



OSELAN

Optimal Sea Elements and Nutriment

A real asset for functional drinks

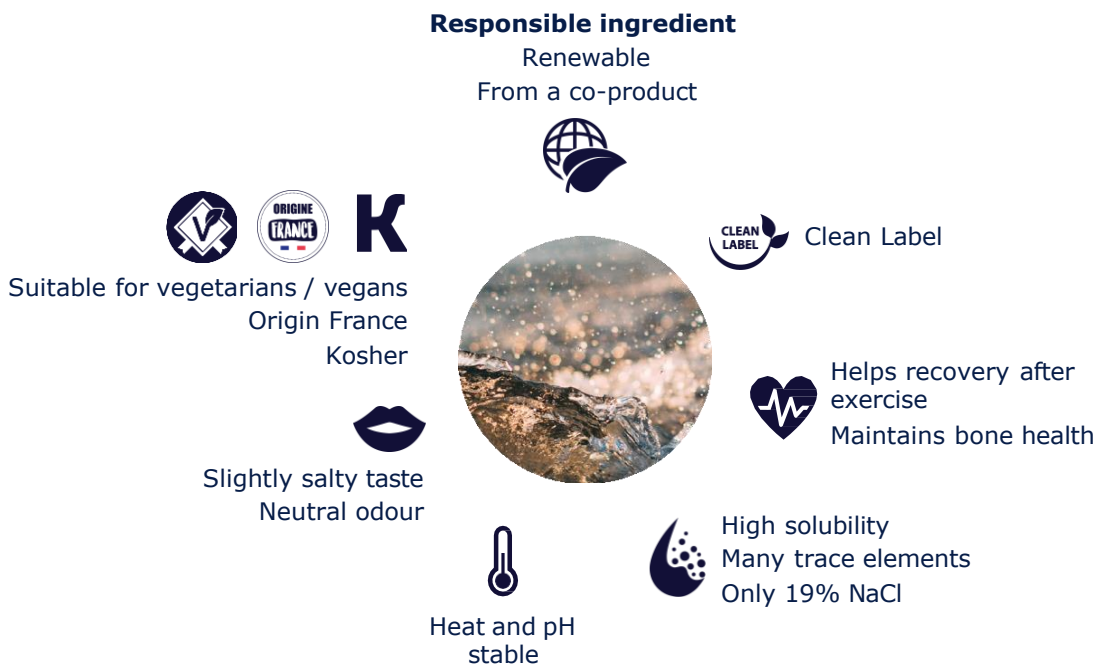


INTRODUCTION

The **nutritional transition** is underway: consumers' growing interest in healthy nutrition and the increase in micronutrient deficiencies **are stimulating the market for fortified foodstuffs offering health benefits**. Being widely and regularly consumed around the world, **beverages** are particularly suited to this purpose: drinks in all categories can be enriched (water, sports drinks, carbonated drinks, plant-based beverages, fruit juice, etc.) ^[1].

In Europe, this market is dominated by **sports and energy drinks**: volumes have doubled over the last five years, and market potential remains vast ^[2]. In order to satisfy consumers concerned about their health and the environment, manufactures are reviewing their beverages to include **natural and functional ingredients**.

It is in this context that Straqim offers **OSELAN**, a concentrate of marine minerals particularly rich in **magnesium** and containing no less than **22 minerals and trace elements**, meeting the technical and marketing needs of beverages:



SUMMARY



OSELAN: A RESPONSIBLE INGREDIENT

A RENEWABLE INGREDIENT

A NUTRITIONAL INGREDIENT

A HEALTHY INGREDIENT



TECHNICAL INFORMATION

CHARACTERISTICS

NUTRITIONAL CLAIMS

SUITABLE FOR USE IN A WIDE RANGE OF BEVERAGES



IDEAS FOR DRINKS RECIPES

ISOTONIC DRINK FOR JOINT HEALTH

CLEAN ENERGY DRINK FOR INTENSE
REMINERALISATION

« ANTI-FATIGUE » SMOOTHIE



ESSENTIALS

A RENEWABLE INGREDIENT

OSELAN can be described as a seawater concentrate.

It is sourced from a renewable co-product from salt harvesting, and is obtained using a unique production method involving **no chemical treatments**, thereby meeting the definition of a **Clean Label** product.

The production procedure is based around concentrations via evaporation.



