

**LABORATORY REPORT**

Laswell Asia Pacific Sdn Bhd  
Malaysia

Report No: WLR14-12356Rev1  
Sample No: WS14-6859  
Report Date: 17/09/2014

Introduction: Further to the request received from M/s. Laswell Asia Pacific Sdn Bhd dated 09<sup>th</sup> September 2014, a sample of Aerosol spraying fire extinguisher was tested for Chemical Analysis.

Sample Description : Aerosol Type Fire Extinguisher, FF400  
Sample received : 09/09/2014  
Date of Test : 09/09/201 - 12/09/2014  
Tested by : CJ

**METHOD : KOFEIS 0108**

Test	Requirement	Results
Structure & performance		
State of use	For fixed-state use, but shall not be for mechanically manipulated use	Fixed state of use
Risk of corrosion	Parts having risk of corrosion shall be processed anti-corrosive	Anti corrosive
Expellant gas	Expellant gas shall be inflammable and not affect the performance of the agent	Found satisfactory
Mode of use	Shall be structured for one-time use	Single time use
Valve protection	The protruding valve should be equipped with protective device	Found satisfactory
Temperature affect	No failure shall occur under the temperatures allowable for use	No failure occurred
Operating power	for finger press plate type, shall be under 50 N, and lever type, shall be under 150 N; Revolving valve shall be completely opened at a 1/4 turn, and shall be under 4N·m	35.5 N (finger type use)



Test	Requirement	Results
Dimensions	Should be appropriate within the tolerance range.	Height: 28.5 Cm Diameter: 5.8 Cm Pass the test
Materials	The container material should be either steel or light metal	Light material and found satisfactory
Weight of extinguishing agent	Weight of extinguishing agent, etc. shall be less than 700g.	408gm and found satisfactory
	Weight of extinguishing agent and liquefied gas shall be less than 90% of the container weight.	75.8 %
	Charging pressure should be under 0.8 Mpa at (35±0.5) Celsius	0.62Mpa at 35.1°C
<b>Performance</b>		
Garbage can fire	No lingering flames and recurrence within 2 minutes	Satisfactory
Gasoline stove fire	No lingering flames and recurrence within 1 minute	Satisfactory
Curtain fire	No lingering flames and recurrence within 2 minutes	Satisfactory
Sitting mat fire	No lingering flames and recurrence within 2 minutes	Satisfactory
Frying pot fire	No lingering flames and recurrence within 1 minute	Satisfactory
Car engine room fire	No lingering flames and recurrence within 1 minute	Satisfactory
Anti-corrosion test	No rusting or other failure shall occur in the anti-corrosion test of submerging sample in a 3% sodium chloride solution for 7 days, and in a 3% sulfuric solution or 3% sodium hydroxide solution for 7 days (excluding those filled with extinguishing agents like powder or halogenated compound product)	Satisfactory



Test	Requirement	Results
Spray Test	Extinguishing agent shall be effectively sprayed within 2 seconds after operation	Within 1 Second
	-Spray time should be at least 5 seconds at (20±2) Celsius. -Allowable spray time shall be within 30% of the proposed value	17.3 Seconds and proposed label time is 20 Seconds minimum
	Spray efficiency shall be at least 85%	98.3%
	Weight of extinguishing agent shall be less than 700g and less than 90% of container Allowable weight of extinguishing agent shall be (+50g, -40g) as the proposed range is 400g	408gm
	Filled gas shall not leak after submersion in warm water of (48±2) Celsius for 1 hour	No leak found and Satisfactory
Air-tightness test	Taking as one cycle placing the sample in the workable upper limit temp. for 24 hours and in the workable lower limit temp. for 24 hours, repeat the cycle 3 times; results of tests of No.8 (Spray) and No.9 (Air-tightness) shall meet the requirements.	Satisfactory
Temperature repetition test	The container of the aerosol-type extinguisher used for car engine rooms shall not be taken off or burst after submersion in warm water at (85±2) Celsius for 1 hour.	Satisfactory
High temperature test	The container of the aerosol-type extinguisher used for car engine rooms shall not be taken off or burst after submersion in warm water at (85±2) Celsius for 1 hour.	Satisfactory
Container internal pressure test		
Higher value of internal pressure test	No deformation shall occur after applying water pressure 1.5 times the container pressure at (50±2) Celsius for 5 minutes, and no destruction shall occur after applying water pressure 1.8 times the container pressure for 5 minutes.	No deformation found



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Test	Requirement	Results
	No deformation shall occur after applying water pressure of 13kg/cm <sup>3</sup> for 5 minutes, and water pressure of 15kg/cm <sup>3</sup> for 5 minutes.	No deformation found
Shock test	No destruction or gas leakage shall occur to meet the requirements of No.8 (Spray) after one vertical and horizontal free-fall test at 1.5m height, respectively.	Satisfactory
Extinguishing agent		
Freezing point	Shall be under -20 C	-14.3 <sup>0</sup> C
Steel corrosion	Weight loss of metal shall be less than 3mg/20cm <sup>3</sup> per day after placing sample at (38±2) Celsius for 21 days	No weight loss eviden
Settling volume	Before change	Less than 0.1 vol%
	After change	Less than 0.2 vol % <sup>2</sup>
Surface tension	Employing ASTM D 971, tension shall be less than 33mN/m at the liquid temp. of 20 C, and at least -3.0mN/m and under 1.5 mN/m of the design value.	Satisfactory 16.8mN/m Designated value is 18.0mN/m
Specific gravity	When measured with the hydrometer or pycnometer in accordance with ASTM D 5355, specific gravity shall be within ±0.02 of the design value.	Satisfactory
Density of hydrogen ion	Density shall be within ±0.4 of the design value when measured in accordance with ASTM D 4052	1.19
Mark	Shall meet applicable technical requirements	Satisfactory

Remarks: the above product meets the above requirements

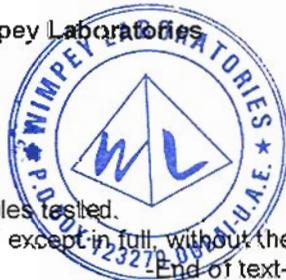
Signed for and on behalf of Wimpey Laboratories

AV Chandrajith  
Director

Test results relate only to the samples tested.

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