Seabird

RESEARCH AND DEVELOPMENT

MANUFACTURING OF

COMPOSTABLE AND INNOVATIVE

BIOPLASTIC

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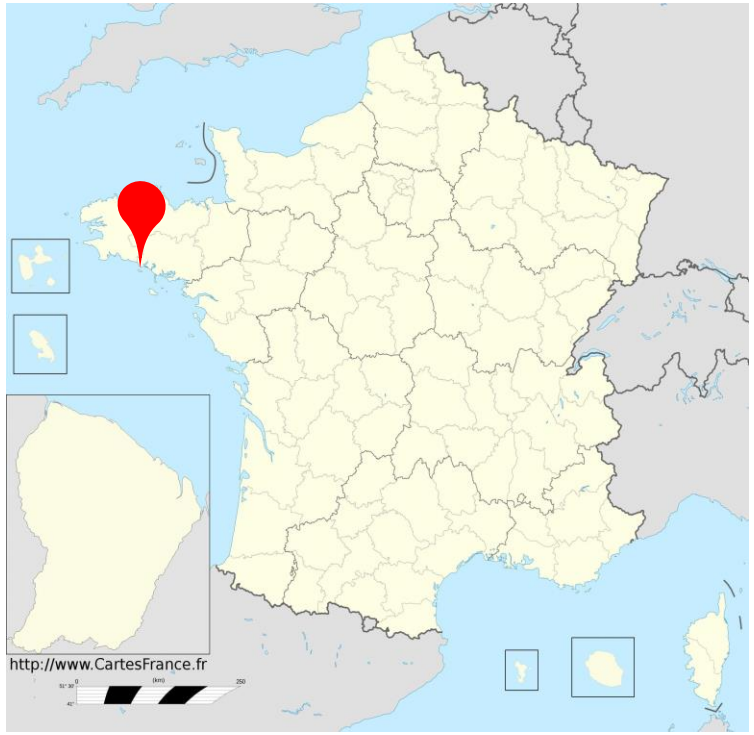

- Located in Larmor-Plage
- Started in 2011
- 5 employees
- Development and production of bioplastic compounds

- Marine environment
- Cosmetic
- Hygiene
- Packaging

SEABIRD's Project History

Seabird
Bioplastic for environment

2012 BIOFIMA Project
Objective: Development of a biodegradable monofilament for marine application
Duration: 48 months
Partner: Brittany region / IRDL laboratory
Link: https://cutt.ly/gyyjJvV

2014 SEABAC Project
Objective: Development of connected and compostable fishing crate. Solution for a circular economy.
Duration: 24 months
Partner: Brittany region
Link: p.15 https://cutt.ly/ayibGiz

2016 COMPOSTABLE Oyster cup
Objective: Development of a new bioplastic formulation for the oyster farming field.
Duration: 24 months
Partner: Comité de la Conchyliculture du Poitou Charente
Link: https://cutt.ly/3yyj5tB

2017 OCEANWISE Interreg Project
Objective: Study of EPS (expanded polystyrene) and XPS under natural conditions; analyze and study exciting recycling and alternatives process solutions in Europe and find alternatives materials to EPS (from biobased and compostable materials).
Duration: 36 months
Partner: 15 european partners
Link: https://cutt.ly/MyyjQos

2018 COMPOSTABLE disposable Nonwovens
Objective: Development of a formulation for the use of bioplastic to disposable nonwoven applications
Duration: 36 months
Partner: Internal project, BPI funding

2015: SEA®15₆ 2016: SEA®11₃ 2017: SEA®21₂

2018 COMPOSTABLE Fishing net Project
Objective: Development of compostable trammel fishing nets for the sole fishing
Duration: 24 months
Partner: French Biodiversity office, PNM EPMO, Nautic conseil.

