Bauaufsichtlich anerkannte Prüf-, Überwachungs- und Zertifizierungsstelle
Prüfstelle für Feuerlöschmittel und -geräte
DIN EN ISO/IEC 17025: D-PL-17819-01-00; DIN EN 45011: D-ZE-17819-01-00
DIN EN ISO/IEC 17020: D-IS-17819-01-00
ZLS-GS-0066
Notified Body no. 0767

MPA Dresden

CERTIFICATE OF CONFORMITY – WATER BASED FIRE EXTINGUISHING MEDIA

Certificate of conformity reference number: **KB 185/14**

Test specification:	**Test procedure LM 01-01, Nov. 29, 2011, test of water based fire extinguishing media except for clause 4.11 – packaging, marking, see the note below**
Test report no.:	**20140916**
Requested by:	**BONPET SYSTEMS d.o.o., Obrtniška cesta 30, 1420 TRBOVLJE, SLOVENIA**
Manufacturer:	**BONPET SYSTEMS d.o.o., Obrtniška cesta 30, 1420 TRBOVLJE, SLOVENIA**
Product name:	**Bonpet fire-extinguishing liquid**
Type of fire extinguishing medium:	**Fluid fire extinguishing medium (readymade solution)**
Test fire performance:	**Proof with portable EN 3 fire extinguishers:** **27 A according to EN 3-7 with 6 litres fire extinguishing medium** **144 B according to EN 3-7 with 6 litres fire extinguishing medium** **75 F according to EN 3-7 with 6 litres fire extinguishing medium**
Freezing point:	**-14,5 °C**
Notes:	**1. The fire extinguishing medium is to use undiluted.** **2. The information according to clause 4.11 of LM 01-01 for marking shall be stated on the packing or on the storage container.**

Conformity to the above mentioned test specification is attested. All applicable requirements have been met.

This certificate of conformity is valid solely for fire extinguishing media which correspond to the submitted test samples and to the confirmed documents.

Certificates of conformity of fire extinguishers are solely valid in conjunction with the fire extinguishing medium the type test of the fire extinguisher has been done with.

This certificate of conformity does not include surveillance.

26th August, 2014

pp

Grad. Eng. Jürgen Dittrich
Laboratory Manager

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Test report

No. 20140916

Applicant:	BONPET SYSTEMS d.o.o. Obrtniška cesta 30 1420 TRBOVLJE SLOVENIA
Manufacturer:	BONPET SYSTEMS d.o.o. Obrtniška cesta 30 1420 TRBOVLJE SLOVENIA
Application date:	2014-06-20
Subject of application:	Test of a premixed liquid fire extinguishing medium for suitability as fire extinguishing medium on use with fire extinguishers
Name of the fire extinguishing medium:	Bonpet fire-extinguishing liquid
Basis of the examination:	Test procedure instruction LM 01-01 of MPA Dresden GmbH dated 29th November 2011 for test of water based fire extinguishing media (following to EN 1568 and EN 3-7)
Receipt of sample:	2014-07-08
Test laboratory:	MPA Dresden GmbH Official laboratory for fire extinguishing media and fire extinguishers Fuchsmühlenweg 6F 09599 Freiberg GERMANY

This test report comprises 11 pages, including 1 annex.

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General information:

Only equipment and materials detailed in this report have been subjected to the tests. Test results apply to the tested samples only.

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Publications of test reports and information on tests for publicity purposes need the written approval of the laboratory in every isolated case.

Every page of this report is stamped with the seal of the laboratory.

Summary:

The liquid fire extinguishing medium **Bonpet fire-extinguishing liquid** (premixed water based solution) has been tested relating to its chemical / physical characteristics and to its extinguishing efficiency in order to examine the suitability for fire extinguishing purposes.

The liquid extinguishing medium **Bonpet fire-extinguishing liquid** is suitable for application with fire extinguishers against fires of materials of the fire classes A, B and F according to EN 2.

The proof of the extinguishing effectiveness has been performed with portable stored pressure fir extinguishers (6 litres).

Test fire rating in accordance with EN 3-7 : 2004 + A1: 2007: **27 A, 144 B and 75 F**

Application concentration: undiluted application

Freezing point of the concentrate: -14,5 °C (measured on the sample)

Special information:

The marking label of the fire extinguishing medium for packing containers is to furnish with the required information (see on page 9, clause 5 of this test report).

