

File: MH48408

Project: 11CA14748

Date: 4/7/2011

Client:

**Wells MFG Co.**

Model:

WVU-96

Product Tested

Meat Cakes

**Wells MFG Co.**  
Model: **WVU-96**

Start Time: **9:03**

Product Tested: **Meat Cakes**

Cook Time: **5 minutes a side**

End Time: **17:03**

Barometric Pressure: **763** mmHg

Recovery Time: **Griddle is cleaned even**

Test Date: **05/12/11**

Room Ambient: **24**

## IMPINGER WEIGHT

Measurement	Filter Weight in grams	
	Start	End
1	0.6512	0.6594
2	0.6516	0.6591
3		
4		
5		
6		
Final	0.6516	0.6591

Impinger	Start Volume/Weight	Empty Weight (lbs)	With Content (lbs)	End of Test (lbs)
1	100mL	1.340	1.562	1.424
2	100mL	1.278	1.500	1.742
3	0	1.298	1.298	1.420
4	200g	1.350	1.794	1.912

## Timed Meter Readings

Traverse Point Number	Sampling Time Hr/Sec	Gas Meter Reading (m <sup>3</sup> )	Orifice Pressure Differential ΔH	Velocity Head ΔP	Pump Vacuum In.hg	Stack Temp °C	Probe Temp °C	Box Temp °C	Impinger Temp °C	Gas Meter Outlet °C
Initial	0	287.295	42	6.0	1.0	31	121	121	8	25
1	10	287.500	42	6.0	1.0	31	121	122	10	25
1	20	287.706	42	6.0	1.0	31	121	121	13	27
1	30	287.912	41	6.0	1.7	31	121	121	16	28
1	40	288.118	41	6.0	1.5	33	121	121	14	29
1	50	288.323	41	5.8	1.5	33	121	121	15	29
1	60	288.528	42	5.8	1.5	32	121	121	13	30
2	10	288.736	42	6.8	1.5	32	121	122	14	30
2	20	288.943	42	6.8	1.5	32	121	121	16	30
2	30	289.150	42	6.8	1.5	32	121	121	13	30
2	40	289.358	42	6.8	1.5	32	121	121	14	30
2	50	289.564	42	6.6	1.5	31	121	121	17	30
2	60	289.771	42	6.6	1.5	32	121	121	12	30

Traverse Point Number	Sampling Time Hr/Sec	Gas Meter Reading (m <sup>3</sup> )	Orifice Pressure Differential ΔH	Velocity Head ΔP	Pump Vacuum In.hg	Stack Temp °C	Probe Temp °C	Box Temp °C	Impinger Temp °C	Gas Meter Outlet °C
3	10	289.979	41	6.6	1.5	31	121	121	13	30
3	20	290.184	41	6.6	1.5	32	121	121	14	30
3	30	290.386	40	6.6	1.5	34	121	121	16	30
3	40	290.590	41	6.6	1.5	31	121	121	12	30
3	50	290.802	41	6.6	1.5	31	121	121	12	30
3	60	291.014	42	6.6	1.5	32	121	121	14	30
4	10	291.226	43	6.2	1.5	32	121	121	12	30
4	20	291.436	43	6.2	1.5	33	121	121	13	30
4	30	291.646	42	6.4	1.5	32	121	121	14	30
4	40	291.856	42	6.2	1.6	31	121	120	16	30
4	50	292.065	42	6.4	1.6	32	121	121	13	30
4	60	292.276	42	6.3	1.6	32	121	121	13	30
5	10	292.593	42	7.0	1.5	32	121	121	13	29
5	20	292.800	42	7.0	1.5	31	121	121	14	29
5	30	293.009	43	7.0	1.5	31	121	121	14	29
5	40	293.219	43	7.0	1.5	32	121	122	14	29
5	50	293.429	43	7.0	1.5	32	121	121	14	30
5	60	293.644	43	7.0	1.5	33	121	121	12	30
6	10	293.850	42	7.0	1.5	32	121	121	12	30
6	20	294.051	40	7.0	1.5	32	121	121	14	30
6	30	294.257	42	7.0	1.5	32	121	122	14	30
6	40	294.463	42	6.8	1.5	34	121	121	15	30
6	50	294.670	42	7.0	1.5	32	121	121	12	30
6	60	294.880	42	7.0	1.5	32	121	121	12	30
7	10	295.089	42	7.0	1.5	33	121	121	13	30
7	20	295.298	42	7.0	1.7	32	121	121	14	30
7	30	295.508	42	7.0	1.7	32	121	121	15	30
7	40	295.719	44	7.0	1.7	32	121	121	11	30
7	50	295.932	43	7.0	1.7	32	121	121	11	30
7	60	296.145	43	7.0	1.8	33	121	121	12	30
8	10	296.358	43	6.4	1.8	34	121	122	13	30
8	20	296.572	44	6.6	1.8	32	121	122	13	30
8	30	296.784	44	6.6	1.8	32	121	121	15	30
8	40	296.997	44	6.6	1.8	32	121	121	15	30
8	50	297.212	44	6.6	1.8	32	121	121	12	30
8	60	297.427	44	6.6	1.8	33	121	121	11	30

