marine biodegradable plastic 09

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Development of Marine Biodegradable Materials with Ionic Bonds

Ionic Bond / Marine Biodegradable

Nisshinbo Holdings Inc.

Research Highlights

Background

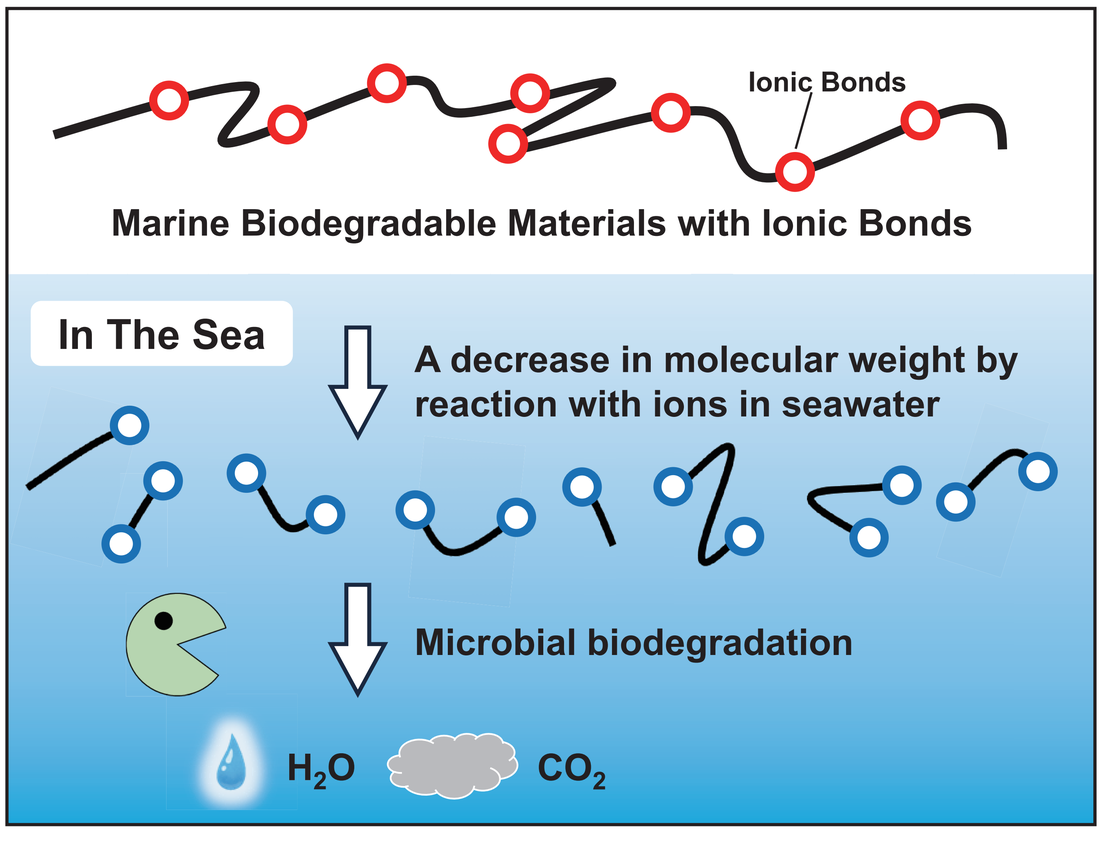
The demand for environmentally responsible materials has been increasing to reduce marine plastic, including microplastic, pollution.

