



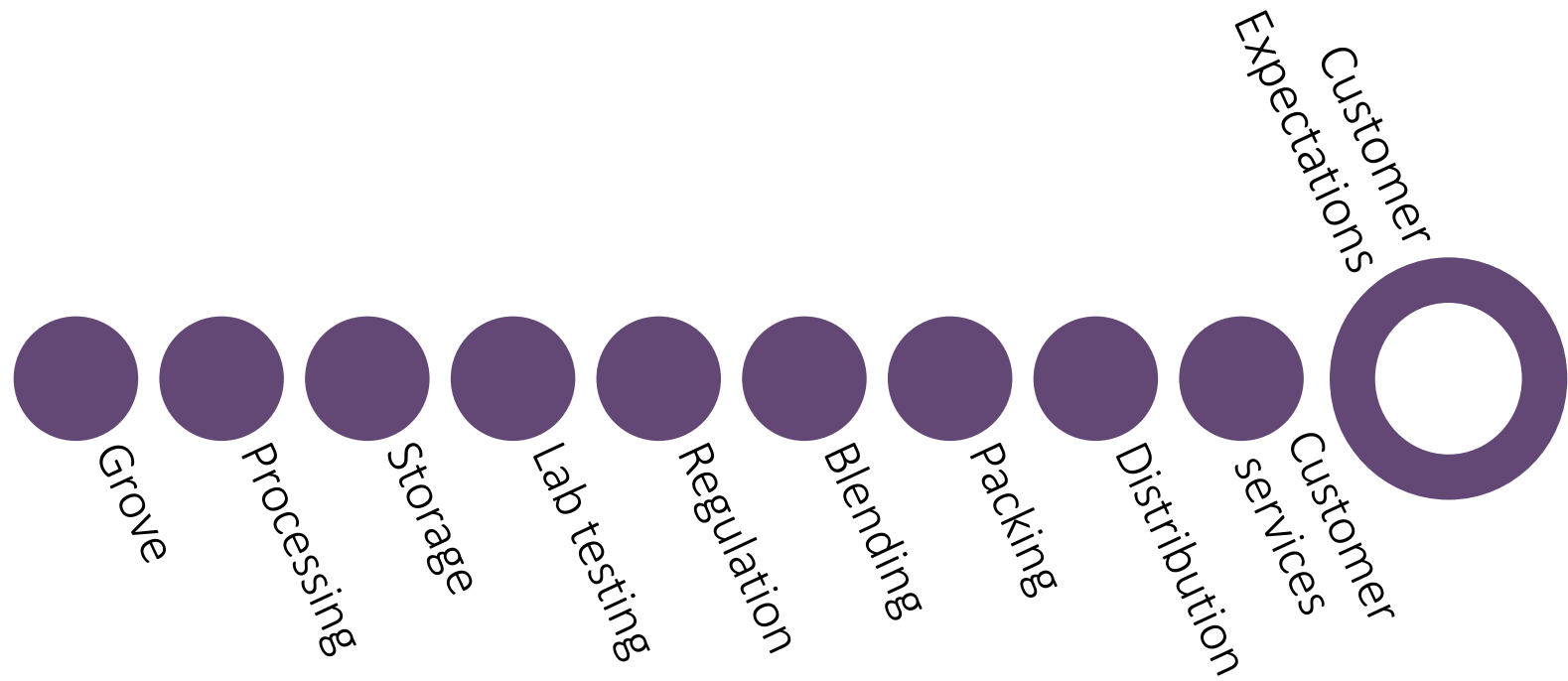
EVOO quality – the whole picture

Claudia Guillaume
October 2025

What is EVOO quality?

Extra virgin olive oil (EVOO) quality refers to a set of chemical and sensory standards that ensure the oil is of the highest grade of olive oils.

