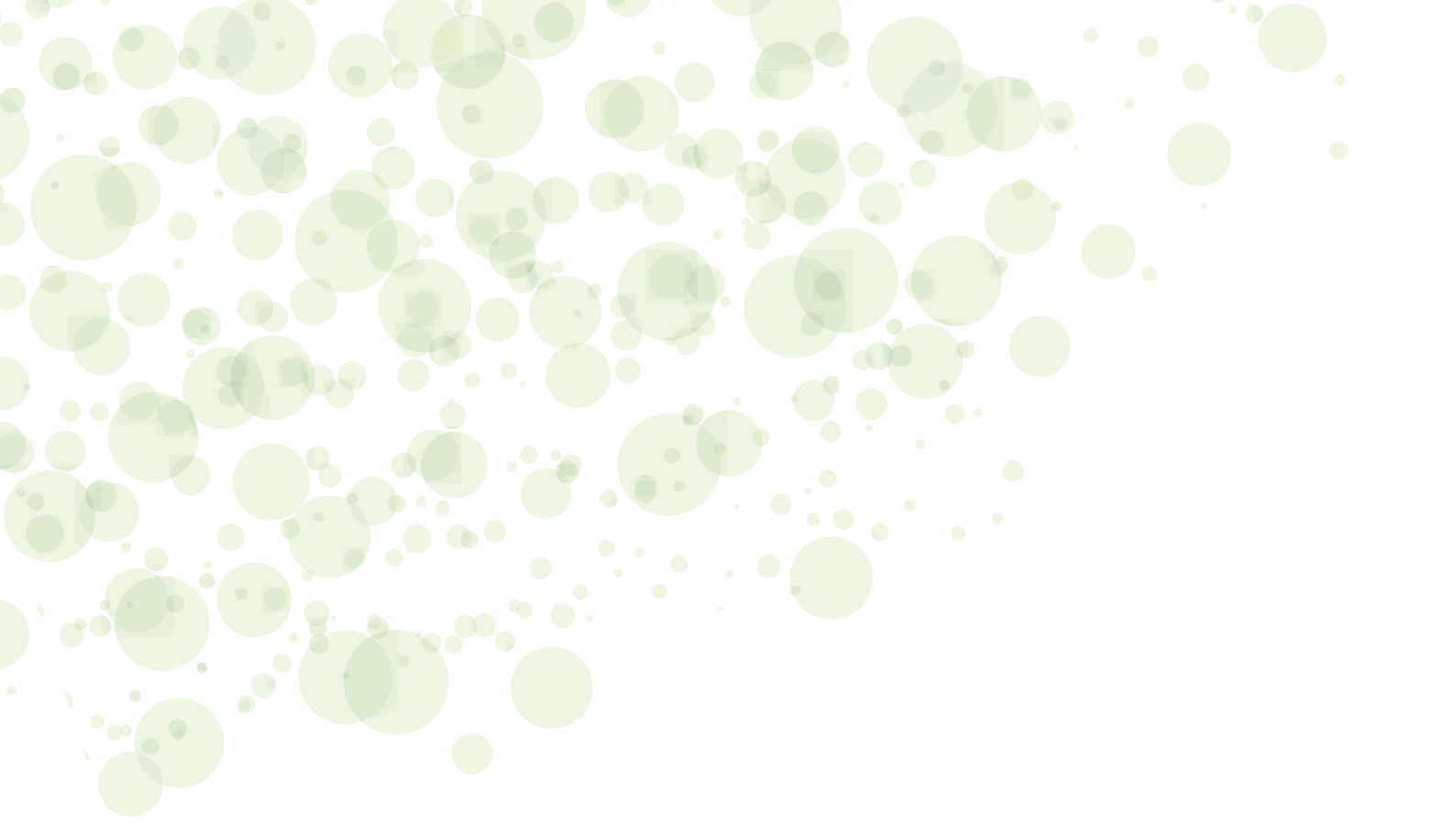


## Product Range and Services

### Extraction & Cultivation

- › Active substance extracts
- › Microalgae cultivation
- › Algae cosmetics
- › Nutritional Supplements





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# ABOUT

## IGV GmbH

The Institute for Grain Processing was founded in 1960 as an application-oriented research institute for the milling, baking and food industries. As a result of an MBO in 1994, it was transferred into a limited liability company (GmbH). Our three departments, **TESTLAB**, **FOODTECH** and **PLANTTECH**, are now focused on the production of food and industrial development services.

