USER GUIDE

for Olive Pomace Oil in the kitchen

Everything you need to know

ORIVA

INTERPROFESIONAL DEL ACEITE DE ORUJO DE OLIVA

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1 Introduction

This short user guide is designed to help readers find out more about the uses and key characteristics of **Olive Pomace Oil.**

Some readers, professionals, cooking students and users in general will have already heard about Olive Pomace Oil but you may have **doubts about how to use it and which food preparations it is suitable for.**

We encourage you to read this guide to get the most out of this unique product. A variety from the olive grove, with culinary and nutritional properties that make it a great ally in the kitchen, especially for frying.

Healthy, value for money and long-lasting. Learn more about the advantages of Olive Pomace Oil, a great ally in the kitchen.


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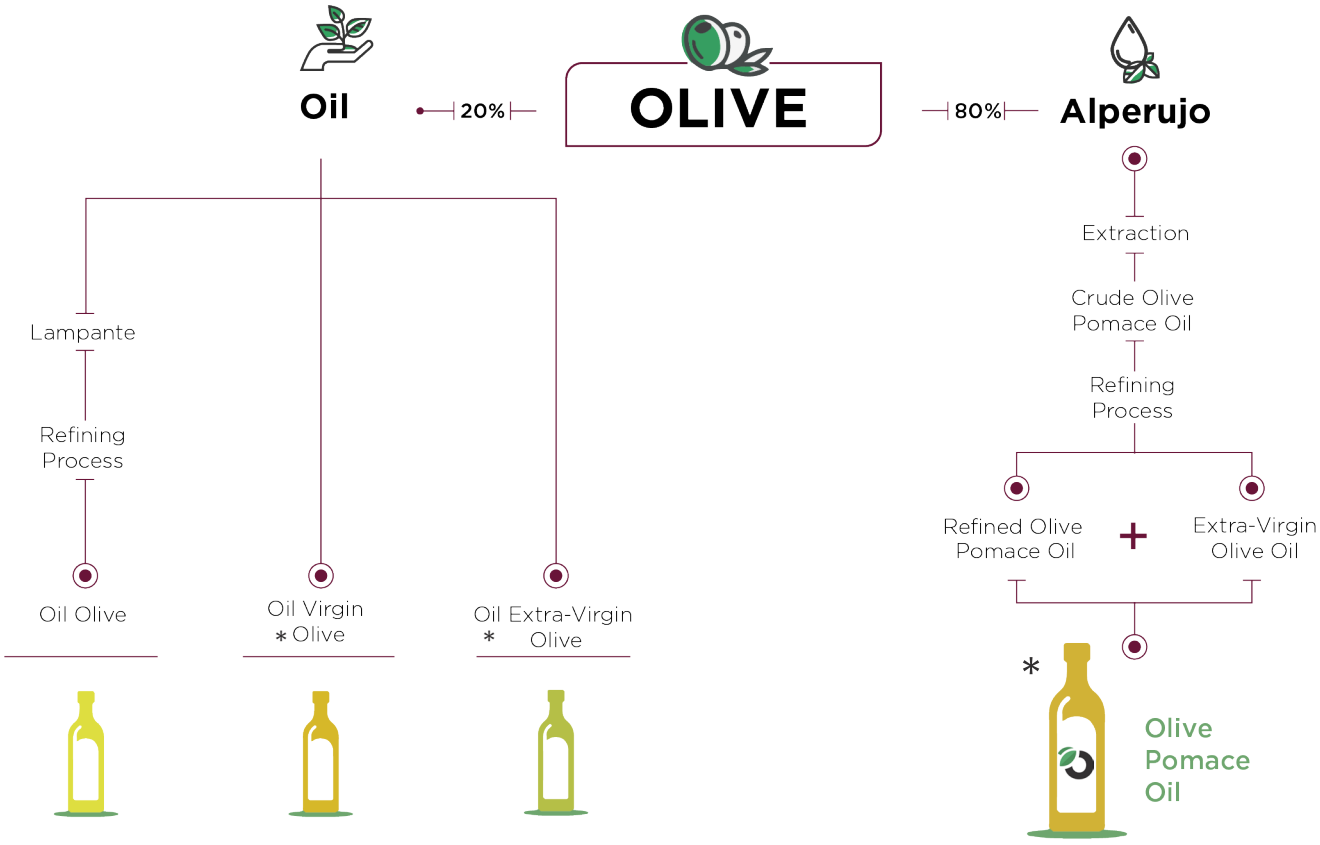
2 Olive pomace oil

