

## Test report

No. 2010-F-0467/Rü 06

**Applicant:** RÜHL – FEUERLÖSCHMITTEL GMBH  
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61381 Friedrichsdorf

**Manufacturer:** RÜHL – FEUERLÖSCHMITTEL GMBH  
Hugenottenstraße 105  
61381 Friedrichsdorf

**Application date:** 2010-02-02

**Application:** Test of a liquid fire extinguishing medium (premixed solution ready for use) for suitability as fire extinguishing medium for fire extinguishers

**Type designation:** RÜHL Favorit Home

**Basis of the examination:** Internal examination instructions of MPA Dresden dated August 25<sup>th</sup> 2003 for test of water based fire extinguishing media (following to EN 1568 and EN 3-7)

**Receipt of sample:** 2008-10-29

**Test laboratory:** MPA Dresden GmbH  
Official laboratory for fire extinguishing media and fire extinguishers  
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This report contains 11 pages, including 1 annex.

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BIC WELA33HAN33XXX



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**Summary:**

The extinguishing medium RÜHL Favorit Home has been tested regarding to its chemical / physical characteristics and its extinguishing efficiency in order to appraise the usability for fire extinguishing equipment in the widest sense.

The extinguishing medium RÜHL Favorit Home is suitable for use with fire extinguishers against fires of materials of fire classes A, B and F according to EN 2.

The proof of the extinguishing effectiveness has been performed with portable stored pressure fire extinguishers (3 litres).

Test fire rating in accordance with EN 3-7 : 2004+A1 : 2007: **8 A, 55 B and 75 F**

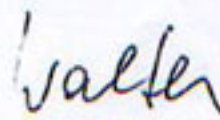
Usage concentration: undiluted

Freezing point of the concentrate (sample): < - 30 °C

26<sup>th</sup> March 2010

  
Grad. Eng. Ottrich  
Laboratory Manager



  
Grad. Eng. Walter  
Official

## 1. General

The foam extinguishing medium RÜHL Favorit Home is a premixed solution ready for use and it is required no more dilution.

The suitability of the product has been examined in accordance with the Internal examination instructions of MPA Dresden for tests of water based fire extinguishing media, dated August 25<sup>th</sup> 2003, following to the respective requirements of the standards EN 1568 and EN 3-7.

## 2. Chemical composition

The chemical composition of the fire extinguishing medium has not been submitted by the manufacturer to the laboratory.

## 3. Eingereichte Unterlagen

- /1/ Product data sheet, undated, 2 pages
- /2/ Safety data sheet according to 1907/2006/EG, 2008-10-17
- /3/ Label for packing



#### 4. Test results

##### 4.1 Laboratory tests – characteristic values (clauses 3 to 10 of the Internal examination instructions)

Characteristic value	Requirement EN 1568	Manufacturer specification	Sample measurement	Requirement fulfilled (yes/no)
pH-value (20°C)	6,0 – 9,5	8,5 ± 0,5	8,73	Yes
Density g/cm <sup>3</sup> (20°C)	–	1,275 ± 0,025	1,278	<sup>2)</sup>
Viscosity mm <sup>2</sup> /s (20°C) (0°C)	–	–	5,03 10,74	<sup>3)</sup>
Refraction index n <sub>D</sub> <sup>20</sup>	–	1,395 ± 0,010	1,3951	<sup>3)</sup>
Freezing point °C <sup>1)</sup>	–	≤ - 30	< - 30	<sup>3)</sup>
Sediment Vol % before aging	≤ 0,25	–	0	Yes
after aging	≤ 1,00	–	0	Yes
Sample dispersible through 180 µm - sieve (yes/no)	Yes	–	Yes	Yes
Resistance to aging (T <sub>1</sub> = -40°C;23°C;60°C;23°C) <sup>2)</sup>	No formation of layers	–	No formation of layers	Yes
Infrared spectrogram	–	–	Annex 1	<sup>3)</sup>

##### 4.2 Tests in conjunction with a fire extinguisher (clause 11 of the Internal examination instructions)

###### 4.2.1 Details of the fire extinguisher

Type:	3 litre stored pressure fire extinguisher with grip lever armature and 6-hole-spray nozzle
Nominal Charge:	3 litre (it corresponds with 3,834 kg)
Fire extinguishing medium:	RÜHL Favorit Home
Pressure storing:	12 bar N <sub>2</sub> at 20°C in the fire extinguisher container
Specification:	EN 3



<sup>1)</sup> The lower application temperature has to be at least 5°C more than the freezing point.

