO KOGYO COMPANY LIMITED, KATSUSHIKA WORKS  
3-26-19, Chanajaya, Katsushika-ku, Tokyo, Japan



Inspection Mark :



Remarks :

Also complying with the relevant provisions of SOLAS 1974 or the 1978 Protocol, as amended in 1981 and 1988.

Issued under the authority of the Government of Japan.

  
Surveyor Y. Imada   
NIPPON HAKUYOHIN KENTEI KYOKAI

TRAD  
0047/2015



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PGM  
Prof. Gustavo Adolfo Perrin  
Project Dispersion Engineering

mekmet Ali uyar  
DOKÜMAN İNCELENDİ / REVIEWED



MINISTERUL DE INTERNE  
CORPUL POMPIERILOR MILITARI  
INSPECTORATUL GENERAL

# AVIZ

Nr. 34187 din 17.10.2002

Potrivit prevederilor art. 17 lit. e din Legea nr. 121/1996 privind organizarea și funcționarea Corpului Pompierilor Militari și art. 8 alin. (1) din Normele generale de prevenire și stingere a incendiilor aprobate prin Ordinul ministrului de interne nr. 775/1998,

*Inspectoratul General al Corpului Pompierilor Militari*

AVIZEAZĂ TEHNIC

produsul DISPOZITIV AUTOMAT DE STINS INCENDII  
tip BONPET

producător KABO KOGYO Co. Ltd. - Tokyo

Prezentul aviz este însoțit de următoarele documente

1. Certificat de conformitate nr. C/150/1340 din 14.10.2002, emis de C.S.E.S.P.S.I

2. Fișă tehnică nr. C - FT/150/1340 din 14.10.2002, emisă de C.S.E.S.P.S.I

Orice modificare sau modernizare a produsului implică obținerea unui nou aviz

La cererea organelor abilitate de lege pentru îndrumarea și controlul activității de prevenire și stingere a incendiilor, este obligatorie prezentarea avizului

Deținătorul avizului poartă răspunderea pentru utilizarea în condiții legale a produsului avizat și calitatea acestuia

Nerespectarea condițiilor din documentația în baza căreia s-a eliberat avizul atrage suspendarea sau retragerea acestuia și răspunderea legală.

Valabil până la 17.10.2007.

COMANDANTUL CORPULUI  
POMPIERILOR MILITARI  
General de brigadă

Vladimir SECARĂ

ADJUNCT AL COMANDANTULUI

Colonel

ing. Aurelian NIȚĂ

TRAD  
0047/2015



Mehmet Altıugur



Proje Gözetim Mühendisliği  
Proje İnceleme İnşaatçılık

AKÜMAN İNCELENDİ

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## SERTİFİKA

2008/67/EK Direktifi ile Tadil Edilen Şekliyle 96/88/EC Direktifi Uyarınca

AT Tip İncelemesi (Modül B)

Ürün Öge Kimliği: Taşınabilir Yangın Söndürücü. Öge No.: A1/3.2

Sertifika No. : MED-EX-C-273/EN3/B/01/09  
Sertifikalandırma Kurumu Kimlik No : 0437  
Düzenleme Tarihi : 31 Temmuz 2009  
Test Raporu No. : MED-EX-R-273/EN3/01/09  
İmalatçı Fabrikasının Adı ve Adresi : "İFAİSTOS" MPATZIOS A. & S. KOLL.ŞTİ  
Sirmali 20, Elevsina, P.K. 192 00  
Ürün Tipi : 2 lt., BONPET Kimyasal Çözeltili Taşınabilir Yangın Söndürücü  
Çizim No. : KX11-502-F2 & 60-2-290-0092  
Düzenleme ve Standartlar : Direktif 2008/67/08 (Deniz Ekipmanı), Düzenleme II-2/10  
IMO Kararı MSC.98(73) FSS Kodu, IMO Kararı A.951(23)  
EN 3-7: 2004+A1:2007

### BEYAN

İşbu belge ile yukarıda belirtilen Tipin 2008/68/EC Direktifi ile Tadil Edilen Şekliyle 96/98/EC Direktifi şartlarına uygun olduğunu teyid ederiz. Tip ayrıca EN 1866 Standardında verilen tüm kriterleri de karşılamaktadır ve dolayısı ile Düzenleme II-2/10, IMO Kararı MSC.98(73) FSS Kodu ve IMO Kararı A.951(23) ile tadil edilen şekliyle SOLAS 74 uyarınca tüm kabul kriterlerini karşıladığı kabul edilmiştir. Sadece detayı bu raporda verilen malzemeler teste tâbi tutulmuştur. "Uygunluk İşareti" yukarıda belirtilen ekipmana yalnızca üretim – kontrol safhası 96/98/EC Direktifi Ek B'de öngörüldüğü şekilde eksiksiz olarak tamamlandığında konulabilir. Başvuru Sahibi, onaylanan taşınabilir basınçlı ekipman üzerinde yapılan tüm değişiklikleri Onaylanmış Kuruluşu bildirmek durumundadır.