26th August, 2014

Grad. Eng. Dittrich
Laboratory Manager

Grad. Eng. Bauer
Official

1. General

The liquid fire-fighting agent **Bonpet fire-extinguishing liquid** is a premixed solution ready for use and it is not to dilute further more.

The suitability as a fire extinguishing medium of the product has been examined in accordance with the test procedure instruction LM 01-01 of MPA Dresden GmbH for examination of water based fire extinguishing media, dated 29th November 2011, following to the respective requirements of the norms EN 1568 and EN 3-7.

2. Chemical composition

A notice of the manufacturer about the chemical composition of the fire extinguishing medium is not available to the test laboratory.

3. Submitted documents

/1/ Safety data sheet according to EU 1907 /2006, version no. 2 dated on March 1, 2012, 6 pages

4. Test results

4.1 Laboratory tests – characteristic values (clauses 3 to 10 of the test procedure instruction)

Characteristic value		Requirement EN 1568	Manufacturer specification	Sample measurement	Requirement fulfilled (yes/no)
pH-value	(20°C)	6,0 – 9,5	8,0 – 8,5	9,06	Yes
Density g/cm³	(20°C)	–	1,1	1,138	3)
Viscosity mm^2/s	(20°C) (0°C) (-10°C)	– – –	– – –	1,89 3,64 5,18	3)
Refraction index	n^D_{20}	–	–	1,3829	3)
Freezing point	°C 1)	–	< 0	-14,5	3)
Sediment before aging after aging Sample dispersible through 180 µm - sieve	Vol % (yes/no)	 ≤ 0,25 ≤ 1,00 Yes	 – – –	 0 0 Yes	 Yes Yes Yes
Resistance to aging (T_1= -10°C;23°C;60°C;23°C 2))		No formation of layers	–	No formation of layers	Yes
Infrared spectrogram		–	–	Annex 1	3)

4.2 Tests in conjunction with a fire extinguisher (clause 11 of the procedure instruction)

4.2.1 Details of the fire extinguisher

Type:	6 litres stored pressured fire extinguisher with grip lever armature and 6-hole Multiplast foam spray nozzle
Nominal Charge:	6 litres (it corresponds with 6,83 kg)
Fire extinguishing medium:	6 l Bonpet fire-extinguishing liquid
Pressure storing:	15 bar N_2 at 20°C in the fire extinguisher container
Specification:	EN 3

1) The lower application temperature has to be at least 5°C more than the freezing point.
2) T_1 = freezing point minus 10 °C, if the fire extinguishing medium is declared as freeze resistant.
T_1 = the lower application temperature, if the fire extinguishing medium is not declared as freeze resistant and it has a lower application temperature.
3) No assessment is given because the test norm specifies no requirement for this characteristic value.

4.2.2 Duration of operation, minimum duration (clause 7.1.1 of EN 3-7)

Sample no.		1	2	3
Measured duration of operation	(s)	28,4	27,7	28,6
Minimum required duration of operation (tables 3 to 8)		15		
Compliance with clause 7.1.1	(yes/no)	Yes		

4.2.3 Duration of operation, spread of measurements (clause 7.1.2 of EN 3-7)

Deviation of measured time from average discharge				
Average discharge duration	(s)	28,2		
Sample no.		1	2	3
Deviation of the measured value from the average	(%)	0,7	1,8	1,4
Maximum permissible deviation	(%)	≤ 15		
Compliance with clause 7.1.2	(yes/no)	Yes		

4.2.4 Residual charge (clause 7.2 of EN 3-7)

Sample no.		1	2	3
Determined residual charge	(kg)	0	0,01	0
Residue as a percentage of the nominal charge *)				
Actual	(%)	0	0,1	0
Maximum permissible residue	(%)	≤ 10		
Compliance with clause 7.2	(yes/no)	Yes		

*) Nominal charge (kg) for water based fire extinguishers: 6 l x 1,138 kg/l= 6,83 kg.

