

AITEX is a Spanish non-profit making private association formed by textile and related companies. In the field of standardization and quality, it has advanced testing laboratories that are authorized to award several certifications. AITEX participates in various EC initiatives, supporting the companies in different EU-funded projects. It has coordinated several LIFE projects such as:

- LIFE ENV99/E/346 - "The application of advanced photo-oxidation techniques in the treatment of residual waters in the Textile industry".
- LIFE03/ENV/E/000102 - "Water Purification Tertiary Treatment using Photo-oxidation at semi-industrial scale".
- LIFE05/ENV/E/000285 - "Alternatives for waste volume reduction in the textile sector through the application of minimization measures in the production process and in the consumption".
- LIFE07/ENV/E/000794 - TEXLEGIO: Risk reduction to public health from environmental sources using biotechnology in the textile sector.
- LIFE09/ENV/ES/000461 - NOISEFREETEX Demonstrative solutions to reduce noise pollution in industrial areas, using finishing technologies in textile materials.
- LIFE10/ENV/ES/000431- WET-COM: Wet-laid technology application for textile residues revalorization in composites industry.
- LIFE11/ENV/ES/0000600- SEAMATTER: Revalorization of coastal algae wastes in textile nonwoven industry with applications in building noise isolation.
- LIFE11/ENV/ES/000552 BIOMOMI: BIO-Monitoring and Automatic Microbiological Contamination Control System of Industrial Hydraulic Circuits.
- LIFE12/ENV/ES/000265 ADNATUR: Demonstration of natural coagulant use advantages in physical & chemical treatments in industry and urban waste water.
- LIFE13 ENV/ES/000309 DYES4EVER: Demonstration of cyclodextrins techniques in treatment of wastewater in textile industry to recover and reuse textile dyes.
- LIFE13 ENV/ES/000603 PHOTOCITYTEX: Air pollution treatment in European urban environments by means of photocatalytic textiles.

## CONSORTIUM

Coordinated by:



Participating Institutions:



Produção e Comercialização  
de algas e seus derivados Lda.  
[www.algaplus.pt](http://www.algaplus.pt)



Banco Español de Algas.  
Universidad Las Palmas de Gran Canaria  
[www.marinebiotechnology.org](http://www.marinebiotechnology.org)



Spanish Bioindustry Association  
ASEBIO  
[www.asebio.com](http://www.asebio.com)

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Demonstration of new natural  
dyes from algae as substitution  
of synthetic dyes actually used  
by textile industries.



LIFE13 ENV/ES/000445

## NEEDS

### ENVIRONMENTAL PROBLEM

Synthetics dyes employed in textile industry are very polluting:

- Not come from renewable sources.
- Use high amount of energy during their production.
- Employ hazardous chemicals in their synthesis.
- During their decomposition may produce carcinogenic or toxic compound products.

Most Natural dyes come from plants and for the industrial application have some disadvantages:

- Very low yield.
- Farmland is required.

SEACOLORS proposes to solve this problem in natural dyes by using micro, macroalgae and cyanobacteria as a raw material due to their advantages:

- They are a renewable source.
- No require farmland for growth.
- It can increase the dyes yield controlling the growing conditions (temperature, light, nutrients...).
- During their growing they can reduce the CO<sub>2</sub>.

## OBJECTIVE

SEACOLORS main objective is to obtain natural dyes from a sustainable and renewable source such as algae (micro, macro and cyanobacteria) to use them in the textile industry to replace synthetic dyes currently employed.

### SPECIFIC OBJECTIVES

- Select algae with high dye capacity and potential for biomass cultivation.
- Improve the algae's dye content through optimization of their growing conditions.
- Optimize the amount of dye obtained by using different extraction techniques.
- Optimize dye process and auxiliary chemicals employed.
- Evaluation of textile fastness.
- Evaluation of water waste.

## EXPECTED RESULTS

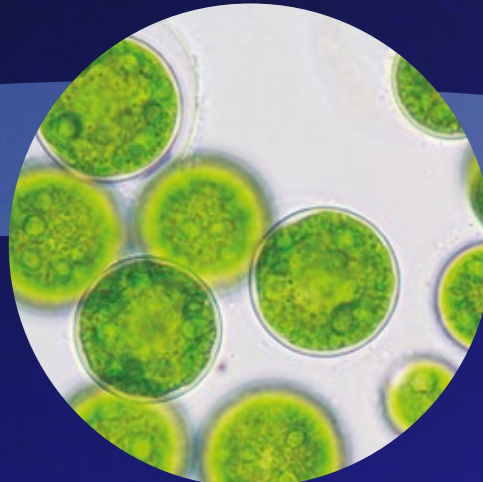
The principal expected result is to obtain different dyed fabrics at semi-industrial scale with the new dyes obtained from micro and macro algae.

The project implies more feasible results at industrial level in the future:

- To obtain a full color range.
- To obtain enough amount of dye in industrial level.
- The fabric must comply the required quality standards.
- Reutilization of waste generated.
- Reduction of CO<sub>2</sub> emissions.
- To improve quality of waste water with the better biodegradability of new dyes.



Macroalgae



Microalgae



Cyanobacteria