Sertifika Geçerlilik Tarihi : 30 Temmuz 2019

MIRTEC S.A. Adına

(imza)

Değerlendirme Departmanı Adına

(imza)

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0047/2015



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Proje Gözetim Mühendisi  
Project Inspection Engineering

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(logo) EBETAM (MIRTEC)

TEKNİK EK

Sertifika No. : MED-EX-C-273/EN3/B/01/09

Ürün Teknik Özellikleri

Gövde İmalatçısı	: Jiaying Fire Fighting Equipment Co. Ltd
Çizim No	: KX11-502-F2
Muhafaza İmalatçısı	: CPF Industriale S.p.A.
Çizim No.	: 60-2-290-0092
Basınç Göstergesi İmalatçısı	: Zhejiang Winner Fire Fighting Equipment Co.
Çizim No.	: JXXGP02/01-16-OREV.1
Hortum İmalatçısı	: Ningbo Kaixuan Fire Control Co.
Çizim No.	: KX09-003-28D
Söndürme Aracısının İmalatçısı ve Tipi	: BONPET, Kimyasal Çözelti
Yangın Performansı	: 8 A, 113 B, 25 F
İzin Verilen Azami Basınç	: 18 BAR

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Project Inspection Engineering

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Mehmet Ali Uğur

*(Handwritten signature)*



СВИДЕТЕЛЬСТВО О ТИПОВОМ ОДОБРЕНИИ  
TYPE APPROVAL CERTIFICATE

Изготовитель  
Manufacturer **Bonpet Systems d.o.o.**

Адрес  
Address **Obrtniska 30, 1420 Trbovlje, Slovenia / Словения**

Изделие\*  
Product\*

**Самосрабатывающий жидкостной огнетушитель типа BONPET**  
**Automatic Spraying Liquid Fire Extinguisher type BONPET**

Код номенклатуры  
Code of nomenclature **06060900МК**

На основании освидетельствования и проведенных испытаний удостоверяется, что вышеупомянутое(ые) изделие(я) удовлетворяет(ют) требованиям Российского морского регистра судоходства.  
This is to certify that on the basis of the survey and tests carried out the above mentioned item(s) complies(ly) with the requirements of Russian Maritime Register of Shipping.

5.1.1 части VI Правил классификации и постройки морских судов и правила 10.6.3.2 главы II-2 МК СОЛАС-74 с поправками 2000г.  
5.1.1 of Part VI of RS Rules for the Classification and Construction of Sea-Going Ships and regulation 10.6.3.2 of Chapter II-2 of SOLAS-74 as amended 2000.

Настоящее Свидетельство о типовом одобрении действительно до **07.06.2012**  
This Type Approval Certificate is valid until

Настоящее Свидетельство о типовом одобрении теряет силу в случаях, установленных в Правилах технического наблюдения за постройкой судов и изготовлением материалов и изделий для судов.  
This Type Approval Certificate becomes invalid in cases stipulated in Rules for the Technical Supervision during Construction of Ships and Manufacture of Shipboard Materials and Products.

Дата выдачи  
Date of issue **07.06.2007**

№ **07.01574.009**

Российский морской регистр судоходства  
Russian Maritime Register of Shipping

М.П. (подпись)  
L.S. (signature)



**В.И. Еенко / V.I. Evenko**  
(фамилия, инициалы)  
(name)

\*Дополнительную информацию смотри на обороте.  
Additional information see overleaf.

TRAD.  
0047/2015



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PGM

Mehmet Ali Uyar

M. Uyar

Технические данные  
Technical data

Огнетушитель состоит из стеклянной ампулы, которая содержит жидкостной раствор. Ампула закреплена в специальных жестяных кронштейнах, которые должны монтироваться в защищаемом помещении в соответствии с инструкциями изготовителя.

The extinguisher consists of glass ampoule which contains the liquid solution. The ampoule is fixed in special tin holders which shall be mounted in protected space in accordance with manufacturer's instructions.

Основные технические характеристики / Main technical characteristics:

1 Срабатывание огнетушителя происходит при температуре жидкостного раствора / Increase of the extinguisher happens at temperature of the liquid solution, °C: 90 +/- 5.

2 Объем, защищаемый одной ампулой, куб. м / Volume protected by one ampoule, cub. m: 8.

3 Габаритные размеры, мм / Overall dimensions, mm:

- диаметр, не более / diameter, no more than: 80;

- длина, не более / length, no more than: 280.

4 Емкость ампулы, куб. см / Capacity of the ampoule, cub. cm: 600.

5 Масса ампулы, г / Mass of the ampoule, gram: 830.

6 Масса огнетушителя, не более, г / Mass of the extinguisher, no more than, grams: 1030.

7 Огнетушащее вещество: жидкость, которая при нагревании интенсивно переходит в газовую фазу.

Fire extinguishing medium is liquid which turns actively into gas at heating.

8 Максимальная высота установки огнетушителя составляет 3 м от пола при тушении всего защищаемого объема.

Maximum height of mounting of the fire extinguisher is 3 m from floor in case of extinguishing of full protected volume.

Техническая документация и дата ее одобрения Российским морским регистром судоходства  
Technical documentation and the date of its approval by Russian Maritime Register of Shipping

Стандарт предприятия 1695444 одобрен письмом 009-6.6.5/2-17952 от 07.06.07г.

Standard No. 1695444 has been approved by letter 009-6.5.5/2-17952 dated 07.06.07.

