

E-Gel® and standard DNA ladders



Green benefits

- Less use of expanded polystyrene (EPS) coolers
- Less energy to produce
- No refrigerant required for transport
- Decreased fuel consumption and greenhouse gas emissions required for transport
- Less waste disposal
- Improved freight density

Introduction

Thermo Fisher Scientific is committed to providing researchers and scientists the best products, enabling cutting-edge technology while keeping the environment in mind. To minimize the adverse environmental impact of packaging and shipping products with cold gel packs or dry ice, we investigated the feasibility of shipping our Life Technologies™ DNA Ladders at ambient, rather than cold, temperatures.

Through functional testing we have found that product quality and long-term stability were unaffected by ambient shipping. By eliminating the use of cold gel packs and dry ice for shipping these products, we are decreasing packaging and refrigerant, thereby reducing:

- Energy used to manufacture the packaging
- Fuel use and greenhouse gas emissions associated with transport and packaging
- Packaging waste at end of life

Product description

Life Technologies™ supplies a wide range of DNA ladders and markers to enable accurate size and mass estimation of DNA fragments between 10 bp and 12 kb. Life Technologies™ DNA ladders are designed for a wide range of applications and can be stained with ethidium bromide, SYBR® Safe, and other detection methods including radiolabeling. Ready-to-use E-Gel® DNA ladders are premixed with loading buffer and formulated for maximum performance on E-Gel® precast agarose gels.

Green features

Sustainable packaging

The adverse environmental impact of shipping products at low temperature is tremendous, causing increased CO₂ emissions generated from the manufacturing of expanded polystyrene (EPS) coolers and refrigerant, increased packaging size reducing freight density, and increased fuel consumption due to added refrigerant weight.

We have been systematically evaluating ways to minimize the carbon footprint of shipping refrigerated products. One way we can do this is by challenging the perceived requirement for refrigerated shipping, and when the data support a change, we ship products at a temperature consistent with their demonstrated stability.

More than 1,600 kg of EPS is used to manufacture coolers for DNA ladders every year. The annual carbon footprint to manufacture EPS and convert it into coolers is approximately 5.5 tons of CO₂ per year¹. By shipping these products at ambient temperatures, Thermo Fisher Scientific will help divert over 5,500 ft³ of EPS waste from reaching landfills and incinerators each year, and will reduce the total annual carbon footprint from transport and packaging by over 34 tons—roughly the same as taking seven cars off the road every year^{2,3}.

Functional and stability testing demonstrated that DNA ladders, when exposed to simulated ambient shipping conditions, performed identically and retained stability as compared to controls shipped on gel ice or dry ice⁴.

References

1. Data derived from Bousted, I, Eco-profiles of the European Plastics Industry POLYSTYRENE (Expandable) (EPS). PlasticsEurope. June 2006.
2. Data derived from U.S. EPA, Climate Leaders, Greenhouse Gas Inventory Protocol Core Module Guidance (*Optional Emissions From Commuting, Business Travel and Product Transport*).
3. U.S. EPA Greenhouse Gas Equivalencies Calculator, <http://www.epa.gov/cleanenergy/energy-resources/calculator.html>, accessed 31 January 2014.
4. To view the detailed results of ambient shipping stability and performance testing of Life Technologies™ DNA Ladders, visit: <http://tools.lifetechnologies.com/content/sfs/brochures/DNA-Ladders-WhitePaper.pdf>

Further details can be found at lifetechnologies.com/ambientshipping

