



Food Service Technology Center Appliance Test Summary Report

The information in this report is based on data generated at the PG&E Food Service Technology Center.
California consumers are not obligated to purchase any full service or other service not funded by the program.
This program is funded by the California utility rate payers under the auspices of the California Public Utilities Commission.

Manufacturer	Garland
Model	(Moisture +) MP-GS-10-D
Appliance	Full-size convection oven - Gas

Report Number	5012.09.46
Test Date	August, 2009
Tested By	A.Spitz

Purpose of Testing

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

Energy Input Rate

Rated Energy Input Rate (Btu/h)	80,000
Measured Energy Input Rate (Btu/h)	84,503
Difference (%)	5.3
Fan/Control Energy Rate (kW)	0.61

Preheat to 340°F

Duration (min)	8.67
Energy Consumption (Btu)	12,491
Preheat Rate (°F/min)	30.3

Idle at 350°F (No Moisture)

Idle Energy Rate (Btu/h)	17,387
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Heavy-Load Cooking Energy Efficiency ^a

Food Product	Russet Potatoes
Oven Temperature Set-point (°F)	350
Cook Time (min)	45.81
Cooking Energy Rate (Btu/h)	49,065
Cooking Energy Rate (kW)	0.56
Energy to Food (Btu/lb)	230
Energy to Appliance (Btu/lb)	543
Cooking-Energy Efficiency (%)	44.0 ± 2.5
Production Capacity (lb/hr)	94.0 ± 4.3

^a based on a minimum of three test replicates.



Garland

185 East South Street
Freeland, PA. 18224
www.garland-group.com

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Heavy-Load Potato Test Data

	Test #1	Test #2	Test #3
Measured Values			
Cook Time (min)	45.25	46.75	45.42
Electric Energy to Oven (kWh)	0.42	0.43	0.43
Initial Weight of Potatoes (lb)	71.670	71.640	71.845
Final Weight of Potatoes (lb)	63.480	62.015	63.570
Initial Temperature of Potatoes (°F)	72.2	70.7	72.3
Final Temperature of Potatoes (°F)	205	205	205
Calculated Values			
Sensible Heat (Btu)	8,084	8,081	8,009
Latent - Heat of Vaporization (Btu)	7,994	9,336	8,027
Total Energy to Food (Btu)	16,029	17,417	16,036
Energy to Food (Btu/lb)	224	243	223
Total Energy to Oven (Btu)	38,387	40,042	38,362
Energy per Pound of Food Cooked (Btu/lb)	536	559	534
Cooking-Energy Efficiency (%)	43.4	45.2	43.5
Electric-Only Cooking-Energy Rate (kW)	0.56	0.56	0.57
Gas-Only Cooking Energy Rate (Btu/h)	48,982	49,490	48,723
Production Capacity (lb/h)	95.0	91.9	94.9

Medium-Load Potato Test Data

	Test #1	Test #2	Test #3
Measured Values			
Cook Time (min)	42.92	42.42	43.42
Electric Energy to Oven (kWh)	0.39	0.39	0.40
Initial Weight of Potatoes (lb)	43.075	42.750	42.955
Final Weight of Potatoes (lb)	38.425	38.030	38.190
Initial Temperature of Potatoes (°F)	72.2	71.7	70.8
Final Temperature of Potatoes (°F)	204	205	205
Calculated Values			
Sensible Heat (Btu)	4,802	4,788	4,847
Latent - Heat of Vaporization (Btu)	4,511	4,578	6,622
Total Energy to Food (Btu)	9,313	9,366	9,469
Energy to Food (Btu/lb)	216	219	220
Total Energy to Oven (Btu)	27,264	27,038	26,972
Energy per Pound of Food Cooked (Btu/lb)	633	633	630
Cooking-Energy Efficiency (%)	35.9	36.4	37.0
Electric-Only Cooking-Energy Rate (kW)	0.55	0.55	0.55
Gas-Only Cooking Energy Rate (Btu/h)	36,240	36,365	35,397
Production Capacity (lb/h)	60.2	60.5	59.4

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Light-Load Potato Test Data

	Test #1	Test #2	Test #3
Measured Values			
Cook Time (min)	43.42	42.50	42.50
Electric Energy to Oven (kWh)	0.40	0.39	0.39
Initial Weight of Potatoes (lb)	14.435	14.395	14.445
Final Weight of Potatoes (lb)	12.730	12.755	12.900
Initial Temperature of Potatoes (°F)	74.02	75.00	75.23
Final Temperature of Potatoes (°F)	204.96	204.86	205.06
Calculated Values			
Sensible Heat (Btu)	1,575	1,570	1,575
Latent - Heat of Vaporization (Btu)	1,654	1,591	1,499
Total Energy to Food (Btu)	3,228	3,161	3,074
Energy to Food (Btu/lb)	224	220	213
Total Energy to Oven (Btu)	18,846	18,285	18,249
Energy per Pound of Food Cooked (Btu/lb)	1,306	1,270	1,263
Cooking-Energy Efficiency (%)	18.5	18.6	18.2
Electric-Only Cooking-Energy Rate (kW)	0.56	0.55	0.56
Gas-Only Cooking Energy Rate (Btu/h)	24,138	23,941	23,869
Production Capacity (lb/h)	20.0	20.3	20.4

Frozen Macaroni and Cheese Cooking Uniformity Test Data

	Test #1
Measured Values	
Cook Time (min)	71.00
Final Average Temperatures per Rack (°F)	
Rack #1 (Top)	204.6
Rack #2	184.9
Rack #3 (Center)	167.8
Rack #4	146.9
Rack #5 (Bottom)	146.3

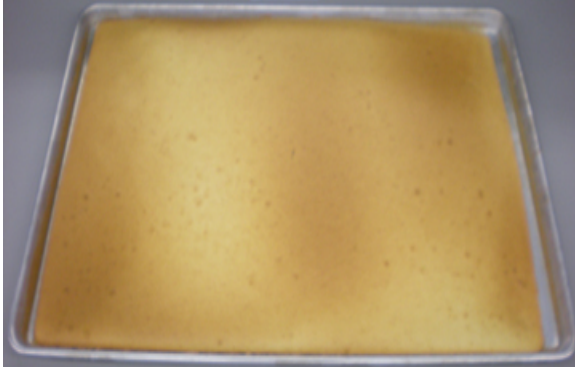
Sheet Cake Uniformity

Food Product	White Cake Mix
Bake Time (min)	21.00



Food Service Technology Center Appliance Test Summary Report

Top



Lower Center



Upper Center



Bottom



Center



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