



도원바이오테크  
dowonbiotech

2020

**DOWONBIOTECH**

**Company Profile**

“Well being Innovation! A company specializing in biodegradable property development “

도원바이오테크  
dowonbiotech

# INDEX

I. About Us

II. Material features (Nano PLA)

III. Introduction of our own technology applied products

IV. Introduction of US corporation

V. Various certifications status

## Prologue

Well being & Well dying: A company specializing in biodegradable technology development aiming for the nature as it is

### Differentiated R&D: Nano PLA

Its own properties of company-affiliated research institutes, nano cosmetics specialized in raw material development, and new material plastic development and advice

### Commercialization of nature as it is in various ways

Development of baby products, kitchen supplies, household goods, disposable products, etc., trademark registration of own brand, and patent application

### Alternative Innovation

Innovative replacement of chemical materials that are 100% harmless to the human body



DOWON biotech Co.,Ltd

도원바이오테크

# I. About Us

## HISTORY

### Since 2015.2-

- Establishment of a knowledge industry center in Songdo Smart Valley
- Manufacture of bio-plastic containers to which biodegradable resin (PLA) is applied
- Registered a patent for a method of manufacturing natural burials and an enshrinement box for pets using biodegradable resin (PLA)
- development of various bioplastic properties, completion of production of specimens and prototypes

### Since 2016.4~

- Self-development, design and shopping mall construction for baby products, tableware, toys, etc.
- Female business certification
- Establishment of corporate research institute
- Cosmetics and medical products (raw materials) export advice & consulting
- 2016 Introduction of nano cellulose raw materials: Nano PLA R&D, completion of new material properties
- R&D of reinforced plastics for nano PLA cutting board
- Antibacterial PLA nonwoven fabric: Development of antibacterial PLA mask for medical use and prevention of fine dust
- Development of nano-bio cosmetics and production of finished products
- Development and production of temporary dental raw materials for medical use
- Development of low-temperature molding PLA casts and bandages (Completion of permission for grade 1 plaster replacement medical device)

## I. About Us

Since 2018.~

- Biodegradable straw physical property development and finished product development completion, 3 patents registered
- We are supplying products by receiving orders from EDIYA headquarters and 500 stores (Development of disposable items such as tumbler and ice cup)
- Development of 100% biodegradable PLA raw material, development of blow molding (cosmetic container) and completion of delivery
- Establishment of mass production facility and relocation of factory in Namdong Industrial Complex
- We have established a corporation in HK Biotech in the US and are in the process of establishing a factory with (Texas) & San Angelo city - One international patent PCT is pending.



## II. Introduction of our own technology Nano- PLA Polymer



**Cyclic Process (Technology that considers humans and the environment)**

① Eco-friendly material made by natural fermentation (polymerized extrusion material: PLA-Poly Lactic Acid)

② PLA 40% + natural ingredients 60%, our company's composition blending technology

③ Various heavy metals, environmental hormones, and phthalates are not detected (0%)

④ No oxidative biodegradants, chemical additives, or plasticizers are used.

⑤ Development of perfect professional properties with differentiated technology (realization of finished products)

⑥ Even if it is landfilled or incinerated, the environment is not destroyed, and it is safe for animals to consume it.

