



File EX15622
Project 10CA52309
Project 10CA52310

Issued: February 15, 2012
Revised: April 6, 2012

REPORT

on

WET CHEMICAL SOLUTION EXTINGUISHING
SYSTEM UNITS - PRE-ENGINEERED

LVT HIGH TECH FIRE PROTECTION A SUBSIDIARY OF LEHAVOT, PRODUCTION AND
PROTECTION LTD
UPPER GALLILE ISRAEL

Copyright © 2012 UL LLC

UL LLC authorizes the above named company to reproduce this Report provided
it is in its entirety.

GENERAL

INTRODUCTION:

This Report describes the investigation of Lehavot Fire Protection's WCK Series wet chemical extinguishing system units. The systems consist of actuating assemblies designed for automatic or manual operation, expellant gas assemblies for storing, releasing and controlling the gas used for expelling the wet-chemical solution, cylinder assemblies for storing the wet-chemical solution, and discharge assemblies and miscellaneous devices. Systems are stored-pressure type having the expellant gas stored in the same cylinder as the wet-chemical-solution extinguishing agent.

OBJECT:

The object of this investigation was to determine compliance of the WCK Series wet chemical extinguishing system units with the applicable requirements of the Standard for Fire Testing of Fire Extinguishing Systems for Protection of Restaurant Cooking Areas for Fire Protection Service, UL 300, and the Standard for Pre-Engineered Dry Chemical Extinguishing System Units, UL 1254.

PLAN:

The investigation of the wet chemical extinguishing system units consisted of conducting a product conformance evaluation and performance testing as described in UL 300 and UL 1254.

DESCRIPTION

PRODUCT COVERED:

WCK Series, 6, 9, 16, 20 and 26 Liter capacity, stored-pressure extinguishing system units. Units are designed to discharge wet chemical solution from fixed nozzles for the extinguishment of fires in cooking appliances, hoods, plenums, filters, and ducts used for the ventilation of restaurant cooking equipment when such fires originate in the entrance of the ventilating equipment. For use at temperatures from +32 to +120°F. Operated by automatic means with manual back up. Includes the protection of deep fat fryers, griddles, range tops, upright broilers, chain broilers, electric char broilers, rock char broilers, natural charcoal char broilers, natural wood char broilers, gas radiant char broilers and woks.

Model	Nominal Capacity, L	Charge Pressure, bar @ 21°C
WCK6	6	15
WCK9	9	15
WCK16	16	15
WCK20	20	15
WCK26	26	15

CONSTRUCTION DETAILS:

The devices have been examined and found to comply with the applicable requirements of UL 300, UL 1254 and NFPA 17A in effect as of the date of this Report.

USE:

The products covered by this Report are for use in accordance with the National Fire Protection Association Standard For Wet Chemical Extinguishing Systems, NFPA 17A; Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations, NFPA 96, and the Manufacturer's Design, Installation, Recharge and Maintenance Technical Manual. (see Fig. 1).

A summary of the nozzle flow use limitations are as follows:

Fire Test Nozzle Summary (all pre-engineered flow tests must meet or fall between these values in order to be considered compliant)

Nozzle P/N	Nozzle Flow Points	Minimum Quantity, mL	Minimum Flow Rate, mL/s	Maximum Flow Rate, mL/s
93484	0.5	590	9.67	16.77
93416	1.0	787	12.49	N/A*
93482	1.0	1033	19.86	30.05
93483	1.5	1426	22.28	32.78
93429	2.0	2229	38.44	51.63
93478	2.0	2164	33.81	N/A*

*Nozzle not used with any appliances that require identification of a maximum flow rate.

Pre-engineered Flow Test Nozzle Summary (for future use, all pre-fire extinguishment flow tests must be equal or lower than the minimum and all pre-splash flow tests must meet or exceed the maximum in order to avoid changing flow limitations)

Nozzle P/N	Nozzle Flow Points	Minimum Quantity, mL	Minimum Flow Rate, mL/s	Maximum Flow Rate, mL/s
93484	0.5	590	9.74	14.63
93416	1.0	1082	18.03	28.07
93482	1.0	1295	20.89	27.87
93483	1.5	1426	24.07	32.78
93429	2.0	2229	38.60	51.05
93478	2.0	2278	39.30	50.58

TEST RECORD NO. 1

SAMPLES:

Samples of the wet chemical extinguishing system units, as indicated below and constructed as described herein, were submitted by the manufacturer for examination and test.

