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Ultra-Low-Temperature Laboratory Freezers – Energy Only Specification for Product Equivalent of that Used in: U.S. DOE Demonstration of High-Efficiency Ultra-Low-Temperature Laboratory Freezers

Host Sites:

- *University of Colorado at Boulder
Boulder, CO*
- *Michigan State University
East Lansing, MI*

Summary

The U.S. Department of Energy's (DOE) Better Buildings Alliance (BBA) has developed this purchase specification for high-efficiency ultra-low-temperature laboratory freezers (ULTs) with input from manufacturers and other stakeholder organizations. This energy-only specification provides a description of required performance characteristics resulting in increased energy savings for ULTs in laboratories.

This specification defines a product equivalent to the most efficient model demonstrated in the DOE's [high-efficiency ULT demonstration](#) conducted at the University of Colorado at Boulder in Boulder, CO and Michigan State University in East Lansing, MI. It is recommended that any potential user of this specification read the demonstration case study to learn of the benefits and difficulties faced in implementing this product in a real world application. To use this specification cut and paste the language on the following pages into your request-for-proposal or design document.

More on the DOE and BBA activities, including other energy saving purchase specifications and demonstration case studies, can be found on the [BBA's website](#).

Technology Performance

This specification is intended to be used as a communication device between a purchaser and manufacturer to identify available products meeting a specific energy performance.

1.1 Scope

- I. This specification is for High-Efficiency Ultra-Low-Temperature Laboratory Freezers (ULTs) that are designed for laboratory applications and are capable of maintaining set-point storage temperatures between -70 °C and -80 °C. This specification does not cover:
 - a. Portable ULTs
 - b. Explosion-proof ULTs
 - c. Walk-in products

1.2 Energy Efficiency Requirements and Recommendations

- I. Minimum Efficiency Requirements and Test Method
 - a. ULTs meeting this specification shall not exceed a rated daily energy use of 380 Watt-hours per cubic foot of internal volume when tested in accordance with the [ENERGY STAR 2014 test method](#) for Laboratory Grade Refrigerators, Freezers, and Ultra-Low Temperature Freezers.