

Cook & Hold Ovens - Emissions Report

Maximum savings in shrinkage, energy, and labor, while eliminating exhaust hood requirements

Underwriters Laboratories has proven what we've known all along. An Alto-Shaam Cook & Hold oven doesn't require valuable space under an expensive ventilation hood. Grease-laden vapors emitted by the Cook & Hold oven are by far less than U.L.'s established standard of 5 milligrams per cubic meter. After a continuous 8 hours of cooking multiple full loads of chicken in each compartment of the double oven, the Alto-Shaam Cook & Hold emissions sampling resulted in a total of 0.55 milligrams per cubic meter with absolutely no visible smoke. See the following addendum of method and results provided by U.L.



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Printed in the U.S.A.  1227 (04/11)



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2005-10-20

Mr. Rodney Anderson
Alto-Shaam Inc.
W164 N9221 Water St Po Box 450
Menomonee Falls, WI 53051
United States

Reference: File E52279 Project 05NK22443
EPA 202 TESTING FOR EMISSION OF GREASE-LADEN AIR; MODELS 1000-TH/I,
1000-TH/II PT, 500-TH/II, 750-TH/II, 1000-TH/III, 500-TH/III, 750-TH/III, 1000-TH/III, 500-TH/III
Product(s): AS-250 COOK AND HOLD OVENS

Dear Mr. Anderson,

Based on your request, we have opened a project to determine the amount of emissions of grease laden vapor that exits the 1200-TH/III. This model is outlined in section 33 of the referenced file. The testing of this model was considered representative of all models outlined in sections 2, 4, 14 and 33. UL's investigation of your product has been completed under the above project number and the subject product was determined to comply with the applicable requirements of NFPA96: 2004 Edition, Par. 4.1.1.2.

The result of our testing of the model 1200-TH/III was 0.55 mg/m³. This result complies with the requirement of NFPA96, par. 4.1.1.2 as it is less than the required 5 mg/m³. See the Addendum of this letter for complete test method and results.

This completes our project for the subject investigation and we are closing this project with the associated report revisions.

Please contact us if you have any questions or comments.

Sincerely,

Fred Zaplatosch
Fred Zaplatosch
Staff Engineer
Department: 3015CNBK

Reviewed by:

Bruce R. Proper
Bruce R. Proper
Section Manager
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U.L. addendum of method and results

Test for evolution of smoke or grease-laden air:

The Model 1200-TH/III oven was tested using a method derived from EPA Method 202. The manufacturer also provided 2 to 3 lb chickens for the test.

A sheet metal hood having no leaks was constructed above the unit with a 6 in. by 8 in. duct, 108 in. tall sheet metal stack such that all grease-laden vapors exiting the cooking compartment were captured within the hood. A sampling port was located 84 in. downstream from the hood exhaust, at which point it was determined there was laminar flow. The sampler was assembled and an out-of-stack filter was used. A pre-leak check was conducted and determined to be > 0.02 ft/min. Sampling was determined to be done at 9 traverse points.

The stack was furnished with a variable speed ventilator to draw the grease-laden vapors into the hood and stack for total capture of effluents. The ventilator was adjusted to 500 CFM.

The oven was operated normally by cooking the following foods:

Chickens, 54 per load (27 chickens per cavity). Each load took 135 minutes.

The cooking cycle was repeated for 8 hours of continuous cooking.

During the cooking operation, it was noted whether or not visible effluents evolved from the air exhaust of the hood. Gauge, meter and temperature readings were taken and recorded every 10 min. After cooking, the condition of the duct was noted and a post-leak check was conducted and determined to be < 0.02 ft³/min.

After being allowed to cool, the sampling equipment was disassembled, the filter was removed, and placed into a sample container labeled No. 1. The liquid in impingers Nos. 1, 2, and 3 were volumetrically measured and transferred to sample container No. 3. The silica gel and impinger No. 4 were transferred to sample container No. 5. The nozzle, probe and impingers were rinsed three times with water and the rinse was added to container No. 3. These parts were also rinsed three times with acetone and transferred to container No. 4. All additional inter surfaces of the sampling terrain glassware were rinsed with methylene chloride three times, the rinse was transferred to container No. 6. A blank of acetone approximately equivalent to the amount used for rinses was aliquoted into container No. 2, the same was done for the distilled de-ionized water and methylene chloride except that these were aliquoted into their own individual containers labeled No. 7 and 8 respectively. All containers were properly labeled and sealed, then the liquid levels in all the containers were marked.

The analysis phase was done in accordance with EPA Method 202, using the out-of-stack filter.

Results:

There was no visible smoke emitted from the exhaust of the hood during the normal cooking operation. There were no noticeable amounts of smoke accumulated in the test room after 8 hours of continuous cooking.

The total amount of grease-laden effluents collected by the sampling equipment was found to be 0.55 mg/m³, which is less than 5 mg/m³.

