OLIVE OIL PRODUCTION PROCESS

THE OLIVE OIL HANDBOOK

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Olive Oil Extraction and Storage

The process of olive oil production includes the following: Picking the raw material (olives), cleaning the olives, milling, malaxation, centrifugal separation of olive oil and water and storage and bottling of the olive oil.

1. Raw Materials

Spain is unquestionably the world leader on olive oil production, being responsible for the 45% worldwide olive oil production. Spain produces 1.5 million ton per year, whereas Italy produces 0.6 million ton per year and Greece only produces 0.36 million ton per year.

In order to produce large quantities of very high-quality olive oil efficiently, economically and consistently, the following factors are important: Right climate and the choice of cultivars (e.g. tree spacing, pruning, irrigation, fertilization, pest control, harvest timing and harvest method).

The olive harvest starts in October and it ends in the beginning of March. Harvesting can be done by hand or by machinery. To get a premium extra virgin olive oil, the olives must be transferred to the factory (in plastic crates of 20-25Kg or in large crates of 250-300Kg) in less than 4 hours.

2. Cleaning

When the olives arrive to the factory, they must be cleaned to get rid of dirt and leaves. First, the olives must get through an aspirator, with magnets, fans and vibrating screen. Then, the olives get to washing tank to get rid of mineral dirt (e.g. sand).

3. Milling

Metal tooth grinder

Hammer mill

Milling is the process of transforming the olives into olive oil. The milling involves grinding the olives into a paste. The olives can be crushed by a stone olive mill (uncommon practice), metal tooth grinder or a hammer mill.

- Metal tooth grinder: Olives are fed into the centre of this grinder. The olives are ground as they go away from the centre. Its advantages include precise regulation of olive paste fragment size (high output), it is cheaper, high extraction yield and you can get more stables oils with high phenols content. Its disadvantages include negative organoleptic characteristics (e.g. stronger and spicy taste), stones can break the grinder teeth and the oil paste temperature rises in the milling process between 6 and 10 ºC.
- Hammer mill: A hammer mill with swinging arms which, through centrifugal action, pushes the olives into the sides of a rotating chamber. Its advantages include continuous, high throughput, higher phenol content (i.e. better shelf life) and high extraction yield. Its disadvantages include the difficulty of water-oil separation, negative organoleptic characteristics (e.g. bitter, stronger and spicy taste) and the oil paste temperature rises in the milling process between 6 and 10 ºC

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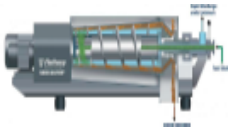
4. Malaxation



Malaxation refers to the process of mixing the olive oil paste for 20-40 minutes at a temperature of 28 ºC to allow small oil droplets to combine into bigger ones. Is extremely important that the malaxing time is between 20-40 minutes, otherwise we can get the following negative attributes: longer mixing time can increase oil yield but it affects the olive oil quality, longer time allows for oxidation (i.e. shelf time decreases) and it increases acidity and peroxide index (affects flavour)

5. Centrifugal Olive Oil Separator

There are two main methods to separate the oil from water: Centrifugal olive oil separator and gravity olive oil decanter.

6. Storage considerations and bottling

Storage

Bottling

Olive oil can be stored in plastic stainless steel and stainless-steel containers free of aromas or polluting substances. The olive oil must be stored at a temperature of between 13ºC and 18ºC. The good storage of the olive oil is very important to avoid deterioration through the lipase and the oxygen actions. Oxidation or rancidity is accelerated when exposed to light and heat.

The olive oil needs to be filtered before bottling. It is important to mention that the colour of the extra virgin olive oil is not indicative of quality. It may go from deep green to light yellow, and it depends on the olive variety, harvesting time and lights.