4.2.5 Commencement of discharge (clause 7.3 of EN 3-7)

Sample no.		1	2	3
Measured space of time	(s)	< 1	< 1	< 1
Maximum permissible space of time	(s)	≤ 4		
Compliance with clause 7.3	(yes/no)	Yes		

4.2.6 Effective range of operating temperature (clause 7.4 of EN 3-7)

Temperature cycling		Cycle A		Cycle B	
Sample no.		1	2	3	4
Temperature of start of cycle	(°C)	T_{min}: 0	T_{min}: 0	T_{max}: 60	T_{max}: 60
Temperature at and of cycle	(°C)	T_{max}: 60	T_{max}: 60	T_{min}: 0	T_{min}: 0
Commencement of discharge after opening control valve					
Measured space of time	(s)	< 1	< 1	< 1	< 1
Maximum permissible space of time	(s)	≤ 10			
Duration of operation					
Measured duration of operation	(s)	26,0	26,2	29,1	29,3
Maximum permissible duration of operation [1]	(s)	≤ 56,4			
Minimum required duration of operation	(s)	≥ 6			
Residual charge					
Determined residual charge	(kg)	0	0	0,02	0,01
Residue as a percentage of nominal charge [2]		0	0	0,3	0,1
Maximum permissible residue [3]	(%)	≤ 10			
Compliance with clause 7.4	(yes/no)	Yes			

[1] The duration of operation must not be more than twice the value established at 20 °C (except CO_2 fire extinguishers).

[2] Nominal charge (kg) for water based fire extinguishers see page 5.

[3] 15 % for BC-fire extinguishing powder, 10 % for all other fire extinguishing media.

4.2.7 Class A fire rating (clause 15.2 of EN 3-7)

Test no.		1	2	3
Fire size as per I.2.1 of annex I		27 A		
Moisture of test fire wood: measured average	(%)	15	15	–
Permissible average moisture of fire wood	(%)	10 to 15		
Measured temperature inside test room before ignition	(°C)	22	22	–
Permissible temperature inside test room before ignition	(°C)	0 to 30		
Measured air speed inside test room before ignition	(ms^{-1})	0	0	–
Maximum permissible air speed before ignition	(ms^{-1})	≤ 0,2		
Test fire extinguished	(yes/no)	Yes	Yes	–
Measured time to extinguish test fire	(min:s)	1:28	1:21	–
Maximum permissible extinguishing time [1)]	(min)	7		
Measured O_2 concentration throughout test inside test room	(Vol%)	20,4	20,4	–
Minimum required O_2 concentration throughout test	(Vol%)	≥ 19		
Achieved test fire rating – fire class A		27 A		
Minimum required test fire rating – fire class A [2)]		8 A		
Compliance with clause 15.2	(yes/no)	Yes		

1) Time to extinguish: < 5 min up to 21 A; < 7 min greater than 21 A.
2) As per tables 3 and 4 of clause 6.4.2 of EN 3-7.

4.2.8 Class B fire rating (clause 15.3 of EN 3-7)

Test no.		1	2	3
Fire size as per I.3.1 of annex I		144 B		
Fire test carried out	(indoors / outdoors)	Outdoors		
Measured ambient temperature	(°C)	22	22	–
Permissible ambient temperature	(°C)	0 to 30		
Measured wind speed	(ms^{-1})	1,0	1,0	–
Maximum permissible wind speed	(ms^{-1})	≤ 3		
Test fire extinguished	(yes/no)	Yes	Yes	–
Measured time to extinguish test fire	(s)	65	60	–
Measured reminder of heptane after extinction	(mm)	> 5	> 5	–
Minimum required reminder of heptane after extinction	(mm)	≥ 5		
Achieved test fire rating – fire class B		144 B		
Minimum required test fire rating – fire class B *)		113 B		
Compliance with clause 15.3	(yes/no)	Yes		

*) As per tables 5 to 8 of clause 6.4.3 of EN 3-7.