Like all fats and oils **Olive pomace oil** is a lipid. It is an **edible vegetable oil**, which is liquid at 20ºC and, like other oils, is composed of **96-97% triglycerides** made up of fatty acids, the remaining content consisting of other minor lipids.

Where does Olive Pomace Oil come from?



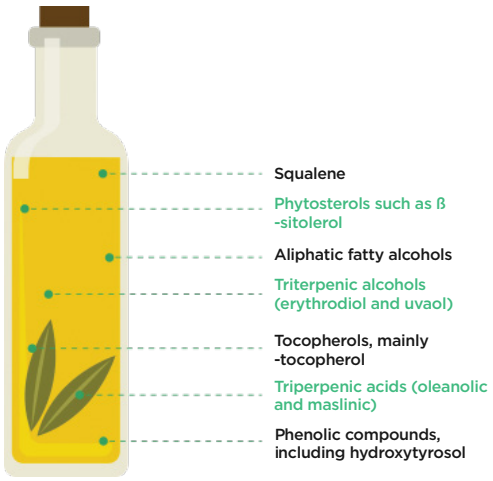
* *There are four types of oils from the olive family that can be found on supermarket shelves.*

According to the regulations, only refined Olive Pomace Oil and Virgin or Extra-Virgin Olive Oil may be included in its composition.

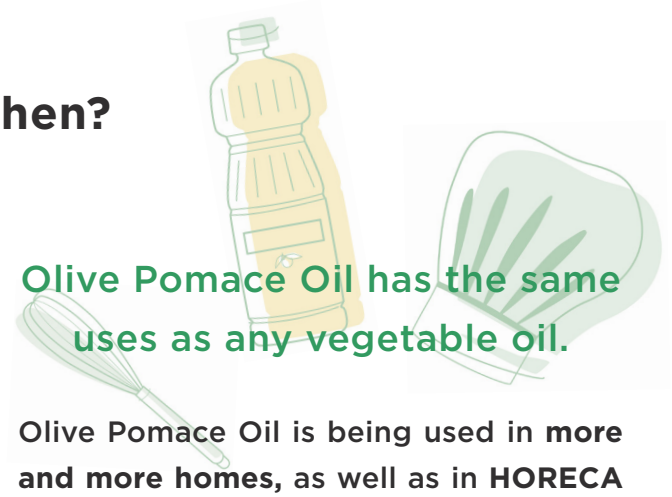
As we can see, it comes from the olive grove, so it has the same fatty acid profile as olive oils, but, in addition, its production process gives it exclusive beneficial properties.

We can trust Olive Pomace Oil precisely for that reason, **because it comes from the olive grove**, making it a millenary crop.

HEALTHY BIOACTIVE COMPOUNDS:



What are its uses in the kitchen?



It is true that the flavors, aromas, even the color nuances of virgin and extra virgin olive oil are unique, and in the dishes in which the flavor of the oil is part of the richness of the dish, these oils are more advisable, but it is also true that for other uses such as sauces, **sauces, stews, pastries and fried foods**, Olive Pomace Oil offers **exceptional properties.**

Olive Pomace Oil has the same uses as any vegetable oil.

Olive Pomace Oil is being used in **more and more homes,** as well as in **HORECA** channel establishments and, of course, in the food, canning and snack industry, among others.

Summarizing ideas:

Olive Pomace Oil comes from the olive grove and is used in cooking and the food industry like any other vegetable oil.

