

# The Tallest & Thin Wall Biodegradable Plastic (PLA) Glass

Bio7 Hepta & 4Tiers



Nissin Precision Machines Co., Ltd.

"What is **Polylactic Acid (PLA)** plastic?"

*"Plant based **Biodegradable Resin** made from *lactobacillus* and *starch*"*

*"Eco-friendly materials driving the Circular Economy into action."*

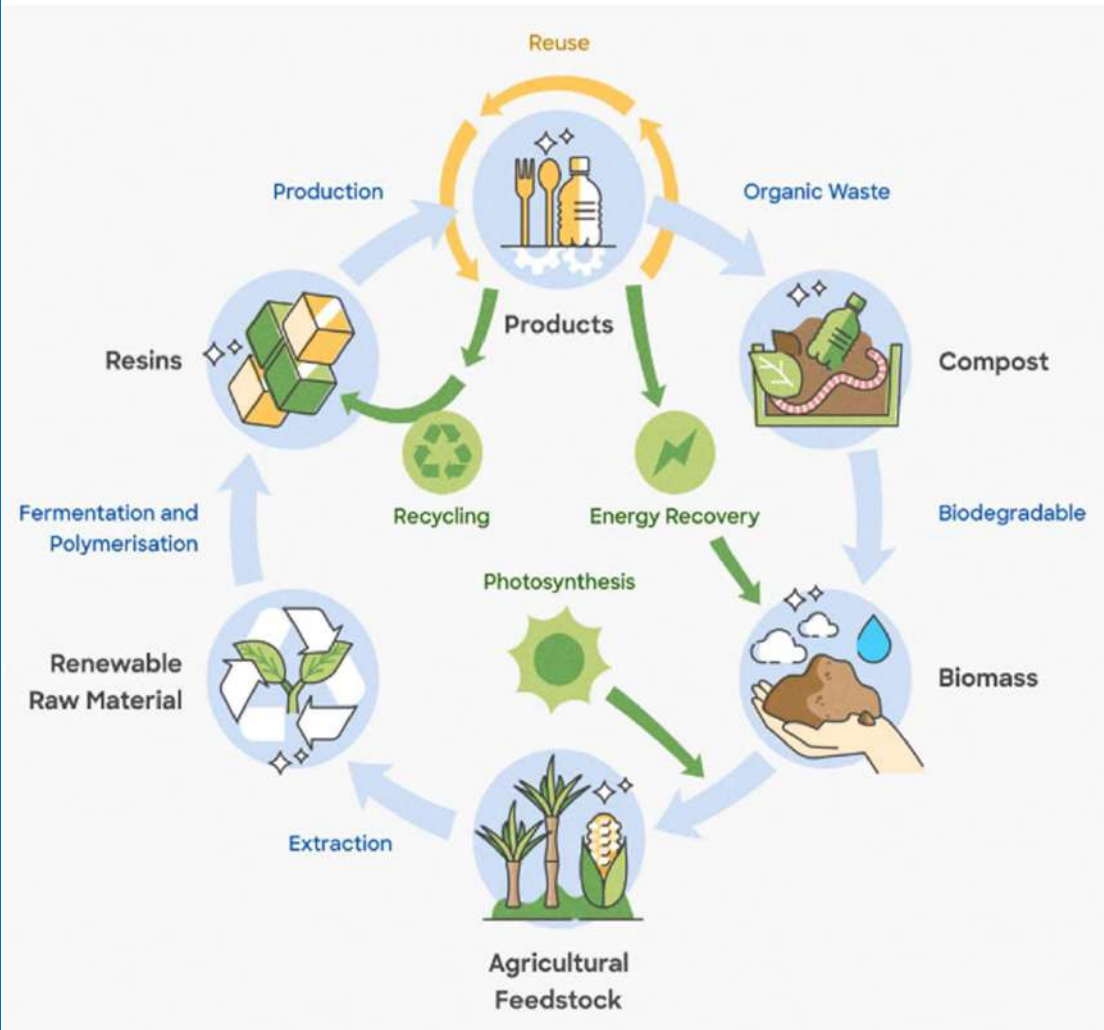
#### Advantages:

- ✓ **CO2 emission reduction** (carbon neutral)
- ✓ **Biodegradable with no waste** (organic waste → biomass → agricultural material)
- ✓ **Derived from plants:** Renewable crop resources instead of exhaustible fossil fuels