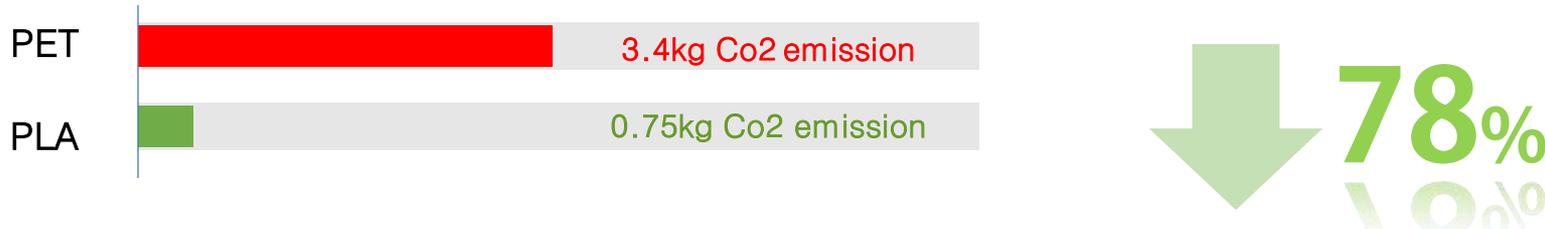




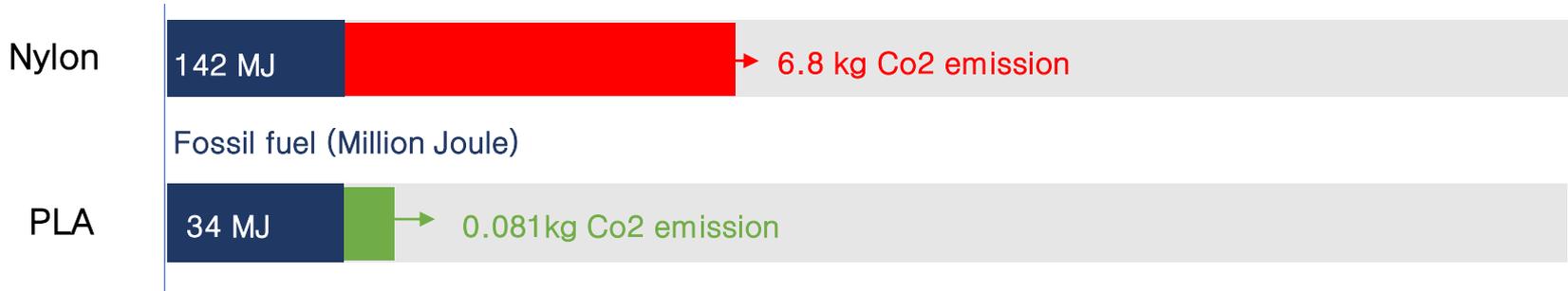
# Characteristics & comparison of natural vegetable material (PLA: Poly Lactic Acid)

▶ PLA can reduce CO<sub>2</sub> generation by 60% compared to petrochemical coating film, and energy required for production is reduced by 30%.

▶ CO<sub>2</sub> generation amount compared to PET



▶ Amount of fossil fuel required and CO<sub>2</sub> generation when producing 1kg of nylon

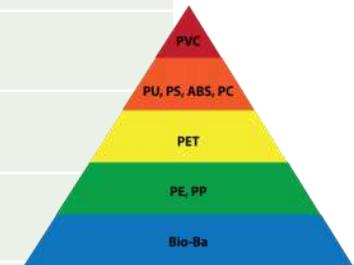


\* Source: Natureworks company (USA)



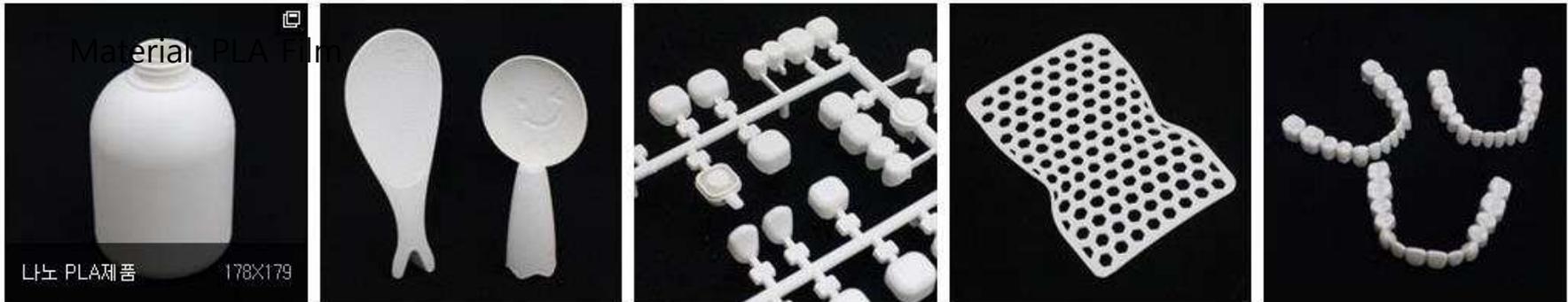
# Comparison with existing synthetic resin products (1)