Образец изделия испытан под техническим наблюдением Российского морского регистра судоходства.  
Product's specimen has been tested under the technical supervision of Russian Maritime Register of Shipping.

Акт № 07.01573.009

от 07.06.07

Report No.

of

Область применения и ограничения  
Application and limitations

В качестве средства пожаротушения в машинных помещениях с безвахтенным обслуживанием, других чем машинные помещения категории А, вместо переносных огнетушителей. Техническая документация должно быть представлена Регистру для одобрения в каждом конкретном случае использования огнетушителей на борту судов.  
For fire extinction in unmanned machinery spaces other than machinery spaces of category A instead of portable fire extinguishers. The technical documentation shall be submitted to RS for approval for each particular case of application of the extinguishers on board ships.

Вид документа, выдаваемого на изделие  
Type of document issued for product

Изделия поставляются с копией настоящего Свидетельства о типовом одобрении.  
The product should be supplied with a copy of this Type Approval Certificate.

06/2004

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0047/2015



PGM  
Proje Gózetim İnşaatçılık  
Project Inspection Engineering

İNGÖRMAN İNCELENDİ / REVIEWED

Mehmet Ali Uğur

BUREAU VERITAS  
Certification



## Certification

Awarded to

**BONPET SYSTEMS, d.o.o.**  
OBRTNIŠKA CESTA 30, 1420 TRBOVLJE, SLOVENIJA

Bureau Veritas Certification certify that the Management System of the above organization has been audited and found to be in accordance with the requirements of the management system standards detailed below

### Standards

**ISO 9001:2000**

### Permitted Exclusion(s)

- 7.3 Design and development
- 7.5.2 Validation of processes for production and service provision
- 7.5.3 Customer property

### Scope of supply

PRODUCTION OF AUTOMATIC EXTINGUISHING AMPOULES  
BONPET IMPLEMENTATION OF BUILT-IN EXTINGUISHING  
DEVICES ON LIQUID EXTINGUISHING AGENT BONPET

Original Approval Date: 07/05/2009

Subject to the continued satisfactory operation of the organization's management System, this certificate is valid until: 15/11/2010

To check this certificate validity please call +386 1 47 57 670.

Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained consulting the organization.

Certificate number: SL12575Q

Date: 07/05/2009



Bureau Veritas Certification  
using the certification  
certificate number 999



CERTIFICATION AUTHORITY: Bureau Veritas Certification, s.r.o., Chludčova 1, 140 02 Praha 4, Czech Republic  
MANAGING OFFICE: Bureau Veritas Certification, Emburova cesta 40a, 1000 Ljubljana, Slovenia



PGM

Prof. Goran Klemenčič  
Priloga k certifikatu

DOKUMENT IZDELANI / DOKUMENT

Mehmet Ali Ağar

Page: A 20/32

# MSDS



ФЕДЕРАЛЬНАЯ СЛУЖБА ПО НАДЗОРУ  
В СФЕРЕ ЗАЩИТЫ ПРАВ ПОТРЕБИТЕЛЕЙ И БЛАГОПОЛУЧИЯ ЧЕЛОВЕКА  
Территориальное управление Федеральной службы в сфере защиты прав потребителей  
и благополучия человека по г. Москве

## САНИТАРНО-ЭПИДЕМИОЛОГИЧЕСКОЕ ЗАКЛЮЧЕНИЕ

№ 77.01.03.245.П.07853.03.5 от 29.03.2005

Настоящим санитарно-эпидемиологическим заключением удостоверяется, что продукция:  
**Устройство пожаротушения "Bonpet"**

изготовленная в соответствии  
с спецификацией предприятия - изготовителя

СООТВЕТСТВУЕТ (НЕ СООТВЕТСТВУЕТ) санитарным правилам  
(непущное зачеркнуть, указать полное наименование государственных санитарно-эпидемиологических  
правил и нормативов):

ГН 2.2.5.1313-03 "Предельно допустимые концентрации (ПДК) вредных  
веществ в воздухе рабочей зоны", ГН 2.1.6.1338-03 "Предельно допустимые  
концентрации (ПДК) загрязняющих веществ в атмосферном воздухе  
населенных мест"

Организация-изготовитель

Фирма "Bonpet Systems d.o.o."

Словения

Получатель санитарно-эпидемиологического заключения

ООО "Джи Эс Трейдинг", г.Москва, ул.Самокатная, дом 2а, стр.1

Основанием для признания продукции, соответствующей (не соответствующей)  
санитарным правилам, являются (перечислить рассмотренные протоколы исследований, наименование  
учреждения, проводившего исследования, другие рассмотренные документы):

санитарно-эпидемиологическое заключение № 77.01.03.248.П.06469.03.5 от  
17.03.05; особенности самосрабатывающего противопожарного средства "Bonpet";  
дилерский договор № 12 от  
04.02.2005г.

№0610182



*Mohamed Ali*  
*Prof. Bunny Gustave Persijn*  
FEDERAL SERVICE FOR CONSUMER PROTECTION AND HUMAN WELFARE  
MOSCOW

1  
0047/12/2015



## ÜRÜNÜN HİJYENİK ÖZELLİKLERİ

Maddeler, değerler (faktörler)

Hijyen Normu

(SanPiN, MDU, PDK v.s.)