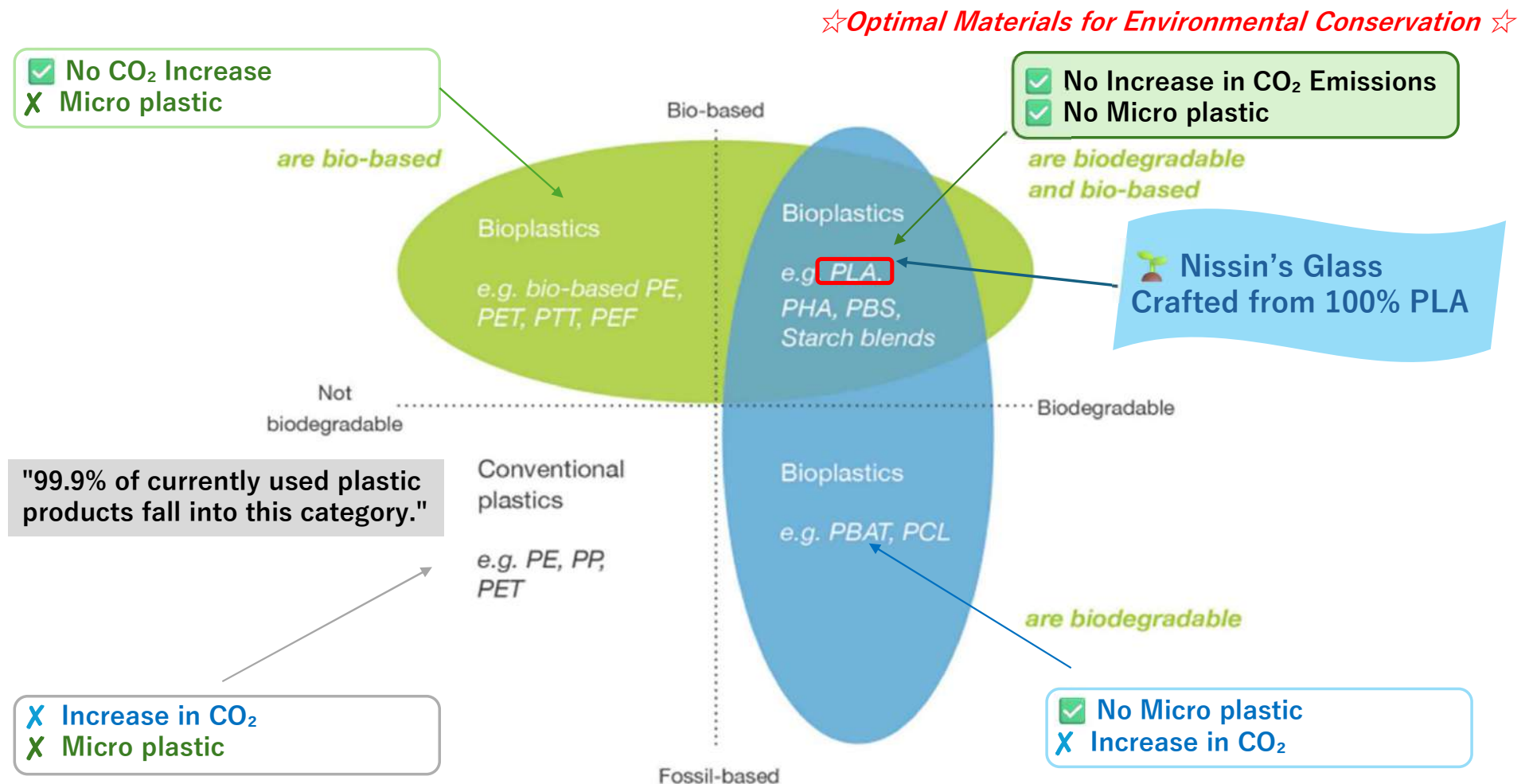
#### Challenges:

1. High material costs: Increase supply volume to drive down prices.
2. Low heat resistance (currently 55°C/131°F): Focus on material development to enhance heat resistance.

## The Life Cycle Of Bioplastics



# “The Solution to Environmental Challenges of Plastics ~ Biodegradable Plastics”



Graph: Material coordinate system of bioplastics Source: European-bioplastics.org

# The features of Nissin's Bioplastic Glass

## 1. Environmental Aspects

-1 kg of biodegradable plastic cups can reduce CO<sub>2</sub> emissions by 2.5 kg compared to petroleum-derived plastic cups.

-The material is biodegradable into water and CO<sub>2</sub> in about 3 months in compost, about 5 years in soil, and about 10 years in the ocean.

## 2. Technology

-The flow length, measured from the bottom to the mouth, is approximately 135mm, making it the longest in the world at the time of its development.\*(based on our research).