2018 COMPOUNDING LINE Inauguration

2019 BIOTEXMED Project
Objective: Development of a formulation for the use of bioplastic nonwovens used in the medical field
Duration: 48 months
Partner: Paris hospital (AP-HP)
Link: https://cutt.ly/XyyklDs

2019 SEALIVE H2020 Project
Objective: Development of compounds for Oyster bags, rigid packaging and fishing gears applications.
Duration: 48 months
Partner: 24 european partners
Link: https://cutt.ly/dyykmYK

2020 FILALTIQ project
Objective: Development of a compounds for mussels net applications
Duration: 12 months
Partner: SMIDAP

And several others private project with industrial partners in: geotextile, rope, cosmetic, packaging …

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The Bio-thermoplastics

End-of-life of materials …

Non-biodegradable

Bio-based *Polyamide*
Bio ethylene
Bio propylene

Biodegradable

Origin of materials…

Bio-based

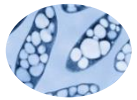
Biopolyesters

From micro-organisms: Fermentation.

Bacterial cellulose
Polyhydroxyalcanoates family

From renewable monomers

PLA (corn starch)
PGA (beet sugar)
PBS (plant glucose)



Agropolymers

From biomass: Extraction

Proteins

Animal
Casein, Gelatin, Collagen
Vegetable
Wheat gluten, corn zein, soy

Polysaccharides

Alginate (brown algae)
Chitin (crustacean shell)
Cellulose (cotton, linen, hemp, wood)
Plasticized starch (corn, potato, wheat)

Petro-sourced

From chemical synthesis

Aliphatic biopolyesters
PLC,
PBS…

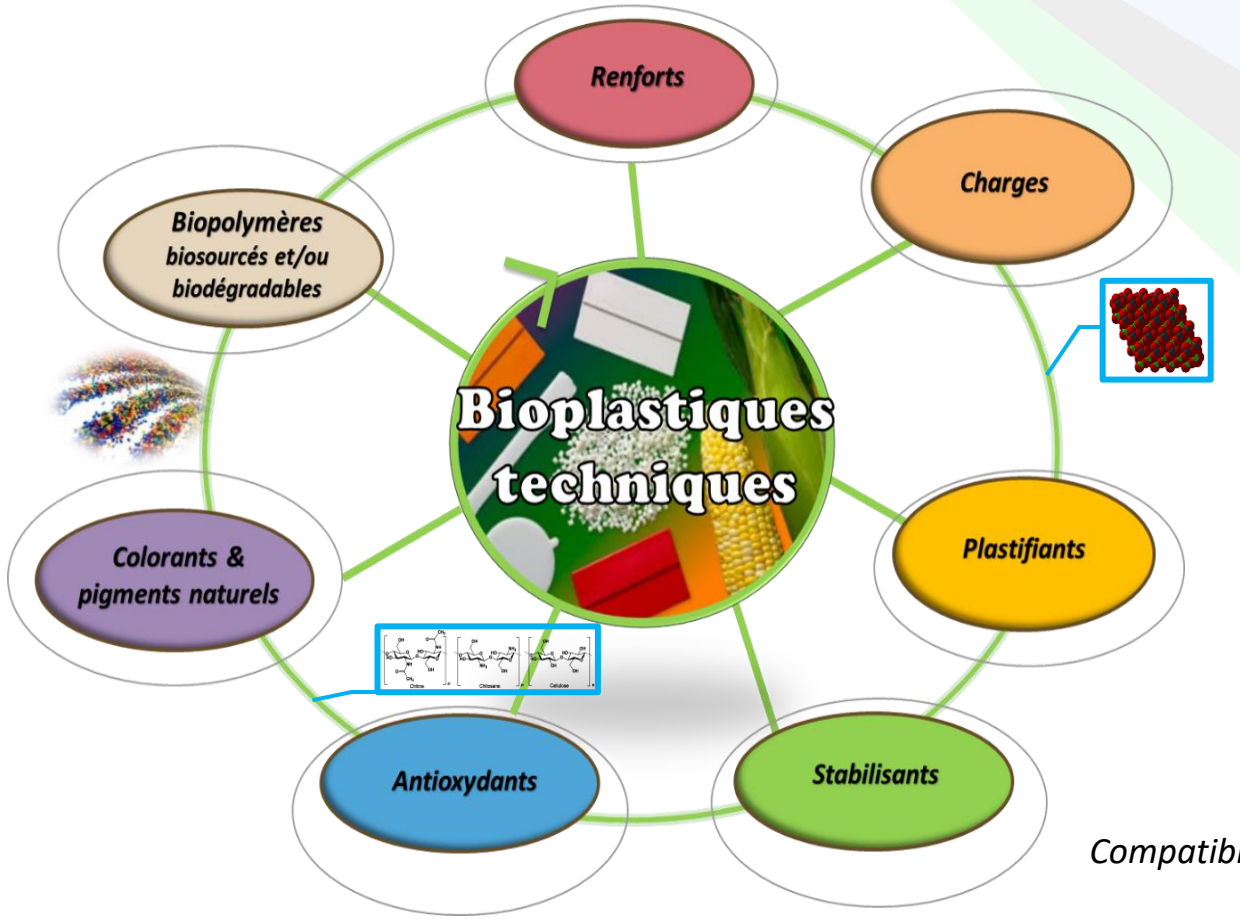
Aromatic biopolyesters *PBT*
PBAT
Copolymer