WCK Series, 6, 9, 16, 20 and 26 Liter capacity, stored-pressure extinguishing system units having a nominal charging pressure of 15 bar at 21°C. Units are designed to discharge wet chemical solution from fixed nozzles for the extinguishment of fires in cooking appliances, hoods, plenums, filters, and ducts used for the ventilation of restaurant cooking equipment when such fires originate in the entrance of the ventilating equipment. For use at temperatures from +32 to +120°F. Operated by automatic means with manual back up.

The units are designed for protection of commercial restaurant cooking appliances, hoods, and ducts as described in the Manufacturer's Installation, Manual.

Based on testing of the identical nozzle flow limitations for all models, the Model WCK9 was used for investigation purposes and was considered representative of the entire series of models for all cooking appliance extinguishment and hood and duct extinguishment tests in accordance with UL 300.

GENERAL:

Test results relate only to the items tested.

The following tests were conducted:

TEST	Reference
Flow Distribution Test	UL 1254, Sec. 32
Hydrostatic Pressure	UL 1254, Sec. 33
30-Day Elevated Temperature	UL 1254, Sec. 34
Temperature Cycling	UL 1254, Sec. 35
500 Cycle Operation	UL 1254, Sec. 37
One-Year Time Leakage	UL 1254, Sec. 38
Mounting Device Test	UL 1254, Sec. 39

Operation Test Of Manual Actuators And Manual Pull Stations	UL 1254, Sec. 41
Elastomeric Parts	UL 1254, Sec. 45
10-Day Moist Ammonia Air Stress Cracking Test	UL 1254, Sec. 46
Cooking Appliance Extinguishment - Deep Fat Fryer	UL 300, Sec. 6.2
Cooking Appliance Extinguishment - Griddle	UL 300, Sec. 6.3
Cooking Appliance Extinguishment - Range Top	UL 300, Sec. 6.4
Cooking Appliance Extinguishment - Gas Radiant Char-Broiler	UL 300, Sec. 6.5
Cooking Appliance Extinguishment - Electric Char-Broiler	UL 300, Sec. 6.6
Cooking Appliance Extinguishment - Lava Rock Char Broiler	UL 300, Sec. 6.7
Cooking Appliance Extinguishment - Natural Charcoal Char-Broiler	UL 300, Sec. 6.8
Cooking Appliance Extinguishment - Mesquite Wood Char-Broiler	UL 300, Sec. 6.9
Cooking Appliance Extinguishment - Upright Broiler	UL 300, Sec. 6.10
Cooking Appliance Extinguishment - Chain Broiler	UL 300, Sec. 6.11
Cooking Appliance Extinguishment - Wok	UL 300, Sec. 6.12
Deep Fat Fryer Extinguishment Splash Test	UL 300, Sec. 6.13
Deep Fat Fryer Cooking Temperature Splash Test	UL 300, Sec. 6.14
Range Top Extinguishment Splash Test	UL 300, Sec. 6.15
Range Top Cooking Temperature Splash Test	UL 300, Sec. 6.16
Wok Extinguishment Splash Test	UL 300, Sec. 6.17
Wok Cooking Temperature Splash Test	UL 300, Sec. 6.18
Hood and Duct (Full Scale) Extinguishment Test	UL 300, Sec. 7

The test methods and results of the above tests were based on limitations established from information submitted by the manufacturer and as detailed in the manufacturer's manual.

Evaluation of the following components was not considered necessary based on component requirements consistent with applicable end product requirements. The components are agent cylinders, pressure gauges, gas valves (manual and electric), fusible links, label system, elastomeric seal material, hood fittings and control switches.

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements in the standards noted below and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Standard	Title	Edition or Publication Date	Latest Revision Date
UL 1254	Standard For Pre-Engineered Dry Chemical Extinguishing System Units	3	2010-10-08
UL 300	Standard For Fire Testing Of Fire Extinguishing Systems For Protection Of Commercial Cooking Equipment	3	2010-07-16

Any information and documentation provided to you involving UL Mark services are provided on behalf of Underwriters Laboratories Inc. (UL) or any authorized licensee of UL.