-Utilizing advanced manufacturing technology, we have successfully overcome the challenges of shaping PLA (Polylactic Acid) resin. This achievement allows us to produce thin-walled components with a thickness of just 0.65mm, surpassing the industry standard limit of 1mm.

## 3 Applications

-The ultra-thin 0.65mm mouthpiece enhances the enjoyment of cold beverages, providing a crisp, refreshing sensation with every sip.

-Heat resistance up to 55°C/131°F, it is perfect for enjoying cold beverages.

-Perfect for using them in environmentally conscious gatherings and outdoor activities.

-Ideal for educational purposes, such as demonstrating composting techniques and observing the degradation process.

## 4 Design

**Bio7<sub>Hepta</sub>:**Combining the concept of a prime number with PLA resin, this design is both durable and auspicious. The ultra-thin 0.65mm rim enhances transparency, while the heptagonal base provides superior stability. The sleek, smooth edge adds both practicality and elegance.

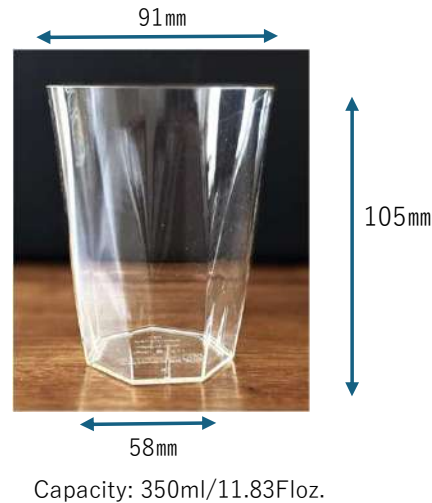
**4-Tiers:**Provides exceptional stability, ideal for small portions of drinks and desserts like ice cream. Each tier holds approximately 50 ml, and it doubles as a 200 ml measuring cup.



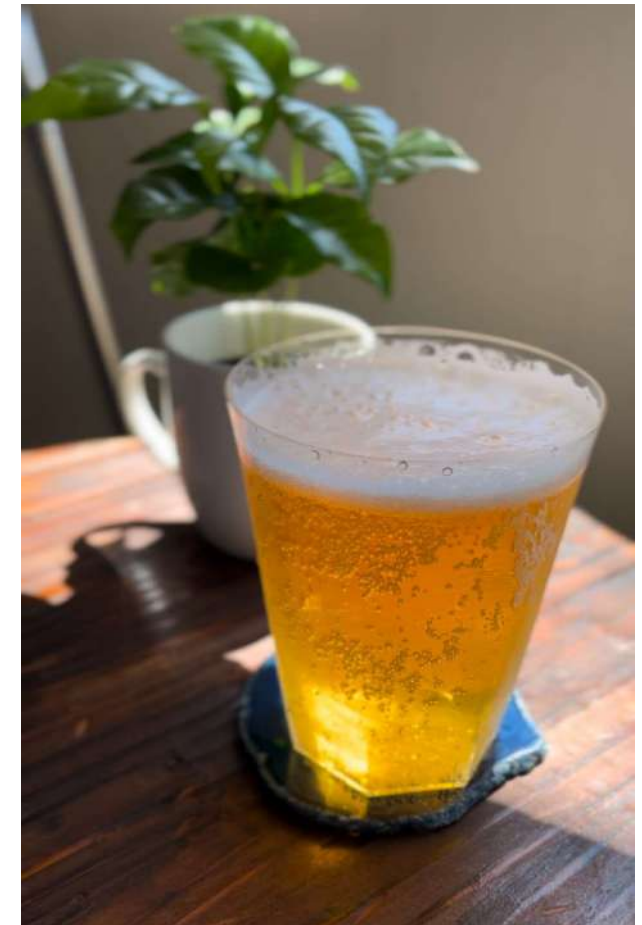
# Our Products

## Bio7 *Hepta*

- “Prime number” and PLA resin creates an “unbreakable,” auspicious concept. It is a thin like fine glass, but it doesn’t break!
- The ultra-thin mouth rim (0.65mm) enhances transparency, while the heptagonal bottom ensures unmatched stability.
- **Heat resistance temperature: 55°C/131°F**
- **Not dishwasher safe**
- The glass **biodegrades** into **Water or CO<sub>2</sub>** within approximately **3 months in compost**, **5 years in soil**, and **10 years in the ocean**
- 1 kg of biodegradable plastic cups can reduce CO<sub>2</sub> emissions by 2.5 kg compared to petroleum-derived cups.