Trend of bioplastics to become bio-based

Bio-based doesn't mean that a plastic is biodegradable and conversely, a biodegradable plastic is not necessarily bio-based.

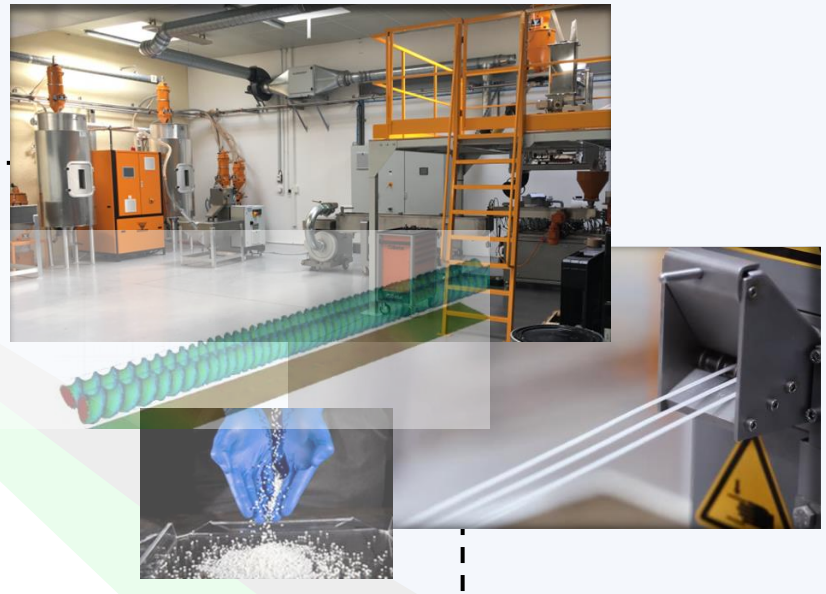
Formulation or compounding

Each bioplastic has its own properties. Some of them are sensitive to water (thermoplastic starch) while others are insoluble. Certain have good antimicrobial properties (chitosan) and others have good barrier properties to O_2 and CO_2. Some are flexible and easy to process (aliphatic biopolyesters) and others are rigid and brittle (poly lactic acid)... Thereby, each polymer has its specific field of application. They hardly equal conventional polymers but their thermal, mechanical, viscoelastic properties (…) can be improved by judicious blending (blend of biopolymers, addition of bio-additives, fillers...).