EVOO quality – the whole picture



From grove



to consumers' home

Grove - Agronomical factors

✓ Factors which are difficult to change:

- Varieties (Genetics)
- Environmental conditions

✓ Factors which are easier to manage:

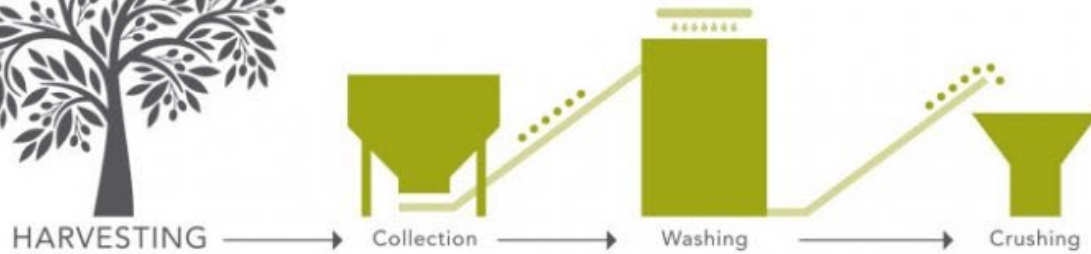
- Grove management
 - Pests & diseases
 - Irrigation
 - Harvest & transport

Processing Factors

✓ Optimal harvest time

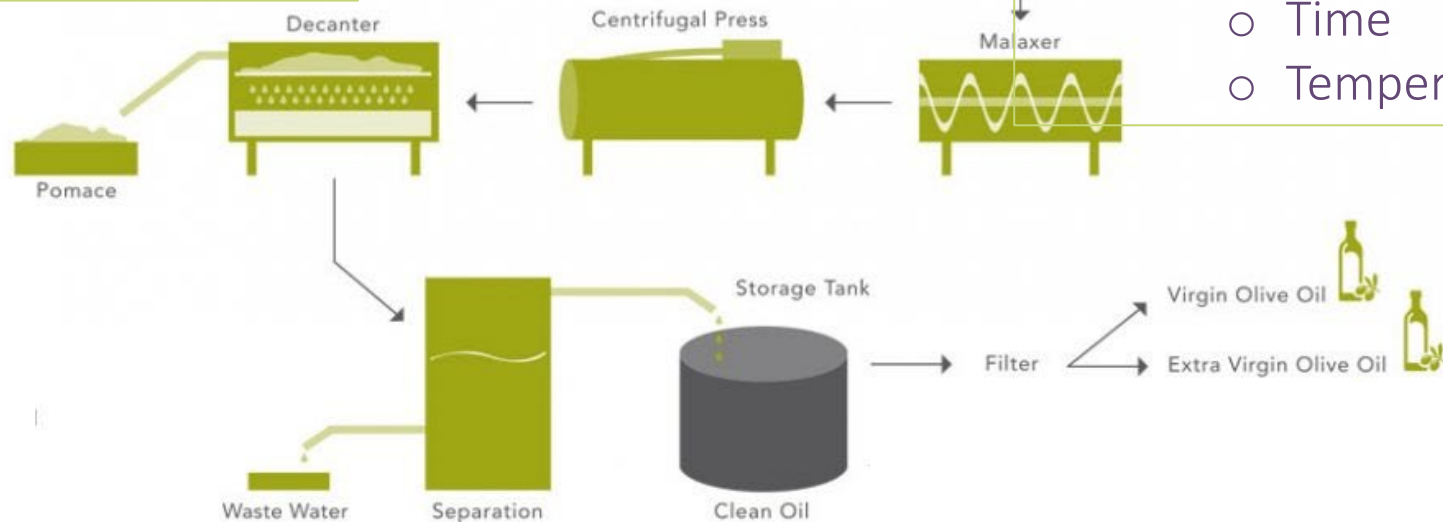


✓ Prompt oil extraction



✓ Healthy fruit

✓ Malaxing:
○ Time
○ Temperature



Storage

✓ Oil oxidation

Minimise Light, temperature, Oxygen and metals exposure to the oil

Peroxide value

UV coefficients (K232, K270, DK)

Rancid Defect

✓ Oil fermentation

Remove sediments and water from the bottom of the tank.