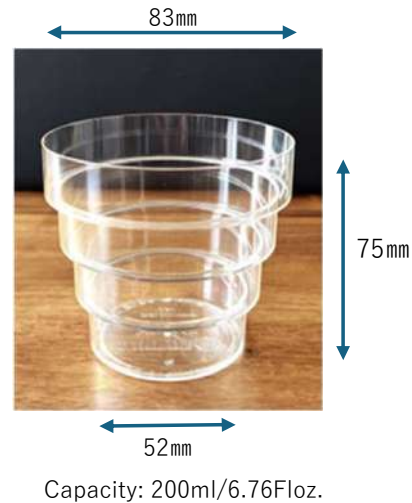
*“The thin, smooth glass edge provides both functionality and aesthetic appeal.”*



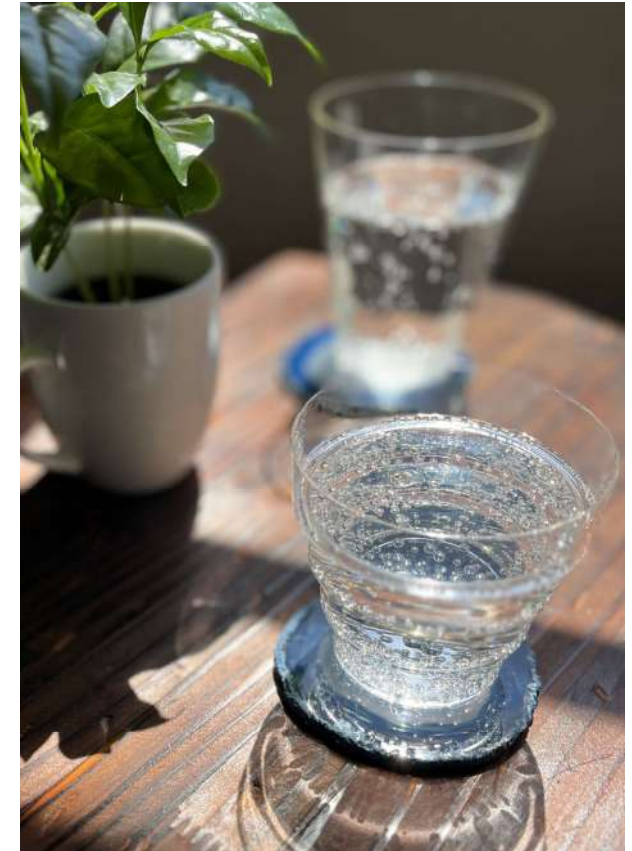
# Our Products

## 4Tiers

- Each compartment holds around 50cc, doubling as a 1cup/200cc measuring cup. Also great as a rice or fried rice mold, with endless possibilities beyond!“
- **Heat resistance temperature: 55°C/131°F**
- **Not dishwasher safe**
- The glass **biodegrades** into **Water or CO<sub>2</sub>** within approximately **3 months in compost**, **5 years in soil**, and **10 years in the ocean**
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*“Excellent stability. Ideal for indulgent desserts such as ice cream and jelly, as well as refreshing small beverage servings.”.*



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## Examples of Using Bio Plastic Glass

- Serving beverages at eco-friendly events and parties.
- Offering sustainable drinkware options in cafes, restaurants, and hotels.
- As an alternative to fine glassware with a good mouthfeel.
- Catering for outdoor events and picnics, reducing plastic waste.
- Supporting composting initiatives by using biodegradable cups at composting facilities.
- For educational purposes and environmental awareness campaigns.
- Further raise awareness at environmentally conscious festivals, parties, and events.
- As a novelty item with an environmental protection message.





## Benefits of bioplastics

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In search of new material solutions and keeping an eye on the goal of sustainable sourcing, production and consumption, bioplastics have several advantages. The use of renewable biomass to produce bioplastics is the key for:

- Increasing resource efficiency by the means of:
  - The resources (crops) being cultivated on an at least annual basis;
  - The principle of cascade use, as biomass can first be used for materials that can in some cases be reused and recovered, and eventually for energy recovery
- Reducing the carbon footprint and greenhouse gas (GHG) emissions of materials and products
- Saving fossil resources by substituting them step by step
- Getting independent from fossil resources such as crude oil and therefore become independent from related exports

Source: European bioplastics

<https://www.european-bioplastics.org/news/publications/>





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*"Beginning with Bio7 &4 Tiers, we persist in actively developing eco-friendly products and contribute to the realization of a sustainable future."*



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