3 Benefits of Olive pomace oil Consumption

Olive Pomace Oil Qualities

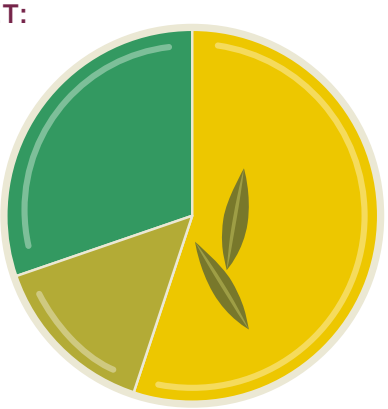
Olive Pomace Oil Qualities Nutritionally, olive pomace oil is a healthy food product, a lipid.

Nutrition experts recommend daily consumption, in addition to vitamins and minerals, energy nutrients: lipids, proteins and carbohydrates, all essential for the body; but **what is the recommended dose for each?**

The following graph shows a generic distribution of nutrients. The specific percentage for person will depend on sex, age and lifestyle.

It is important to note that of the fats consumed daily, more than half should be monounsaturated, such as olive pomace oil.

BALANCED DIET:



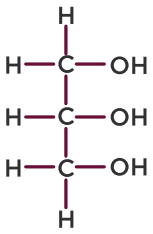
- Carbohydrates
- Proteins
- Fats

Oils are triglycerides made up of fatty acids. In triglycerides, three fatty acids are linked to the glycerol molecule.

Triglycerides may contain mostly saturated or unsaturated fatty acids.

FREE FATTY ACID

GLYCEROL



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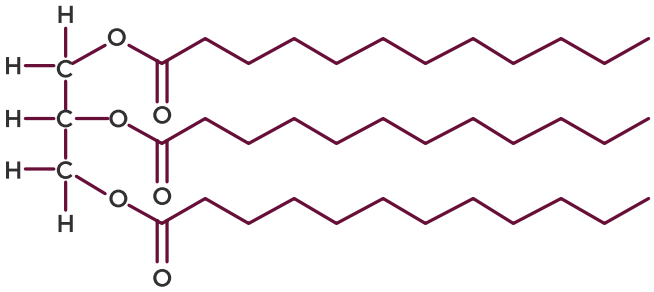
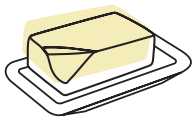


The triglicerids:

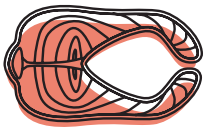
Saturated Fatty Acids



Unsaturated Fatty Acids:

- Monounsaturated

- Polyunsaturated



Saturated. Found in animal fats: milk, cream, butter, lard, tallow, and in some vegetable oils: palm, palm kernel or coconut. Saturated fats should be consumed in moderation because in excess they **increase LDL** (bad) **cholesterol** in the blood.

Unsaturated. There are two types:

Monounsaturated: present in olive oil (oleic acid) and, therefore, in Olive Pomace Oil. These fats increase HDL (good) cholesterol and decrease LDL (bad) cholesterol and are beneficial in preventing cardiovascular diseases. Remember that out of your recommended daily fat intake, more than half should be monounsaturated.saturadas.

Polyunsaturated: found in seed oils (mainly sunflower, soybean and corn) and fish.

The nutritional quality of Olive Pomace Oil is determined by its composition of monounsaturated fatty acids, which have been proven to be beneficial in the prevention of cardiovascular diseases, and its bioactive compounds.

Olive Pomace Oil has up to 80% oleic acid and contains 2% healthy bioactive substances.

Research* conducted by the Institute of Fats (Instituto de la Grasa -IG) and the Institute of Food and Nutrition Science and Technology (Instituto de Ciencia y Tecnología de Alimentos y Nutrición -ICTAN) attached to the **Spanish National Research Council** (Consejo Superior de Investigaciones Científicas -CSIC) provides scientific evidence on its nutritional interest and performance in frying and baking, its effects on cardiovascular health and Alzheimer's disease prevention.