Free Fatty Acid

Diacylglycerides

Muddy/Winey defect

Storage – good practices

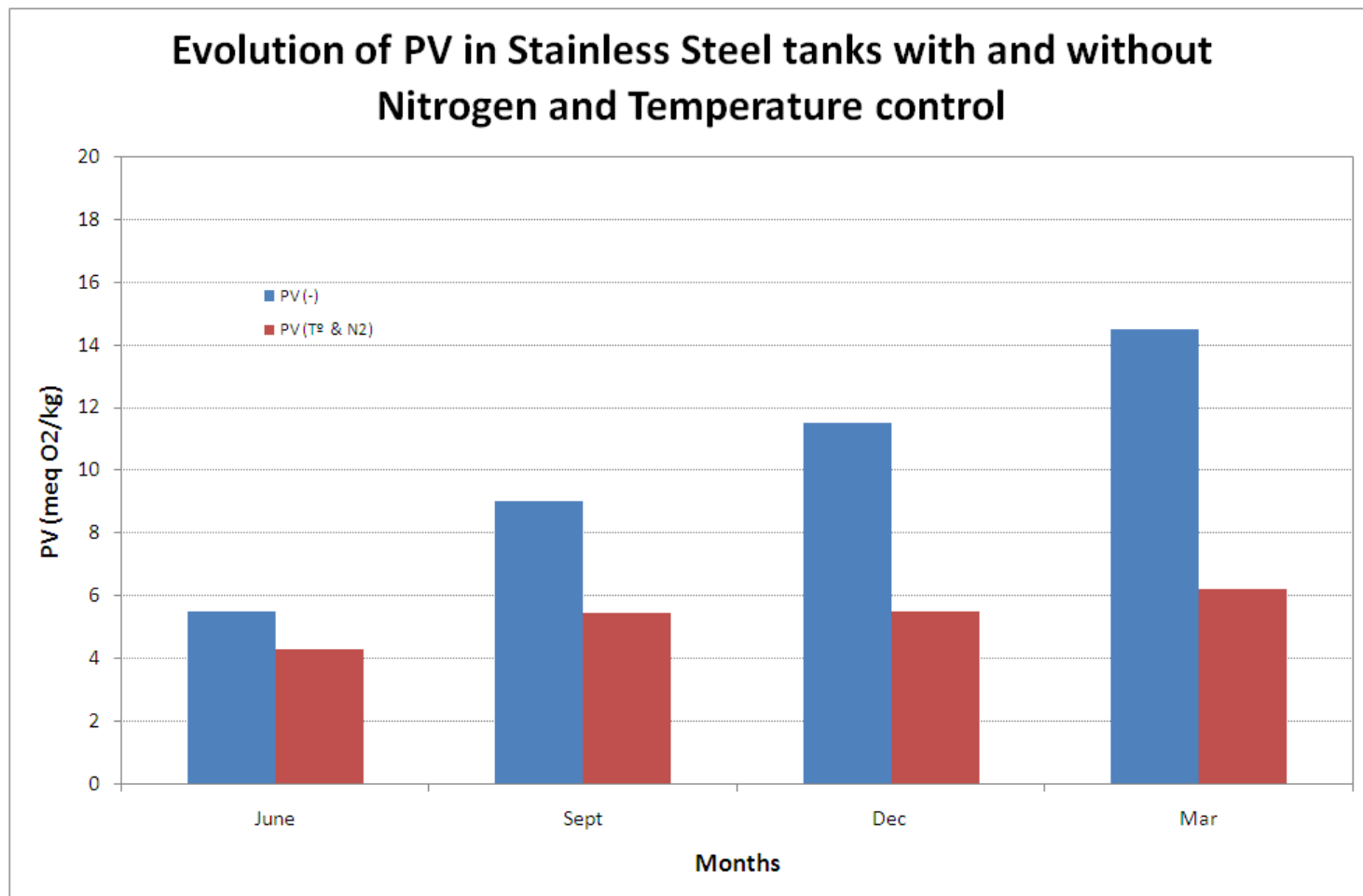
Low oxidation



High oxidation



Oil oxidation



Oil oxidation

OK for transport but
really **BAD** for storage
purposes.