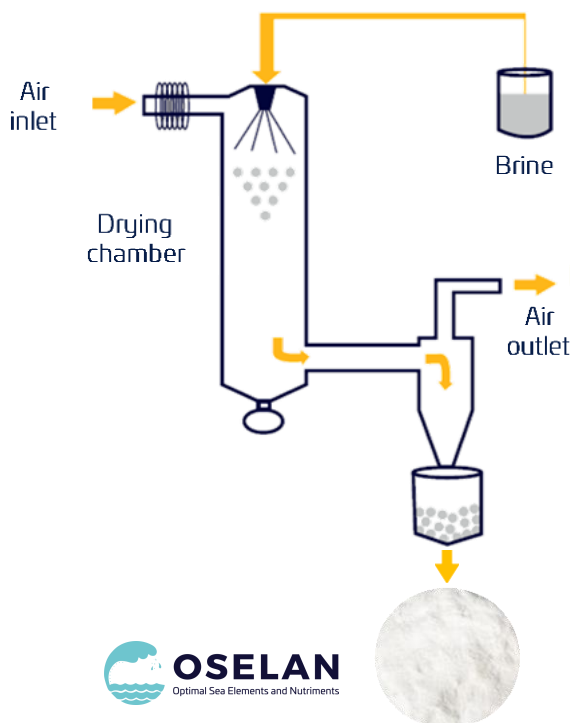
1. Evaporation in salt evaporation ponds

The raw material for OSELAN is the water found in the final basin of a salt evaporation pond. This water is known as brine, and is low in NaCl but rich in trace elements.

2. Spray drying of brine

Drying via spray drying involves spraying small droplets of a liquid within a chamber, into which hot air (+/- 200°C) is injected.

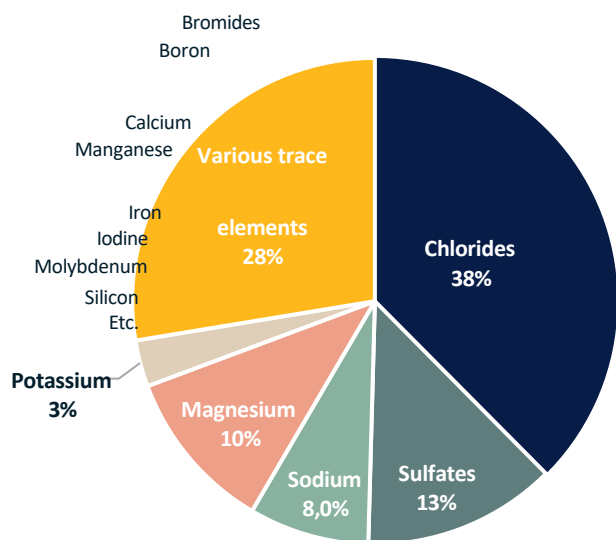
This is the preferred drying method for many thermo-sensitive products, and is therefore frequently used in the food and pharmaceutical industries.



A NUTRITIONAL INGREDIENT

The OSELAN production method, which involves two successive concentrations via evaporation, makes this product both extremely rich in beneficial minerals and trace elements, while also reducing the level of sodium chloride (NaCl) it contains.

Typical composition of OSELAN



Chlorides are present in 3 forms (MgCl_2 , NaCl and KCl) and magnesium in 2 forms

(MgCl_2 and MgSO_4).

MgCl_2 is particularly known for its **high level of bioavailability**, which is an **important criteria** in the choice of a form of **mineral supplement**.

OSELAN contains no less than 22 minerals and trace elements, some in high concentrations (cf. Annex).

A SUPPLY OF MAGNESIUM

The vast majority of European populations do not consume sufficient levels of magnesium, as their diets are high in processed foods which are lacking in this nutrient ^[3]. And yet, magnesium is a co-factor in over 300 enzyme reactions that control important physiological processes, as well as specific functions in various organs in the neuro-muscular and cardiovascular systems ^[4].

A SOURCE OF TRACE ELEMENTS

Trace elements are minerals that living organisms require in very small amounts (less than 0.01%). They are essential for growth, development, bodily health and recovery.

An imbalance in trace elements can be considered a risk factor for many cardio-metabolic diseases ^[5].