Yangın esnasında kimyasal reaksiyonlar neticesinde,

yanan yüzeylerden havayı dışı eden büyük miktarda gaz ve kati madde ortaya çıkar ve alev derhal söndürülür.

PDK

(İzin Verilen Azami Miktarlar, mg/m3)

	İş Alanı Havası	Atmosfer Havası
Di-sodyum sülfat	10,0	0,3/0,1
Amonyak	20,0	0,2/0,04
Di-alüminyum sülfat	2/0,5	-

Kullanım alanı:

**A,B,C,E sınıf yangın söndürülmesi için**

Kullanma, saklama, nakletme şartları ve güvenlik önlemleri:

**Kullanım kılavuzundaki taleplere uygun şekilde**

Etiket üzerinde belirtilmesi gereken bilgiler:

**İmalatçı işletme (ülke), ürün tanımı, görevi, imalat tarihi, parti numarası, garantili depolama süresi**

Bilirkişi raporunun geçerli olduğu tarih: **28.03.2010**

**Baş Devlet Sıhhiye Hekimi**

(Baş Devlet Sıhhiye Hekimi Yardımcısı):

(resmi mühür)

TRAD-  
0047/2015



N.N.FİLATOV

(imza)

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PGM  
Proje Gözetim Mühendislik  
Project Inspection Engineering  
DOKÜMAN İNCELENDİ / REVIEWED

Mehmet Ali Uzun  
M. Uzun

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**THIS STDS ADHERES TO THE STANDARDS AND REGULATORY REQUIREMENTS OF SLOVENIA  
AND MAY NOT MEET REGULATORY REQUIREMENTS IN OTHER COUNTRIES.**

**Manufacturer: BONPET SYSTEMS d.o.o., Trbovlje, SLOVENIA Product Fire extinguishing  
liquid Bonpet, ampoule Bonpet**

Stran 1 od 5

#### **SAFETY TECHNICAL DATA SHEET**

#### **SECTION 1: RECOGNITION ELEMENTS OF THE CHEMICAL SOLUTION AND OF THE MANUFACTURER**

Producer: Bonpet Systems d.o.o. Trbovlje, Slovenija

The manufacturer of the chemical solution and of the automatic fire extinguisher: BONPET.  
The chemical solution (extinguishing substance) BONPET is not hazardous for the  
environment

#### **SECTION 2: INFORMATION ON COMPOSITION**

The chemical solution in the ampoule BONPET is neutral, soluble in water and harmless to  
the environment.

#### **CHEMICAL CHARACTERIZATION**

Major components conc. up to CAS No.

Ammonium sulphate H8-N2-O4-S 15 % CAS 7783-20-2

Sodium silicate H2-O3-Si.2Na 25 % CAS 6834-92-0

Alunite mixture 35 % CAS 10043-67-1

EMPICOL-ESB-3 10 % CAS 9004-82-4

SODIUM-PHOSPHATE- 10 % CAS 7558-80-7

Ingredients (B,T, PS) 30 % CAS 107-40-4, 108-30-5

#### **SECTION 3: INFORMATION ON HAZARDS**

The fire extinguishing liquid BONPET is harmless to human body. If the fire extinguishing  
liquid BONPET comes in contact with human skin it does not cause injuries.

When exposed to temperature above 300 °C decomposed to N2 & CO2.

#### **SECTION 4: EMERGENCY INFORMATION**

GENERAL INF.: Harmless for people, animals, plants and environment.

BREATHING: The liquid is not volatile (soft ammonia smell)

**This STDS adheres to the standards and regulatory requirements of Slovenia and may not  
meet regulatory requirements in other countries.**

**Manufacturer: BONPET SYSTEMS d.o.o., Trbovlje, SLOVENIA**

**Product Fire extinguishing liquid Bonpet, ampoule Bonpet**

Stran 2 od 5

SKIN CONTACT: The liquid is not aggressive. (Washed out with water)

EYE CONTACT: Washed out water.

Should the fire extinguishing liquid BONPET come into contact with human skin or eyes,  
must be washed out with clean water. The fire extinguishing liquid BONPET is harmless for  
breathing.

#### **SECTION 5: FIRE PROTECTION INFORMATION**

BONPET fire extinguishing liquid is not flammable under any circumstances.

The fire extinguishing liquid BONPET is not flammable and does not cause fire.

The instruction to use, are enclosed to each BONPET ampoule.

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Fire Inspection Engineering

DOKÜMAN INCELENDI REVIEWER

Mehmet Ali Uğur  
[Signature]

## SECTION 6: INFORMATION FOR A CASE OF ACCIDENTAL SPILLING

The fire extinguishing liquid BONPET is harmless to the environment. It is not hazardous if spilt near a fire since it is inflammable.

PEOPLE Washed out with water where comes into the skin contact

ENVIRONMENT Washed out with the water

CLEANING Washed out with the water

## SECTION 7: HANDLING AND STORING

The fire extinguishing liquid BONPET must be stored in well closed containers and ampoule. The storage does not require any special ventilation equipment or warehouses.

STORAGE: In the warehouses not warmer then 60°C.