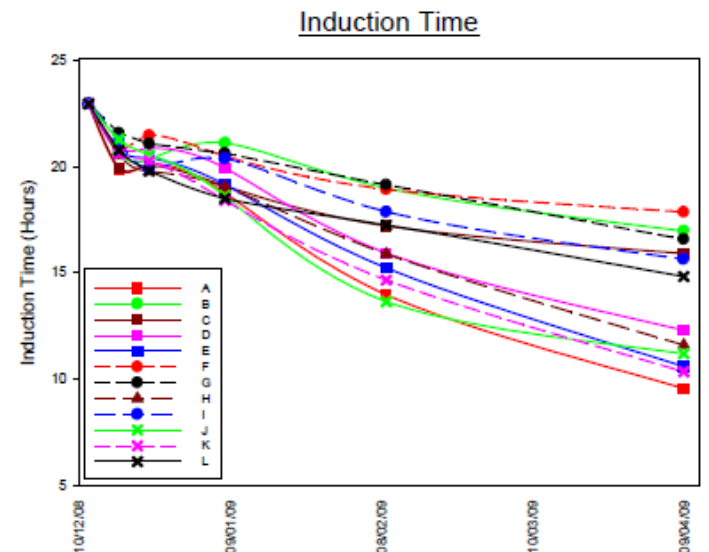
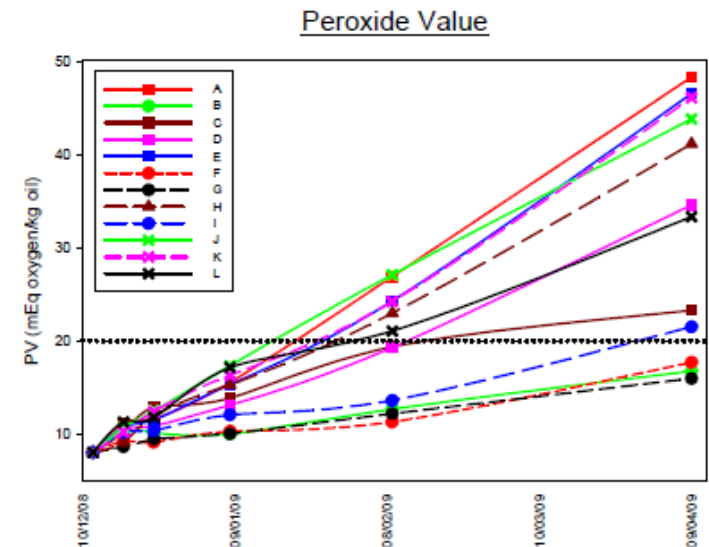