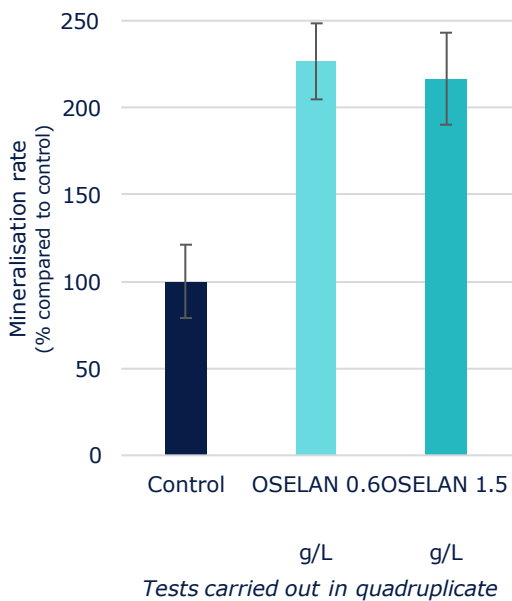
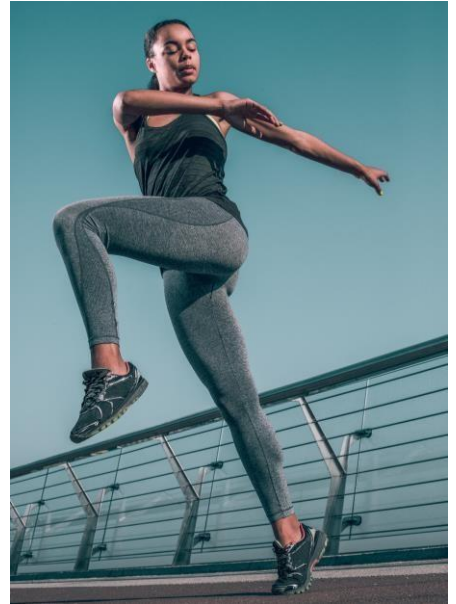
A HEALTHY INGREDIENT

VITALITY: RECOVERY AFTER EFFORT

Electrolytes are trace elements naturally present in our bodily fluids, including sweat, and we lose them when we perspire.

Over the past 10 years, several *in vivo* studies in humans have shown that a rehydration protocol using beverages with high levels of minerals and trace elements:

- improves rehydration after effort [6;7]
- shortens recovery times of muscular and respiratory power [6;7;8]
- can improve athletic performance [9;10]



BONE HEALTH: BOOSTS BONE DENSITY

In order to assess the impact of using an OSELAN supplement on bone health, Nuwen carried out an *in vitro* study using bone cells (osteoblasts).

The results showed that the rate of bone mineralisation with the OSELAN supplement was at least double that of the control group.

OSELAN is suitable in formulations targeting bone health, bone growth and mitigating the effects of osteoporosis.

OSELAN is perfectly suited for use in beverages aimed at sports, vitality and bone health, or in soluble sticks.

Technical Information

CHARACTERISTICS

Legal statement	Marine mineral complex
Particules size	90% of particules < to 150 µm
pH (sol. 10% in water)	9
Solubility (g / L)	> 30%
Heat stability	Yes

NUTRITIONAL CLAIMS *

	Beverages	Food products
Magnesium source	0.27%	0.53%
High in magnesium	0.53%	1.05%

SUITABLE FOR USE IN A WIDE RANGE OF BEVERAGES

Beverage types	Examples	Notable
Plant-based beverages	Coconut Almond Rice	With almond milk, a pleasantly "textured" mouthfeel was detected with a 0.2% incorporation of OSELAN.
Fruit drinks	Lemon juice Tomato juice Mango smoothie	OSELAN reduces the acidity of lemon juice and enhances the flavour of tomato juice.
Sports drinks	Energy and isotonic drinks	No incompatibility detected

Despite a slightly alkaline pH, the addition of OSELAN reduces the pH of beverages.

* Nutritional claims determined according to Annex XIII of EU Regulation No 1169/2011.
The claims mentioned in this document pertain to the properties of the Straqim ingredient. When using these claims, it should be verified that they apply to the finished product based on its final composition. Straqim shall not be held responsible for any failure to comply with Regulation (EC) No 1924/2006.

IDEAS FOR DRINKS RECIPES



ISOTONIC DRINK * FOR JOINT HEALTH

Ingredients: water, lemon juice 14%, sugar 7%, marine collagen 1%, **marine mineral complex (sodium and magnesium chlorides) 0,4%.**

⇒ Marketing claims:

- Nutritional claim: « *Magnesium source* »
- Appropriate health claim: « *Magnesium contributes to the maintenance of normal bones* »
- Beverage full of electrolytes (or trace elements)

* Osmolarity of 288 mOsm/L (the one for blood plasma: 275 to 300 mOsm/L).



CLEAN ENERGY DRINK FOR INTENSE REMINERALISATION

Ingredients: carbonated water, lemon juice 14%, sugar 4%, green tea extract 1% (maltodextrin, green tea), **marine mineral complex (sodium and magnesium chlorides) 0,27%.**

⇒ Marketing claims:

- Nutritional claim: « *Magnesium source* »
- Appropriate health claim: « *Magnesium contributes to electrolyte balance* »
- Electrolyte-loaded beverage (or trace elements)
- Natural ingredients, free from synthetic stimulants (replaced by green tea extract)



« ANTI-FATIGUE » SPIRULINA * SMOOTHIE

Ingredients: bananas 51%, coconut water 33%, lemon juice 14%, spirulina 0,31%, **marine mineral complex (sodium and magnesium chlorides) 0,29%.**