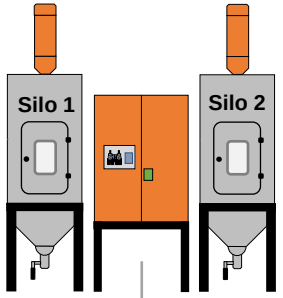


Compatibilizers, anti-UV…

SEABIRD's Compounding Technology

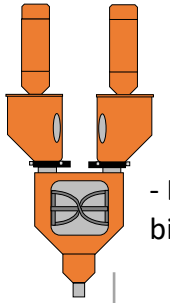


Drying system



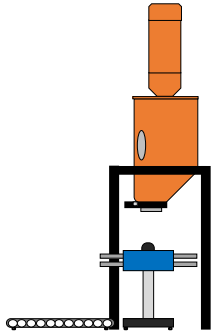
- Drying bioplastic before and after compounding.

Blending system

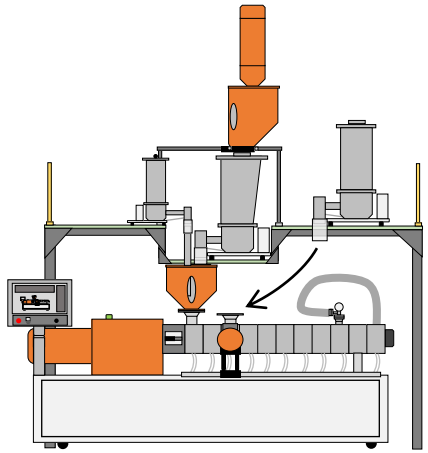


- Blending of different bioplastic granulates.

Packaging system



Compounding system



- Compounding by corotative twins screws
- Specific screws design for bioplastics compounding
- Capacity to blend the bioplastic resins with diverses additifs and fillers (co-products)
- Production of granulates

