

## **ENERGY STAR Supplement to ANSI/ASHRAE Standard 72-2005 for Laboratory Grade Refrigerators and Freezers Data Collection Form December 30, 2009**

Please note, including this Instructions worksheet, there are four total worksheets in this data collection form. For each equipment tested, please complete this data collection form with all relevant fields filled out in the Data and Measurements worksheets. Please add additional rows to the Measurements worksheet if there are more than 50 thermocouples used for one test. Also please include measurements taken during the energy consumption and temperature uniformity tests. ENERGY STAR also asks that you also provide a schematic showing where the thermocouples are placed in the tested equipment in the Probe Location Schematic worksheet.

Please submit non-qualified product data to ENERGY STAR at [LabGradeRefrigeration@energystar.gov](mailto:LabGradeRefrigeration@energystar.gov) by 03/31/2010. If you have any questions concerning this data collection form, please contact Bijit Kundu at [bkundu@icfi.com](mailto:bkundu@icfi.com) and (202) 862-1157. Thank you!

<b>Product Description</b>		
1	Manufacturer	
2	Brand	
	Equipment (Refrigerator or Freezer)	
3	Product Type (General Purpose Refrigerator, Blood Bank Refrigerator, Pharmacy/Chromatography Refrigerator, General Purpose Freezer, -30 Freezer, -20 Freezer, Other [specify])	
4	Model Number Tested	
5	Dates Tested	
6	Size, H x W x D, in.	
7	# Outer Doors	
8	Door Type (Glass, Solid, Other [specify])	
9	Measured Interior Volume, Cubic Feet (AHAM Volume)	
10	Method of Access to Refrigerated Compartment (from above, from front, from front and back, other [specify])	
11	Illumination (Type and Watts)	
12	Refrigerant	
13	Please List Options of Tested Equipment	
<b>Electrical Rating</b>		
14	Voltage	
15	Frequency	
16	Phase	
17	Current	
<b>Door Openings During Test Period</b>		
18	Every X Minutes for Y Hours	
19	Total Number of Openings	

<b>Steady State</b>		
20	Steady State as defined by ANSI/ASHRAE 72 reached (i.e., average temperature of all Thermocouples changes less than 0.2 degrees C from one 24-hour period or refrigeration cycle to the next)? (Y/N)	
21	If No to question above, please describe average temperature change of all Thermocouples after 5 hours with no door openings ( $\pm$ degrees C)	
<b>Supply Power</b>		
22	Voltage	
23	Frequency	
<b>Test Data</b>		
24	Thermostat Setting	
25	Energy Input During Refrigerating Time, kWh/day	
26	Total Energy Input, kWh/day	
27	Total Time Test Period, Min	
28	Percent Compressor Running Time, %	
<b>Ambient Temperatures</b>		
29	Minimum Dry Bulb, Degrees F	
30	Maximum Dry Bulb, Degrees F	
31	Average Dry Bulb, Degrees F	
32	Minimum Wet Bulb, Degrees F	
33	Maximum Wet Bulb, Degrees F	
34	Average Wet Bulb, Degrees F	
<b>Thermocouple Data: Energy Consumption Test</b>		
35	Average Temperature of All Thermocouples, Degrees F	
36	Average Standard Deviation of All Thermocouples, Degrees F	

37	Coldest Thermocouple Average Temperature, Degrees F	
38	Warmest Thermocouple Average Temperature, Degrees F	
39	Coldest Thermocouple Temperature, Degrees F	
40	Warmest Thermocouple Temperature, Degrees F	
<b><i>Thermocouple Data: Temperature Uniformity Test</i></b>		
41	Average Temperature of All Thermocouples during Defrost Cycle, Degrees F	
42	Average Standard Deviation of All Thermocouples during Defrost Cycle, Degrees F	
43	Average Temperature of All Thermocouples during Steady State, Degrees F	
44	Average Standard Deviation of All Thermocouples during Steady State, Degrees F	

