



Food Service Technology Center Appliance Test Summary Report

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Manufacturer	Garland
Model	Master 450
Appliance	Full-Size Convection Oven - Gas

Report Number	5012.08.53
Test Date	January, 2006
Tested By	G. Sorensen

Purpose of Testing

This testing determined the energy input rate, preheat time and energy, idle energy rate, uniformity and heavy-load cooking-energy efficiency of the oven by applying ASTM F1496.

Energy Input Rate

Rated Energy Input Rate (Btu/h)	60,000
Measured Energy Input Rate (Btu/h)	60,620
Difference (%)	1.0
Electric Energy Rate (kW)	0.77

Preheat to 350°F

Duration (min)	12.1
Gas Energy Consumption (Btu)	12,280
Electric Energy Consumption (kWh)	0.16
Preheat Rate (°F/min)	22.2

Idle at 350°F

Idle Energy Rate (Btu/h)	16,820
Electric Energy Rate (kW)	0.77

Heavy-Load Cooking Energy Efficiency ^a

Food Product	Russet Potatoes
Cook Time (min)	45.4
Cooking Energy Rate (Btu/h)	51,410
Electric Energy Rate (kW)	0.69
Energy to Food (Btu/lb)	233
Energy to Appliance (Btu/lb)	554
Cooking-Energy Efficiency (%)	42.1 ± 1.2
Production Capacity (lb/hr)	97.0 ± 4.8

^a based on a minimum of three test replicates.



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Oven Browning Uniformity

Sheet Cakes

Rack #1 (Top)



Rack #2



Rack #3 (Middle)



Rack #4



Rack #5 (Bottom)



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Ice-Load Cooking Uniformity Test Results

Cook Time (min)	53.6
Cooking Energy Rate (Btu/h)	58,230
Average Rack Temperatures (°F):	
Rack #1	158
Rack #2	142
Rack #3	170
Rack #4	171
Rack #5	209
Maximum Temperature Difference	67

Heavy-Load Potato Test Data

	Test #1	Test #2	Test #3
Measured Values			
Number of Potatoes	150	150	150
Cook Time (min)	46.3	44.4	45.5
Gas Energy to Oven (Btu)	39,353	38,097	39,257
Electric Energy to Oven (Btu)	1,823	1,747	1,788
Initial Weight of Potatoes (lb)	73.6770	73.3710	73.2130
Final Weight of Potatoes (lb)	64.0155	64.3620	63.6970
Initial Temperature of Potatoes (°F)	76.0	71.9	77.8
Final Temperature of Potatoes (°F)	205.0	205.0	205.1
Calculated Values			
Sensible Heat (Btu)	7,984	8,203	7,829
Latent - Heat of Vaporization (Btu)	9,372	8,739	9,231
Total Energy to Food (Btu)	17,355	16,942	17,059
Energy to Food (Btu/lb)	236	231	233
Total Energy to Oven (Btu)	41,176	39,845	41,046
Energy per Pound of Food Cooked (Btu/lb)	559	543	561
Cooking-Energy Efficiency (%)	42.1	42.5	41.6
Cooking Energy Rate (Btu/h)	50,965	51,483	51,768
Cooking-Energy Rate (kW)	0.69	0.69	0.69
Production Capacity (lb/h)	95.4	99.2	96.5

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