4.2.9 Class F fire rating (clause 15.4 of EN 3-7)

Test no.		1	2	3
Fire size as per L.5.2 of annex L		75 F		
Measured ambient temperature	(°C)	24	19	–
Permissible ambient temperature	(°C)	0 to 30		
Measured duration to reach auto ignition oft he oil	(h:min)	2:01	2:04	–
Maximum permissible duration to reach auto ignition of the oil	(h:min)	≤ 3:30		
Measured auto ignition temperature	(°C)	351	350	–
Permissible auto ignition temperature	(°C)	330 to 380		
Complete discharge of the entire content without interruption	(yes/no)	Yes	Yes	–
Test fire extinguished	(yes/no)	Yes	Yes	–
Burning material ejected	(yes/no)	No	No	–
Re-ignition or overflow of fuel within 20 min after the complete discharge	(yes/no)	No	No	–
Remaining oil in the tray at the end of the test	(yes/no)	Yes	Yes	–
Enlargement of flames observed	(yes/no)	No	No	–
Achieved test fire rating – fire class F		75 F		
Minimum required test fire rating – fire class F *)		25 F		
Conformity to clause 15.4	(yes/no)	Yes		

*) As per table L.1 of clause L.2.1 of EN 3-7.

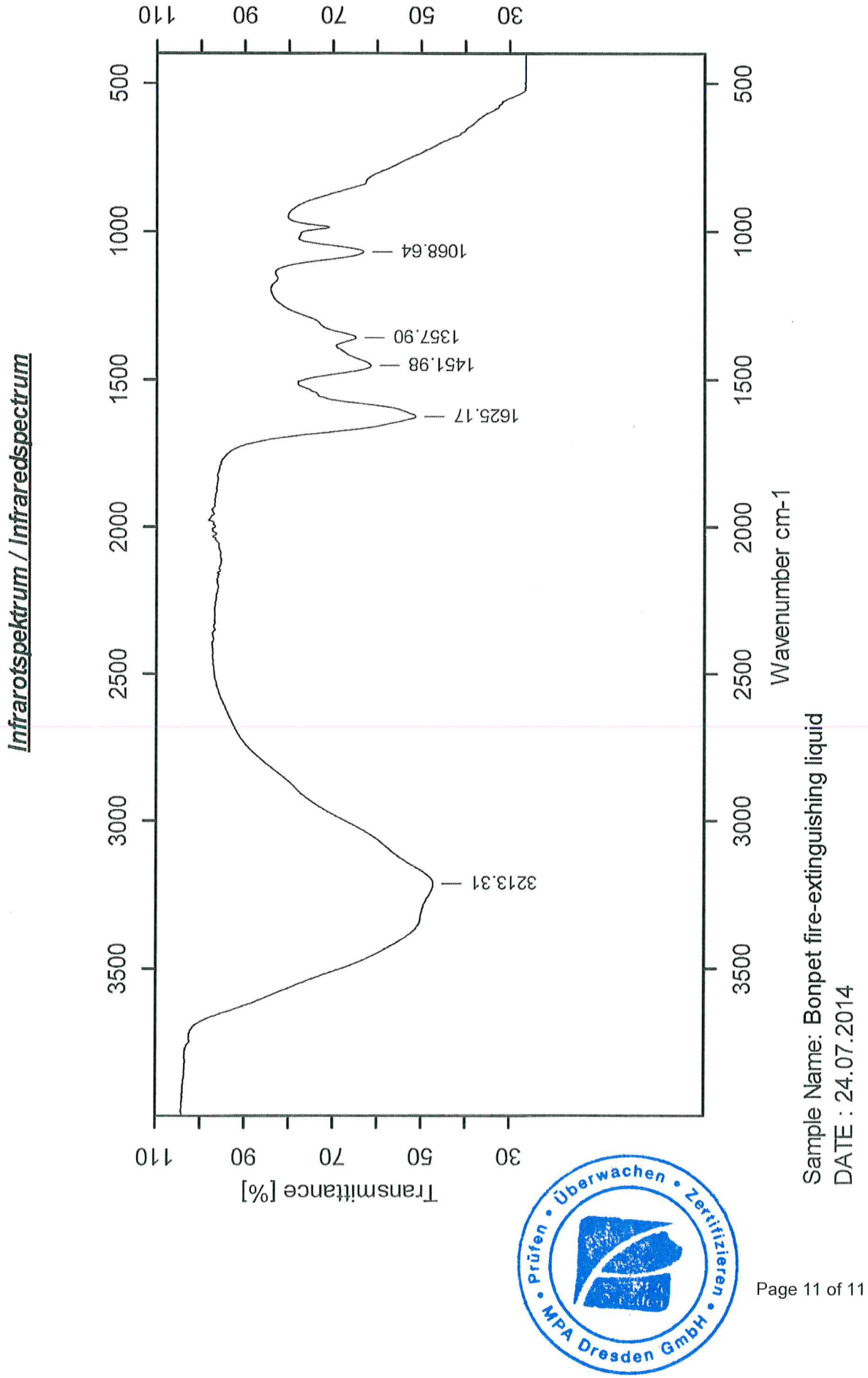
5. Requirements to marking (clause 12 of the procedure instruction)

