invitrogen™
by life technologies™

Lipofectamine® 2000 and Lipofectamine® RNAiMAX Transfection Reagents

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

Life Technologies 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 on cold gel packs, Life Technologies investigated the feasibility of shipping two of our market leading products, Lipofectamine® 2000 and Lipofectamine® RNAiMAX transfection reagents, at ambient rather than cold temperatures.

We have found, through functional and analytical testing, that product quality and long term stability were unaffected by ambient shipping. By eliminating the use of cold gel packs 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 of packaging and product
- Packaging waste at end of life

Product Description

Both Lipofectamine® 2000 and Lipofectamine® RNAiMAX reagents are cationic-lipid transfection reagents formulated for superior transfection efficiencies on a variety of cell types.

Lipofectamine® RNAiMAX reagent is designed specifically for the delivery of siRNA and miRNA while Lipofectamine® 2000 reagent delivers DNA or siRNA with excellent transfection performance for protein expression, gene silencing, and functional assays.

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Green Features

Sustainable Packaging

The adverse environmental impact of shipping products at low temperature is tremendous: causing increased CO_2 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. Life Technologies has been systematically evaluating novel ways to minimize the carbon footprint of shipping refrigerated products. One way we can do this is to challenge the perceived requirement for refrigerated shipping and when the data supports a change we ship products at a temperature consistent with their demonstrated stability.

The annual carbon footprint to manufacture EPS and convert it into coolers for Lipofectamine® 2000 and Lipofectamine® RNAiMAX reagents is approximately 40 tons of CO_2 per year. It takes nearly 120 barrels of crude oil equivalents and 150 MWh of power annually to make the 9,000 Kg of EPS coolers needed to ship these reagents[1,2].

By shipping these reagents at ambient temperatures, Life Technologies will help divert nearly 24,000 ft^3 of EPS waste from reaching our landfills and incinerators each year, and will reduce the total annual carbon footprint from transport and packaging by over 80 tons—roughly the same as taking 15 cars off the road every year.

Functional and stability testing demonstrated that Lipofectamine® 2000 and Lipofectamine® RNAiMAX reagents, once exposed to simulated ambient shipping conditions, performed identically and retained stability as compared to controls shipped on gel ice[3].

Footnotes

1. Data produced using Compass™ Comparative Packaging Assessment online software tool (v. 1.1) www.design-compass.org/
2. Reference 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. For the detailed results of ambient shipping stability and performance testing of Lipofectamine® 2000 and Lipofectamine® RNAiMAX reagents, visit: www3.appliedbiosystems.com/cms/groups/services/documents/generaldocuments/cms_103226.pdf

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