Classification	Nano PLA Food Container (Our company)	Existing (Synthetic Resin) Food Container
Coating material	PLA + PBS	<ul style="list-style-type: none"> <li>• PP,PE</li> <li>• PP,PE(70%) + PLA + PBS</li> </ul>
Decomposition during landfill (period)	100% biodegradation (good condition for composting)	70% or more non-decomposition (It takes 200 years or more)
Antibacterial activity	Strain reduction 99.9%	No strain reduction
Smoke density	Around 10kg/ m <sup>3</sup>	Around 50kg/ m <sup>3</sup>
Hazardous substances (environmental hormones, etc.)	Not detected	Detected when heat is applied
Productivity (printing, adhesion, etc.)	<b>Excellent</b>	Good
Heating value during combustion	4,500Cal/g	8,000Cal/g
Greenhouse gas (Co2)	78% reduction compared to Pet	-
Waste charge	Exemption	Imposition
Smell during combustion	Sweet smell	Toxic gas
Government policy	<b>Coincidence</b>	Not coincidence



### III. Introduction of our own technology Nano- PLA Polymer

New material application nano PLA made by combining natural bioplastic and vegetable cellulose



**:: Completion of producing container for blow molding for the first time in Korea**



**:: Completion of producing PLA for low-temperature molding medical use for the first time in Korea**

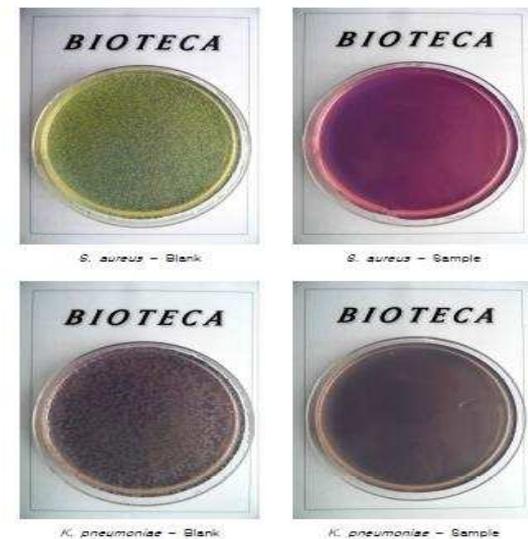
**:: Completion of producing biodegradable PLA vinyl with transparency for the first time in Korea**



☞ ☞ Our company's biodegradable vinyl



**:: Completion of producing biodegradable PLA nonwoven fabric with excellent antibacterial activity for the first time in Korea (Maintenance of antibacterial activity of diplococcus pneumoniae, staphylococcus aureus, Escherichia coli for 18 hours)**



☞ Antibacterial level (KS K 0693 applied)

We make Angelgreen's 100% biodegradable corn straws from honest ingredients, which are good for the environment as well.



ALL



Kids



Bubble type(black)



Bubble type(white)



General type(white)



General type(green)



General type(blue)



General type(black)

By raising the quality of disposable products to the next level, it has been reborn as a biodegradable product that helps the global environment.

## IV. Introduction of HK Biotech Corporation, US subsidiary

- HK Biotech Corporation
- Factory production City of San Angelo and State of Texas in the U.S.
- FDA registration
- Develop and submit TIRZ (Tax Increment Reinvestment zone) Mayor Mrs. Brenda G.



Defense Logistics Agency  
 7-Eleven (Southland) Corporation  
 Target  
 McDonald's  
 COSTCO  
 Walmart/Sam's  
 HEB Supermarkets  
 CYSCO Foods