Research & Development

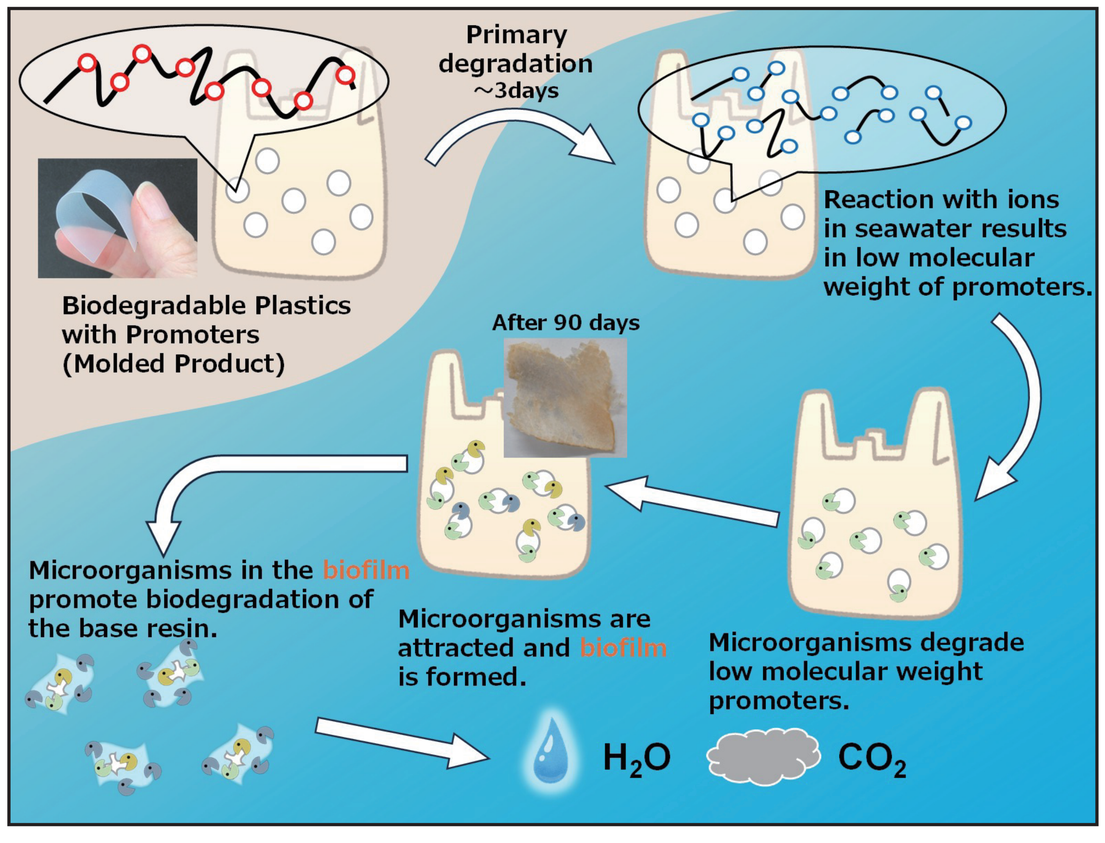
We have developed marine biodegradable materials with ionic bonds that begin biodegradation upon contact with seawater.

Fine Particles
(Hydrophobic Alginate Particles)

Biodegradation Promoters



The Mechanism of Marine Biodegradation of Developed Materials



The Mechanism of Marine Biodegradation of Biodegradable Plastics with Additives

For Visitors

We would like to explore the applications of marine biodegradable materials with ionic bonds and collaborate with partner companies to launch innovative products.

Online Contents

Nisshinbo Holdings R&D Activities
https://www.nisshinbo.co.jp/r_d/activity.html

Project Name	Technology Development Project for Social Implementation of Marine Biodegradable Plastics / Development of New Stuff and New Material related to Marine Biodegradable Plastics
Contact Information	Nisshinbo Holdings Inc. Business Development Division https://www.nisshinbo.co.jp/contact/newBusinessInq/form.html

