

Advantages and challenges of plant-derived foam floats.

- Toward the development of fishing gear that is friendly to the marine environment
- “UMI” & “NAGISA” Foundation

Currently, foam floats, which are widely used in the aquaculture industry in Japan, are aggregates of polystyrene foamed particles. 98% of the foam float is air and the raw material is only 2%, which is a very light and resource-saving product. On the other hand, it becomes particles due to the passage of time and ultraviolet rays and flows out into the sea, causing marine pollution. In addition, there are many garbage incinerators that refuse to accept floats collected from the sea because the incinerator is damaged when they are processed on land. We are working on the development of foam floats that have high quality as fishing gear, are safe even if they flow out into the sea, decompose and disappear after a certain period of time, and are easy to process on land.

Conditions for "new foam float"

- ① The existing production line can be used
- ② The price is the same as the current product
- ③ Be strong
- ④ Non-toxic or low toxicity
- ⑤ Being able to digest quickly in the body
- ⑥ Biodegradation is gradual

We have selected "polylactic acid," a plant-derived material, as a material that has the potential to meet the above six conditions.

Foamed floats made from plant-derived polylactic acid met the above conditions ①, ④ and ⑤ at the time of manufacture.

For this reason, we verified ③ and ⑥ of the above conditions in the verification test at the fishing site.

As a result of the verification, it was found that the condition ③ is more likely to collapse than the current float, and that it contracts over time and the buoyancy decreases.

On the other hand, although the condition ⑥ requires further verification, it does not seem that biodegradation is progressing particularly quickly at this time.

"Further Benefits of Polylactic Acid Foam Float"

- ① Can be incinerated on land (does not destroy the incinerator)
- ② Does not generate harmful gas (NOx, SOx, etc.) when incinerated.

③ It is said that the amount of CO2 emitted from manufacturing to incineration is half that of conventional products (polystyrene).

"To conclude"

- The price of polylactic acid is high, and reducing manufacturing costs is an issue for the future.
- We will continue to work with the manufacturers responsible for development to further improve the polylactic acid float to meet the condition of ③.
- We are deeply grateful to the Fisheries Agency, Government of Japan for financial support for this demonstration test, Nichimo Co., Ltd., JSP Corporation, Marine Fisheries Research and Development Center (JAMARC), and the Shizuoka aquaculture company for providing a place for prototypes and demonstration tests. I would like to say.

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Styrofoam floats washed ashore and their debris



Foaming (polylactic acid) float under verification test in aquaculture cage



Float under test on a floating reef in an overseas purse seine fishery