



BEST PRACTICE GUIDELINES FOR THE STORAGE OF OLIVE OILS AND OLIVE-POMACE OILS FOR HUMAN CONSUMPTION

Introduction

It is well known that, during the conservation of the edible oils, oxidation processes, mainly involving the fatty acids of triglycerides, favours the accumulation of free radicals and the generation of off-flavours. Moreover, oxidation causes the loss of antioxidants and reduces sensory and health properties, lowering the category, product value and consumer acceptability.

It is therefore useful to promote good practices and to establish recommendations for the correct storage of olive oils and olive pomace oils, in particular, to limit the exposure of the product to negative factors such as light, high temperature, oxygen and other activators (e.g. chlorophylls and transition metals) to slow the oxidation process, with a positive incidence on the proper conservation throughout the supply chain, or the oil's shelf-life.

As regards extra virgin olive oil (EVOO), which is the top quality level among edible virgin olive oils, it should be noted that its peculiar composition, which confers health benefits and specific sensory properties to this product due to the presence of compounds such as antioxidants, including polyphenols and volatile substances that create the sensory fruity notes, is dependent on a number of variables. These include the use of high-quality raw material and the correct olive ripening and preservation techniques, the technical processes applied, applying only physical and mechanical phases, and the proper conservation of the extracted oil. When the storage conditions are not appropriate, EVOO can initially fall into a lower commercial category (virgin olive oil – VOO), without specific implications for its safety for human consumption, but further oxidation may cause the oil to become unfit for consumption (lampante olive oil), without refining.

Purpose

The objective of these guidelines is to report on and summarise the best practices for the storage of olive oils and olive-pomace oils, following production and prior to consumption, with the aim of carefully maintaining, as long as possible, their composition and characteristics, defined by the parameters set out in the regulation. It should be stressed that olive oils and the olive pomace oils must meet the legal requirements provided in legislation throughout their shelf life, from production to the final consumption.

Scope of application

The present guide is intended for application to olive oils and olive-pomace oils, after their production and during their storage prior to consumption, with a focus on extra virgin olive oils.

1. Post production

1.1. Oil storage before bottling

Recommendations:

- The temperature of the storage room should be kept between 13 and 25 °C and to store the oil in stainless-steel tanks, saturating the headspace with inert gases (e.g. nitrogen or argon under a controlled atmosphere), preferably insufflated from the bottom of the containers. If the stainless-steel tanks and connection pipes are maintained under a weak inert gas pressure, as far as possible, from oil storage to bottling, there is a greater guarantee of reducing the oil's exposure to oxygen.
- In case of edible virgin olive oils, pouring is crucial to remove any sediments.

1.2. Transportation

Recommendations:

- Reduce the time of transport of bulk oil as much as possible.
- Avoid any risk of heating, exposure to light or air oxygen during loading and unloading operations.

1.3. Filtration

Filtration is recommended, with a view to removing suspended water and solid micro particles, thus optimizing the shelf life of the oil by reducing the likelihood of the fermentative and chemical reactions that can compromise the initial quality (e.g. promoting appearance of sensory defects and ethyl esters formation). Filtration is conducted before bottling and before storage, in this case to reduce the incidence of oxidation related to frequent decanting operations. In this regard, filtration acts more effectively and rapidly than decanting in removing the suspended water and particle aggregates containing oxygen.

It is highly recommended to:

- Reduce contact with air during filtration as much as possible.
- Conduct paper, cotton and/or flood filtration, or filtrate using very pure and inert diatomaceous earth of fossil origin (fossil flour) for rough filtration.

1.4. Bottling and packaging

Recommendations:

- Keep pre-distribution storage rooms at low light intensity and at temperatures between 13 and 25 °C.
- Pack the olive oil after having carried out at least a rough filtration or a natural decantation (see 1.2.).

- Use suitable primary packaging that protect the oils from light (e.g. dark glass bottles, stainless steel bottles, cans, multilayer steel tin plate, sleeves to completely protect clear glass bottles from the light).
- Where possible, maintain the saturation of the headspace with inert gases during bottling.
- Use secondary packaging materials for protection against light (e.g. cardboard) and, possibly, high temperatures (e.g. polystyrene or, better, reusable thermal containers).
- Indicate clearly – in the label but also on the secondary packaging -: “KEEP AWAY FROM LIGHT AND HEAT”.

1.5. Best before date

It is compulsory to:

- Establish an appropriate best before date, which is the date until which the product retains its specific properties, when properly stored and bottled.

It is highly recommended, in any case, even in the case of top quality oils at production, kept in the most rigorous storage conditions, to:

- Limit the best before date to 24 months after bottling.

The best before date should be indicated according to the regulations of the country of retail sale. For olive oils and olive pomace oil it is generally sufficient to indicate best before date in the form MM/YYYY or with an equivalent expression.

The words “best before...” shall be accompanied by:

- Either the date itself;

or

- A reference to where the best before date can be found on the labelling.

2. Purchase, transportation and storage at the distribution point

2.1. Purchase of bottled oil

Recommendations:

- Pay attention to the best before date in planning the purchase of oil.
- Give preference to olive oils packed in cans or dark glasses that protect them from the light, thus providing greater protection against oxidation than transparent containers.
- Respect the principle whereby subsequent purchases must have subsequent best before dates.

2.2. Transportation of bottled oil

Recommendations:

- Reduce the time of transport of oil as much as possible.

- Avoid leaving the product for a long time on the forecourt, with the risk of heating before loading.
- Avoid the transportation in tarpaulin trucks.
- Include, if available, thermal probes inside the secondary packaging to verify the temperature range of the oils during the transportation.

2.3. Storage at the distribution

Recommendations:

- Keep the packages and bottles of oil away from any source of natural, direct light or any other source of light. Store pallets in such a way as to avoid exposure to direct light. Special attention should be given to the last layer of the pallet, which is the most exposed to direct light (e.g. sunlight from a window, a skylight or any other source of light).
- Keep the storehouse temperature between 13 and 25 °C.
- Respect the "first in first out principle" (FIFO): items stored first are retrieved first.

3. Retail exposure and sale of bottled oil

For purchase and transportation, even of reduced supplies (small shops), follow the instructions given in the paragraphs 2.1 and 2.2.

3.1. Exposure in the store

Recommendations:

- Use a natural or artificial illumination level lower than 500 lux (average) and with an intermediate or warm light colour lower than 4 000 °K (UNI 10380).
- Avoid storing on top shelves or exposed to light sources (sunlight or artificial), e.g. never on the window.
- Keep the store temperature between 13 and 25 °C and keep the product away from any accidental source of heat, such as next to or above fridges, air conditioners, radiators.
- Size the store shelf according to the sales of the product.
- In the store or small shop shelf, respect the "first in first out principle" (FIFO): items with the earliest best before date should be placed in the first line.