The marking of the storage containers has to comprise at least the following details and this information has to be permanently marked and legible:

- The words "fire extinguishing medium"
- Trade name according to the approval
- Confirmation of Conformity reference number: KB 185/14
- Storage temperature
- Required warning information: (e.g. health protection, water protection)
- Filling date
- Manufacturer/distributor

A label draft for marking of the packaging or transport container has not been submitted.
Note the information on page 2 of this test report.

Annex 1: Infrared spectrogram of the fire extinguishing medium Bonpet fire-extinguishing liquid



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1. IDENTIFICATION OF THE SUBSTANCE/COMPOUND AND COMPANY

1.1 Identification of the product:

Product:	**Bonpet fire-extinguishing liquid**
Code(s) of the product:	020005 NOTE: Safety data sheet only applies to the fire-extinguishing liquid without packing. It applies to all packing units from 10 to 1000 litres.

1.2 Important identified uses of the substance or compound and not advisable uses:

Purpose, scope of application:	Extinguishing fire
Use restrictions:	The product is intended for industrial and professional use.
Application method:	It is used in fire-extinguishing systems and fire-extinguishing products

1.3 Details about the supplier of the safety data sheet:

Producer:	BONPET SYSTEMS d.o.o. Obrtniška cesta 30 SI 1420 TRBOVLJE SLOVENIA Phone: +386 3 56 14 720 Fax: +386 3 56 14 722
Information about the safety data sheet:	info@bonpet.si Phone number +386 3 56 14 720

1.4 Emergency phone number:

Telephone:	In case of health problems consult a doctor, in case of life hazard call your local emergency telephone number. Additional information available on +386 3 56 14 720 from 8 until 15.00.

2. HAZARD IDENTIFICATION

2.1 **Classification of substance or compound:**
Classification in accordance with the Directive 1999/45/EC and the regulation 1272/2008 EC:
In accordance with the EU legislation, the fire-extinguishing liquid is not classified as hazardous substance.

Health:	The fire-extinguishing liquid is not intended for drinking. No negative effects of the liquid in contact with skin are known.
Environment:	The fire-extinguishing liquid is neutral, soluble in water and does not represent any special hazards for the environment if the disposal recommendations from chapter 13 of the safety data sheet are taken into consideration.

2.2 **Label elements:**
The product is not classified as a hazardous substance.

213.911 **Other hazards:**
This compound does not contain substances that are considered persistent, bio-accumulative or poisonous or very persistent or very bio-accumulative.

3. STRUCTURE/CONSTITUENTS DATA

3.1 Introduction

The fire-extinguishing liquid Bonpet is a mixture of non-hazardous additives and substances listed below:

Substance	*CAS no.*	*ECC no.*	*Conc. %*	*Classification 1999/45/ES*		*Classification 1272/2008/ES*	
				label	*R phrases*	*Cat. of hazard*	*Hazard phr.*
Ammonium carbonate CH_2O_3-xH3N	10361-29-2	233-786-0	3	X_n	22	AcuteTox. 4 oral	H302
Ammonium hydrogen carbonate CH_2O_3-H_3N	1066-337	213-911-5	3	X_n	22	AcuteTox. 4	H302
Towalex AFFF 3% UL			2	X_i	36	Eye Irrit. 2	H319

3.2 Additional instructions

Complete text of R and H phrases mentioned in this chapter can be found in chapter 16.

4. FIRST AID MEASURES

4.1 First aid measures description:

The substance is not hazardous for the health of people, animals or for the environment. In case of sickness, consult a doctor. Information on health risk is based on hazardous substances of the compound.