Oil oxidation

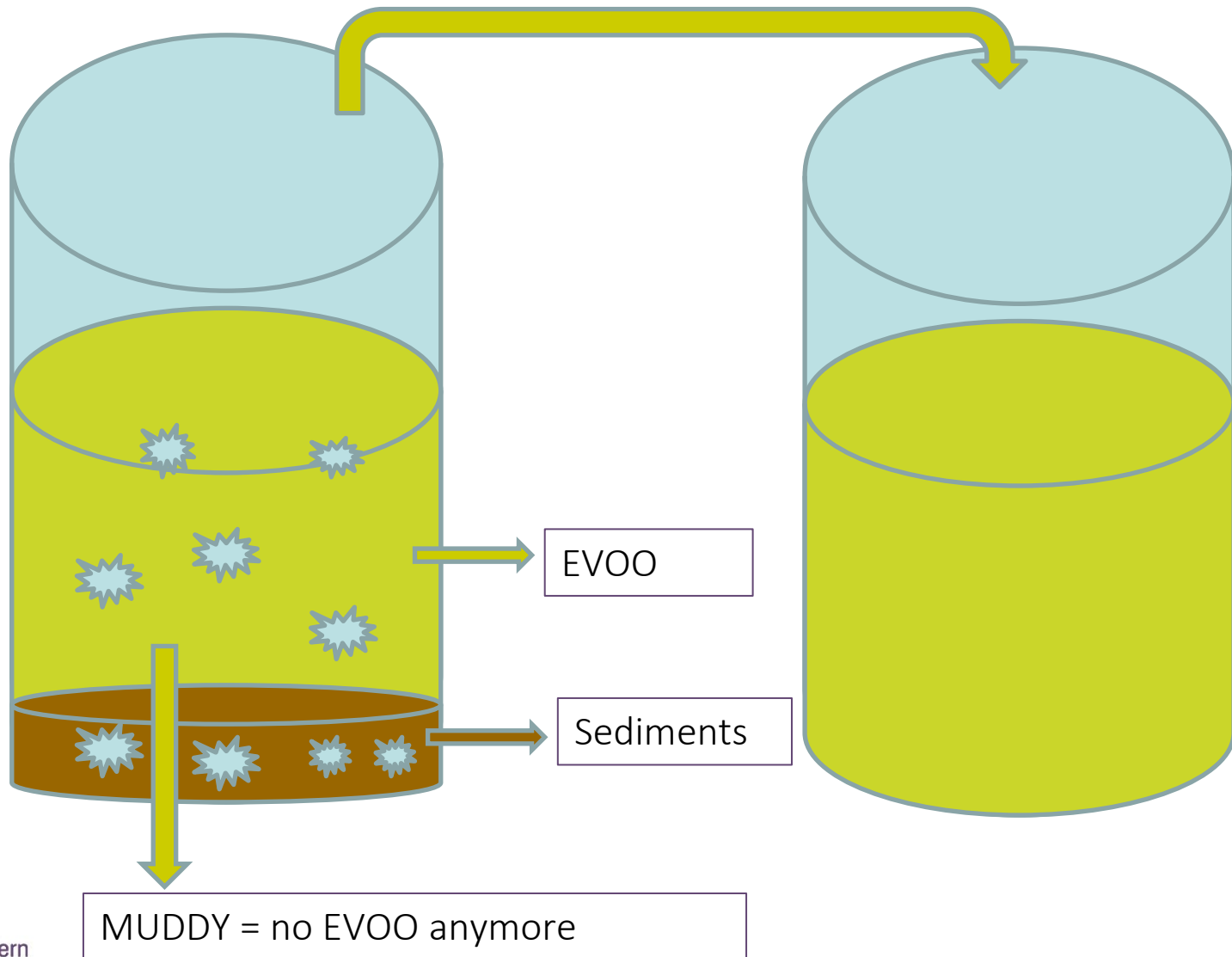
10. Appendices

Table 10.1 Comparison of peroxide value, polyphenol content, induction time and α tocopherols of oil stored in 12 containers for 4 months.

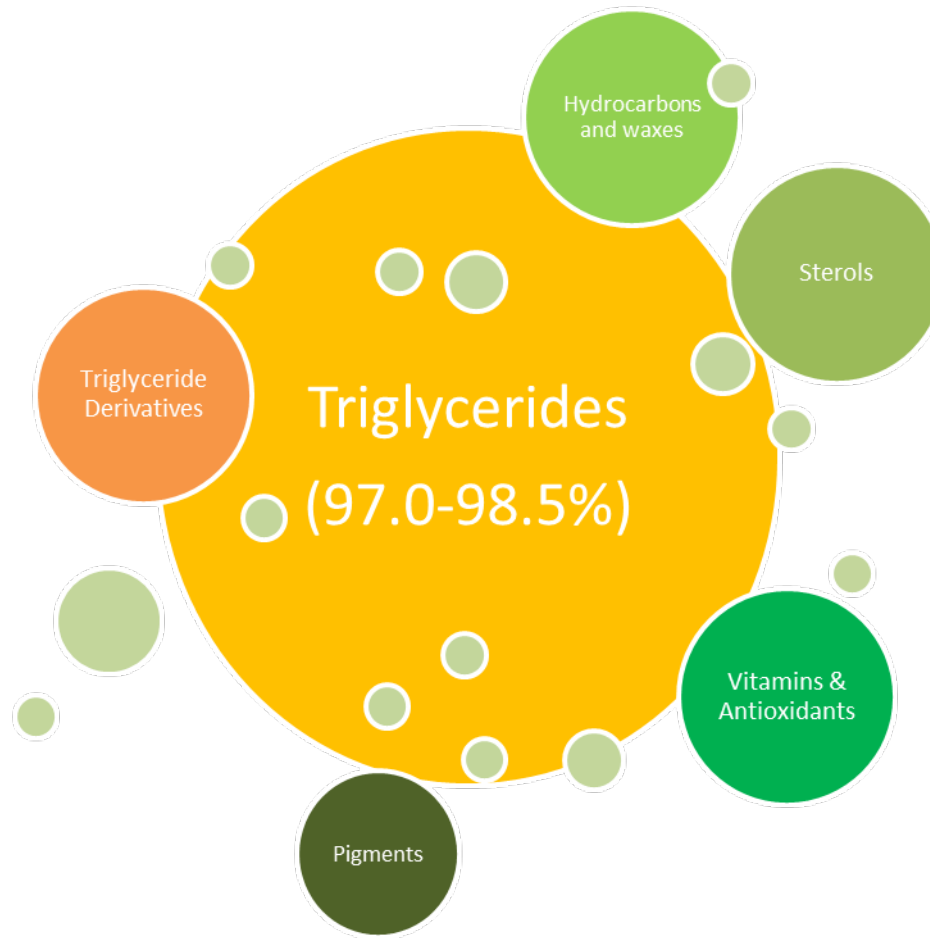
Sample	PV		Polyphenols		Induction Time		α Tocopherol	
	mEq oxygen/kg oil		mg/kg of caffeic acid		Hours		mg/kg	
	0 months	4 months	0 months	4 months	0 months	4 months	0 months	4 months
A	8	48	271	148	22.94	9.56	245	152
B	8	17	271	206	22.94	16.96	245	244
C	8	24	271	198	22.94	15.90	245	181
D	8	34	271	174	22.94	12.29	245	209
E	8	46	271	173	22.94	10.59	245	175
F	8	18	271	219	22.94	17.85	245	254
G	8	16	271	217	22.94	16.57	245	252
H	8	41	271	175	22.94	11.59	245	182
I	8	21	271	199	22.94	15.63	245	253
J	8	43	271	175	22.94	11.19	245	165
K	8	46	271	177	22.94	10.34	245	175
L	8	33	271					160