### Business fields

- › Innovative technologies for new protein products
- › Efficient, resource-effective production processes
- › Innovative recipes based on functional ingredients
- › Product manufacturing from algae and plants
- › Food safety methodologies on behalf of industry and retail

Our accredited test laboratory, our training and further education courses, our counselling services for project management and technology and the related transfer of knowledge into companies complete our profile.

Our most recent project is the capacity building of extraction in the new technical centre for biotechnology and plant-based foods.

# CONTACT

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The products and services of IGV PLANTTECH are based on 20 years experience of research, development and production of active ingredient extracts of micro, macro-algae and plants.

Especially our expertise in the field of microalgae cultivation offers optimal conditions for marketable products with high added value potential.

Main objective is the development and production of bioactive agent extracts and active ingredients from micro, macro-algae and plants for cosmetics, dermaceuticals, food products and food supplements.

In addition to the product development on the customer's behalf and the quality-oriented production we also offer product-related analytics.

Bioactive-oriented cultivation technologies in closed photobioreactors guarantee the production of microalgae biomass in a controlled, reproducible quality.

Therefore we are able to offer unique and customized product development.

# BIOACTIVE EXTRACTS

from Microalgae, Macroalgae and  
plant-based raw materials

EXTRACTION

BASICS

PRODUCT DEVELOPMENT

PROCESS DEVELOPMENT

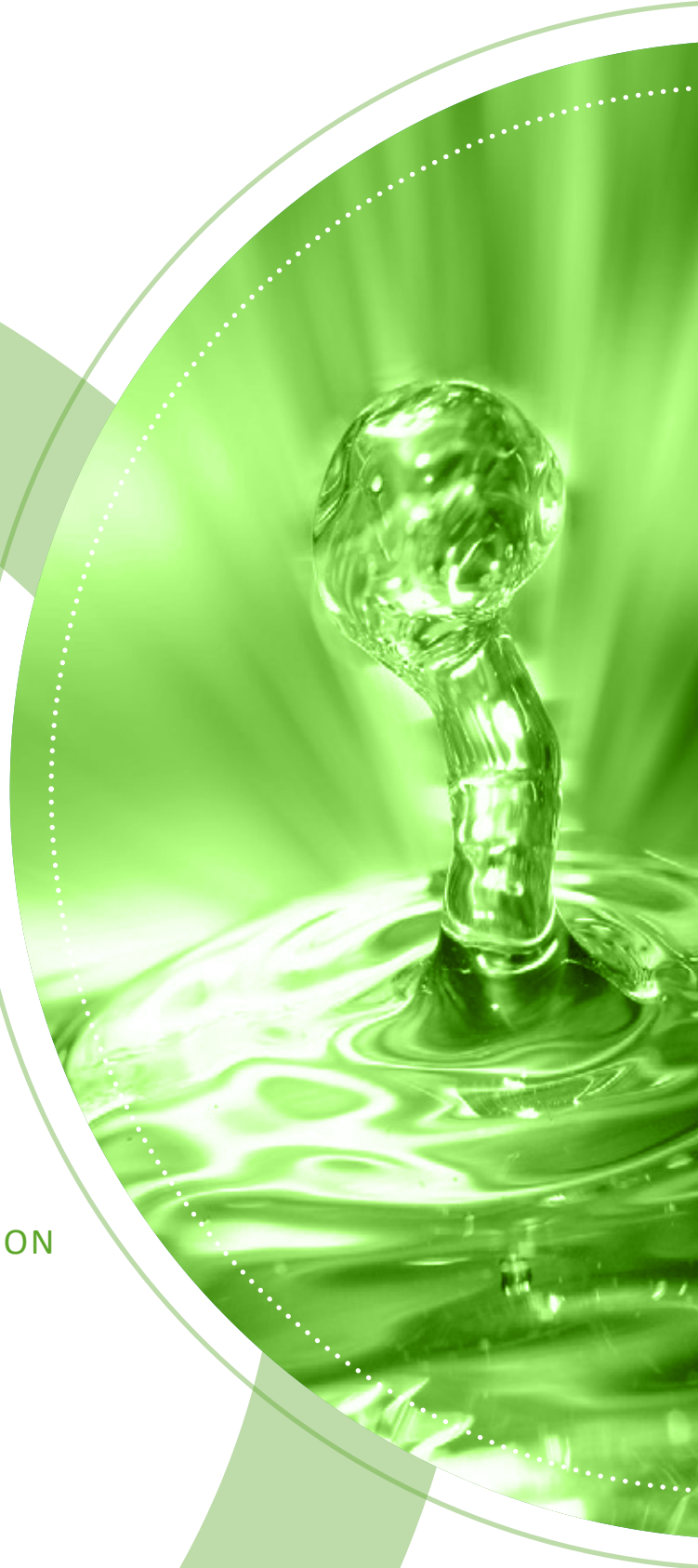
EXTRACT PRODUCTION

CULTIVATION

DIVERSIFICATION



Production, Development, Distribution of  
Extracts from algae and plants as well as  
of cosmetic products



# EXTRACTION

Our extraction know-how from microalgae, macroalgae and plant-based raw materials offers optimal conditions for bioactive products with high value added potential.

## Range of services



### BASICS

Evaluation of suitable complex extraction processes for the production of targeted active substances. In this case the analysis of the ingredients of selected raw materials/products are involved.



