

## Carrageenane (E407)

### Culinary data

Carrageenan, used preferably at a rate of 1 g for 100 g of final preparation or less, is a gelling agent.

It enables:

- to obtain gelled preparations with an elastic and transparent texture, similar to this obtained with gelatine, but unlike in the case of gelatine, these gels can be served hot, or prepared with fruits such as pineapple, kiwi or papaya,
- to prepare hot foams,
- to increase the stability of whipped cream.



### Technological data

#### Dissolution

Our mixture of the  $\kappa$  and  $\iota$  forms necessitates heating to a temperature greater than 75°C. To improve the solubility of the carrageenan, it is recommended to disperse it in cold water, before heating the mixture.

The amount usually used ranges from 0.2 to 0.5g for 100g of final preparation in the case of dairy products, and from 0.5 to 2.0g for 100g of final preparation in the case of aqueous preparations.

#### Gel setting

The  $\kappa$  and  $\iota$  forms our carrageenan is made of are able to gel when the preparations are cooled down to temperatures close to 37 °C. In these conditions, the gels formed are able to withstand temperatures below 70 °C. The gels set again as the temperature is decreased again to temperatures close to 37 °C.

The gel setting is fast.

#### Sensory characteristics

The gels obtained are neutral in taste, transparent, and elastic.

#### Keeping

Unlike the gels made of gelatine, those made of carrageenan do not toughen with aging.

#### Influence of the acidity

Carrageenan is less sensitive to acidity than agar-agar does. However it should be avoided to heat them to long at acidic pH.

#### Storage

maximal temperature 25°C

air moisture < 60%.

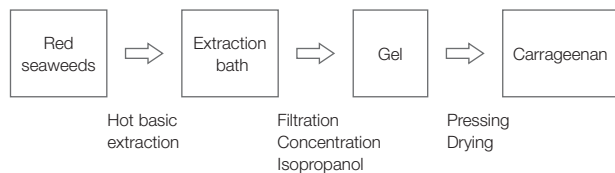
### Toxicological data

- Acceptable daily intake of 75mg/kg.
- No known side effects in the concentrations used to obtain the desired effect.
- May cause flatulence at high doses.

## Scientific data

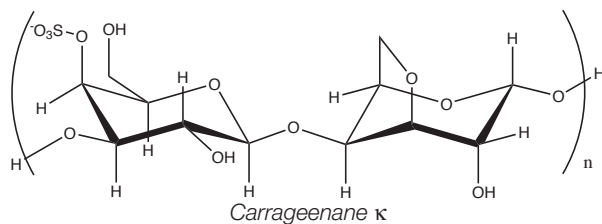
### Origin

Carrageenans are a family of products extracted from red seaweeds displaying gelling properties. The seaweeds varieties are essentially from the genus *Solieriaceae*, *Gigartinaceae*, *Furcellariaceae*, *Hypneaceae*, *Rhabdoniaceae* et *Rhodophyllidaceae*. In nature, they serve as structural material to the seaweeds: soft and resistant, they allow adapting to the constant changed of the marine streams.



### Chemical composition

Carrageenans are a family of polymers (long molecules made by attaching one after the other a large number from one or several small molecules) made of carbohydrates (i.e. sugars in chemistry's words, with a meaning not restricted to table sugar). Several sorts exist that vary by the density of negative charges they carry, and as a consequence, their solubility. The ions accompanying these negatives charges, and specifically the potassium and calcium ions, are playing an important role in the gel setting of carrageenans.



### History

Carrageenans have been used as thickener for centuries, the earliest record of it being in Ireland, boiled with milk.