Inhalation:	The liquid is not volatile (slight ammonia smell). Injured person should be transferred to fresh air. In case of respiration difficulties give mouth-to-mouth respiration and find medical help.
Contact with skin:	Remove contaminated clothes. Wash with soap and wash with a large amount of water.
Contact with eyes:	Wash eyes with a large amount of water (10 – 15 minutes). If the irritation does not cease, consult a doctor.
Ingestion:	Wash mouth with water and drink a lot of water. In case of ingestion of a large amount, find medical help.

4.2 The most important symptoms and effects, acute and delayed

Not known.

4.3 Medical attendance and special treatment

Inform the doctor about the reason of the injury and, if possible, show the label or safety data sheet. Other data not available.

5. FIRE PREVENTION MEASURES

5.1 Fire-extinguishing media:

It is a fire-extinguishing liquid, therefore no measures are necessary.

5.2 Special hazards related to the substance or compound:

At the temperature over 300°C the liquid decomposes to N_2 and CO_2

5.3 Advice for fire-fighters

Not necessary.

6. ACCIDENTAL EMISSION MEASURES

6.1 Personal safety measures, protective equipment and emergency procedures:
Prevent contact with eyes and skin. Not potable.

6.2. Environmental measures:
The Bonpet liquid itself is not hazardous for the environment. However, prevent the possibility of emission of firewater into sewage system, water reservoirs and groundwater. In case of pollution, consider adequate legislation.

6.3. Purification methods/collecting in case of accidental emission:
Small amounts should be washed with a large amount of water, large amounts should be covered by an absorbent material (sand) and collected into a labelled inert packaging and removed in accordance with the regulations in chapter 13.

7. HANDLING AND CONSERVATION

7.1 Safety measures for safe treatment:
The product is not hazardous and does not require special handling. At work it is only important to assure compliance with the work safety regulations. Open containers must be closed tightly and safety measures, related to work with chemicals, must be taken into consideration. Do not eat or drink during the use.

7.2 Safe storage conditions, including incompatibility:
Liquid must be stored in closed containers. Storage does not require any special equipment or ventilation.

7.3. Special final utilizations:
Legible from the technical sheet and the declaration of the product.
Packaging materials:

- Recommended – producer's original packaging
- Inadequate – do not stream into any other but original and labelled containers.

8. EXPOSURE SUPERVISION/PERSONAL PROTECTION

8.1. Supervision parameters:
Keep away from food and drink.

8.2. Exposure supervision:

Adequate technical and technological supervision:	Safety measures listed in chapter 7.
Personal safety precautions:	Maintain a clean work environment. Do not eat or drink during work. After work wash, undress and wash the contaminated clothes.
Eye/face protection:	In case of possibility of direct contact with the product, use safety goggles.
Skin protection:	Wear cotton protective clothing.
Hand protection:	Safety gloves: Material: Nitrile rubber, Penetration time: > 480 min, thickness: 0,4 mm.
Respiratory tract protection:	Not necessary.
Heat hazard:	No data available.
Other:	No data available.
Environment exposure supervision	Apply environmental protection measures.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Basic physical and chemical properties data:

Physical state	Liquid
Colour	Slightly coloured liquid
Smell	Slight ammonia smell
pH	8 – 8,5
density	1.1 kg/l
Flammability	Not flammable
Solubility in water at 20°C in g/l	Completely soluble in water
Freezing point	< 0°C
Boiling point	103°C
Flashpoint	Non-existent
Explosion point	Non-existent
Ignition temperature	Non-existent
Decomposition temperature	above 300°C
Decomposition products	N_2, CO_2, H_2O

9.2 Other data:
Not known.

10. PERSISTENCE AND BEHAVIOUR OF SUBSTANCE

10.1. Behaviour of substance:
Dangerous reactions when used normally are not known.

10.2 Chemical stability:
At normal storage and use conditions the material is stable.

10.3 possibility of dangerous reactions:
Not known.

10.4 Conditions that must be avoided:
High temperatures. Decomposes at 300°C

10.5 Incompatible materials:
The product is not reactive and is compatible with most substances, except strong oxidising agents. Store in original container.