### PRODUCT AND PROCESS DEVELOPMENT

We maintain worldwide contacts to biomass producers. In close cooperation with our customers, innovative approaches are in continuous development and lead to special process solutions, active substance components and cosmetic products. Also in the field of plant-based raw materials we will share our expertise in process management and product development.



### EXTRACT DEVELOPMENT - PRODUCTION ON SALES ORDER

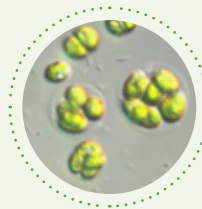
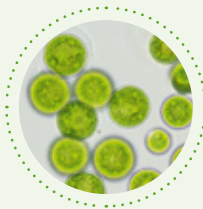
The development and integration of the clients needs and ideas lead to optimised processes for efficient extract production for our customers. Common volumes are 1 / 5 / 25 / 1,000 / 30,000 liters.



### CULTIVATION & RESEARCH PROJETS

For scientific purposes and within the scope of research projects we possess a wide spectrum of micro-algae strains:

- › **Scenedesmus**
- › **Chlamydomonas**
- › **Haematococcus**
- › **Nannochloropsis**
- › **Phaeodactylum**
- › **Porphyridium**
- › **Galdieria**



### DIVERSIFICATION

In order to achieve a high level of resource efficiency, various extracts are generated from one raw material in order to obtain the complex spectrum of active substances. These extracts are suitable for applications in cosmetic and dermacosmetic products as well as in food and nutritional supplements.

## Laboratory services

### ANALYTICAL SPECTRUM

Determination of pigments from photosynthesis (*Chlorophylle, Carotinoides, Phycobiliproteins*)

Determination of the polyphenol content

Investigations on photo- and colour stability

Inhibition of Tyrosinase activity

Determination of Mono-/Disaccharides and saccharic acids

Determination of monosaccharides upon total hydrolysis of polysaccharides

Sensory and photometric evaluation

Determination of antioxidative capacity

Determination of oxidation stability (*Rancimat measurement*)

Analytical quality control (*pH, conductivity, density, viscosity, dry matter, refraction index, turbidity, colour value, ethanol content etc.*)

## Extraction technology

Innovative extraction technologies are used to create a broad spectrum of products with bioactive potential from valuable raw materials

