# Market Study: Bioplastic Packaging

**World Report (2nd Edition)**

Ceresana
*Market Research Since 2002*

# This brochure provides further information on the study: "Bioplastic Packaging – World (2nd Edition)"

## Executive Summary

New factories for bioplastics open up new prospects for the packaging industry. Larger production capacities for polylactic acid (PLA), thermoplastic starch (TPS), and other biopolymers improve supply capability and predictability, lower prices, and make sustainable alternatives to fossil-based plastics economically attractive. Ceresana has therefore analyzed the global market for packaging materials made from bio-based and/or biodegradable plastics for the second time. The market research institute expects global sales generated with these products to grow to USD 32.1 billion by 2034.

**Bacteria Produce Films for Food**

Not only is the production of bio-based and biodegradable polymers being expanded, their quality is also being constantly improved. Heat-resistant grades, customized barrier properties, and other innovations expand the range of possible applications and areas of use. PLA, usually made from plant starch, is currently the most important bioplastic on the packaging market with a share of 30%. In second place comes packaging made from bio-based plastics that are not biodegradable, such as polyethylene and PET. Ceresana forecasts the highest growth rates for PLA packaging and for packaging made from polyhydroxyalkanoates (PHA), which are produced with the help of bacteria through fermentation and are biodegradable. The demand for this eco-friendly packaging is expected to increase by 10.3% and 7.2% respectively by 2034.

**Opportunities and Challenges for Bioplastic Packaging**

Bioplastics are increasingly being processed into durable high-performance products. However, the most important application today, accounting for 56%, is short-term packaging for food and beverages. Not only in Europe, the trend is moving towards sustainable and environmentally friendly packaging: The region with the largest demand is Asia-Pacific, with a global market share of 42%.

In addition to market data and forecasts, the study also provides information on the regulatory framework in the EU as well as the general economic situation and the situation in the packaging industry in the individual countries.

**Current Market Report:**

**Chapter 1** analyzes the global market with growth forecasts up to 2034: The development of demand and revenues is shown for each region. In addition, the different types of packaging, applications, and products are examined individually. Rigid packaging and flexible packaging are handled separately. The following applications are examined in detail: Food & beverages, consumer products, cosmetics & pharmaceuticals, and others.

For Europe, North America, Asia-Pacific, and the "Rest of the World", the packaging market is broken down for the different types of bioplastics: PLA, starch, PBAT, PHA, other biodegradable plastics, and bio-based but non-biodegradable plastics.

In addition, the demand for each type of bioplastic is broken down for the respective packaging applications.

In **Chapter 2**, the 11 most important sales markets are examined individually. The following are shown in each case: Demand and revenues split by the individual applications, demand per bioplastic and packaging type (flexible and rigid packaging).

**Chapter 3** provides 35 company profiles of the largest manufacturers, e.g. Amcor, Huhtamäki, NTIC, Novolex, Plantic, Shanghai Yifu, Sphere, and Taghleef.

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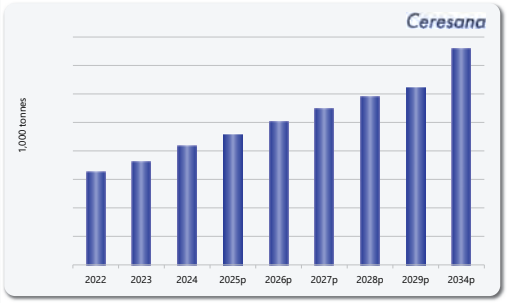
**2.2.2 USA**

Demand for bioplastic packaging in the USA totaled approximately X tonnes in 2024. The USA thus represents the second largest domestic market around the globe after China. We expect market volume to increase to about X tonnes in 2034. Compared to 2024, this constitutes average growth of X% per year.
Revenues generated with bioplastic packaging amounted to approx. USD X billion in 2024. We expect an increase to approx. USD X billion by 2034. Compared to 2024, this corresponds to an average growth of X% per year.




