

TrypLE™ Enzyme



Green Benefits

- No Expanded Polystyrene (EPS) coolers
- No energy expended to produce coolers
- Less weight to transport (No dry ice)
- Allows decreased fuel consumption and greenhouse gas emissions required for transport
- Energy efficient
- Less hazardous
- Recyclable packaging

Introduction

Life Technologies is committed to designing our products with the environment in mind—it's one more step toward a smaller footprint. TrypLE™ Express and TrypLE™ Select Cell Dissociation Enzymes (as compared to Trypsin) eliminates the need for added chemicals to inactivate the enzyme and does not require refrigerated shipping or storage. This in turn, eliminates the need for an expanded polystyrene (EPS) cooler and refrigerant. All contribute to less energy consumed while delivering exceptional performance.

Product Description

The TrypLE™ products are a highly purified, animal origin-free cell dissociation enzyme that replaces porcine trypsin and is stable at room temperature. Because TrypLE™ is not derived from an animal source, hazards from potential pathogenic contaminants are eliminated. TrypLE™ is so gentle on cells that inactivation

with trypsin inhibitors is not required. TrypLE™ is ideal for dissociating attachment-dependent mammalian cell lines both in serum and in serum-free conditions, and can be directly substituted for trypsin without protocol changes.

Green Features

Sustainable Packaging

Life Technologies has been systematically evaluating novel ways to minimize the environmental impact of our packaging. One way we can do this is to ship TrypLE™ in a recyclable corrugated container as compared to an EPS cooler with dry ice (required for Trypsin). The adverse environmental impact of shipping frozen products is tremendous. The manufacture of EPS coolers, transport of gel and/or dry ice, and the disposal of the EPS all contribute to CO₂ emissions. Shipping TrypLE™ at ambient conditions also minimizes these impacts and helps to reduce the carbon footprint.

By shipping in standard corrugated containers at ambient temperatures, we have been able to eliminate 3,600 kg of EPS from our packaging every year. The carbon emissions avoided by not manufacturing this EPS and converting it into coolers is approximately 14 tons annually. In addition, nearly 40 barrels of crude oil equivalents and 60 MWh of power is saved annually, which would be required to produce the EPS.¹

Energy-Efficient

The TrypLE™ products are stable under ambient conditions, whereas trypsin activity is lost under ambient conditions. Trypsin must be repeatedly frozen and thawed, while TrypLE™ is ready to use at ambient temperatures.

Working stocks of TrypLE™ enzyme can be kept at room temperature for six months. A study was conducted at Stanford University to investigate the benefit of reducing the need for refrigerated storage of biological materials. They found that by transferring biological samples from frozen

storage to room temperature, electricity use could be cut by forty million kilowatt-hours (kWh), carbon footprint reduced by an estimated 18,000 metric tons, and \$16 million dollars saved in operating costs over the next ten years.² While we recognize that the scale of this study is much larger than the savings that you may experience from room temperature storage of TrypLE™, we have included this example to illustrate the environmental costs of cold storage.

Less Hazardous

Because TrypLE™ is not produced from animals, it is the perfect solution for applications where contamination by hazardous etiological agents is a concern.

References

1. Data produced using Compass™ Comparative Packaging Assessment online software tool (v. 1.1) (<https://www.designcompass.org/>)
2. <http://medfacilities.stanford.edu/sustainability/downloads/RoomTempStoragePilotResults.pdf>

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