### OUR PROCESS TECHNOLOGIES

CELL DISRUPTION

HOT WATER EXTRACTION

CO<sub>2</sub> HIGH PRESSURE EXTRACTION

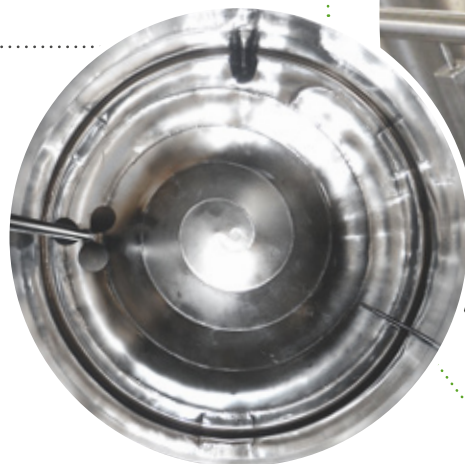
SEPARATION

MICRO- AND ULTRAFILTRATION

CONCENTRATION

DRYING

VACUUM EVAPORATION





## Product range of available algae extracts

### EXTRACTS OF ACTIVE SUBSTANCES

**HYDROPHILIC** (Aqueous Extraction) 1 / 5 / 25 / 1,000 / 30,000 liters

**DRIED** (Lyophilisation, Spray drying) 1 / 5 / 25 / kg

**LIPOPHILIC** (CO<sub>2</sub>-Extraction) 50 / 100 / 500 / 1,000 ml

PRODUCT NAME	PRODUCT DESCRIPTION	PRESERVATIVES	PROPERTIES
<b>SP-H3000e/ SP-H3000b</b>	<b>SPIRULINA PLATENSIS EXTRACT</b> › Clear light brown solution › Application concentration: 0,5–5%	Euxyl K 701 or Natriumbenzoat	+ Skin protection + Radical scavenger + Cell activation + Energiser
<b>SP-H3010</b>	<b>SPIRULINA PLATENSIS EXTRACT</b> › With propylenglycol › Light yellow brown solution › Application concentration: 0,5–5%	Rokonsal BS / Phenoxyethanol	+ Cell regeneration + Radical scavenger + Cell activation + Smoothing
<b>SP-LC1001</b>	<b>1% SPIRULINA PLATENSIS CO<sub>2</sub> EXTRACT</b> - › In almond - oil › Orange brown › Application concentration: 0,2–5%	-	+ Sun protection + After Sun protection + Radical scavenger + Smoothing
<b>SPHMD</b>	<b>SPIRULINA PLATENSIS EXTRACT</b> › High concentrated, › Spray dried on maltodextrin, › Light yellowish powder, › Application concentration: 0,1–2%	-	+ Skin protection + Radical scavenger + Cell activation + Energiser
<b>CV-H2004e/ CV-H2004b</b>	<b>CHLORELLA VULGARIS EXTRACT</b> › Clear light orange brown solution › Application concentration: 0,5–5%	Euxyl K 701 or Natriumbenzoat	+ Cell activation + Energiser + Radical scavenger
<b>AN-H2005e</b>	<b>ASCOPHYLLUM NODOSUM EXTRACT</b> › Clear light orange brown solution › Application concentration: 0,2–5%	Euxyl K 701	+ Skin hydration + Moisturiser + Radical scavenger
<b>FV-H2006</b>	<b>FUCUS VESICULOSUS EXTRACT</b> › High molecular weight fraction › Brown solution › Application concentration: 0,2–5%	Phenoxyethanol Natriumbenzoat	+ Sun protection + After Sun protection + Radical scavenger + Skin hydration + Moisturiser
<b>FV-HL2006e/b</b>	<b>FUCUS VESICULOSUS EXTRACT</b> › low molecular weight fraction › clear light orange brown solution › application concentration: 0,2–5%	Euxyl K 701	+ Skinhydration + Moisturiser + Collagen booster + Cell regeneration

# INNOVATIVE ALGAE COSMETICS

developed & crafted in the  
IGV Cosmetics Manufactory

AQUAFLO

MICROALGAE

BIOACTIVE INGREDIENTS

PRIVATE-LABEL

AQUAFLO COSMETICS

NUTRITIONAL SUPPLEMENTS



## The cosmetic line AQUAFLOr

Pleasant algae active substances for the care and protection of your skin

AQUAFLOr is a holistic care system consisting of cosmetic products with bioactive extracts from the micro alga *Spirulina platensis* and the macro alga *Ascophyllum nodosum*. Since true beauty is known to come from inside, nutritional supplements with spirulina and chlorella algae complement the skin care products in the form of tablets and powder.



The AQUAFLOr cosmetics line provides products for face, body and hair which are perfect for every skin type.

The products have been tested by medics and dermatologists who confirm their soothing and skin-friendly properties.



## Excellent skin care

AQUAFLOr Active Cream with the multifunctional algal active substance Derma-Spirulan supports skin regeneration and stimulates the cell renewal of the skin. Bioactive algae active substances improve the natural skin protection mechanisms. The skin gets tightened and increases elasticity. The cream was developed on the basis of a plant-based emulsifier system according to the guidelines for natural cosmetics and does not contain any colorants or synthetic preservatives. AQUAFLOr Active Cream is perfect for day and night care and is also suitable for sensitive skin.