10.6 Dangerous decomposition products:
Exposed to air, the liquid decomposes to CO_2 in H_2O. Decomposition process is faster at higher temperatures. At the temperature over 300°C the liquid decomposes to N_2 and CO_2

11. TOXICOLOGICAL DATA

11.1 Toxicological effects data:
The product itself is not tested but classified in accordance with a conventional method (calculated) of the Directive 1999/45/ES about dangerous products and it is adequately classified in accordance with the toxicological hazard. Details in chapters 2 and 3.

Acute toxicity:	The liquid does not endanger health and is biologically degradable. When used professionally and in accordance with the instruction, no disadvantageous effect is known.

Skin irritation:	Low possibility with very sensitive people
Eye irritation:	Low possibility with very sensitive people
Skin irritation:	Low possibility with very sensitive people
Respiratory tract sensitisation:	No data available.
Skin sensitisation:	No data available.
Chronic toxicity	No data available.

12. ECO-TOXICOLOGICAL DATA

Evaluation of ecological receptivity of the product is not available.

12.1. Toxicity:
The product is not classified as environmentally hazardous on the basis of the components data from point 2 of the safety data sheet. The product does not contain volatile components.

12.2. Persistence and degradability:
Bio-degradable.

12.3. Bioaccumulation:
No data available.

12.4. Mobility in ground:
Fire-extinguishing liquid BONPET is environment friendly and harmless to aquatic environment and to animals and plants.

12.5. PBT and vPvB estimate results:
No data available.

12.6. Other disadvantageous effects:
Does not bioaccumulate.

13. REMOVAL

13.1 waste management methods:

Waste disposal:	Preparation residues can be disposed by a purification facility in accordance with the Decree on waste management or with local or national regulations.
Packaging disposal:	Damaged packaging or packaging containing residues management: Packaging must be emptied completely and treated in accordance with the Decree on packaging and waste packaging management, and residues in accordance with Decree on waste management. Emptied and cleaned packaging can be used again for packaging of the product or it can be removed in accordance with the Decree on packaging and waste packaging management.
Residue code	Residue code is defined on the basis of a consultation with the waste remover.

14. TRANSPORT DATA

14.1 Railroad and road transport (RID/ADR):
According to the rules in force the product is not classified as hazardous.

IMDG/GGV sea
According to the rules in force the product is not classified as hazardous.

ICAO/IATA
According to the rules in force the product is not classified as hazardous.

15. STATUTORY DATA

15.1 Health, safety and environment regulations/legislation, specific for the substance or compound:
Decree (ES) no. 1907/2006, Decree 1999/45/ES with all modifications, Decree (ES) no. 1272/2008:

The product does not classify as a dangerous chemical.

15.2. Chemical safety assessment:
Chemical safety assessment was not carried out.

16. OTHER DATA

16.1 Importance of R phrases from chapter 3:
Complete R phrase text mentioned in chapter 3:
R 22 Harmful by ingestion
R 36 Irritates eyes.

16.2 Importance of H phrases from chapter 3:
Complete H phrase text mentioned in chapter 3:
H302 Harmful by ingestion
H319 causes eye irritation

16.2 Changes from previous edition:
Safety data sheet is consistent with the EU Decree 1907/2006 in all parts of the safety data sheet.

16.3 Other information:
This safety data sheet was written in accordance with the applicable legislation. The information's in the safety data sheet are important for safe handling, storage and transport of chemicals and for waste removal.
The information stated refers to our knowledge and experience and are exact and reliable on the day of the creation of the Safety data sheet. The user must find assess the adequacy of the data in the Safety data sheet according to the specific use of the product. The product may not be used for other intentions but those described in chapter 1. In case the data in Safety data sheet do not suffice according to the work extent, nature and conditions, the user must obtain additional information. The user is also obliged to study all applicable regulations and act in accordance with them (from the field of safety at work, waste, transport, etc.).
The information in the Safety data sheet describes requirements necessary for a safe treatment with our product and do not represent a product quality guarantee. In case of non-compliance with the measure described in the Safety data sheet or inappropriate use of the product, we cannot be held responsible for the consequence.

The safety data sheet is created on the basis of the applicable legislation and the supplier's safety data sheet for:

- Ammonium bicarbonate – date 20th Feb. 2012, version 1.2
- Ammonium carbonate – date 26th Jan. 2012, version 8.0
- Towalex AFFF 3% UL – date 20th April 2004, version 1