Summarizing ideas:

Olive Pomace Oil is a lipid, liquid at room temperature and mainly composed of monounsaturated fatty acids, principally oleic acid. Olive Pomace Oil consumption is recommended in a balanced and healthy diet.

The principal lines of research published to date in leading international scientific journals are as follows:

- Performance of Olive-Pomace Oils in Discontinuous and Continuous Frying. Comparative Behavior with Sunflower Oils and High-Oleic Sunflower Oils. Research Center: Institute of Food Science and Technology and Nutrition, ICTAN.
- Stability of Bioactive Compounds in Olive-Pomace Oil at Frying Temperature and Incorporation into Fried Foods" Research center: Institute of Fats, IG.
- Quality and Nutritional Changes of Traditional Cupcakes in the Processing and Storage as a Result of Sunflower Oil Replacements with Refined Olive Pomace Oil. Research center: Institute of Fats, IG.
- Functionality of Puff Pastry Olive Pomace Oil-Based Margarines and Their Baking Performance. Research Center: Institute of Food Science and Technology and Nutrition, ICTAN.
- Olive Pomace Oil versus High Oleic Sunflower Oil and Sunflower Oil: A Comparative Study in Healthy and Cardiovascular Risk Humans. Research Center: Institute of Food Science and Technology and Nutrition, ICTAN.
- Attenuation of Inflammatory Processes Associated With Alzheimer's Disease After Consumption of Pomace Olive Oil. Phases I and II (Phase III trials on Alzheimer patients are ongoing). Research Center: Institute of Fats, IG.

Interprofesional del Aceite de Orujo de Oliva continues its commitment to R&D to expand scientific knowledge of Olive Pomace Oil in two areas: health properties and culinary properties.

*Find out more about these studies by visiting the R&D&I section of the Interprofesional del Aceite de Orujo de Oliva's, ORIVA, web page.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4 Benefits of Olive Pomace Oil as a frying oil

Properties of Olive Pomace Oil in Frying.

We have already seen that **Olive Pomace Oil is used like any other vegetable oil;** now let's look at its specific use as frying oil, which is a commonly used cooking method.

We'll start by explaining **what** this technique **consists of.**

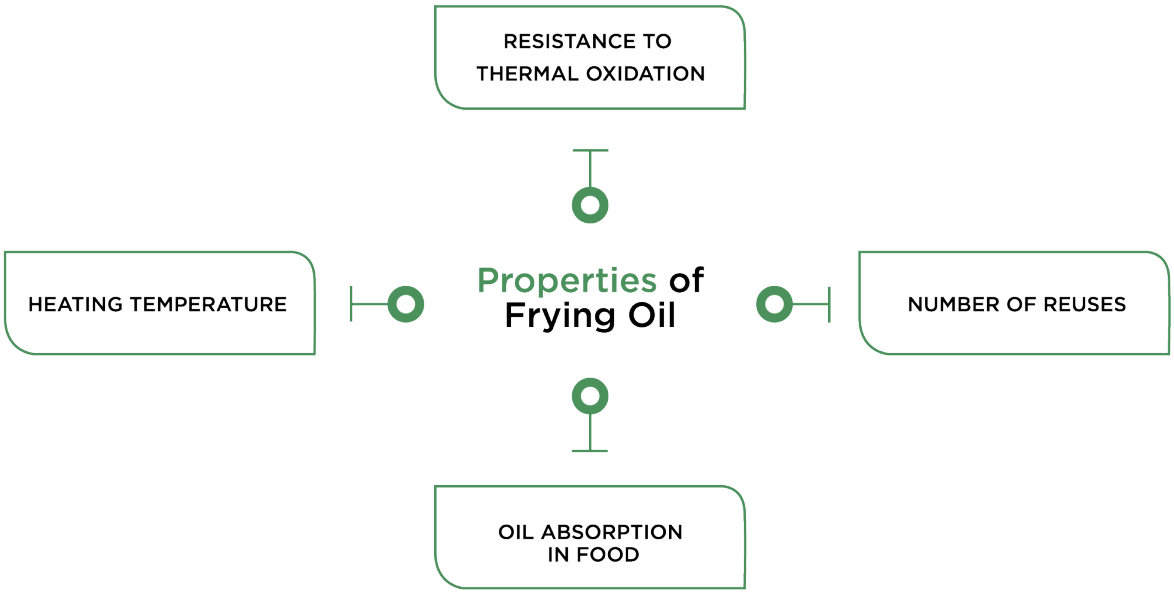
Frying is the cooking of food **immersed in oil at a high temperature.**