<sup>2)</sup> T<sub>1</sub> = Freezing point minus 10 °C, if the fire extinguishing medium is declared as freeze resistant.

T<sub>1</sub> = The lower application temperature, if the fire extinguishing medium is not declared as freeze resistant and it has a lower application temperature.

<sup>3)</sup> No assessment is given since 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)	15,1	15,6	15,3
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)	15,3		
Sample no.	1	2	3
Deviation of the measured value from the average (%)	1,3	1,9	0
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)	0,14	0,12	0,13
Residue as a percentage of the nominal charge <sup>1)</sup>			
Actual (%)	3,6	3,1	3,4
Maximum permissible residue (%)	≤ 10		
Compliance with clause 7.2 (yes/no)	Yes		

<sup>1)</sup> Nominal charge (kg) for water based fire extinguishers: 3 l x 1,278 kg/l = 3,834 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	
	1	2	3	4
Sample no.				
Temperature of start of cycle (°C)	T <sub>min</sub> : -30	T <sub>min</sub> : -30	T <sub>max</sub> : 60	T <sub>max</sub> : 60
Temperature at end of cycle (°C)	T <sub>max</sub> : 60	T <sub>max</sub> : 60	T <sub>min</sub> : -30	T <sub>min</sub> : -30
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)	13,5	13,9	14,6	14,9
Maximum permissible duration of operation <sup>1)</sup> (s)	≤ 30,6			
Minimum required duration of operation (s)	≥ 6			
Residual charge				
Determined residual charge (kg)	0,14	0,11	0,13	0,09
Residue as a percentage of nominal charge <sup>2)</sup>	3,6	2,9	3,4	2,3
Maximum permissible residue <sup>3)</sup> (%)	≤ 10			
Compliance with clause 7.4 (yes/no)	Yes			

<sup>1)</sup> The duration of operation shall be not more than twice the value established at 20 °C (except CO<sub>2</sub> fire extinguishers).

<sup>2)</sup> Nominal charge (kg) for water based fire extinguishers see page 5.

<sup>3)</sup> 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	8 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)	5	5	–
Permissible temperature inside test room before ignition (°C)	0 to 30		
Measured air speed inside test room before ignition (ms <sup>-1</sup> )	0	0	–
Maximum permissible air speed before ignition (ms <sup>-1</sup> )	≤ 0,2		
Test fire extinguished (yes/no)	Yes	Yes	–
Measured time to extinguish test fire (min:s)	2:58	2:30	–
Maximum permissible extinguishing time <sup>1)</sup> (min)	5		
Measured O <sub>2</sub> concentration throughout test inside test room (Vol%)	20,4	20,4	–
Minimum required O <sub>2</sub> concentration throughout test (Vol%)	≥ 19		
Achieved test fire rating – fire class A	8 A		
Minimum required test fire rating – fire class A <sup>2)</sup>	5 A		
Compliance with clause 15.2 (yes/no)	Yes		

<sup>1)</sup> Time to extinguish: < 5 min up to 21 A; < 7 min greater than 21 A.

<sup>2)</sup> 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	55 B		
Fire test carried out (indoors / outdoors)	Outdoors		
Measured ambient temperature (°C)	5	5	–
Permissible ambient temperature (°C)	0 to 30		
Measured wind speed (ms <sup>-1</sup> )	0,2	0,2	–
Maximum permissible wind speed (ms <sup>-1</sup> )	≤ 3		
Test fire extinguished (yes/no)	Yes	Yes	–
Measured time to extinguish test fire (s)	96	107	–
Measured remainder of heptane after extinction (mm)	> 5	> 5	–
Minimum required remainder of heptane after extinction (mm)	≥ 5		
Achieved test fire rating – fire class B	55 B		
Minimum required test fire rating – fire class B <sup>*)</sup>	55 B		
Compliance with clause 15.3 (yes/no)	Yes		

<sup>\*)</sup> 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)	3	3	-
Permissible ambient temperature (°C)	0 to 30		
Measured duration to reach auto ignition of the oil (h:min)	1:12	1:20	-
Maximum permissible duration to reach auto ignition of the oil (h:min)	≤ 3:30		
Measured auto ignition temperature (°C)	350	355	-
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 <sup>1)</sup>	5 F		
Conformity to clause 15.4 (yes/no)	Yes		

<sup>1)</sup> As per table L.1 of clause L.2.1 of EN 3-7.

