

Applied Biosystems PowerFlex Thermal Cycler



Less waste: generates up to 37% less waste at end of life than prior models and contains recycled polycarbonate and ABS content

More energy efficient: uses up to 45% less energy when in sleep mode than prior models

Learn more at thermofisher.com/greenerbydesign

Introduction

We are committed to designing our products with the environment in mind. This fact sheet gives the rationale for the environmental claim that the Applied Biosystems™ PowerFlex™ Thermal Cycler generates less waste than prior models. An additional benefit is its smaller benchtop footprint. As a result of its optimized, space-saving design, this thermal cycler generates up to 37% less waste at the end of its useful life.

Product description

The PowerFlex Thermal Cycler is designed to enable high-performance PCR with flexibility and productivity for modern labs. With a smaller, lighter design, optimized internal architecture, and advanced thermal control, the PowerFlex Thermal Cycler supports reliable and efficient PCR workflows with less material used in its manufacture and less carbon emissions emitted in its transport.



Figure 1.
Applied Biosystems™ PowerFlex™ Thermal Cycler, 3 x 32-well

Figure 2.
Applied Biosystems™ PowerFlex™ Thermal Cycler, 1 x 96-well

Green features

Less waste

The PowerFlex Thermal Cycler weighs less compared to the previous generation system, helping reduce waste generated at the end of its useful life. Additionally, it has a smaller footprint than the prior model, enabling labs more efficient space usage.

Table 1. Comparison of thermal cycler weight as waste generated at product's end of life.

Thermal cycler model	Configuration	Instrument weight (kg)	Weight reduction (kg)	Waste reduction with PowerFlex model
PowerFlex Thermal Cycler	1 x 96-well	11.8	7	37.2%
	3 x 32-well	14	4.8	25.5%
ProFlex Thermal Cycler	All	18.8	—	—

Table 2. Comparison of benchtop footprint for thermal cycler models.

Thermal cycler model	Overall instrument footprint (W x D x H mm)	Benchtop footprint area (mm²)	Footprint reduction with PowerFlex model
PowerFlex Thermal Cycler	300 mm x 513 mm x 257 mm	153,900	17.5%
ProFlex Thermal Cycler	330 mm x 565 mm x 272 mm	186,450	—

It reduces waste and its footprint via an optimally designed internal architecture, including a 64% reduction in the surface area of the thermal control board and a 50% reduction in its weight compared to prior models. The miniaturization of electronics enables not only a lighter instrument with a smaller footprint, but also contributes less electronic waste, or e-waste, at the end of its useful life.

The PowerFlex Thermal Cycler also incorporates materials with recycled content in its structural components amounting to 10% of its total weight. Specifically, the polycarbonate (PC) and polycarbonate-acrylonitrile butadiene styrene blended plastic components (PC-ABS)* contain the following amount of recycled content:

- **PC/ABS components:** 35% recycled content
- **Polycarbonate (PC) components:** 30% recycled content

Reducing electronics components and incorporating recycled materials reduces the need for mining natural resources and generates fewer greenhouse gas emissions than using only virgin materials.

* Post-consumer/post-industrial content percentages are unknown, not provided by supplier

More energy efficient

The PowerFlex Thermal Cycler can be put into sleep mode when not in use to save additional energy as compared to idle mode. For the 1 x 96-well model, placing it into sleep mode for 16 hours a day (assuming an 8-hour workday) saves up 0.2 kWh per day and up to 52.2 kWh in a year (assuming 261 workdays per year)¹.

In addition, in comparing sleep mode on the PowerFlex Thermal Cycler to prior models, there is up to an additional 45% reduction. This equates to a savings of 56.4 kWh in comparison to the ProFlex Thermal Cycler's sleep mode energy consumption over the same yearlong period.

Table 3. Comparison of energy use between idle and sleep mode for thermal cycler models.

Thermal cycler model	Configuration	Energy usage in idle mode (W)	Energy usage in sleep mode (W)	Energy use reduction from idle to sleep mode	Energy use reduction in sleep mode with PowerFlex™ model
PowerFlex Thermal Cycler	1 x 96-well	29	16.5	43%	45%
	3 x 32-well	30.3	18.6	39%	38%
ProFlex Thermal Cycler	—	—	30	—	—

In order to capture all the sustainability benefits of this new product, we also completed review and labeling through My Green Lab's ACT™ Label 2.0 program, which provides a third-party verified Environmental Impact Factor for each product. Learn more about the ACT label at act.mygreenlab.org.

Designing the PowerFlex Thermal Cycler to generate significantly less waste and use less energy while delivering exceptional flexibility in a smaller footprint is a win for our customers, our company, and the planet.

1. Standard laboratory conditions utilized for idle and sleep mode energy measurements in accordance with energy testing requirements for My Green Lab's ACT Label 2.0 program.