NEDO

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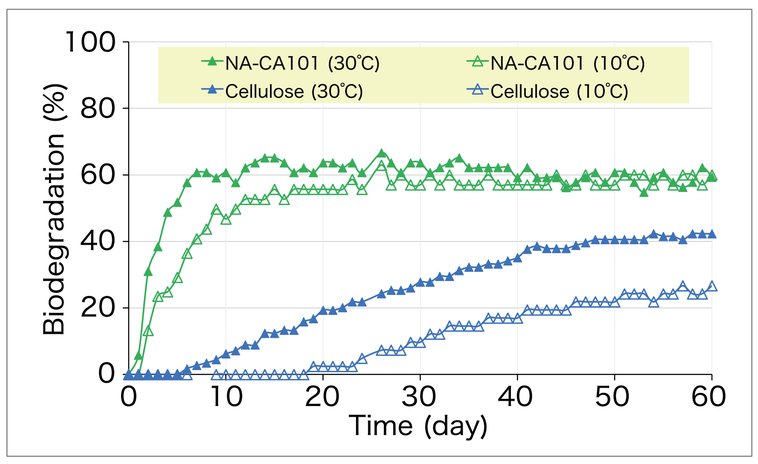
Summary of Marine Biodegradable Materials with Ionic Bonds

Biodegradable Fine Particles / Biodegradation Promoters

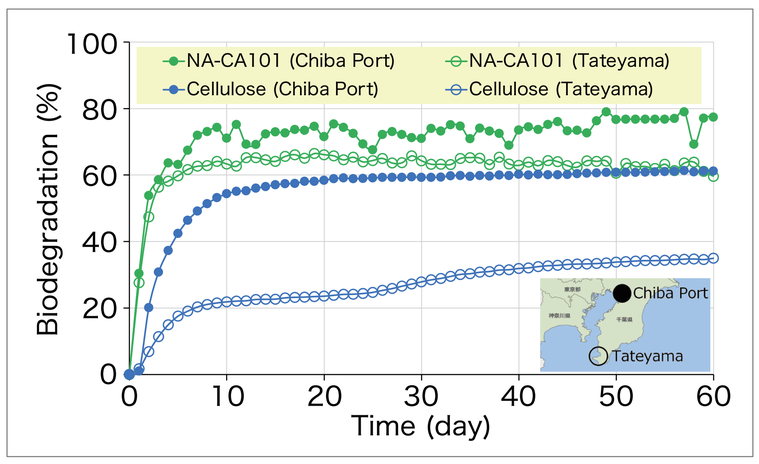
Nisshinbo Holdings Inc.

Hydrophobic Alginate Particles (NA-CA101)

- We have developed eco-friendly materials made from alginic acid derived from seaweed.
- We expect applications in personal care, such as cosmetics.



The Effect of Test Temperatures on Biodegradability



The Effect of Seawater Sampling Points on Biodegradability

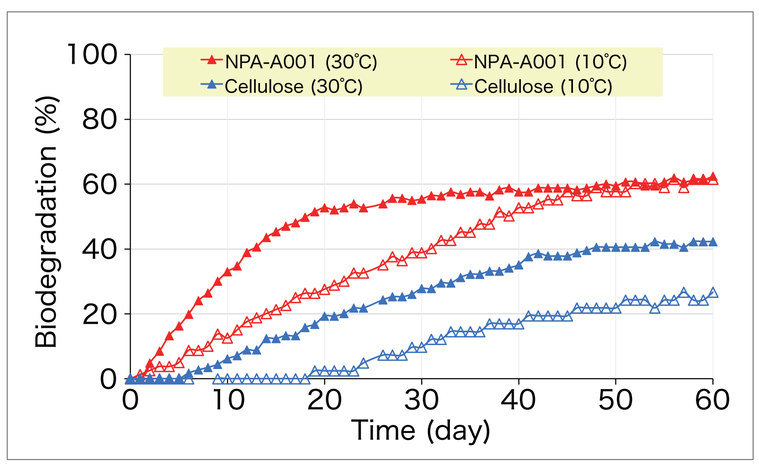
OK biodegradable MARINE Certification (2021)

Tests	Results
Skin Irritation	Negative
Eye Irritation	Negative
AMES	Negative
Patch Test	Negative
Natural Origin Index	≧90%
Biomass Degree	100%