This simple definition also flags up the complexity involved and leads to discussion of how to find the highest quality oil for cooking, the one that best satisfies the needs of chefs and consumers alike, for which we need to consider the **key properties** of frying oils.

As indicated by Dr. **Marquez-Ruiz et al. (2018)***, frying is a **very complex process involving numerous reactions**, due to the action of oxygen in the air, high temperature and water from the food, which lead to organoleptic changes, increased viscosity, foaming, darkening and decreased smoke point.

All the altered compounds formed are known as **polar compounds.**

** Gloria Márquez-Ruiz is a research scientist at CSIC. Leader researcher on the study " Performance of Olive-Pomace Oils in Discontinuous and Continuous Frying. Comparative Behavior with Sunflower Oils and High-Oleic Sunflower Oils".*



Heating temperature

Oil in frying functions as a **heat transfer medium.** One of the requirements is that it must be stable under extreme conditions of immersion frying, i.e., high temperatures and humidity.

The **optimum** frying **temperature** is 170-190ºC, but it is recommended not to exceed 180ºC.

LOW TEMPERATURE

If the frying temperature does not reach the optimum point, the food **takes a long time to fry and absorbs a large amount of the frying oil**, making it less digestible, appetizing and higher in calories.

EXCESS TEMPERATURE

The so-called smoke point must never be exceeded, since at that temperature the **oil spoils**, smokes, bubbles and becomes viscous.

The **smoke point of** Olive Pomace Oil is one of the highest for vegetable oils at **between 230-240ºC.**

Resistance to thermal oxidation

Frying oils are altered because the fatty acids they contain oxidize in the presence of oxygen and heat (thermal oxidation), they deteriorate changing their composition while polar compounds increase, which has a negative impact. Remains of organic matter in decomposition or carbonized compounds, which are substances that aid oxidation, should also be avoided.

When **measuring oil degradation** to ascertain if it can continue to be used, the only legal and mandatory parameter in Spain is to measure its polar compounds, which must not exceed 25% according to the Quality Standard for Heated Oils and Fats.

Test strips are currently the most widely used method in the hotel and catering industry.

All catering establishments must manage food safety through the Good Practices Guide or HACCP[1], among other regulations. All of which specify the obligation to measure polar compounds and to keep a log. Remember, looking at the oil is not enough to tell us where it has degraded or not.

Observation gives us clues, but if we want to use the oil with full sanitary guarantees, we simply need to use a test strip (or any other measuring method).

The high amount of oleic acid (up to 80%) in **olive pomace oil** explains its durability in frying. For this reason, there are seeds that are modified to obtain oils with more **oleic acid**.

Oil absorption in food

Foods absorb fats during frying, but a **good frying technique**, with the right timing and temperature, helps to create a thin, consistent layer around the fried product **avoiding excess oil**.

It is advisable to cut food into medium or large pieces to obtain **crispy fried foods with less fat**.

Using Olive Pomace Oil in cooking is good value for money and it lasts even longer with a good frying technique.

Oils also deteriorate due to the number of times they are reheated. The volume of oil needed for frying forces us to use them more than once, and therefore, it is best to **look for the oil that can withstand being reheated the most** without reaching degradation.

