

FUNCTIONAL
YARN & FABRIC

seaflow®

MARINE ENERGY



Taiwan

One of the prosperous aquaculture in Taiwan is oyster farming, there are around **200,000,000** KG of oyster per year, mostly distributed in the west coast of Taiwan.



Oyster Farming

The Problem

We're Facing Now.



What're we going to deal with these shells?

According to the statistics, there're around **160,000,000 KG** of oyster shells will be discarded. These shells are just piling up and cause the awful smell.

Material Innovation



**RECYCLED
BOTTLE**

REUSE REDUCE RECYCLE



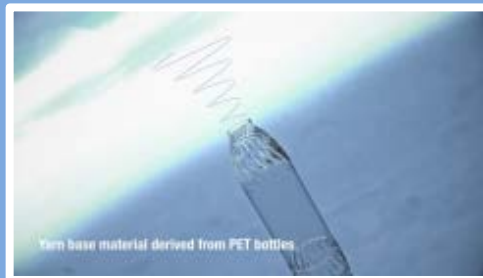
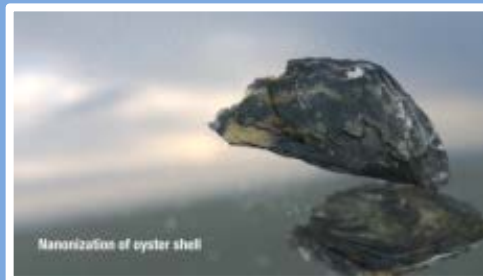
**OYSTER
SHELL**

After spending almost 10 years,
we're proud and excited that we finally
find a way to deal with the mountains of
Oyster Shells.

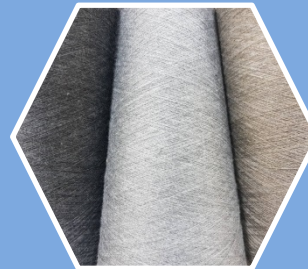
Take fully advantages of oyster shells, get
the most out of it.

The NEW Material made of
Recycled Bottle
&
Oyster Shell

The raw material of **Seawool®** is PET bottles and oyster shell powder, we combined these two things together to create the functional yarn. It has exceptional warmth, and environment friendly components from the ocean and post consumer product as the perfect example of **CIRCULAR ECONOMY**.



OYSTER SHELL



SEAWOOL YARN



RECYCLED PET BOTTLE

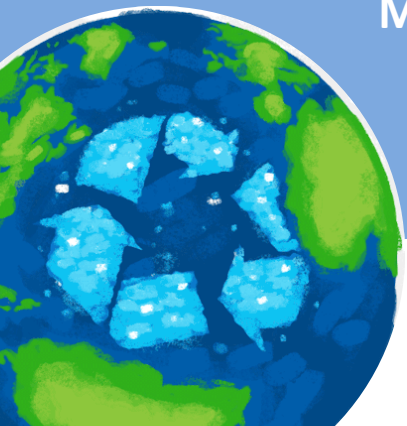


Eco-Friendly
Woolen Touch
Keep Warm
Anti-Static
Q-Dry , Easy Care



The functional yarn which the structure is 99% similar with wool was entitled “**Seawool**”.

The best advantages of Seawool is focusing on its **environmentally-friendly** materials. The oyster shell which naturally contained with mineral that made the yarn have additional multi-functions: Anti- Static, Anti- Odor, Moisture Management , Quick dry, High CLO and Machine wash.