Graph: Demand in the USA from 2022 to 2034

| Revenues | 2022 | 2023 | 2024 | 2025p | 2026p | 2027p | 2028p | 2029p | 2034p | 2024-2034 |
|---|---|---|---|---|---|---|---|---|---|---|
| Million USD | X | X | X | X | X | X | X | X | X | X% p.a. |
| Million EUR | X | X | X | X | X | X | X | X | X | X% p.a. |

Table: Revenues generated in the USA from 2022 to 2034, in million USD and million EUR

| Million USD | 2022 | 2023 | 2024 | 2025p | 2026p | 2027p | 2028p | 2029p | 2034p | 2024-2034 |
|---|---|---|---|---|---|---|---|---|---|---|
| Food & Beverages | X | X | X | X | X | X | X | X | X | X% p.a. |
| Consumer Products | X | X | X | X | X | X | X | X | X | X% p.a. |
| Cosmetics & Pharma | X | X | X | X | X | X | X | X | X | X% p.a. |
| Others | X | X | X | X | X | X | X | X | X | X% p.a. |
| **Total** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X% p.a.** |

Table: Revenues generated in the USA from 2022 to 2034 – split by application

| in 1,000 tonnes | 2022 | 2023 | 2024 | 2025p | 2026p | 2027p | 2028p | 2029p | 2034p | 2024-2034 |
|---|---|---|---|---|---|---|---|---|---|---|
| Food & Beverages | X | X | X | X | X | X | X | X | X | X% p.a. |
| Consumer Products | X | X | X | X | X | X | X | X | X | X% p.a. |
| Cosmetics & Pharma | X | X | X | X | X | X | X | X | X | X% p.a. |
| Others | X | X | X | X | X | X | X | X | X | X% p.a. |
| **Total** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X% p.a.** |

Table: Demand in the USA from 2022 to 2034 – split by application

| in 1,000 tonnes | 2022 | 2023 | 2024 | 2025p | 2026p | 2027p | 2028p | 2029p | 2034p | 2024-2034 |
|---|---|---|---|---|---|---|---|---|---|---|
| PLA | X | X | X | X | X | X | X | X | X | X% p.a. |
| Starch | X | X | X | X | X | X | X | X | X | X% p.a. |
| PBAT | X | X | X | X | X | X | X | X | X | X% p.a. |
| PHA | X | X | X | X | X | X | X | X | X | X% p.a. |
| Other Biodegradables | X | X | X | X | X | X | X | X | X | X% p.a. |
| Non-Biodegradables | X | X | X | X | X | X | X | X | X | X% p.a. |
| **Total** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X% p.a.** |

Table: Demand in the USA from 2022 to 2034 – split by product

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| in 1,000 tonnes | 2022 | 2023 | 2024 | 2025p | 2026p | 2027p | 2028p | 2029p | 2034p | 2024-2034 |
|---|---|---|---|---|---|---|---|---|---|---|
| Rigid Packaging | x | x | x | x | x | x | x | x | x | X% p.a. |
| Flexible Packaging | x | x | x | x | x | x | x | x | x | X% p.a. |
| **Total** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **X% p.a.** |

Table 1: Demand in the USA from 2022 to 2034 – split by type

**General Economic Situation:**

The USA has been the world's largest economic power since the Second World War. Around 1950, the peak to date, the country accounted for around 28% of global GDP. By 2012, this share had fallen to around 22% – but then rose again. The USA currently accounts for around 25% of the global economy (nominal, in US dollars). However, when purchasing power is taken into account, China has overtaken the USA since 2016. The growth of Chinese industry is the main reason why the USA's share of global industrial production has fallen from an estimated 50% in 1950 to around 17% today. The nominal US GDP per capita of currently around USD 82,700 ranks 7th in the world behind Norway, Switzerland, and other small countries (in comparison: Germany ranks 18th with USD 53,500 and China 73rd with USD 12,600). Growth in the US economy rose from 2.5% in 2022 to 2.9% in 2023 and 2.8% in 2024. The IMF expects GDP growth of 1.8% for the USA in 2025 and 1.7% in 2026.

