

# Starch

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A vital ingredient in our diets



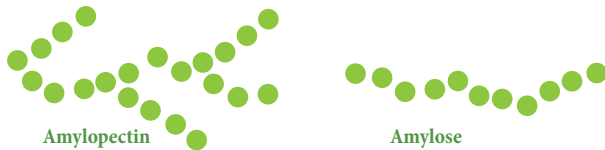
# STARCH: NATURE'S GIFT

Starch acts as an energy store in the **vast majority of plants**. It is a naturally-occurring carbohydrate found in **wheat, maize** and **potatoes** and **peas**. Although starch is usually extracted from these crops, it also occurs in many other foods such as rice, peas, pulses, manioc, sweet potatoes, bananas, etc.

It is made during **photosynthesis**, a process common in most plants. It is vital for plant reproduction and growth.

## STARCH COMPOSITION

Starch is a **polymeric carbohydrate** (several thousand units of glucose) arranged in linear chains (known as amylose) or in branched structures (known as amylopectin); its ratio varies depending on the plant source.



● glucose unit

## STARCH MANUFACTURING

**Starch manufacturing** involves **separating starch from the various components of a plant** (e.g. proteins, fiber, fats) to convert it into ingredients.

EU starch manufacturers use conventional (non-GMO) raw materials which are almost exclusively domestically produced.

\* Genetically Modified Organism

Still have questions about starch and starch-based ingredients in food?  
VISIT [WWW.STARCHINFOOD.EU](http://WWW.STARCHINFOOD.EU) TO LEARN MORE.



# A KEY ROLE IN OUR DIET



Starch is a member of the **carbohydrates food group** which have a calorific value of **4 kcal/g**. When it is digested by the body, glucose is released into the bloodstream.

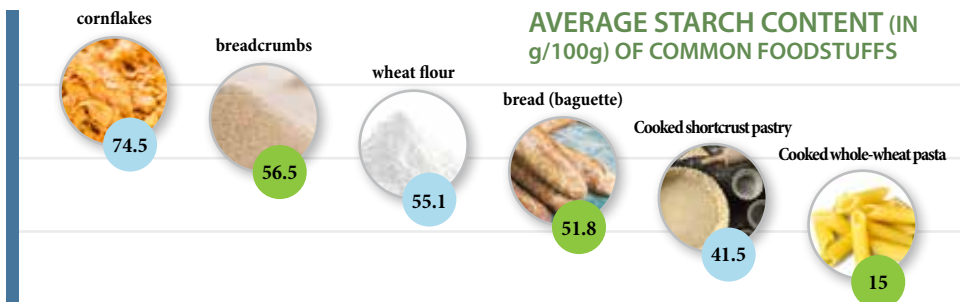
Starch is a **complex carbohydrate**.

The study by Hardy et al., 2015(1) demonstrated the importance of starch consumption in human evolution. It supplies the body with energy and supports metabolic functions (brain, red blood cells fetal development, etc.).

Nutritionists agree that carbohydrates should be an important part of our diet. The European Food Safety Authority (EFSA) recommends that the **intake of total carbohydrates**, including carbohydrates from starchy foods (generally in the form of tubers or root vegetables) should range from **45-60% of the total energy intake for both adults and children**.

This energy is released through the starch digestion process. This process begins in the mouth via the enzyme **salivary amylase** and continues in the intestines via pancreatic amylases and intestinal enzymes. The successive action of these enzymes breaks down the starch into units of **maltose** (a disaccharide) and then into **glucose**.

(1) Hardy et al., 2015. The Importance of Dietary Carbohydrate in Human Evolution.



Source: CIQUAL

## DID YOU KNOW?

Starch extracted from maize, potatoes or peas does not contain any gluten.

However, as wheat is an allergen, EU Regulation No.1169/2011 (on the provision of food information to consumers) states that its origin must be indicated and displayed on the packaging ("wheat starch"). In fact, starch extracted from wheat, except where otherwise specified, contains traces of gluten. Gluten is a composite of plant proteins and helps provide a broader variety of food protein sources.



# STARCH: A VITAL PART OF OUR DAILY DIET

Native starch is a powder obtained from plants containing starch. In addition to their nutritional and energy value as carbohydrates, starches have a number of useful properties: for example they are useful for making **thick and glossy sauces, thickening soups** and making **lighter cakes**.

They are also widely available commercially for general culinary use.

Native starches are labeled as “**starch**” in food ingredient listings.(1)

## WHAT IS MODIFIED STARCH?

Starches can be physically, chemically or enzymatically modified to change their properties to make them useful in certain food preparation techniques.

For example, they may be used to thicken cold sauces, to help frozen food retain its texture and to maintain a consistent texture in cook-chill foods when reheating.

Some modified starches are food additives and are listed as “**modified starch**”. They are **used as thickening and gelling agents**. They are subject to an **independent assessment** by the EFSA (European Food Safety Authority) to guarantee their safety and are on the list of approved food additives. (2)



(1) EU Regulation No. 1169/2011 on the Provision of Food Information to Consumers.

(2) EU Regulation No. 1333/2008 on Food Additives.

nb: modified starches are not gmos.  
they are starches which have been processed to preserve  
their various properties for culinary use.

# STARCH: THE JOURNEY FROM THE FIELD

There are specific manufacturing processes for each plant, and there is dedicated processing and handling equipment for each separate crop (wheat, maize, potatoes) to ensure there is no mixing.



1

EU farmers cultivate the crops required to produce starch (e.g. maize, wheat, potatoes) which involves the work of 60,000 agricultural workers.



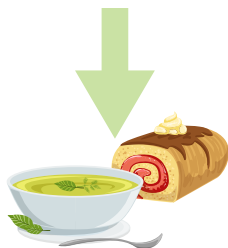
2

Water is used to separate the components of the grain. For maize, grains are soaked in water. For wheat, water is added to the flour obtained after milling and sieving. The starch milk is then separated from the other grain components such as proteins.



3

The starch extracted using this process is then dried and packaged.



4

These starches are used in various industries such as food manufacturing (for bread, baked goods, etc.), manufacturing (papermaking pulp, corrugated board, etc.), pharmaceuticals and animal feed.

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# OVERVIEW

Starch occurs naturally in plants and is their main source of energy.

Starch is a member of the carbohydrate family. We need a sufficient intake of carbohydrates to maintain a healthy body. This can be in the form of bread, rice, pasta etc.

Starch is useful for its stabilizing, binding, thickening and gelling properties, making it an important ingredient in our daily lives.

Modified starches are not genetically modified starches but starches which have been further processed in order to create specific properties for various culinary uses.



## Chef's tip:

to bake a lighter cake, replace half of the flour with wheat, maize or potato starch.