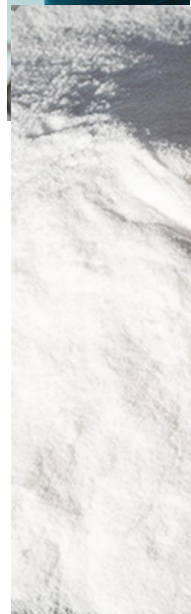
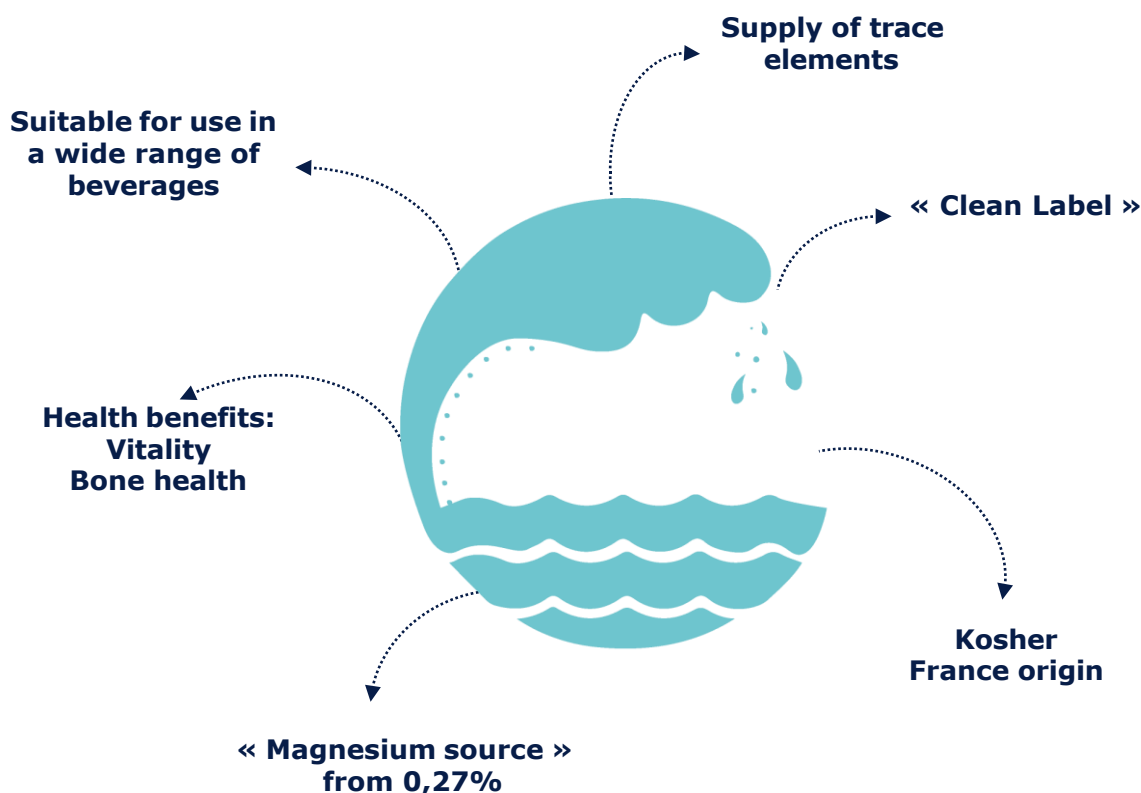
⇒ Marketing claims:

- Nutritional claim: « *Magnesium source* »
- Appropriate health claim: « *Magnesium contributes to a reduction of tiredness and fatigue* »
- Beverage with concentrated electrolytes thanks to OSELAN and coconut water

* *Spirulina may increase people's ability to resist mental and physical fatigue* ^[11].

ESSENTIALS

	OSELAN
Legal statement	Marine mineral complex
Origin	Co-product from salt harvesting
« Clean Label »	Yes
Magnesium content	9-11%
Supply of trace elements	Yes : > 22 (potassium, boron, manganese, iron, iodine, etc.)
Solubility	High : > 30%
Degree of processing	Simple (solar evaporation, brine pumping, spray drying)



ANNEX

Concentrations of the 8 more concentrated chemical elements of OSELAN:

Chemical elements	Seawater* (mg/kg)	Oselan** (mg/kg)	Concentration factor
Chloride	18 980	372 857	X 20
Magnesium	1 290	107 970	X 84
Sodium	10 770	79 644	X 7
Potassium	399	30 678	X 77
Sulfur	5 024	21 328	X 4
Bromide	64,6	6 090	X 94
Boron	4,5	392	X 87
Silicon	0,14	28	X 200

* For a standard Seawater with salinity concentration of 35 g/L.

** Average value based on a 3 batches analysis.

A real asset for functional drinks

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