ENERGY STAR®

Laboratory Grade Refrigerator & Freezer

Certification Body Training

U.S. Environmental Protection Agency

January 23, 2017

Agenda

- Version 1.0 Specification Overview
- CB Application and Next Steps
- Open Questions & Comments

Timeline of Version 1.0 Specification

- 2014 – DOE finalized Test Method
- November 2014 – Draft 1 Specification distributed
- 2015 – Version 1.0 Data Assembly Extension
- November 2015 – Draft 2 Specification distributed
- August 2016 – Draft 3 Specification distributed
- November 2016 – Final Draft Specification distributed
- December 2016 – Version 1.0 finalized

Definitions

Laboratory Grade Refrigerator (LGR): A refrigeration cabinet used for storing non-volatile reagents and biological specimens at set point temperatures between 0 °C and 12 °C (32 °F and 53.6 °F), typically marketed through laboratory equipment supply stores for laboratory or medical use.

a) High Performance: A laboratory grade refrigerator product that is designed to support a maximum peak variation in temperature no greater than 6 °C.

b) General Purpose: A laboratory grade refrigerator product that cannot support a maximum peak variation in temperature equal to or less than 6 °C.

Definitions

Laboratory Grade Freezer (LGF): A refrigeration cabinet used for storing volatile reagents and biological specimens at set point temperatures between -40 °C and 0 °C (-40 °F and 32 °F), typically marketed through laboratory equipment supply stores for laboratory or medical use.

a) High Performance: A laboratory grade freezer product that is designed to support a maximum peak variation in temperature no greater than 10 °C.

b) General Purpose: A laboratory grade freezer product that cannot support a maximum peak variation in temperature equal to or less than 10 °C.

Definitions

Ultra-Low-Temperature Laboratory Grade Freezer (ULT): A freezer designed for laboratory application that is capable of maintaining set point storage temperatures between -70 °C and -80 °C (-94 °F and -112 °F).

- Other Defined Product Types:
  - Combination Laboratory Grade Refrigerator/Freezer
  - Portable Laboratory Grade Refrigerator/Freezer
  - Walk-In Laboratory Grade Refrigerator/Freezer
  - Explosion Proof Refrigerator/Freezer
  - Incubators

Definitions

- Defrost Related Terms
  - Automatic Defrost
  - Variable Defrost
  - Manual Defrost
  - Semi-Automatic Defrost

Definitions

- Additional Defined Terms:
  - AHAM Volume
  - Cabinet Temperature
  - Peak Variance
  - Refrigeration Cycle
  - Stability
  - Test
  - Uniformity
  - Several door and cabinet focused characteristics

Product Family

- Group of models that:
  - Are made by same manufacturer
  - Have same measured interior volume
  - Have same number of external doors
  - Have same basic engineering design
- Allowed differences include:
  - Configurability Characteristics
  - Aesthetic Characteristics

Scope

- Included in Version 1.0:
  - Laboratory Grade Refrigerators
  - Laboratory Grade Freezers
- Excluded in Version 1.0:
  - **Ultra-Low-Temperature Laboratory Grade Freezers**
  - Combination Laboratory Grade Refrigerator/Freezer
  - Portable Laboratory Grade Refrigerator/Freezer
  - Walk-In Laboratory Grade Refrigerator/Freezer
  - Explosion Proof Refrigerator/Freezer
  - Incubators

Scope

Ultra-Low-Temperature Laboratory Grade Freezers

While currently out of scope, EPA does intend to include requirements for ULTs in an upcoming Version 1.1 revision in 2017 that will bring them into scope. The finalized test method already contains instructions for testing ULT products, and those instructions will not change. Until the finalization of the Version 1.1 specification, ULTs will remain out of scope.

Energy Efficiency Requirements

Maximum Daily Energy Consumption Requirements:

The maximum daily energy consumption (MDEC), in kilowatt-hours per 24 hour period, shall be less than or equal to that specified in the following tables.

MDEC Requirements for Refrigerators

Table 1: Maximum Daily Energy Consumption (MDEC) Requirements (kWh/day) for ENERGY STAR Certified Laboratory Grade Refrigerators	
Product Volume (in cubic feet)	**Refrigerator**
General Purpose	
0 < V < 25	≤ 0.124 V + 2.0
25 ≤ V	≤ 0.121 V + 2.07
High Performance	
0 < V < 25	≤ 0.184 V + 3.5
25 ≤ V < 44	≤ 0.153 V + 4.28
44 ≤ V	≤ 0.125 V + 5.5

Note: V = AHAM volume, as defined in Section 1, in cubic feet (ft^3).

MDEC Requirements for Freezers

Table 2: Maximum Daily Energy Consumption (MDEC) Requirements (kWh/day) for ENERGY STAR Certified Laboratory Grade Freezers	
Product Volume (in cubic feet)	**Freezer**
General Purpose	
$0 < V < 15$	$\leq 0.033\ V + 2.0$
$15 \leq V < 30$	$\leq 0.05\ V + 1.75$
$30 \leq V$	$\leq 0.188\ V - 2.375$
High Performance	
$0 < V < 22$	$\leq 0.09\ V + 10$
$22 \leq V$	$\leq 0.426\ V + 2.63$

Note: V = AHAM volume, as defined in Section 1, in cubic feet (ft^3).