**NanoPLA**

Poly Lactic Acid-technology  
**100% Biodegradable Polymer**



HK Biotech Corporation  
 4801 North Bentwood Drive  
 San Angelo, Texas 76904

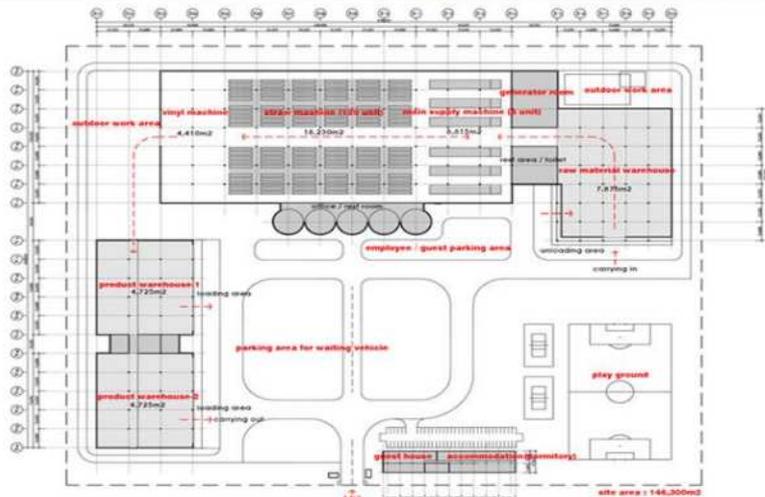
An architecture plan  
(조감도)

A plan on production and facility



An architecture plan

A plan on production and facility



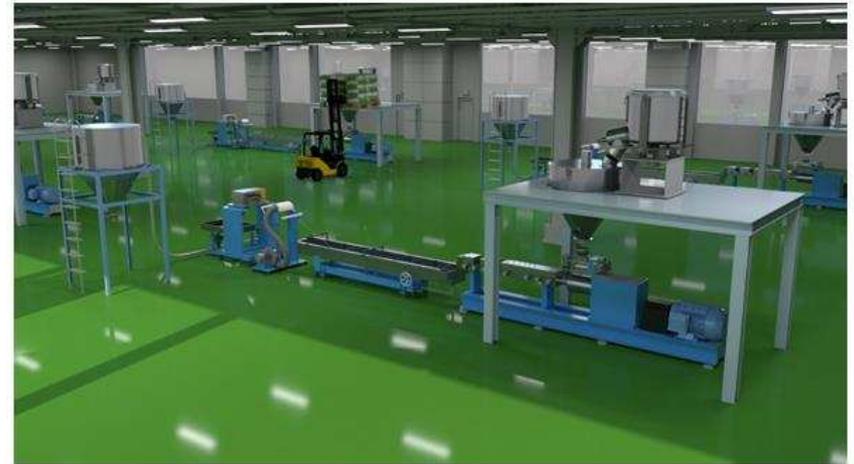
A production facility plan

A plan on production and facility

- Specification: 30meters long, 7meters wide
- Number of installation: 6PCS machines
- Specification: 15meters long, 1.0-1.5meters
- Number of installation: 120PCS machines



- Total Length of the facility : 40meters







## Prototype raw material development and patent application

### Affiliated research institute

#### PLA

polymer raw material properties development and supplementation

#### Medical PCL

Development of polymer raw materials for medical use

#### Polymer fiber

Development of fiber materials through polymerization

#### Patent Name

- Biodegradable composition with excellent low temperature properties and its manufacturing method (10-1889224\_ registration)
- Nonwoven fabric with excellent antibacterial properties and its manufacturing method (10-1983910\_ registration)
- Biodegradable nonwoven fabric with excellent antibacterial properties and its manufacturing method (10-2094637\_ registration)
- ◆ Two types of divisional patent pending (PCT international pending)
- Trademark registration: 20 kinds including Angel Green



**도원바이오테크**  
dowonbiotech

**We aim to provide well-being to people around the world through the globalization of “Nano PLA Polymer”, a natural vegetable plastic made using new technologies suitable for new materials.**

DOWONBIOTECH possesses excellent technology and product capabilities, and is promoting business in the global market with the aim of becoming a market leader in the field of eco-friendly materials. We mainly make and sell eco-friendly products, baby products, and biodegradable disposable products.

The way we eat well and live well is to think about the environment and live together,

Our goal is to protect the global environment through dying naturally and returning back to nature just like being born.

It is not to entrust the process to others, but to think about the environment and prepare in advance with the environment.

DOWONBIOTECH continues to try to commercialize ideas gradually.

CEO Ham Ji-yeon

We will not only make life comfortable with eco-friendly products, but also constantly dream to make people on the Earth happy.



The Creative Bio plastic Manufacturing Company



도원바이오테크  
dowonbiotech

