

## NuWave Oven cooking comparison test –Cooking Time Comparison

Raw prime rib steaks (1/2 lb), chicken leg quarters (1/2 lb), 80% lean hamburger, and Italian sausage were purchased from a local grocer. T-type thermocouples were used to monitor product temperatures and data were recorded using Yokogawa 3087 Portable Hybrid Recorder. Five pieces of each food item were cooked individually in the ovens. Tests were conducted from March 1, 2005 to March 30, 2005.

Results are presented below:

| Food item            | Cooking time* Average ± Standard Deviation (minutes) |                    |                     |
|----------------------|--|--------------------|---------------------|
|                      | NuWave Oven  | Conventional Oven* | ShowTime Rotisserie |
| Beef Prime Rib Steak | 14.7 ± 1.7   | 20.1 ± 3.4         | 18.0 ± 1.3          |
| Chicken Leg Quarter  | 29.1 ± 4.1   | 49.7 ± 7.9         | 40.6 ± 3.8          |
| Italian Sausage      | 11.5 ± 0.3   | 19.44 ± 0.3        | 16.1 ± 0.5          |
| Beef Hamburger       | 9.0 ± 1.3  | 13.1 ± 1.6         | 16.0 ± 0.6          |

| Food item   |                            | Cooking time* (minutes) |                     |                     |
|---|----------------------------|-------------------------|---------------------|---------------------|
|   |                            | NuWave Oven             | Conventional Oven** | ShowTime Rotisserie |
| Beef Prime Rib Steak<br>(1/2lb,<br>1.5"-2")<br>160°F done | Sample #1                  | 14.0                    | 16.6                | 16.2                |
|   | Sample #2                  | 14.5                    | 23.2                | 18.0                |
|   | Sample #3                  | 17.7                    | 24.1                | 19.2                |
|   | Sample #4                  | 13.5                    | 19.3                | 17.3                |
|   | Sample #5                  | 13.7                    | 17.4                | 19.4                |
|   | <b>Average ± Std. Dev.</b> | <b>14.7 ± 1.7</b>       | <b>20.1 ± 3.4</b>   | <b>18.0 ± 1.3</b>   |
| Chicken Leg Quarter<br>(1/2 lb)<br>180°F done             | Sample #1                  | 32.8                    | 59.1                | 36.8                |
|   | Sample #2                  | 25.2                    | 56.8                | 44.1                |
|   | Sample #3                  | 24.7                    | 47.5                | 36.9                |
|   | Sample #4                  | 33.5                    | 43.7                | 40.3                |
|   | Sample #5                  | 29.4                    | 41.4                | 44.9                |
|   | <b>Average ± Std. Dev.</b> | <b>29.1 ± 4.1</b>       | <b>49.7 ± 7.9</b>   | <b>40.6 ± 3.8</b>   |
| Italian Sausage<br><br>165°F done                         | Sample #1                  | 11.5                    | 19.0                | 16.0                |
|   | Sample #2                  | 11.2                    | 19.5                | 16.3                |
|   | Sample #3                  | 11.3                    | 19.8                | 15.6                |
|   | Sample #4                  | 11.7                    | 19.6                | 15.7                |
|   | Sample #5                  | 11.9                    | 19.3                | 16.9                |
|   | <b>Average ± Std. Dev.</b> | <b>11.5 ± 0.3</b>       | <b>19.4 ± 0.3</b>   | <b>16.1 ± 0.5</b>   |
| Beef Hamburger<br><br>160°F done                          | Sample #1                  | 7.0                     | 13.1                | 15.9                |
|   | Sample #2                  | 8.5                     | 10.8                | 17.0                |
|   | Sample #3                  | 10.3                    | 12.7                | 15.8                |
|   | Sample #4                  | 9.8                     | 15.2                | 15.8                |
|   | Sample #5                  | 9.4                     | 13.8                | 15.5                |
|   | <b>Average ± Std. Dev.</b> | <b>9.0 ± 1.3</b>        | <b>13.1 ± 1.6</b>   | <b>16.0 ± 0.6</b>   |

\*To protect consumers' health, the maximum time for a product to reach the evaluated temperature must be reported. This cook time is approximate and may change if more replicates of food items or more than one cooking appliance were evaluated. Average cooking time and standard deviation were requested by the sponsor.

\*\* The 10 minutes preheating time to 350°F in the Conventional Oven was not included in the cooking time.

This data must only be interpreted with the following understanding of causes for variability in the data: Variations in cooking times to reach internal temperatures of the 5 replicates may be attributed to temperature fluctuations in the ovens as well as the characteristics of the specific point in the food at which the internal temperature was monitored during cooking. Presence of air pockets, bone particles, fat or lean muscle molecules may affect the heat transfer and heat capacity during cooking.

Cooking times are approximate values only, as similar foods with varying fat levels, moisture contents, or different cuts of meat, may demonstrate different cooking times.

## NuWave Oven cooking comparison test –Cooking Time Comparison

See final report for full details on this study.

This is to certify that Silliker Inc. has performed the following tests for Hearthware Home Products Inc. for its NuWave Oven, and the following data are true and accurate.