<b>Measurements: Energy Consumption Test</b>					
	Location	Min Temp Over Test Period, Degrees F	Max Temp Over Test Period, Degrees F	Average Temp Over Test Period, Degrees F	Average Standard Deviation Over Test Period, Degrees F
Energy Consumption Test - Thermocouple1					
Energy Consumption Test - Thermocouple2					
Energy Consumption Test - Thermocouple3					
Energy Consumption Test - Thermocouple4					
Energy Consumption Test - Thermocouple5					
Energy Consumption Test - Thermocouple6					
Energy Consumption Test - Thermocouple7					
Energy Consumption Test - Thermocouple8					
Energy Consumption Test - Thermocouple9					
Energy Consumption Test - Thermocouple10					
Energy Consumption Test - Thermocouple11					
Energy Consumption Test - Thermocouple12					
Energy Consumption Test - Thermocouple13					
Energy Consumption Test - Thermocouple14					
Energy Consumption Test - Thermocouple15					
Energy Consumption Test - Thermocouple16					
Energy Consumption Test - Thermocouple17					
Energy Consumption Test - Thermocouple18					
Energy Consumption Test - Thermocouple19					
Energy Consumption Test - Thermocouple20					
Energy Consumption Test - Thermocouple21					
Energy Consumption Test - Thermocouple22					
Energy Consumption Test - Thermocouple23					
Energy Consumption Test - Thermocouple24					
Energy Consumption Test - Thermocouple25					
Energy Consumption Test - Thermocouple26					
Energy Consumption Test - Thermocouple27					
Energy Consumption Test - Thermocouple28					
Energy Consumption Test - Thermocouple29					
Energy Consumption Test - Thermocouple30					
Energy Consumption Test - Thermocouple31					
Energy Consumption Test - Thermocouple32					
Energy Consumption Test - Thermocouple33					
Energy Consumption Test - Thermocouple34					
Energy Consumption Test - Thermocouple35					

Energy Consumption Test - Thermocouple36					
Energy Consumption Test - Thermocouple37					
Energy Consumption Test - Thermocouple38					
Energy Consumption Test - Thermocouple39					
Energy Consumption Test - Thermocouple40					
Energy Consumption Test - Thermocouple41					
Energy Consumption Test - Thermocouple42					
Energy Consumption Test - Thermocouple43					
Energy Consumption Test - Thermocouple44					
Energy Consumption Test - Thermocouple45					
Energy Consumption Test - Thermocouple46					
Energy Consumption Test - Thermocouple47					
Energy Consumption Test - Thermocouple48					
Energy Consumption Test - Thermocouple49					
Energy Consumption Test - Thermocouple50					

<b>Measurements: Temperature Uniformity Test</b>									
		<b>Defrost Cycle</b>				<b>Steady State</b>			
	Location	Min Temp Over 3 Hour Period, Degrees F	Max Temp Over 3 Hour Period, Degrees F	Average Temp Over 3 Hour Period, Degrees F	Average Standard Deviation Over 3 Hour Period, Degrees F	Min Temp Over 3 Hour Period, Degrees F	Max Temp Over 3 Hour Period, Degrees F	Average Temp Over 3 Hour Period, Degrees F	Average Standard Deviation Over 3 Hour Period, Degrees F
Temp Uniformity Test - Thermocouple1									
Temp Uniformity Test - Thermocouple2									
Temp Uniformity Test - Thermocouple3									
Temp Uniformity Test - Thermocouple4									
Temp Uniformity Test - Thermocouple5									
Temp Uniformity Test - Thermocouple6									
Temp Uniformity Test - Thermocouple7									
Temp Uniformity Test - Thermocouple8									
Temp Uniformity Test - Thermocouple9									
Temp Uniformity Test - Thermocouple10									
Temp Uniformity Test - Thermocouple11									
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Temp Uniformity Test - Thermocouple19									
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Temp Uniformity Test - Thermocouple45									
Temp Uniformity Test - Thermocouple46									
Temp Uniformity Test - Thermocouple47									
Temp Uniformity Test - Thermocouple48									
Temp Uniformity Test - Thermocouple49									
Temp Uniformity Test - Thermocouple50									
<b>Equipment Used (e.g., thermocouple types, data acquisition system, etc.)</b>									
Equipment1:									
Equipment2:									
Equipment3:									
Equipment4:									
Equipment5:									
Equipment6:									

**Note: Include a schematic showing the thermocouple locations in equipment with shelves.**