[1] *Hazard Analysis and Critical Control Point.*

Number of fried foods allowed

The specific composition of Olive Pomace Oil, very rich in oleic acid, and with exclusive bioactive compounds, explains its differential properties as it has a protective effect on the oil, making it more durable and stable.

This is one of the key findings of the comparative research with sunflower oils (conventional and high oleic) carried out by the **Institute of Food Science and Technology and Nutrition (ICTAN) of the Spanish National Research Council (CSIC),** with Dr. Gloria Márquez as leader researcher. (More information at www.oriva.es)

According to the study, in discontinuous or domestic frying, conventional sunflower oils reach their maximum level of use, set by regulations at 25% of polar compounds, between the 9th-10th frying and high oleic sunflower oils between the 17th-18th frying. Olive Pomace Oils **can be used for frying up to 21 times.** In other words, they can be used twice as often as the most common seed oils for frying used by consumers. Good stability is also observed for repeat frying up to 40 times in the tests carried out in continuous or industrial frying.

Some vegetable oils with additives in the form of defoamers also have a long life, but it should be borne in mind that longevity is achieved by adding substances and is not an intrinsic quality of these oils.

Summarizing ideas:

Olive Pomace Oil is ideal for frying as it is healthy, value for money and long-lasting. It is stable at the optimum cooking temperature; its monounsaturated fatty acids, oleic acid, do not oxidize as much as other vegetable oils; in frying it creates a layer on the food that makes it absorb little fat and therefore lasts longer, plus it withstands reuse better.

Organoleptic and nutritional changes in food and oil after frying

At this point, many questions about **Olive Pomace Oil** have been answered in terms of what it is and where it comes from. We also know that it is ideal for frying: **healthy, value for money and long lasting.**

Now let's talk about the reasons for choosing this cooking technique:

People like fried foods, it's obvious. The key is the crunchy and tasty coating that forms on the food when frying and makes our taste buds secrete saliva and whets our appetite.

On a hedonic scale2, it always gives excellent results. We fry to transform foods and make them digestible and tasty. Its organoleptic changes bring palatability3 to the taste of the foods that are enriched. The color and texture of fried foods also make them more palatable.

It is important to note the importance of the Maillard reaction4 in the organoleptic changes in frying.

Although it is not an exclusive reaction of this technique, here it is responsible for the golden-brown coloration and the appearance of a complex shade of flavors and odors coming from the multiple compounds that develop in this "caramelization" of the food.

Nutritionally, food that is fried gains in calories because of the oil it adds to the food, but, as we have already seen, they are necessary calories in the daily ener gy intake that our body needs.

The important thing is to fry food properly to minimize the fat content, hence getting the oil temperature right is key.

When food is immersed into the Olive Pomace Oil at 180ºC, a crust is formed on the outside of the food and the fat gain is minimal, the food is encapsulated and the water it contains turns into steam, helping it to cook faster. This results in healthier fried food with fewer calories.

Changes in the lipid profile of fried foods are a consequence of oil absorption between the fat of the initial food and the frying oil. Although the fat content increases in products due to frying, one of the research projects conducted by the Institute of Fats (IG) of the Spanish National Research Council (CSIC) concludes that the changes observed in fried products show a considerable improvement in quality in terms of fat contribution, that is, a decrease in the content of saturated fatty acids, and a decrease in their cholesterol content in samples of animal origin. In the case of frying with olive pomace oil, squalene, alcohols and triterpenic acids and aliphatic alcohols are also incorporated (more information at www.oriva.es). (More information at www.oriva.es).

[2] The hedonic scale is a test in which consumers are asked to rate their degree of satisfaction by means of a scale such as: I do not like it at all, I do not like it, I like it or I quite like it or like it a lot.

[3] According to the RAE Spanish dictionary definition, palatability is the quality of having a pleasant taste.

[4] The Maillard reaction designates a complex set of chemical reactions that result in the coloration of foods, technically, glycosylation or non-enzymatic glycation of proteins.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5 Types of fried foods and foods suitable for frying

In any home or restaurant kitchen we find many recipes for which frying is the principal cooking method. This section describes the distinctive characteristics of this culinary technique.