**Certified True and Correct,**

Signed by: 

Date: April 8, 2005

Silliker Inc., Research Center, 160 Armory Drive, South Holland, IL 60473, USA  
Tel: 708-225-1435, Fax: 708-225-1536, Web: [www.silliker.com](http://www.silliker.com)

## NuWave Oven cooking comparison test – Energy Consumption Comparison

Raw prime rib steaks (1/2 lb), chicken leg quarters (1/2 lb), 80% lean hamburger, and Italian sausage were purchased from a local grocer. A power meter was used to determine energy consumption. Five pieces of each food item were cooked individually in the ovens. Tests were conducted from March 1, 2005 to March 30, 2005.

Results are presented below:

| Food item            | Energy Consumption Average ± Standard Deviation (kW/h) |                    |                     |
|----------------------|--|--------------------|---------------------|
|                      | NuWave Oven  | Conventional Oven* | ShowTime Rotisserie |
| Beef Prime Rib Steak | 0.101 ± 0.016  | 0.258 ± 0.021      | 0.190 ± 0.016       |
| Chicken Leg Quarter  | 0.176 ± 0.026  | 0.408 ± 0.035      | 0.416 ± 0.049       |
| Italian Sausage      | 0.085 ± 0.003  | 0.249 ± 0.010      | 0.144 ± 0.011       |
| Beef Hamburger       | 0.063 ± 0.007  | 0.213 ± 0.010      | 0.166 ± 0.003       |


| Food item   |                            | Energy Consumption (kW/h) |                      |                      |
|---|----------------------------|---------------------------|----------------------|----------------------|
|   |                            | NuWave Oven               | Conventional Oven*   | ShowTime Rotisserie  |
| Beef Prime Rib Steak<br>(1/2lb,<br>1.5"-2")<br>160°F done | Sample #1                  | 0.107                     | 0.234                | 0.173                |
|   | Sample #2                  | 0.113                     | 0.270                | 0.202                |
|   | Sample #3                  | 0.108                     | 0.288                | 0.206                |
|   | Sample #4                  | 0.102                     | 0.256                | 0.174                |
|   | Sample #5                  | 0.073                     | 0.244                | 0.195                |
|   | <b>Average ± Std. Dev.</b> | <b>0.101 ± 0.016</b>      | <b>0.258 ± 0.021</b> | <b>0.190 ± 0.016</b> |
| Chicken Leg Quarter<br>(1/2 lb)<br>180°F done             | Sample #1                  | 0.191                     | 0.456                | 0.336                |
|   | Sample #2                  | 0.149                     | 0.428                | 0.435                |
|   | Sample #3                  | 0.146                     | 0.408                | 0.425                |
|   | Sample #4                  | 0.203                     | 0.368                | 0.468                |
|   | Sample #5                  | 0.189                     | 0.382                | 0.418                |
|   | <b>Average ± Std. Dev.</b> | <b>0.176 ± 0.026</b>      | <b>0.408 ± 0.035</b> | <b>0.416 ± 0.049</b> |
| Italian Sausage<br><br>165°F done                         | Sample #1                  | 0.080                     | 0.246                | 0.136                |
|   | Sample #2                  | 0.085                     | 0.236                | 0.151                |
|   | Sample #3                  | 0.085                     | 0.252                | 0.141                |
|   | Sample #4                  | 0.087                     | 0.264                | 0.132                |
|   | Sample #5                  | 0.089                     | 0.246                | 0.158                |
|   | <b>Average ± Std. Dev.</b> | <b>0.085 ± 0.003</b>      | <b>0.249 ± 0.010</b> | <b>0.144 ± 0.011</b> |
| Beef Hamburger<br><br>160°F done                          | Sample #1                  | 0.053                     | 0.212                | 0.160                |
|   | Sample #2                  | 0.063                     | 0.202                | 0.166                |
|   | Sample #3                  | 0.060                     | 0.208                | 0.167                |
|   | Sample #4                  | 0.068                     | 0.214                | 0.169                |
|   | Sample #5                  | 0.070                     | 0.228                | 0.167                |
|   | <b>Average ± Std. Dev.</b> | <b>0.063 ± 0.007</b>      | <b>0.213 ± 0.010</b> | <b>0.166 ± 0.003</b> |

\*The preheating energy to 350°F in the Conventional Oven was included in the energy consumption.

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## NuWave Oven cooking comparison test – Moisture Content Comparison

80% lean hamburger was purchased from a local grocer. Initial moisture content was 64.47%. Moisture content was determined using AOAC method 950.46Bb. Five hamburgers were cooked individually in the ovens. Tests were conducted from March 1, 2005 to March 30, 2005.

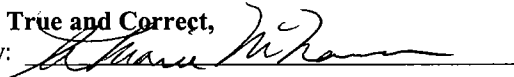
Results are presented below:

| Food item                    |           | Moisture (%)        |                     |                     |
|------------------------------|-----------|---------------------|---------------------|---------------------|
|                              |           | NuWave Oven         | Conventional Oven   | ShowTime Rotisserie |
| Beef Hamburger<br>160°F done | Sample #1 | 61.23               | 57.62               | 56.13               |
|                              | Sample #2 | 58.80               | 57.24               | 55.93               |
|                              | Sample #3 | 57.18               | 56.28               | 56.31               |
|                              | Sample #4 | 57.57               | 57.15               | 57.55               |
|                              | Sample #5 | 58.51               | 57.25               | 56.57               |
| <b>Average ± Std. Dev.</b>   |           | <b>58.66 ± 1.58</b> | <b>57.11 ± 0.50</b> | <b>56.50 ± 0.63</b> |

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