TEST RECORD NO. 2

SAMPLES:

Samples of the wet chemical extinguishing system units, as indicated below and constructed as described herein, were submitted by the manufacturer for examination and test.

WCK Series, 6, 9, 16, 20 and 26 Liter capacity, stored-pressure extinguishing system units having a nominal charging pressure of 15 bar at 21°C. Units are designed to discharge wet chemical solution from fixed nozzles for the extinguishment of fires in cooking appliances, hoods, plenums, filters, and ducts used for the ventilation of restaurant cooking equipment when such fires originate in the entrance of the ventilating equipment. For use at temperatures from +32 to +120°F. Operated by automatic means with manual back up.

The units are designed for protection of commercial restaurant cooking appliances, hoods, and ducts as described in the Manufacturer's Installation, Manual.

The extinguishing system units submitted for investigation are identical in construction to the current UL Listed system units with the exception of a new manual pull station, manual reset relay device and associated revisions to the installation manual. The manual pull station is identical to the current model with the exception of an alternate oversize cover plate. The manual reset relay device is UL Listed.

GENERAL:

Evaluation of the manual reset relay device was not considered necessary based on component requirements consistent with applicable end product requirements.

Additional tests were not considered necessary due to tests conducted in Test Record 1.

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements in the standards noted below and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Standard	Title	Edition or Publication Date	Latest Revision Date
UL 1254	Standard For Pre-Engineered Dry Chemical Extinguishing System Units	3	2010-10-08
UL 300	Standard For Fire Testing Of Fire Extinguishing Systems For Protection Of Commercial Cooking Equipment	3	2010-07-16

Test Record by:

MATTHEW D. TENNENBAUM
Staff Engineer

Reviewed by:

KEVIN HOLLY
Senior Project Engineer

Any information and documentation provided to you involving UL Mark services are provided on behalf of Underwriters Laboratories Inc. (UL) or any authorized licensee of UL.

CONCLUSION

Samples of the products covered by this Report have been found to comply with the requirements covering the category and the products are found to comply with UL's applicable requirements. The description and test result in this Report are only applicable to the sample(s) investigated by UL and does not signify UL certification or that the product(s) described are covered under UL's Follow-Up Service Program. When covered under UL's Follow-Up Service Program, the manufacturer is authorized to use the UL Listing Mark on such products which comply with UL's Follow-Up Service Procedure and any other application requirements of Underwriters Laboratories Inc. The Listing Mark of Underwriters Laboratories Inc. on the product, or the UL symbol on the product and the Listing Mark on the smallest unit container in which the product is packaged, is the only method to identify products investigated by UL to published requirements and manufactured under UL's Listing and Follow-Up Service.

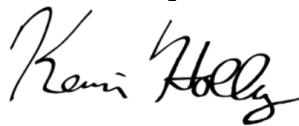
This Report is intended solely for the use of UL and the Applicant for establishment of UL certification coverage of the product under UL's Follow-Up Service. UL retains all rights, title and interest (including exclusive ownership) in this Report and all copyright therein. Unless expressly authorized in writing by UL, the Applicant shall not disclose or otherwise distribute this Report or its contents to any third party or use this Report for any purpose other than to establish UL certification and become eligible for Follow-Up Service for the product(s) described in this Report. Any other use of this Report including without limitation, evaluation or certification by a party other than UL unless part of a certification scheme, is prohibited and renders the Report null and void. UL shall not incur any obligation or liability for any loss, expense, or punitive damages, arising out of or in connection with the use or reliance upon the contents of this Report to anyone other than the Applicant as provided in the agreement between UL and Applicant. Any use or reference to UL's name or certification mark(s) by anyone other than the Applicant in accordance with the agreement is prohibited without the express written approval of UL or any authorized licensee of UL. UL shall not otherwise be responsible to anyone for the use of or reliance upon the contents of this Report.

Report by:



MATTHEW D. TENNENBAUM
Staff Engineer

Reviewed by:



KEVIN HOLLY
Senior Project Engineer