

Lab Armor™ Beads



Green Benefits

- Energy efficient

Introduction

Life Technologies is committed to providing products with the environment in mind. By reducing the energy needed to maintain your water baths and reducing the need for biocidal agents, it is one more step towards creating a smaller footprint. This fact sheet provides the rationale behind the environmental claims that using Lab Armor™ Beads allows one to use less electricity as compared to a traditional water bath.

Product Description

Lab Armor™ Beads are a dry, metallic thermal alloy comprised of small, non-uniform metal beads designed to replace water in a water bath. The resulting dry bath uses less electricity, and provides less temperature fluctuation during operation than a water bath.

Green Features

Energy-Efficient

A bath filled with Lab Armor™ Beads draws 75% (Table 1) and 62.5% (Table 2) less energy when run at 37°C and 65°C, respectively, compared to a bath filled with water run at the same temperatures.

Table 1: Energy Usage During 24-Hour Run at 37°C Without Lid*

| Bath Run Condition | Average Usage (kW) | Run Time (hour) | kW-hour |
|---------------------------------------|--------------------|-----------------|------------|
| Filled with 12 liter Lab Armor™ Beads | 0.01 | 24 | 0.24 |
| Filled with 12 liter water | 0.04 | 24 | 0.96 |
| Net Reduction | | | 75% |

* The value of energy conservation remained the same during 24 hours and 7 days of operation under typical laboratory conditions.

To compare energy usage, a non-shaking standard bath, with and without a lid, was filled with 12 liters of Lab Armor™ Beads compared with the same bath filled with 12 liters of water and set to either 37°C or 65°C. Temperature was monitored using a calibrated Fluke® 43B digital multimeter. The study was conducted in a normal laboratory environment with the room temperature set at 20°C. Once the bath was filled with either water or Lab Armor™ Beads, the temperature was allowed to stabilize overnight before energy consumption was measured. Energy consumption was recorded using a standard power meter after both 24 hours and 7 days of operation under typical laboratory conditions.

Table 2: Energy Usage at 65°C With Lid

| Bath Run Condition | Average Usage (kW) | Run Time (hour) | kW-hour |
|---------------------------------------|--------------------|-----------------|--------------|
| Filled with 12 liter Lab Armor™ Beads | 0.03 | 24 | 0.72 |
| Filled with 12 liter water | 0.08 | 24 | 1.92 |
| Net Reduction | | | 62.5% |

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