PACKAGING: Plastic, metal or glass containers which could be hermetical sealed.

**This STDS adheres to the standards and regulatory requirements of Slovenia and may not meet regulatory requirements in other countries.**

**Manufacturer: BONPET SYSTEMS d.o.o., Trbovlje, SLOVENIA**

**Product Fire extinguishing liquid Bonpet, ampoule Bonpet**

Stran 3 od 5

## SECTION 8: CONTROL OF EXPOSURE / PERSONAL PROTECTION

There is no need for additional safety precautions or protection clothing for personnel and for the users because the fire extinguishing liquid BONPET is harmless even in case of prolonged exposure.

The protective equipment is not required.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

The physical and chemical properties are:

Appearance: lightly coloured liquid

Smell: soft ammonia smell

pH: 8 - 8.5

Density: 1.1 kg/l

Flammability: not flammable

Solubility: soluble in water in any relation

Freezing point - 20 °C

Boiling point 103 °C

Flame point NONE

Explosion level NONE

Flammable point NONE

Thermal decomposition above 300 °C

Thermal decomposition N<sub>2</sub>, CO<sub>2</sub>, H<sub>2</sub>O

## SECTION 10: STABILITY AND REACTIVITY

In the air the chemical solution will be decomposed to CO<sub>2</sub> and H<sub>2</sub>O. The process of decomposition is faster with higher temperatures.

## SECTION 11: INFORMATION REGARDING THE TOXICITY

The liquid is not toxic and is biodegradable.

Acute toxic no information's

Local effects unknown

Long-term exposure no data available



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Project Inspection Engineering

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Mehmet Ali Uzun  
M. Uzun

**This STDS adheres to the standards and regulatory requirements of Slovenia and may not meet regulatory requirements in other countries.**

**Manufacturer: BONPET SYSTEMS d.o.o., Trbovlje, SLOVENIA**

**Product Fire extinguishing liquid Bonpet, ampoule Bonpet**

Stran 4 od 5

**SECTION 12: INFORMATION REGARDING THE IMPACT ON ENVIRONMENT**

The fire extinguishing liquid BONPET is environmentally friendly to the aquatic environment and to animals and plants.

**SECTION 13: DISPOSAL CONSIDERATIONS**

It causes no destruction and only needs washing out with water.

Empty container – after it is washed out with water it could be used for other purposes.

Unused liquid – could be disposed into drainage

**SECTION 14: INFORMATION REGARDING THE TRANSPORTATION**

The fire extinguishing liquid BONPET may be transported in **glass ampoules and in plastic containers** with regular means of transportation. There is no need for special marking signalling perils.

**SECTION 15: REGULATORY INFORMATION**

Ten years if not exposed to the air and kept in a sealed plastic container.

Ten year into the fire extinguisher ampoule BONPET.

**SECTION 16: INFORMATION ON REGULATIONS**

Each fire extinguishing ampoule carries a label with a serial number, instruction manuals and warranty.

**SECTION 17: OTHER INFORMATION**

None.

For additional information please contact your local dealer or manufacturer BONPET SYSTEMS d.o.o., Trbovlje, SLOVENIA.

**This STDS adheres to the standards and regulatory requirements of Slovenia and may not meet regulatory requirements in other countries.**

**Manufacturer: BONPET SYSTEMS d.o.o., Trbovlje, SLOVENIA**

**Product Fire extinguishing liquid Bonpet, ampoule Bonpet**

Stran 5 od 5

**SECTION 18: SPECIFICATION OF THE AMPOULE GLASS AND OF THE LIQUID**

- Ampoule: low expansion glass, heat resistant
- Volume cca 0.6 l
- Dimensions: 280 mm x 80 mm
- The edges present no hazard.

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**BONPET SYSTEMS d.o.o.,  
Manager: Matej Škerbic**



**PCIM**

Proje: Genel Mühendislik  
Proje: İnşaatçılık / Engineering

**DOKÜMAN İNCELENDİ / REVIEWED**

Page:A 25/32

On the basis of the Test record, inspection and measuring No. CPV-295/98 regarding the test and inspection of the product: EXTINGUISHING AGENT BON-PET produced by: BONPET d.o.o., Ravne 100, 8281 SENOVO for the customer and undertaking company: BONPET d.o.o., Ravne 100, 8281 SENOVO applying the regulation of: DIN-Sicherheitsdatenblatt für chemische Stoffe und Zubereitung (DIN 52900) we state that the product complies with the requested criteria and therefore we grant the following

## EXPERTISE

number: 295/98

on conformity of the EXTINGUISHING AGENT BON-PET

Validity of the expertise: the EXPERTISE is valid for three years.

The expertise assesses the conformity of the tested sample and of those products that are produced

with same quality and accuracy as the tested sample.

Maribor, September 3<sup>rd</sup>, 1998

Chief of the fire-safety center: Director of IVD Maribor

Peter BOŽIC, dipl.ing.str. mag. Štefan GREIF, dipl.ing.

