New England Biolabs introduces the ClimaCell® cooler

A 100% recyclable solution for cold chain shipping with no compromise in performance

Introduction

For many years, New England Biolabs® (NEB®) has shipped its products to customers using expanded polystyrene (EPS) coolers. This solution has always been the "gold standard" for cold chain shipping – it is light, durable, and is well-known for its insulative properties. Unfortunately, EPS is difficult to recycle and often makes its way into landfills. To address this, NEB has maintained a shipping box recycling program while we continued to look for alternative, more sustainable, solutions.

NEB has partnered with TemperPack®, a U.S. company that focuses on sustainable solutions for cold chain shipping, in order to provide our customers with a 100% recyclable alternative to EPS shipping that maintains the proper shipping temperature conditions. Unlike EPS, the ClimaCell® cooler can be recycled with other corrugated cardboard.

In this technical note, we test the ability of the ClimaCell cooler to maintain proper shipping temperature for New England Biolabs' products.

Methods

ClimaCell samples were subjected to environmental and stress testing for package content integrity and internal temperature duration. Standardized test methods established by the International Safe Transit Association (ISTA) were selected to functionally evaluate the containers and were executed by a third-party and independent test facility.

Package content integrity

The ISTA 3A small package sequence of drop and vibration tests were performed to ensure products inside the container remained intact. ISTA 3A is an industry standard package integrity test which consists of multiple height drops on multiple container faces, vibration on multiple faces with a top load, and vibration without a top load. A selection of NEB's vials and kitted products were selected for testing.

Internal temperature duration

Two temperature duration tests were performed in a temperature chamber to ensure products inside the container would remain within the intended temperature range: ISTA 7D summer 48-hour profile and a continuous 24°C (75°F) profile. ISTA 7D is an industry standard environmental test. It consists of temperatures up to 35°C simulating external summer conditions during package transit and accounts for hot origination and hot destination conditions. Additional testing at a continuous 24°C was performed to represent the mean U.S. summer high temperature that shipments are most likely to encounter. Winter temperature testing was excluded, because summer temperatures are more challenging to maintain interior temperature. In both cases, temperature probes were placed inside the ClimaCell cooler, along with representative NEB products and two gel packs, which are used in NEB's shipping.

Results

Package content integrity

Vials and kits were inspected after the multiple drop and vibration tests. All samples were undamaged and intact.

Internal temperature duration

All samples successfully exceeded the container internal temperature duration requirement for both ISTA 7D summer 48-hour (A) and continuous 24°C (75°F) (B) profiles. The container insulation and gel packs' thermal capacity maintained an internal container temperature below 15°C for approximately 12 hours beyond our typical shipment window for the ISTA 7D summer test, and approximately 19.5 hours for the continuous 24°C test.

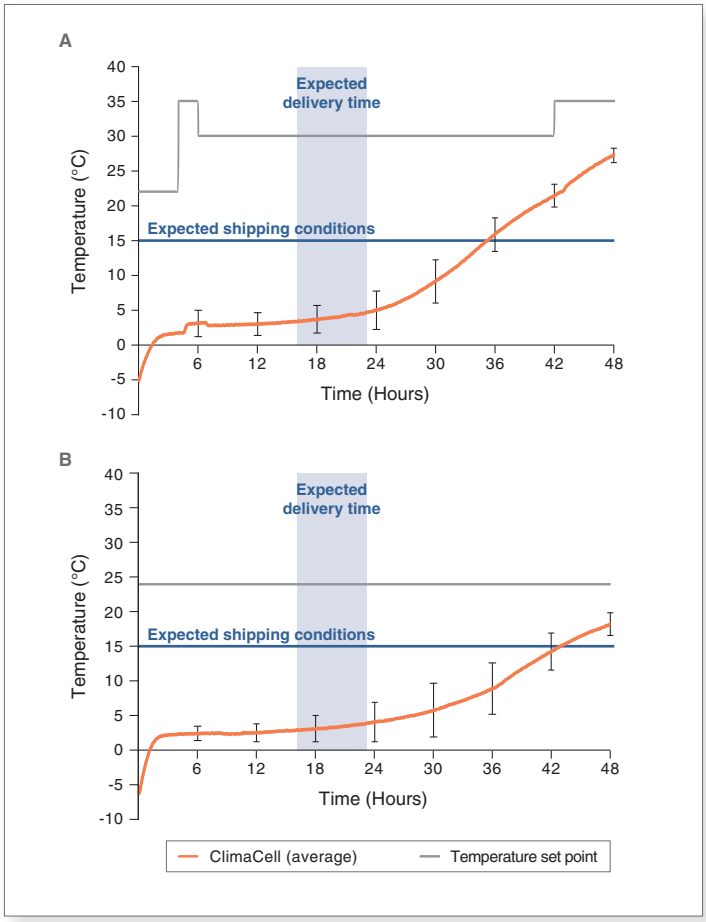
NEB guarantees next-day delivery of U.S. catalog orders placed before 7:30 PM EST the previous day.* As such, NEB targets shipping conditions to maintain temperatures <15°C.

Conclusion

The TemperPack ClimaCell cooler meets and exceeds all design requirements for package content integrity and internal temperature duration. Further, the ClimaCell cooler performs as well as NEB's current EPS cooler, with the added benefit of being 100% recyclable.

FIGURE 1: **Internal temperature duration assays**

ClimaCell coolers were placed in a temperature chamber and subjected to temperature indicated in the profile to reflect (A) a summer 48-hour profile and (B) a continuous profile. Standard deviation is represented at the given time points.



* Visit neb.com for details on NEB's shipping policies.

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