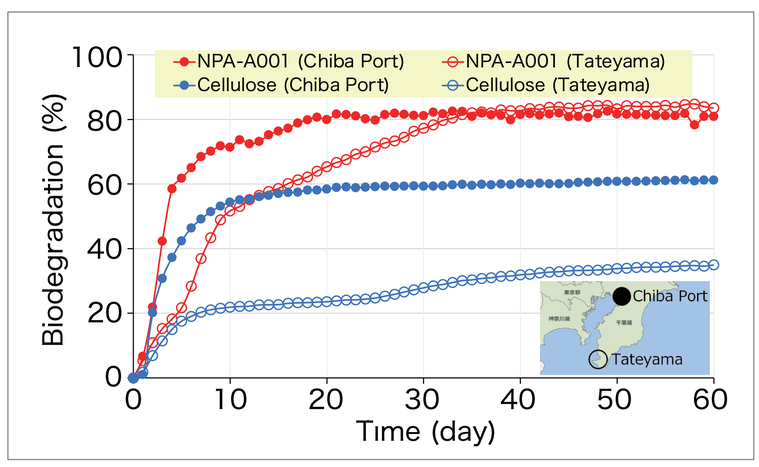
Safety Test

Marine Biodegradation Promoters (NPA-A001)

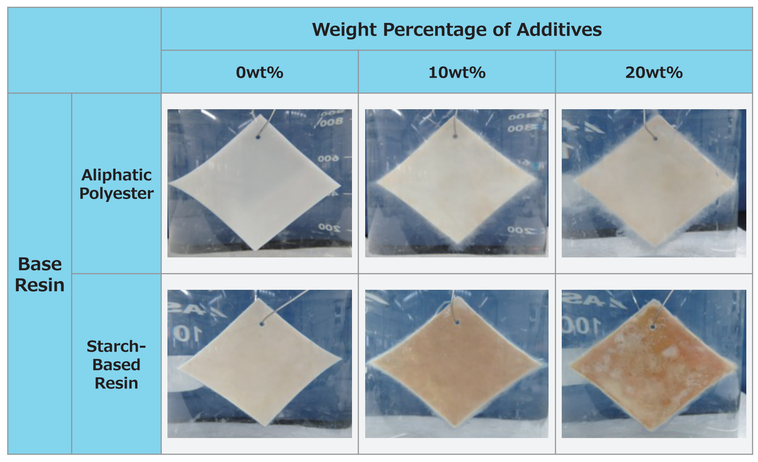
- We have developed additives that enhance biodegradability of biodegradable plastics by blending with them.
- We expect applications as biodegradation promoter for products that are difficult to collect.



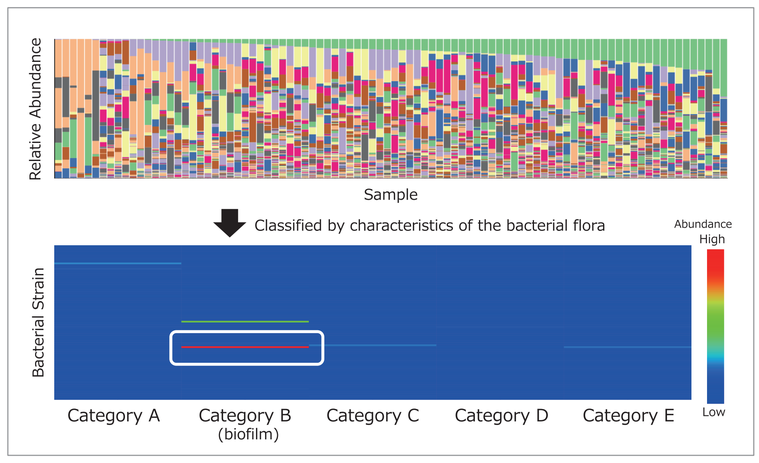
The Effect of Test Temperatures on Biodegradability



The Effect of Seawater Sampling Points on Biodegradability



Appearance of Films Immersed in Seawater for 120 Days



Bacterial Flora Analysis for Mechanism Prediction

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