Solid Ballast Thermal Buffer

Background

Temperature monitoring probes used in laboratory, pharmacy and blood bank refrigerators and freezers are commonly inserted into thermal buffers so reported temperatures reflect the temperature of stored products. Without using a thermal buffer, probes simply measure air temperature and are more susceptible to the effects of door openings. The use of appropriate thermal buffers can help avoid unnecessary nuisance alarms that could be generated if only air temperature were measured.

Traditional thermal buffers use high-viscosity liquids like glycerin or propylene glycol to simulate the thermal mass of stored products. While they do provide the intended thermal buffering benefits, they require setup and ongoing maintenance to ensure proper performance, as liquids can evaporate or leak over time and leave the probes unbuffered.

Helmer Scientific Solid Ballast

Solid Ballasts from Helmer Scientific are maintenance-free thermal buffering solutions designed to replace glycol and glycerin bottles. The solid ballast has been uniquely designed with mass and materials that allow it to match the temperature responsiveness of traditional liquid-based thermal buffers, without the hassle of ongoing maintenance.

Features

Accurately simulates product with equivalent performance to the Helmer glycol/glycerin probe bottle

Maintenance-free design eliminates filling/refilling bottles due to setup, evaporation, or leakage with maintenance-free design

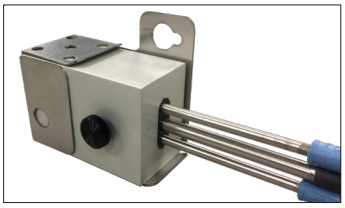
Allows for simple installation on the cabinet wall, with additional bracket options for on-shelf placement

Accommodates co-location of additional 3rd party and/or calibration probes

Solid ballast thermal buffer shown in refrigerator

Specifications

Equipment Temperature Range: -30°C/-20°C freezers, +4°C/+5°C refrigerators
Dimensions (w x d x h): 1.5 x 2.0 x 3.0 in (1.85 x 2.0 x 3.0 in with thumb screw)
Material: Anodized aluminum with thermoplastic polymer insert (nylon)
Weight: 0.85 lbs (0.38 kg)
Probe Locations: 3
Center (x1) Max insert diameter: 0.276 in
Outer (x2) Max insert diameter: 0.197 in



Solid ballast thermal buffer

Helmer Scientific
www.helmerinc.com | 800.743.5637

Equivalency Study

Liquid vs. Solid Ballast performance in Laboratory Refrigerator set at 4°C and Laboratory Freezer set at -30°C

Steady-State Performance Evaluation

Ambient room temperature was controlled at 23°C. The medical-grade refrigerator was allowed to pull-down temperature to a set point of 4°C. The medical grade freezer was allowed to pull-down temperature to a set point of -30°C. Doors remained closed and temperature readings were taken every 6 seconds from probes placed in liquid and solid ballasts installed at standard side-wall location.

Door-Open Performance Evaluation

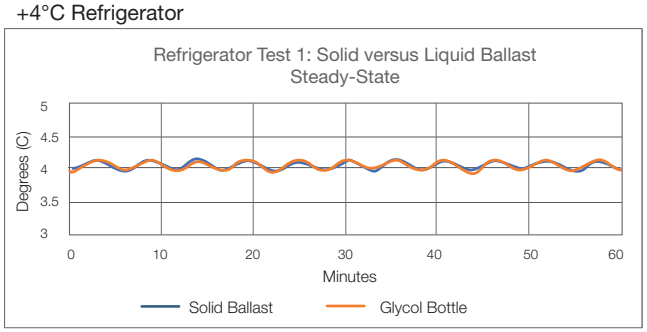
Ambient room temperature was controlled at 23°C. The medical-grade refrigerator was allowed to pull-down temperature to a set point of 4°C. The medical grade freezer was allowed to pull-down temperature to a set point of -30°C. Temperature readings were taken every 6 seconds from probes placed in liquid and solid ballasts installed at standard side-wall location. Doors of the refrigerator and freezer were opened every 10 minutes for an 8 second period.

Conclusion

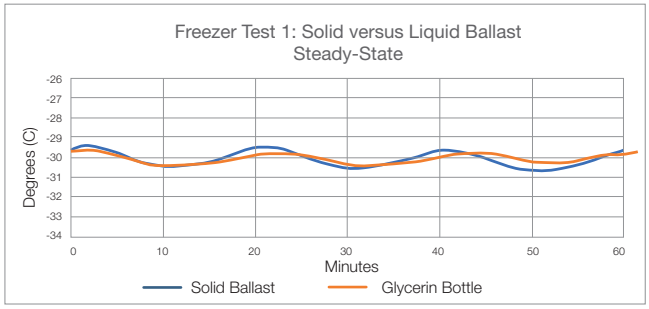
Graphs below show performance of the liquid and solid thermal buffers used in this evaluation. The Helmer Scientific Solid Ballast demonstrated equivalent temperature performance to Helmer glycol/glycerin probe bottles.

Equivalency Study Results: Steady-State

+4°C Refrigerator

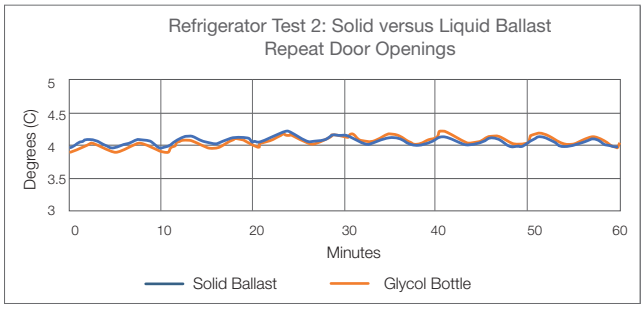


-30°C Freezer



Equivalency Study Results: Door-Open

+4°C Refrigerator



-30°C Freezer