Low Thermal Conductivity

Cold environment →

T_1

Heat flow q

$\lambda (W / m^k)$

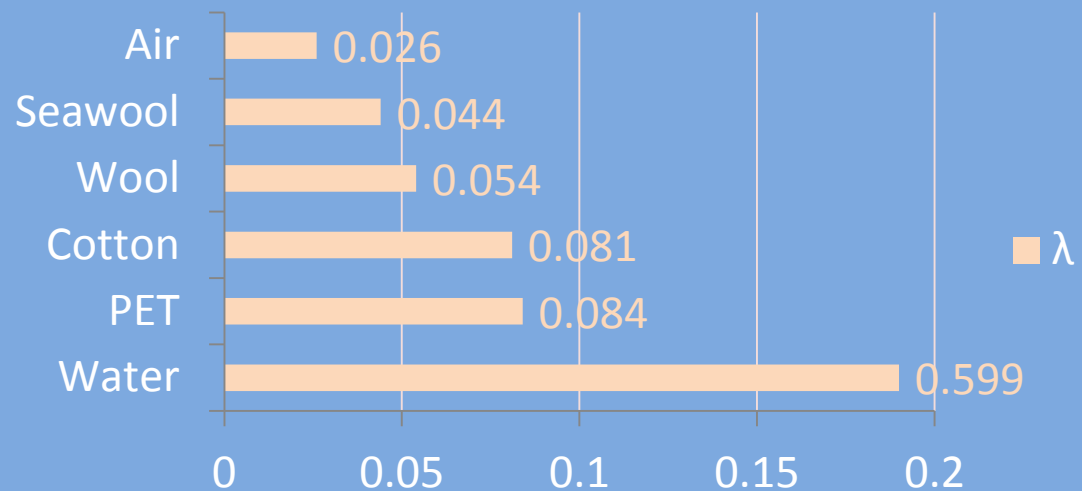
seawool®
MARINE ENERGY

T_2

← Hot environment

Heat can be lost through the process of conduction.

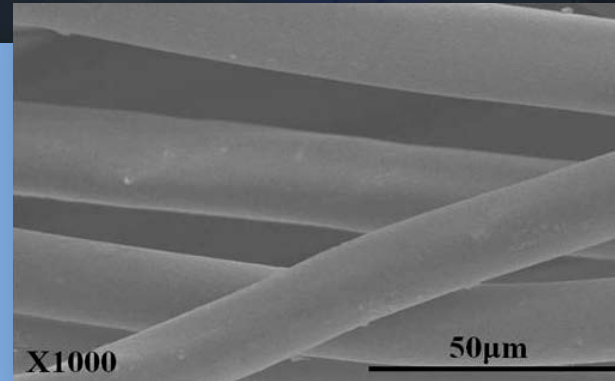
Seawool® has a thermal conductivity – **0.044** that is almost less than half as high as PET – 0.084. It means that Seawool® is better insulators than polyester.



Woolen Touch

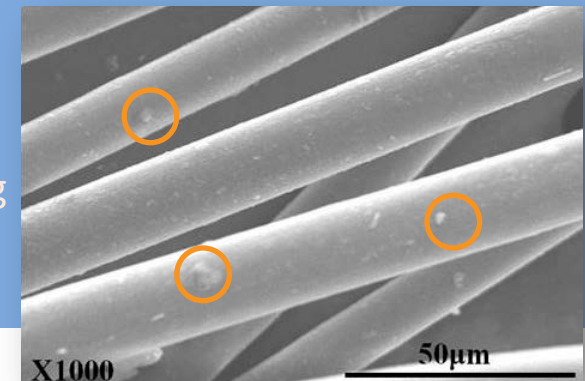
Seawool® has a unique surface structure and we can observe that the fibers show its surface scales under SEM.

The feel of Seawool® is very different to typical synthetic fibers. It feels like wool due to those scales.



(A) Yarn before dyeing

↑ Fiber SEM Pictures ↓



(B) Yarn after dyeing



Anti-Static

Seawool yarn has the major portion Positive Electricity and the human body is with Negative Electricity, so those two electricity will neutralize after wearing this new fabric's apparel and prevent the static happen during the winter time.

Refractive index : 1.59



Anti-ultraviolet

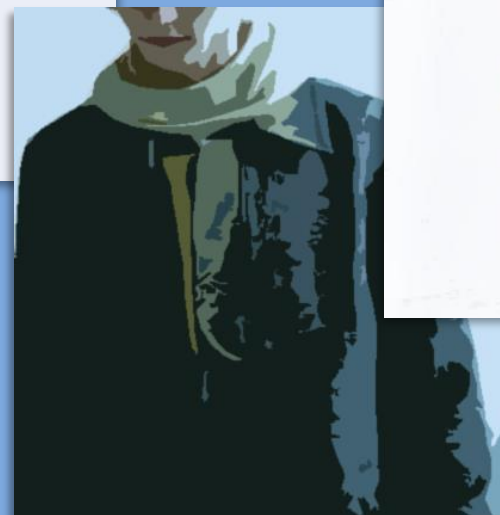
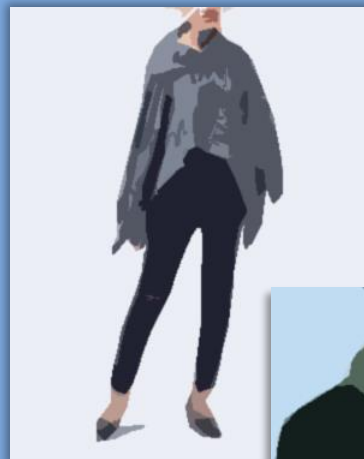


Anti-Odor

The nanolized oyster shell powder on the surface is a microporous structure, which could facilitate the absorption of the odor caused by the body after sweating.

Application

Seawool Functional Yarn





Patents & Awards



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Thank you!