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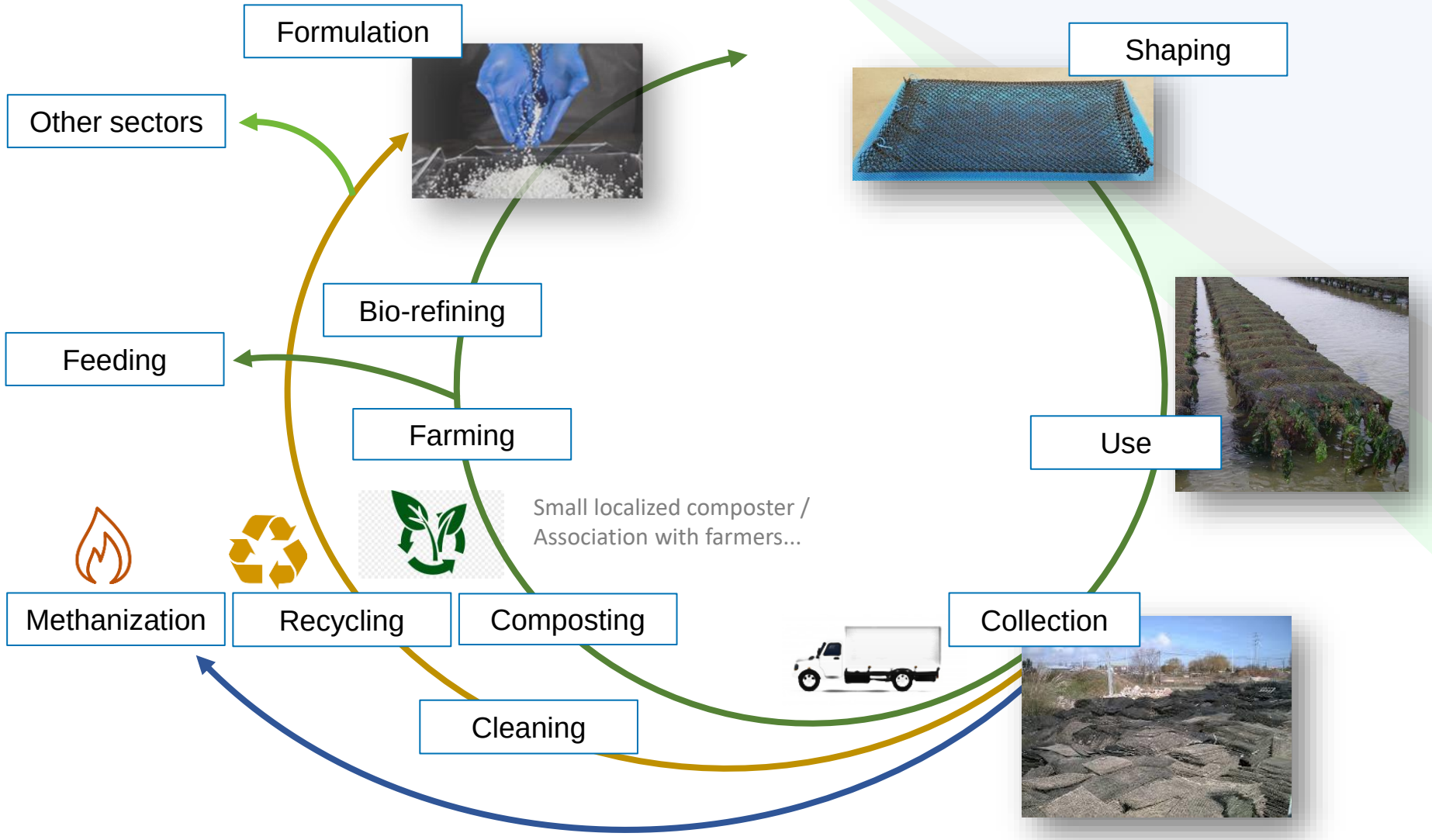
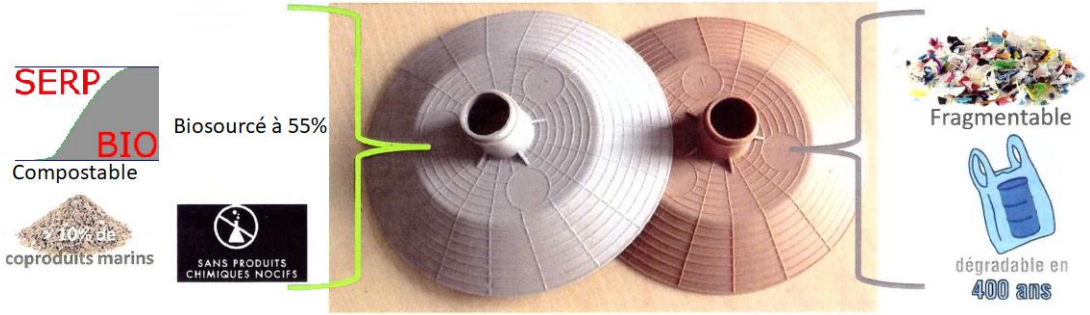
A vertuous loop



Kind of applications for SEABIRD's compounds

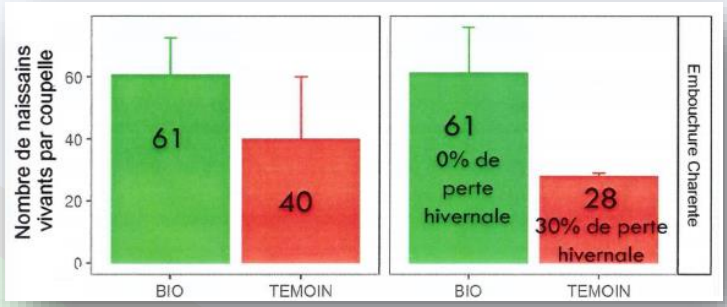
Product: Oyster cups used to the collect of oyster larva