Amount of oil needed

We have already said that frying involves immersion, but there are times when, due to the delicacy or size of the food, immersion is not used. Instead, a small amount of oil is used that does not cover the food in the frying pan.

This type of frying should be avoided whenever possible, since, while the upper part of the food is not covered, the oil binds itself to the product without encapsulating it, so it is retained thus increasing the number of calories.

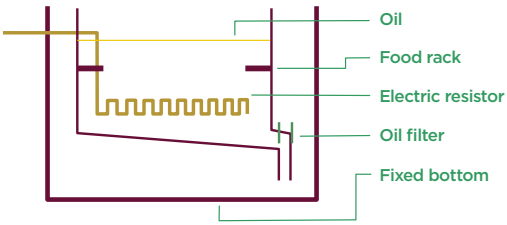
We can also fry in large frying pans or sauté pans. These are deep paella pan type containers where frying is carried out with the food immersed in abundant oil.

In both cases, the main problem is that the frying temperature is not constant, so the oil alters more quickly.

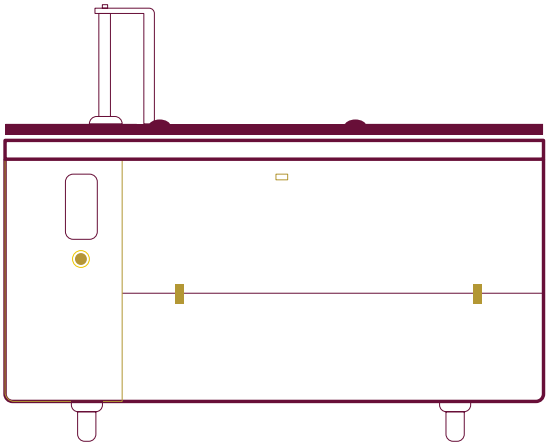
Thus, for domestic frying and catering we recommend an electric or gas fryer, which will be kept at a constant temperature and maintains enough oil to immerse the food.

This fryer is known as a discontinuous or batch fryer, where the oil is heated and cooled successively, as opposed to the continuous belt fryer, which is common in the food industry, where **Olive Pomace Oil** is also widely used.

ELECTRIC FRYER BASKET:

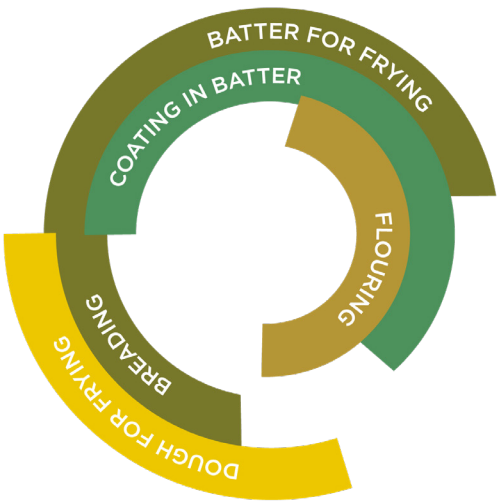


EXAMPLE OF A CONTINUOUS FRYER:



Types of frying depending on how the food is coated

Frying coagulates the external surface of the food, giving it a golden, crispy outer coating. As we have seen, food can be fried directly but can also be protected through coating it in other foods.



There are different ways of coating food before frying:

Flouring: cconsists of coating the entire food surface with flour.

Contrary to popular belief, food should not be too dry otherwise the flour sticks and doesn't transfer to the oil during frying, remaining at the bottom of the pan after frying as a residue.

Toasting food lightly on the outside gives it a crunchy consistency and ensures it is juicy on the inside.

Flouring is used with fragile foods such as small fish so that they do not break during frying. Known as **"Andalusian-style frying"**, it is widely used for small pieces of fish and cephalopods.