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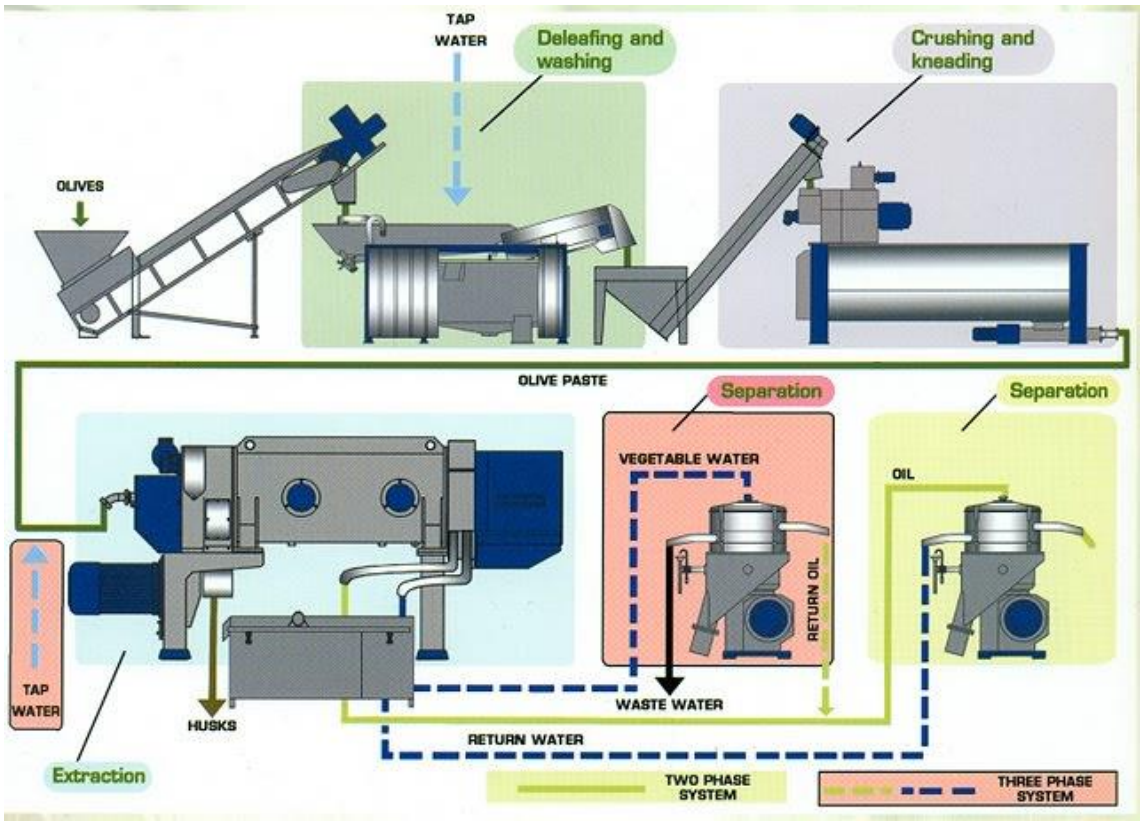
The Olive Oil Production Process:



Different Type of Olive Oils:

There are different types of edible olive oils depending on the quality: Extra virgin olive oil, virgin olive oil, pure olive oil and pomace olive oil.

- EXTRA VIRGIN OLIVE OIL

  The highest grade. Minimum official standards for this grade has a maximum acidity of 0.8%, zero defects of flavour and some fruitiness. It is a top-grade olive oil synonymous with superior quality, with a very fresh flavour containing many antioxidants and polyphenols. In order to comply with the standards of the International Olive Oil Council (IOOC), an extra virgin olive oil should be made from fresh olives processed quickly following harvest and the oil should be removed mechanically, without using solvents, at a temperature not exceeding 30 °C. It must not be mixed with other oils or pomace (leftovers from milling) and must pass the laboratory and flavour tests of the IOOC.

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- VIRGIN OLIVE OIL

  This is an intermediate-quality oil, with a maximum acidity of 2%. It has certain flaws, such as having virtually no fruity flavour or a rancid or humid flavour, that renders its designation as extra virgin olive oil impossible.

- OLIVE OIL OR PURE OLIVE OIL

  It is a blend of refined olive oil and virgin olive oil (added for flavour and colour). The quantity of virgin oil is usually below 10%. Some trade standards require it to be labelled “refined olive oil blend”

- POMACE OLIVE-OIL

  This oil is the poorest quality oil in terms of its suitability for consumption. It is produced from excess residue from an earlier pressed olive oil. It is refined using solvents and mixed with a little virgin olive oil (added for favour)