

# GlutaMAX™-I Media Supplement



## Green Benefits

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

## Introduction

Life Technologies is committed to designing our products with the environment in mind—it's one more step toward a smaller footprint. In order to minimize the adverse environmental impact of packaging and shipping products on dry ice, Life Technologies Corporation investigated the feasibility of shipping and storing its GlutaMAX™-I Media Supplement at ambient temperature.

We have found that ambient shipping and storage does not impact the performance or product lifespan. By

eliminating the use of dry ice we are decreasing packaging and refrigerant, thereby reducing:

- Energy used in producing these items
- Fuel use and greenhouse gas emissions associated with transport
- Waste at end-of-life

Furthermore, by storing this product at room temperature, the demands on our customers' freezers are reduced, decreasing the energy required to store reagents.

## Product Description

GlutaMAX™-I, L-alanyl-L-glutamine, is a dipeptide substitute for L-glutamine. GlutaMAX™-I can be used as a direct substitute for L-glutamine at equimolar concentrations in mammalian cell cultures, with minimal or no adaptation. GlutaMAX™-I improves growth efficiency and performance of mammalian cell culture systems. GlutaMAX™-I eliminates problems associated with the spontaneous breakdown of L-glutamine during incubation. It is highly soluble in aqueous solution and is heat stable. It is supplied as a 200 mM (100X) liquid stock in 0.85% NaCl.

## Green Features

### Sustainable Packaging

Life Technologies has been systematically evaluating novel ways to minimize the impact of shipping products on dry ice, and the carbon dioxide (CO<sub>2</sub>) footprint left by these products during distribution. One way we can do this is to ship GlutaMAX™-I Media Supplement at a temperature consistent with its demonstrated stability. The adverse environmental impact of shipping frozen products is tremendous, from manufacturing coolers to the addition of refrigerant to transport—all contribute to CO<sub>2</sub> emissions.

The annual carbon footprint to manufacture EPS and convert it to coolers for our GlutaMAX™-I Media Supplement

is approximately 9 tons. It takes nearly 20 barrels of crude oil equivalents and 49 MW•h of energy annually to make the EPS coolers needed to ship GlutaMAX™-I Media Supplement[1].

On an annual basis, over 12,0000 pounds of dry ice are added to the coolers to ensure the product is delivered cold to our customers, further increasing the mass and dimensions of each package. Factoring in the number of shipments and average distance traveled per package and the fact that most packages are shipped via air, the annual total carbon footprint for transporting GlutaMAX™-I Media Supplement is in excess of 94 tons (measured as CO<sub>2</sub> emissions)[2].

By “going ambient” for the GlutaMAX™-I Media Supplement, Life Technologies would help divert an annual total of nearly 2,000 kg (2,700 ft<sup>3</sup>) of EPS from landfills and incinerators, and would reduce the total carbon footprint by over 103 tons annually.

Functional and stability testing demonstrated that GlutaMAX™-I Media Supplement exposed to simulated ambient shipping conditions performed identically and retained long-term stability comparable to those shipped on dry ice.

1. Data produced using COMPASS® Comparative Packaging Assessment online software tool (v. 1.1) ([www.design-compass.org](http://www.design-compass.org))
2. Reference data derived from US EPA, Climate Leaders, Greenhouse Gas Inventory Protocol Core Module Guidance (Optional Emissions From Commuting, Business Travel and Product Transport).

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