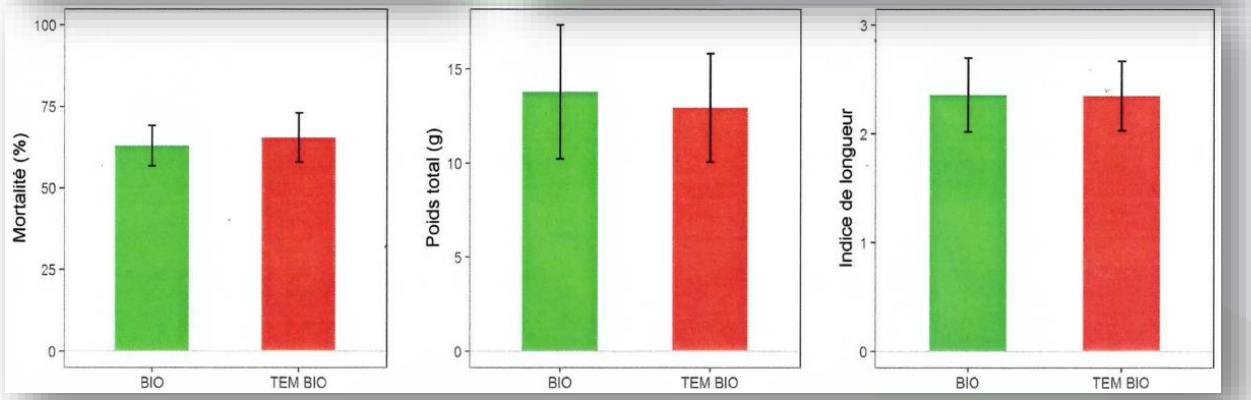
Process: injection



Developed formulation: SEA®15

Results:





	Intactes	Pliées	Fissurées	Cassées
BIO	95,5 %	0,2 %	1,0 %	3,2 %
TEMOIN	95,8 %	3,6 %	0,1 %	0,4 %

creaa

Comité Régional de la Conchyliculture Charente-Maritime

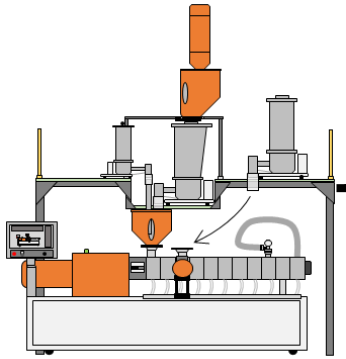
Seabird

Kind of applications for SEABIRD's compounds

Product: Trammel fishing net for the sole fishing.

Manufacturing process:

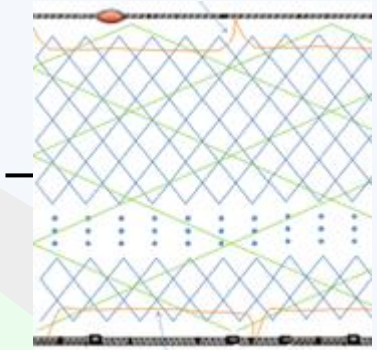
Formulation

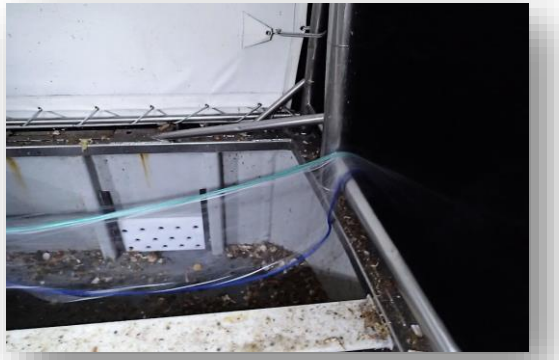


Extrusion-spinning

Weaving

Assembly





Crédit photo Vianney Dupont.