US policy is often confusing for the rest of the world, and not just since Republican Donald Trump became president for the second time in January 2025 and has been repeatedly announcing and suspending tariffs. Simultaneously braking and accelerating at full throttle: The US Federal Reserve has aggressively raised key interest rates in a short amount of time in order to reduce the money supply (more than quadrupled since 2000) and the sharp rise in inflation in the wake of the COVID-19 pandemic (inflation officially reached 8% in 2022, 4.1% in 2023, and around 3% in 2024). Key interest rates rose from 0% in March 2020 to 5.5% in July 2023; they were lowered again to 4.25% by May 2025. However, economic growth, private consumption (around 70% of the USA's GDP), and employment remain relatively stable because the US government is pumping huge sums into the economy at the same time. US defense spending reached a new world record of around USD 997 billion in 2024. In addition,

USD 1.2 trillion for infrastructure renewal (Infrastructure Investment and Jobs Act), USD 280 billion for the semiconductor industry (CHIPS and Science Act), USD 369 billion for the "green" transformation of the economy, and an estimated USD 890 billion for climate protection, "clean" energy, and healthcare (Inflation Reduction Act) will be spread over several years. These opposing policies of the state and the central bank are possibly intended to slow down foreign competitors, especially China, which is heavily in debt. Subsidies and tax breaks are mainly available for strategically important sectors such as semiconductors, microelectronics, energy, and transportation.

It is not yet clear whether the state-subsidized "green" industries will be viable in the long term and recoup their costs. President Trump has largely halted the disbursement of funds from the Inflation Reduction Act (IRA) by executive order and announced that he will cut subsidies for electric vehicles and renewable energies in particular. However, a complete abandonment of the IRA is considered unlikely, as various projects serve the "reindustrialization" of Republican-governed states and also benefit government advisor and billionaire Elon Musk (Tesla, SpaceX).

Regardless of the government in power, the USA is increasingly protectionist. Since April 2025, a duty of 10% generally applies to all imports in addition to the respective standard duty rate. However, there are numerous exceptions. For example, imports under the USMCA free trade agreement with Canada and Mexico are to remain duty-free. In contrast, an additional duty of 25% applies to aluminum, steel, copper, and vehicle parts. Countries that import crude oil from Venezuela, Russia, or Iran are penalized with extra tariffs of 25 to 50%. Additional tariffs of up to 245% apply to imports from China and Hong Kong. Online retailers are particularly affected by the abolition of the de minimis rule for postal parcels from China, i.e. the de minimis limit of USD 800 for duty-free and declaration-free small shipments (instead, there will even be a minimum charge of USD 50 for each shipment from June 2025). China has responded with a retaliatory tariff of 125% on all US goods. Other countries are also threatening retaliatory tariffs, but are still negotiating with the US government. In addition to the various tariffs, there are increasingly non-tariff trade barriers, e.g. "Buy American" rules and "local content" regulations for subsidies and public tenders...

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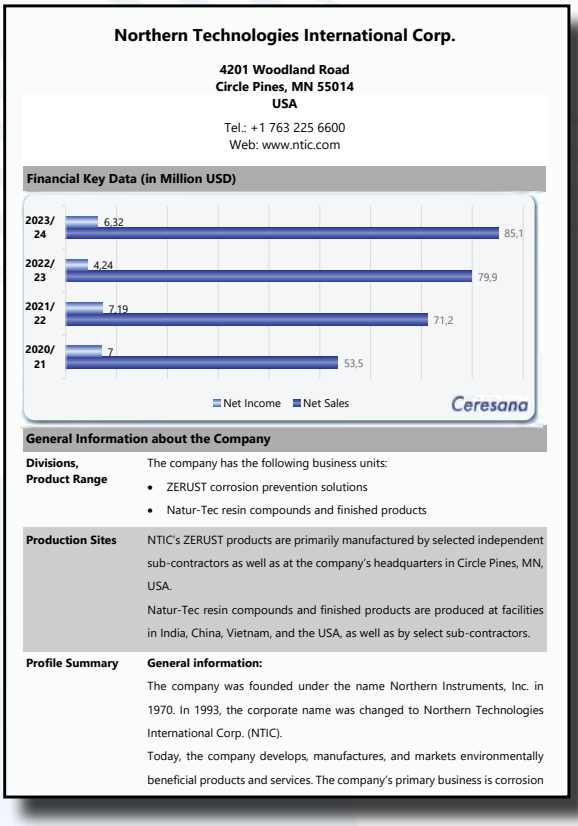
## 3 Company Profiles*