## Nutritional supplements with microalgae



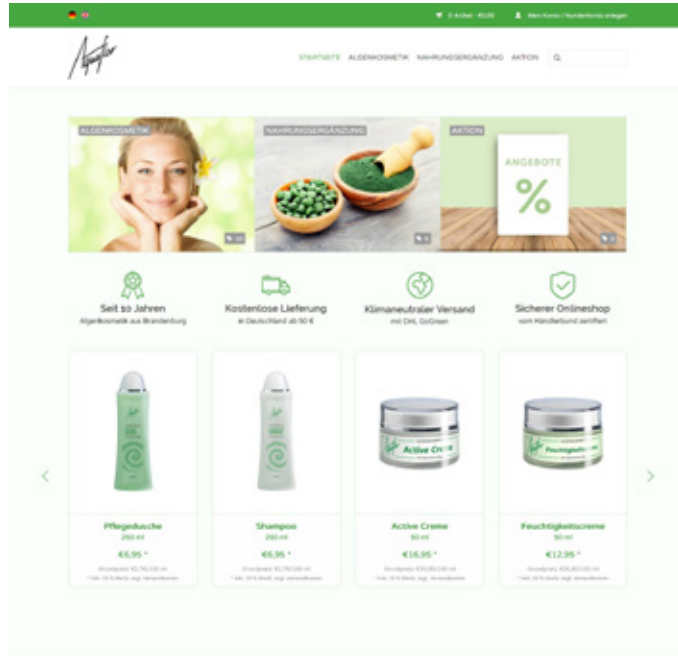
AQUAFLOr Spirulina Tablets (150 g / 320 g / 520 g)  
AQUAFLOr Spirulina Powder (250 g)  
AQUAFLOr Chlorella Tablets (300 g)

- ✓ Free of additives
- ✓ Suitable for vegetarians and vegans
- ✓ Lactose- and gluten-free
- ✓ Ideal for athletics and seniors

## AQUAFLO.R.DE

Algae cosmetics and nutritional supplements - easy to order and fast delivered. The online shop has been optimised for desktops, tablets and smartphones and offers all products from our cosmetics manufactory.

The AQUAFLO.R team is looking forward to welcoming you as our customer.



- ✓ Secure & certified online shop
- ✓ Free shipping over 50 € in Germany
- ✓ No minimum order value
- ✓ Attractive retailer discounts for merchants
- ✓ Fast & Climate-Neutral DHL Shipping
- ✓ Many payment options



## Development of private label cosmetics

From recipes to final products. Exclusively for you.

Do you have new approaches and require support in their implementation, from an idea through a recipe till a marketable end product? We will advise you in developing product ingredients and designing the product, and carry these tasks out completely as a contractor if desired.



### WE SUPPORT

your formulations according to the currently valid Cosmetics Regulation.



### WE TRAIN

your employees and get them fit in all applications.



### WE CREATE

product design, packaging, advertising materials and labels.



### WE INTEGRATE

your recipe needs into an innovative basic concept.



### WE DEVELOP

cosmetic products with algae and/or natural regional resources.



### WE PRODUCE

cosmetics from laboratory scale to batch sizes.

## MICROALGAE BELONG TO THE OLDEST ORGANISMS OF OUR PLANET

During their evolution lasting millions of years they have adapted to the most extreme living conditions and have grown nearly in all habitats. From the desert to the polar sea they live as well in hot springs as in upper bottomset beds.

As phototrophically living organisms microalgae have been exposed high stress by light, oxygen and radicals. This fact results in the formation of many protection systems and bioactive substances.

The microalga *Spirulina platensis* is very tolerant of stress. It has adapted to high accounts of salt, enormous variations of temperature, extreme pH-values and high luminous intensities.

It has developed very effective mechanisms to protect the cells. *Spirulina* algae contain dermatologically effective algal proteins, -polysaccharides and vitamins being able to stimulate the metabolism of the skin and to regenerate the skin cells and to protect them against reactive oxygen species and free radicals. Results of the latest research show that microalgae have a natural sun protection factor because of their effective pigments protecting against light.

## MULTIFUNCTIONAL CELL PROTECTION BY BIOACTIVE ALGAE EXTRACTS

The focus of new cosmetic concepts is on natural bio-active substances counteracting the skin ageing. Bioactive extracts of *Spirulina*- and *Ascophyllum* algae meet these demands because they act as a natural light protection factor and also protect against cell damages caused by UV light and against skin ageing.