(signed) (signed)

INŠTITUT ZA VARNOST PRI DELU IN VARNOST OKOLJA MARIBOR

/INSTITUTE FOR SAFETY AT WORK AND ENVIRONMENTAL PROTECTION IN MARIBOR/

Valvasorjeva ul. 73

2000 MARIBOR

phone (062) 1095000

phone (062) 109500040

fax (062) 109500060

Client: BONPET d.o.o. Order number: LETTER

Ravne 100 from: September 1<sup>st</sup>, 1998

8281 SENOVO

According to its activity object, registered at the District Court of Maribor, Unit of Maribor, register

number 1/521700, the institute has performed:

the Expertise on the fire extinguishing effects and environmental effects of the extinguishing agent

BONPET.

The inspection and testing were carried out on the basis of the authorization of the Ministry of Defense of the Republic of Slovenia, Administration of the Republic of Slovenia for Civil Protection and Disaster Relief, number 223-45/95 from May 23<sup>rd</sup>, 1995.

Inspection carried out by: Responsible director:

Janko MERC dipl.ing.str. Peter BOŽIC dipl.ing.str.

Igor IVANOVSKI, dipl. ing. kem. (signed)

(signed) (seal)

Procedure number: CPV-295/98

INSPECTION PROTOCOL

EXPERTISE ON FIRE EXTINGUISHING

AGENT BONPET

IVD-Fire security center Page 1/8



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Proj. Control Mühendislik  
Project Inspection Engineering

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Mehmet Ali Uğur

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TRAD. 0047/2215

INŠTITUT ZA VARSTVO PRI DELU IN VARSTVO OKOLJA MARIBOR  
/INSTITUTE FOR SAFETY AT WORK AND ENVIRONMENTAL PROTECTION IN MARIBOR/

1. CONTENTS

2. Client, order and testing entity data
3. Introduction
4. General information about the automatic fire extinguishing agent BONPET
5. Physicochemical properties of the fire extinguishing agent BONPET
6. Decomposing products
7. Conclusions
8. Used literature

(seal)

IVD-Fire security center Page 2/8

INŠTITUT ZA VARSTVO PRI DELU IN VARSTVO OKOLJA MARIBOR  
/INSTITUTE FOR SAFETY AT WORK AND ENVIRONMENTAL PROTECTION IN MARIBOR/

2. CUSTOMER, ORDER AND PERFORMER DATA

2.1. Client: BONPET d.o.o.

Ravne 100

8281 SENOVO

2.2. Task extent: Expertise on fire extinguishing agent BONPET

2.3. Testing entity: INŠTITUT ZA VARSTVO PRI DELU IN VARSTVO OKOLJA  
/ INSTITUTE FOR SAFETY AT WORK AND ENVIRONMENTAL PROTECTION/  
Fire Security Center

Valvasorjeva 73

2000 MARIBOR

2.4. Procedure number: CPV-295/98

2.5. Date: September 3<sup>rd</sup>, 1998

2.6. Testing personnel: Janko MERC, dipl.ing.str.

Igor IVANOVSKI, dipl.ing.kem

(seal)

IVD-Fire security center Page 3/8

INŠTITUT ZA VARSTVO PRI DELU IN VARSTVO OKOLJA MARIBOR  
/INSTITUTE FOR SAFETY AT WORK AND ENVIRONMENTAL PROTECTION IN MARIBOR/

3. INTRODUCTION

According to the order of the company BONPET d.o.o., Ravne 100, Senovo, we present the Expertise about the fire extinguishing agent BONPET, laying stress upon the toxicological effects of the above mentioned agent on persons and its other environmental effects.

4. GENERAL INFORMATION ABOUT THE AUTOMATIC FIRE  
EXTINGUISHING AGENT BONPET

BONPET is a product of the producer BONPET d.o.o. Ravne 100, SENOVO destined for automatic fire extinction.

The product BONPET is composed of an ampoule filled with liquid extinguishing agent. The ampoules are made from 1 mm glass.

In case of fire, the BONPET ampoules are automatically activated in the moment when the temperature of the liquid agent in the ampoule exceeds 90°C.

Once this temperature is exceeded, the liquid agent in the ampoule starts to produce decomposing gaseous products. The rising pressure inside the ampoule provokes the break of the ampoule and the chemical solution, contained by the ampoule, is sprinkled over the burning object. The essence of the extinguishing effect is the sprinkling of the chemical solution and gas over the burning object in order to deprive it from oxygen and to extinguish the fire.

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Prof's Gökçem Mithemioğlu  
Project Inspection Engineering

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Mehmet Altınbaş  
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5. PHYSICOCHEMICAL PROPERTIES OF THE FIRE EXTINGUISHING AGENT  
BONPET

5.1. Producer: BONPET d.o.o. Ravne 100, Senovo

5.2. Name of the product: fire extinguishing agent

5.3. Chemical composition:

Urea 79,4 g/l

Silicon (as SiO<sub>2</sub>) 9,96 g/l

Chlorides Cl 2,04 g/l

Ammonium ions NH<sub>4</sub>

+ 90-100 g/l

5.4. Aggregation: liquid

5.5. Colour: pink – white

5.6. Odour: ammonia-like

5.7. Density: 1,16 g/cm<sup>3</sup> at 20°C

5.8. pH values: 7,8 at 20°C

5.9. Solubility in water: yes

Note:

The data are taken from the Certificate for dangerous substances with safety-technical information of the producer. The above indicated values are confirmed by the Zavod za raziskovanje kvalitete materialov Zagreb, CRO (Institute for the investigation of the quality of materials Zagreb, Croatia (Report number 113/93 from November 25th, 1993).