**Northern Technologies International Corp.**

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**USA**

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Web: www.ntic.com

**Financial Key Data (in Million USD)**



**General Information about the Company**

| | |
|---|---|
| **Divisions, Product Range** | The company has the following business units:<br>• ZERUST corrosion prevention solutions<br>• Natur-Tec resin compounds and finished products |
| **Production Sites** | NTIC's ZERUST products are primarily manufactured by selected independent sub-contractors as well as at the company's headquarters in Circle Pines, MN, USA.<br>Natur-Tec resin compounds and finished products are produced at facilities in India, China, Vietnam, and the USA, as well as by select sub-contractors. |
| **Profile Summary** | **General information:**<br>The company was founded under the name Northern Instruments, Inc. in 1970. In 1993, the corporate name was changed to Northern Technologies International Corp. (NTIC).<br>Today, the company develops, manufactures, and markets environmentally beneficial products and services. The company's primary business is corrosion prevention, marketed mainly under the ZERUST brand. In addition, NTIC produces and sells bio-based and certified compostable polymer resin compounds and finished products under the Natur-Tec brand.<br>NTIC has 11 subsidiaries in India, Sri Lanka, the USA, China, Germany, Brazil, Singapore, Vietnam, Taiwan, and Mexico.<br>Furthermore, the company participates in 15 joint ventures in France, Malaysia, Germany, Poland, Czechia, South Korea, Indonesia, Japan, Ukraine, the UK, Türkiye, Sweden, the USA, Finland, and Thailand.<br>In 2024, NTIC employed around 260 people.<br>**Financial information:**<br>NTIC is registered on the Nasdaq Stock Market.<br>The company's fiscal year ends on August 31.<br>In the financial year 2023/24, total assets amounted to USD 94.7 million and USD 4.8 million were invested in R&D.<br>Split by business segment, 74% of net sales in 2023/24 were generated with ZERUST and 26% with Natur-Tec.<br>Split by region, 36% of net sales in 2023/24 were generated in the USA, 17% in China, 7% in Brazil, 26% in India, and 14% in other regions.<br>**ISO certifications:**<br>The company's management system is ISO 9001 certified. |

**Specific Information about Bioplastics Packaging**

Under the brand name Natur-Bag, NTIC produces packaging products made of Natur-Tec bioplastics, such as can liners, shopping bags, and produce bags in various sizes.
Under the brand name Circule, the company offers customized biobased and compostable apparel packaging solutions such as garment dust covers and accessories.
Under the brand name ZERUST-Natur, NTIC manufactures and sells a fully biodegradable VCI film designed to protect against corrosion damage for metals in shipping, storage, and work-in-progress. The products are certified compostable by BPI and TÜV Austria.

*Note: The profiles are assigned to the country in which the company or holding is headquartered. Profiles also include JVs and subsidiaries.

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**Please do not hesitate to contact us if you have any questions.**

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## Reliable Data and Facts for Your Knowledge Advantage:

- Revenues, demand, production, import, and export until 2034
- Macroeconomic and sector-specific explanations per country
- Segmentation into applications, technologies, and products
- 7 world regions and up to 40 countries
- Profiles from manufacturers with capacities

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Biobased Insulation Material – World
Biobased Paints & Coatings – Eur. / – World
Biobased Solvents – Europe / – World
Biobased Surfactants – Europe / – World
Bioplastic Packaging – World
Bioplastic Films – World
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### Chemicals

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Fillers – Europe / – World
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### Packaging

Bags, Sacks & Pouches – Europe / – World
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### Mobility

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Hybrid & Electric Cars – Europe