Oil Fermentation – sediment separation



Lab Testing - Extra Virgin Olive oil



Free Fatty Acids (FFA)

Provides a good indication of:

- 🕒 • the fruit condition before crushing it,
- 🫒 • the time between harvesting and crushing and
- the storage conditions of the oil (sediments).

It is an important parameter in the trade classification of olive oil.

Extra virgin olive oils must have a free acidity level under 0.8%. Nonetheless, it is expected that sound fruit processed immediately should produce oil with less than 0.4 g% FFA.

Free Fatty acids (FFA) and Sensory



- Inadequate storage of olive fruits before crushing

FERMENTATION

High FFA

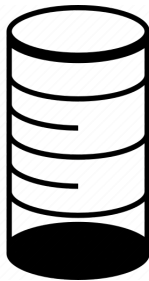
Fusty /
Musty



- Diseases (i.e., anthracnose, olive fly)

High FFA

Musty/Humid/ Grubby



- Inadequate storage of the oil (no separation of the solid and water sediments)

High FFA

Muddy
Sediment /
Winey

Peroxide Value (PV)

- Peroxides Value is the quantity of hydro peroxides present in the oil that have formed through oxidation during its processing and/or storage.
- It is the primary measurement of oils rancidity, and it gives an idea of oils' freshness and storage conditions.
- Peroxides value will increase during the first part of the life of oils, and it will then decrease in more advanced stages of oxidation when more oxidized substances are produced.

Extra virgin olive oils must show a peroxides value under 20.

It is expected that fresh and well processed oils should show peroxides value under 12.

Peroxide Value (PV) and Sensory



- Inadequate
malaxing conditions
(time, temperature)

High PV

Fusty / Cooked



- Environmental
conditions (i.e.
Frost damage)

High PV

Stewed Fruit / Wet
hay



- Inadequate storage
conditions (temp., level
of O₂, type of container)

High PV

Rancid

UV coefficients (K232, K270, DK)

- The determination of the Extinction Coefficient (conventionally indicated by K) in ultraviolet at **232** nm provides a measurement of the state of oxidation of the oils (secondary oxidation) and storage conditions, while the **K270** and **ΔK** values indicate whether or not the oil has been heat treated and/or treated with absorbent earth.

Extra virgin olive oils should have a K232 below 2.50 and K270 below 0.22 and the ΔK value within the +/- 0.01 range.

It is expected that fresh and well processed oils should show K232 values under 2.00 and K270 values under 0.18.