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INŠTITUT ZA VARSTVO PRI DELU IN VARSTVO OKOLJA MARIBOR  
/INSTITUTE FOR SAFETY AT WORK AND ENVIRONMENTAL PROTECTION IN MARIBOR/  
6. DECOMPOSING AGENTS

Thermal decomposition of the fire extinguishing agent BONPET is started already when the temperature is above 31,5°C. In the beginning, these are decomposing agents that provoke the break of the glass ampoule (above 90°C) and the sparking of the fire extinguishing agent over the burning object.

The contact of the extinguishing agent BONPET with the flame or with a heated surface over 450°C provokes in the first phase the origination of a considerable amount of ammonia and carbon dioxide. The originated products react helped by decomposing agents of other components (ammonium sulfate and sodium carbonate) to final products that are:

- sodium chloride
- water
- carbon dioxide
- sodium sulfate.

The above mentioned decomposing agents (NaCl, H<sub>2</sub>O, CO<sub>2</sub> and Na<sub>2</sub>SO<sub>4</sub>) in normal concentration are not dangerous for persons, animals and the environment.

The producer of the automatic fire extinction agent BONPET, the company TAD Corp. From Japan in collaboration with the company Komei Physiochemistry Comp. Ltd. has carried out the measurements of concentrations of separate noxious substances, that are ejected to the atmosphere because of the fire extinguishing agent effects.

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PGIL  
Prof. Gábor Mészáros  
Bécsi Inspektorati Hivatal  
DOKUMEN INCELENĐ / REVIEWED  
Mehmed Ali Uzun  
K. Vujak

The measurements of separate noxious substances have shown that during the fire extinction with the agent Bonpet, relatively low concentrations of CO, CO<sub>2</sub> and ammonia are produced and they never exceed those limit values, that could have negative effects on people's health. The toxicity of the fire extinguishing agent Bonpet, according to the assurances of the producer and the testing results at the Zavod za raziskovanje kvalitete materialov Zagreb, CRO (Institute for the investigation of the quality of materials Zagreb, Croatia (Report number 113/93 from November 25<sup>th</sup>, 1993), amounts to over 10 ml/kg as value LD<sub>50</sub> oral. These results also show, that the product does not contain such toxic elements, that could threaten the health of the employees / consumers, having in mind the condition that the instruction about the safety at work is respected and that producer's instructions for safe use of the product are followed.

The produced decomposing agents in solid aggregation (chloride and sulfate) represent such limited quantity, that no direct pollutions of water and soil will be provoked.

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IVD-Fire security center Page 6/8

INŠTITUT ZA VARSTVO PRI DELU IN VARSTVO OKOLJA MARIBOR  
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7. CONCLUSIONS

According to the inspected documents and the evaluation of the toxicological investigations we can estimate that the automatic fire extinguishing agent BONPET:

- does not contain any toxic, to persons harmful substances,
- during its application it develops the decomposing products, that are not dangerous for persons neither for the environment
- can be characterized as environment-friendly fire extinguishing agent, as it does not contain any ozone-harmful component.

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IVD-Fire security center Page 7/8

INŠTITUT ZA VARSTVO PRI DELU IN VARSTVO OKOLJA MARIBOR  
/INSTITUTE FOR SAFETY AT WORK AND ENVIRONMENTAL PROTECTION IN MARIBOR/  
8. USED LITERATURE

8.1. Certificate for dangerous substances with safety-technical information, produced by: TAD CORPORATION Japan

8.2. Expertise n. 113/93 from November 25<sup>th</sup>, 1993 on chemical and toxicological testing results of the extinguishing agent BONPET

Made by Zavod za raziskovanje kvalitete materialov Zagreb, CRO (Institute for the investigation of the quality of materials Zagreb, Croatia)

8.3. Instructions for the automatic fire extinguisher Bonpet

Produced by: BONPET d.o.o., Ravne 100, Senovo

8.4. Maximum admitted concentrations of noxious gases, vapors and aerosols in the atmosphere of working rooms and working sites; JUS Z.BO.001 (Official Gazette of the SFRJ, No. 35/71).

(seal)

IVD-Fire security center Page 8/8



Proj. Gestão Matemática  
Proj. Inspeção Engenharia

DOKÜMAN İNCELENDİ / REVIEWED

*Mehmet Ali Uğur*  
*M. Uğur*



# DIELECTRICITY

## CENTER OF TRIALS, RESEARCH & STANDARDS

9 Leontariou Str., Kantza 15351 PALLINI

Tel.: 2106601700 Fax: 2106040986

### TRIALS CERTIFICATE

SECTOR: High Voltage Certificate No.: 2335/2009/EEA

LABORATORY: Dielectric trials on Issuing date: 21.7.09

Safe Working Supplies & Accessories of Page 1 of 6

Twisted Cables

### TRIALS CERTIFICATE

Customer's Name: "IFESTOS" BATZIOS A. & S. GENERAL PARTNERSHIP

Customer's Address: 20 SIRMALI STR. 19200 – ELEFSINA

Customer's Trials Application No.: FAX / IFESTOS / 14.7.09

Papers' receipt date by KDEP: 15.7.09

Trial Execution Order Number: 827 / 2235 / 14.7.09

### CONTENTS

1. ITEMS TO BE TESTED

2. DIELECTRIC TRIAL OF PORTABLE FIRE EXTINGUISHERS

The Center of Trials, Research & Standards of DEI assumes all liability for trials performed only on the particular items stated in the current certificate. The results refer exclusively and solely to these items.