Data Reporting Requirements

- All required data fields in the ENERGY STAR Version 1.0 Laboratory Grade Refrigerator and Freezer Qualified Product Exchange (QPX) form shall be submitted to EPA for each ENERGY STAR certified Laboratory Grade Refrigerator or Freezer product or product family

Testing Considerations

- Number of Units Required for Testing
- International Market Certification

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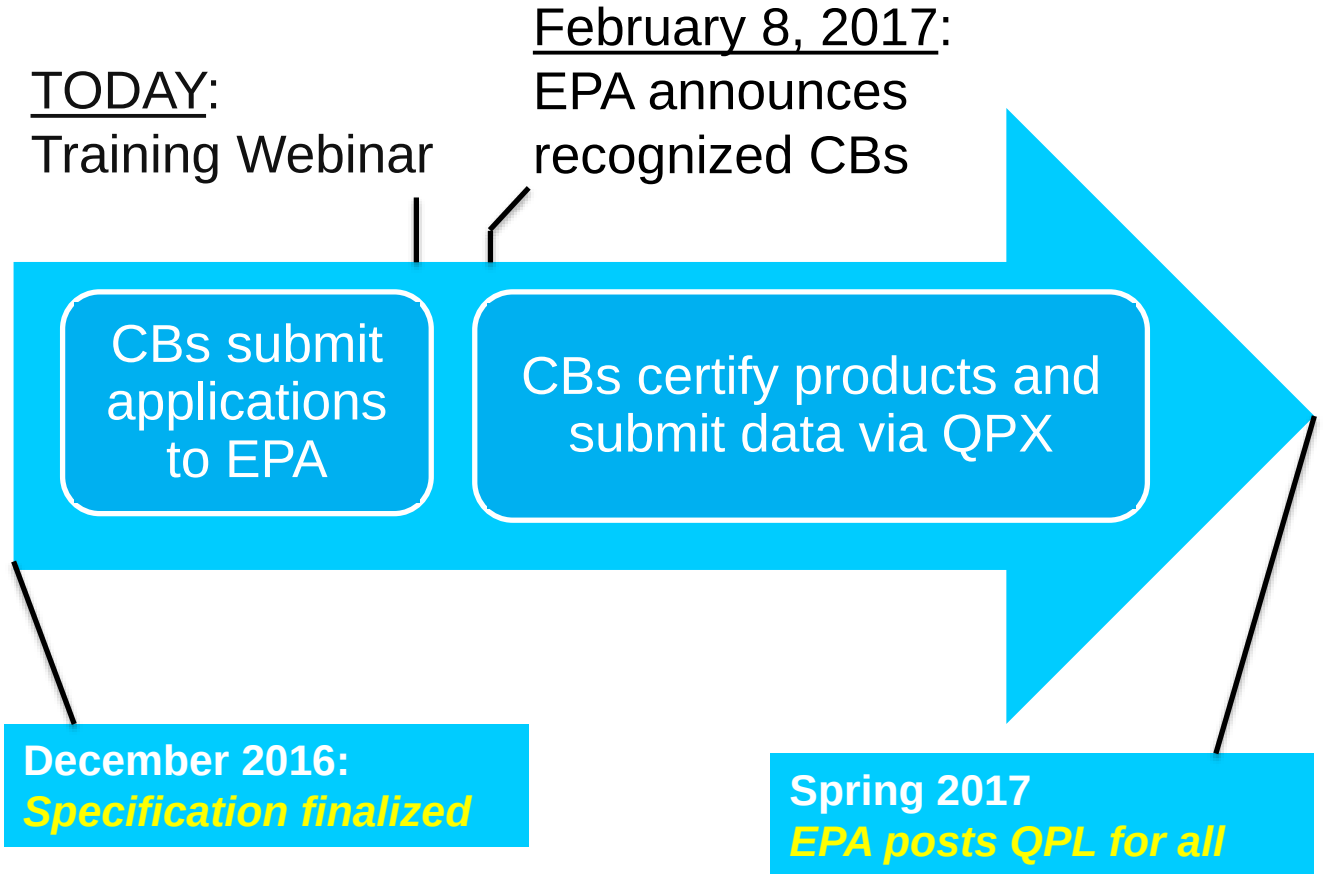
Certification Timeline



Application Process

- If you have not already, please send a signed application and evidence that you have contacted your accreditation body requesting a scope expansion for the Laboratory Grade Refrigerator and Freezer program to certification@energystar.gov
- Submit test data successfully to EPA via the web service for Laboratory Grade Refrigerators and Freezers
- EPA will recognize CBs for this new category pending a formal scope expansion from an accreditation body
- Submission deadline for those CBs that want to be among the first batch recognized will be **February 1**
- EPA will continue to accept applications at any time, but cannot guarantee prompt recognition for those that apply after **February 1**

Submission Deadline
February 1, 2017

Remaining Timeline of Version 1.0

- January 23: Lab Grade RF CB Training Webinar
- January 27: Web service available for certification submissions
- February 1: Deadline for first batch of CB applications
- February 8: EPA announces recognized CBs

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References and Resources

Questions?

Please send any technical questions to:
labgraderefrigeration@energystar.gov

Please send any certification questions to:
certification@energystar.gov

Please find CB Resources at:
www.energystar.gov/CBresources

Thank You!

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