Coating in batter:

It consists of flouring food first then coating it with beaten egg before frying.

The coating is crisp and golden leaving the food juicy. Batter is used for fish fillets like hake or cod, or for small fish like **anchovies**[5] that have been opened, the spine pulled out and stuffed.

As the batter coagulates quickly, **the filling does not come out for the latter.**

Breading:

This involves coating the food in beaten egg and then in breadcrumbs.Sometimes some flour is added first so that the egg sticks better. The outer layer **is thicker and crunchier** than food coated in batter and is more noticeable. Sometimes the breadcrumbs are enriched with some aromatic herbs. Croquettes, San Jacobos (ham and cheese fritters) or hake sticks are some of the typical foods that are coated in breadcrumbs.

Batter for frying:

These are thicker preparations for coating and frying raw or cooked foods. There are different types of batter, depending on the food to be coated. All these batters must be made **30 minutes in advance** so that they can rest properly, and flour used must be diluted correctly so that there are no lumps.

Meat, fish, vegetables or even cheese and fruit, always cut into strips, are dipped in batter and, at the last moment, they are fried in abundant oil at 180ºC for about five minutes or until they are crispy and golden brown.

Some of the most common examples are Japanese tempura and classic Orly batter.

Dough for frying:

They coat and protect food and fillings. **The most popular is the dough for pasties**, although we can also find filo pastry, brick pastry or the recently popularized wonton and gyoza dough.

[5] *The anchovy, Engraulis Encrasicolus by scientific name, is known in other areas of Spain as boquerón.*


de oliva

6 Frying Process

"Frying is an art, and like all art, it must be created with lov"

A.Escoffier (1903)

Frying Process Step by Step

1 Select Olive Pomace Oil.

2 The fryer.

- Fill and preheat.

3 Pre-preparation of the chosen food.

- Washing, peeling, de-stoning, boning, etc.
- Cut into thin strips or slices.
- Prepare the batter and doughs, after they have rested.

4 Frying.

- It should be done in batches of about 200g of food per liter of oil.
- Do not let the oil cool between frying batches, maintain the heat at 180ºC*.
- The frying time should be limited.

5 After frying.

- Add salt if necessary; if we do it before, it passes to the oil which degrades sooner.
- Remove excess oil from the food with absorbent kitchen paper.
- Serve immediately.
- If the fryer will no longer be used, filter the oil and store it away from the light and cover it to prevent oxidation.

* *Temperature recommended if short periods between frying batches are involved.*

7 Tips to help you in the kitchen

- Before using the oil, **keep bottles or containers in a cool place away from light.** Once opened, cover with a lid and consume as soon as possible.
- **Do not mix different oils, as this alters the flavor and properties.**
- Oils can be mixed if they are the same type, the important thing is that the fryer always has the **same amount of oil.**
- **Cut food into medium or large pieces** to absorb less fat.
- **Never saturate the fryer** with food, fry a little at a time, one portion at a time, and always fry food at the same time.
- After frying, the oil should remain **on for a couple of minutes to** allow any water it may contain to evaporate.
- Used oil is a major pollutant - **recycle!**
- **Always use Olive Pomace Oil** in your stews, sauces or fried food, it is healthy, value for money and long lasting.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If you are going to fry, use Olive Pomace Oil.

Its origin: the olive grove.

The origin of Olive Pomace Oil is the olive grove, our greatest natural heritage.

Taste comes first.

With its mild flavor, Olive Pomace Oil enhances the original taste of food.

A more than appetizing crunchy.

At a temperature of no more than 180º you get a crispy coating on the outside while food remains tender on the inside.

A healthy oil.

Its high oleic acid content and antioxidants protect our health and preserve food.

Excellent quality/price ratio.

Olive Pomace Oil has greater durability in frying processes, making it great value for money.

The perfect balance.

Greater resistance to high temperatures means that it can be used in more than twice as many fried foods as the most used seed oils.

To learn more about Olive Pomace Oil visit **www.oriva.es**

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