Average Gas Meter Outlet Temperature: 29.57143 °C

Average Gas Meter Outlet Temperature: 85.22857 °F

Δ H = 42.20833 mm H<sub>2</sub>O

T<sub>m</sub> = 545.23 R

Δ H = 1.661745 in H<sub>2</sub>O

**Wells MFG Co.**  
Model: **WVU-96**

Calculations needed for Nozzle Size

$\Delta H_{@}$  =  This number is calculated when device is calibrated

% Oxygen =  %O<sub>2</sub> Oxygen inside stack during operation

% Carbon =  %CO<sub>2</sub> Carbon Dioxide inside stack during operation

Stack Temperature =  °C Temperature inside stack during operation

Barametric Pressure =  mmHg Barametric pressure at location of meter

Stack Static Pressure =  mm H<sub>2</sub>O Static Pressure inside of duct

Average Square root  $\Delta P$  =   $\Delta P$  mm H<sub>2</sub>O Enter pressure differential at each transvers point in mm H<sub>2</sub>O, the take square root of  $\Delta P$ .

	Pressure	CFM		Pressure
1	4.826	605	5	4.572
2	4.826	575	6	4.826
3	4.318	610	7	5.08
4	4.318	595	8	4.862

Average

# Travers Points

Meter Temperature =  °C

Pitot Tube Coefficient =

% Moisture =

Sample Rate =  Lpm

Ideal Nozzle Size  mm When numbers are entered into calculator, ideal nozzle size will be displayed. Enter number here

in

Actual Nozzle Size Used  in If ideal nozzle size is not available, locate nearest number. Enter what nozzle size was used for testing

**Wells MFG Co.**  
Model: WVU-96

Start Time: 9:03 End Time: 17:03 Test Date: 05/12/11  
Cook Time: minutes a side Product Tested: **Meat Cakes**  
Recovery Time: paned every three cycle Barometric Pressure: 763

## Post-Test Data

Gas Meter Reading initial	287.30 m <sup>3</sup>	Gas Meter Reading End	297.43 m <sup>3</sup>
Vm	10.13 m <sup>3</sup> 357.81 ft <sup>3</sup>		
Y- Constant	<input type="text" value="0.949"/>	This data is obtained during device calibration. Verify number with most recent calibration certification on LEM	
Tstd constant	528.0 R		
Tm	545.2 R	Number obtained from Datasheet	
Barometric Pressure	763 mmHg 30.03937 inHg	Barometric Pressure on day of Test	
Pstd	30.42 inHg		
Δ H	1.661745 in H <sub>2</sub> O		
Vmstd	326.04 ft <sup>3</sup> 9.232329 m <sup>3</sup>		

## Post-Filter Data

Filter paper	659.1000 mg	<b>Weight at End of Test</b>
Filter AR	651.6000 mg	<b>Weight at Beginning of Test</b>
delta H	7.5000 mg	<b>Change of Weight at End of Test</b>

## Post-Acid Used

Acetone Wash	0.1000 mg	Bottle 2	Mc	7.8 mg
Acetone Blank	0.2000 mg	Bottle 3		
Impinger Contents	2.1000 mg	Bottle 4	<b>Mn</b>	15.3 mg
MeCl Wash	6.4000 mg	Bottle 5		
MeCl Blank	0.1000 mg	Bottle 6		
Water Blank	0.5000 mg	Bottle 7		

## Total Grease Emissions

Cs=Mn/Vmstd **1.66 mg/m<sup>3</sup>**