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### KDEP

## CENTER OF TRIALS, RESEARCH & STANDARDS

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Tel.: 2106601700 Fax: 2106040986

### TRIALS CERTIFICATE

SECTOR: High Voltage Certificate No.: 2335/2009/EEA

LABORATORY: Dielectric trials on Issuing date: 21.7.09

Safe Working Supplies & Accessories of Page 2 of 6

Twisted Cables

### 1. ITEMS TO BE TESTED:

Two (2) portable Bonpet liquid fire extinguishers.

#### 1.1 DESCRIPTION OF ITEMS TO BE TESTED:

Two (2) portable fire extinguishers 2 lit with embossed markings: MBK

JX 13541 2008 and JX 13560

TP 26 BAR PS 18 BAR

CE 0437

The papers are signed by the trial superintended and they also include the date of their execution.

### KDEP

## CENTER OF TRIALS, RESEARCH & STANDARDS 1



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Proje G5000m Engineering

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**TRIALS CERTIFICATE**

**SECTOR:** High Voltage Certificate No.: 2335/2009/EEA

**LABORATORY:** Dielectric trials on Issuing date: 21.7.09

Safe Working Supplies & Accessories of Page 3 of 6

Twisted Cables

1.2 DATE OF RECEIPT: 15/7/09

1.3 CONDITION OF ITEMS ON THEIR RECEIPT: Good

1.4 MANUFACTURER – SUPPLIER: "IFESTOS" BATZIOS A. & S. GENERAL PARTNERSHIP

1.5 ITEM CODE: 2235 / 1,2

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**CENTER OF TRIALS, RESEARCH & STANDARDS**

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**SECTOR:** High Voltage Certificate No.: 2335/2009/EEA

**LABORATORY:** Dielectric trials on Issuing date: 21.7.09

Safe Working Supplies & Accessories of Page 4 of 6

Twisted Cables

**2. TRIALS**

2.1 TRIALS TYPE: Dielectric strength of water-based portable fire extinguisher.

2.2 TRIALS SPECIFICATIONS: ELOT EN 3.07 + A1 / 2007 § 9 and annex C.

**2.3 SAMPLE RECEIPT – PREPARATION:**

Papers were submitted by the applicant.

**2.4 PROCEDURE:**

The trials were performed according to § and annex C of the Regulation EN 3. 07 + A: 2007.

The fire extinguisher was fixed on an insulated base along with the fire extinguishing material ejection nozzle, directed towards the center of the already fixed metal frame, with intermediate distance 1 meter (1 m).

Alternating voltage of 35 kV / 50Hz was applied on the metal frame and the fire extinguisher was activated to launch the fire extinguishing material.

Simultaneously with this activation and throughout the fire extinguisher's operation (until it was completely exhausted) current amperage measurements were made between the fire extinguisher's nozzle and its handle, which were short-circuited between them with regard to ground.

2.5 TRIALS PERFORMANCE DATE: 17/7/09

2.6 TRIALS SUPERINTENDED: G. LYTRAS

2.7 PARTICIPANTS: A. GEORGAKIS

**2.8 ATTENDING:**

KDEP

**CENTER OF TRIALS, RESEARCH & STANDARDS**

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Tel.: 2106601700 Fax: 2106040986

**TRIALS CERTIFICATE**

**SECTOR:** High Voltage Certificate No.: 2335/2009/EEA



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DOKÜMAN İZLENİNDİ, İYERİLENDİ  
Mehmet Ali Uğur  
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LABORATORY: Dielectric trials on Issuing date: 21.7.09  
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Twisted Cables

**2.9 INSTRUMENTS AND DEVICES:**

**DESCRIPTION REGISTRY**

**NUMBER**

1. Portable device providing high voltage 0-130 kV, 50Hz with integrated mA meter, manufactured by PHENIX.

694782

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**SECTOR: High Voltage Certificate No.: 2335/2009/EEA**

LABORATORY: Dielectric trials on Issuing date: 21.7.09

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Twisted Cables

**2.10 RESULTS:**

Throughout the dielectric strength trial, the maximum leakage current measured on the said fire extinguisher of 2 lit as 0.027 mA.

Note:

A dielectric strength trial is considered successful when leakage current does not exceed 0.5 mA.

**2.11 CONCLUSION:**

The above results comply with the requirements of the Regulation applied for the fire extinguisher tested, with the particular type of fire extinguishing material.

Trial Superintended Deputy Section Head Section Head

Name: G. LYTRAS G. LYTRAS A. VENIERI

Signature: (signature) (signature) (signature)

TAD 0047/2015



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**PGIM**

Prof. Gökdemir Mühendisi  
Project Inspection Engineering

**DÖKÜMAN İNCELENDİ / REVIEWED**

*Mehmet Ali Uğur*  
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