Developed formulation:

SEA21 2

SEA® 21 4

OFB OFFICE FRANÇAIS DE LA BIODIVERSITÉ

OCEANIC DÉVELOPPEMENT

NAUTIQUE CONSEIL

Parc naturel marin Estuaires picards Mer d'Opale

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Kind of applications for SEABIRD's compounds

Products: Oyster mesh bag
Process: Mesh extrusion (SEALIVE H2020 Project)

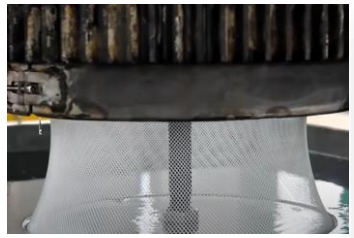


Photo web

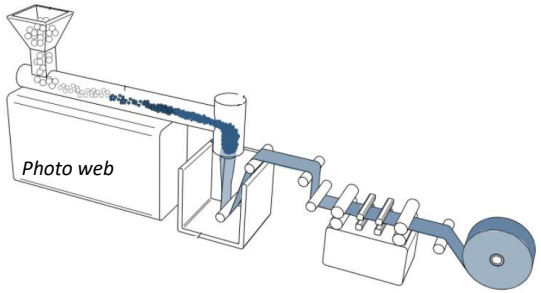


Photo web

Products: mussel nets

Developed formulation: SEA2I2

Products: crates for fishes
Process: Injection (SEALIVE H2020 Project)

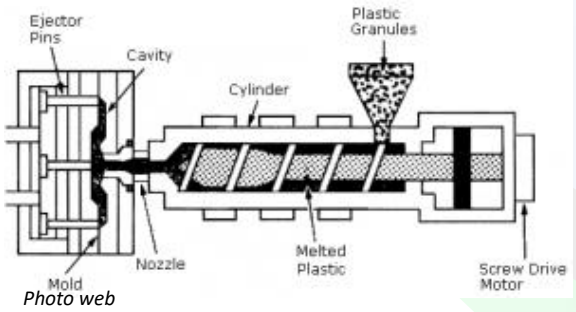


Photo web

Developed formulation: SEA®I3

Products: Textile fiber
Process: Multifilament extrusion

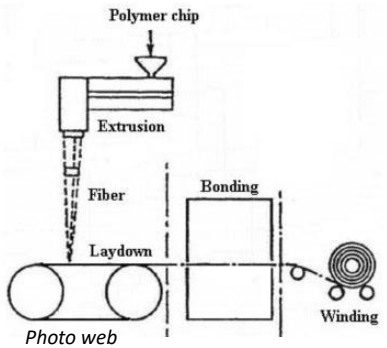
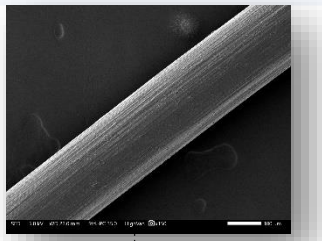
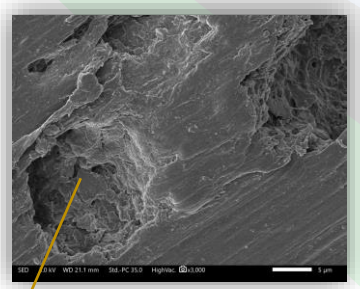


Photo web

Formulation: in development

Biodegradation in marine environnement





The OceanWise project focuses exclusively on expanded polystyrene products and applications that may become marine litter

The project is intented to:

- To propose and test different options (to reduce, to reuse, to recycle, to recover, to use alternative materials) to achieve better environmental results in the different targeted sectors;
- To engage communities of producers and designers on the sustainability of specific applications and to explore new circular models;
- To develop methodologies focused on the circular economy in order to assess new opportunities, obstacles and strategic options.

This proposal stems from the framework directive ont the marine strategy for the EU and the regional action plan of the OSPAR Convention on marine litter. There is a strong impetus to evolve ideas and commitments at national, regional and local political levels.

14 european partners

Industry and target markets

- Industrie de la pêche et l'aquaculture
- Industrie alimentaire
- Les emballages non alimentaires
- Les objets à usage unique

Possible alternatives

Lauréat de l'Ocean Calling Award : Seaclic Box de Storopack

Seabird

Bioplastic for environment

Thanks for your attention!

Any questions ?