Anti ageing active substances of micro- and macro-algae work as natural antioxidants absorbing UV light and neutralizing free radicals.

They help to repair the DNA of the skin cells. Multifunctionally active extracts of *Spirulina* algae support the renewal and regeneration of the skin cells and offer an optimal cell protection.

Complexes of substance of *Ascophyllum* algae with natural reserve- and storage substances supply the skin with energy, moisturize it and make it smooth and tight. A multitude of anti ageing substances of algae like caro-tenoids, tocopheroles, essential amino acids, polyunsaturated fatty acids, lipophile and hydrophile vitamins offer effects protecting and caring the skin and counteract consequently the visible signs of skin ageing.

### Results of the latest research show the merits of bioactive algal extracts for the skin like:

- ✓ Increase of collagen production
- ✓ Stimulation of the metabolic activity of skin cells
- ✓ Stimulation of the regeneration of skin cells
- ✓ Antioxidant and radical scavenging activity
- ✓ Protection against cell-damaging effects of free radicals
- ✓ UV protection through natural light protection pigments
- ✓ Moisturising and hydrating effects
- ✓ Strengthening the skin barrier

*The scientist team of the IGV GmbH was able to obtain the valuable algae ingredients in the form of bioactive algal extracts which can be integrated into cosmetic formulations as valuable components.*

## Biological valuable substances

### MICROALGAE

have special properties that are valuable to humans. In addition to the high vitamin and protein content, antioxidants are particularly interesting.

Due to their radical-intercepting properties, they provide highly developed protection against cell-damaging free radicals and their negative effects on health and skin metabolism.

### LIFESTYLE PRODUCTS

Our most popular algae and plant extracts are used in anti-aging, healthcare or lifestyle products.

Polysaccharides  
Proteins  
Amino acids  
Enzymes  
Polyunsaturated fatty acids  
Minerals  
Trace elements  
Pigments  
Vitamines  
Antioxidants



## Microalgae as nutritional supplement and raw material

for humans, animals, industry and agriculture

Microalgae grow at full speed to success. The variety of possible products is virtually unlimited! We provide microalgae with certificate of analysis and specification, processed upon request with special technologies.

From sample sizes, refill packs up to medium-sized tonnages, everything is available.

- ✓ **Scenedesmus** › Aquaculture, Fish feed, Cosmetics
- ✓ **Haematococcus** › Aquaculture, Astaxanthin
- ✓ **Phaeodactylum** › NEM, Omega-3 fatty acids
- ✓ **Spirulina** › Cosmetics, Supplements, Pet feed
- ✓ **Porphyridium** › Cosmetics
- ✓ **Nannochloropsis** › Aquaculture, Fish feed

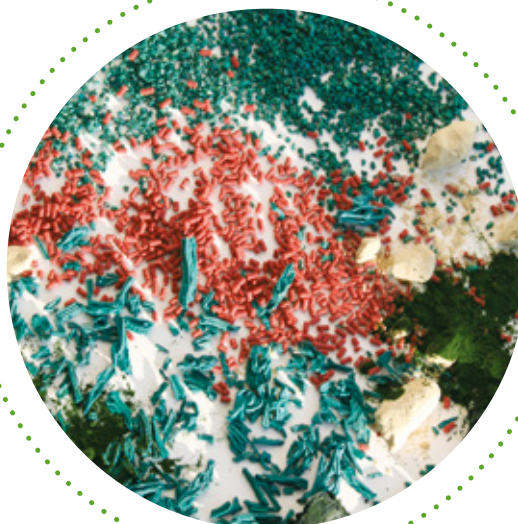
### SPIRULINA ALGAE

**SPIRULINA PREMIUM**  
*Spray-dried, Powder, Tablets*

**SPIRULINA NATUR**  
*Sun-dried, Powder, Chips*

**SPIRULINA BIO**  
*Powder, Tablets*

**SPIRULINA**  
*Extrudates, Granulates*



### CHLORELLA ALGAE

**CHLORELLA PREMIUM**  
*Spray-dried, Tablets*

**CHLORELLA BIO**  
*Spray-dried, Tablets*

**CHLORELLA**  
*Extrudates*

**CHLORELLA**  
*Granulates*

## Notes



## Imprint

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