Oxidation Evolution

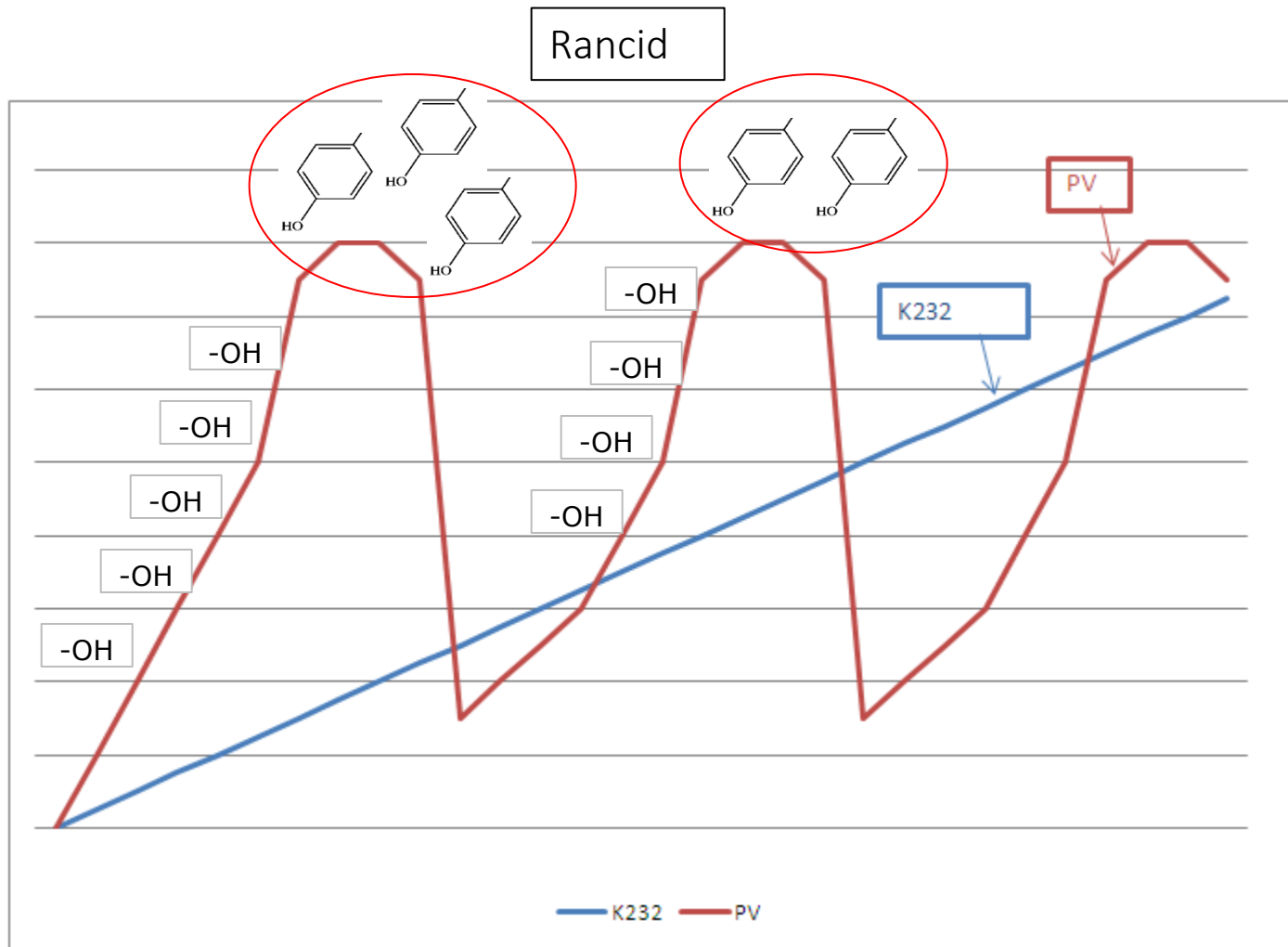


TABLE 5
QUALITY

Parameter	Extra Virgin Olive Oil	Virgin Olive Oil	Lampante olive oil (See Note)	Refined Olive Oil	Olive oil—Composed of Refined And Virgin [or Extra Virgin] Olive Oils	Crude olive-pomace oil	Refined Olive Pomace Oil	Olive-Pomace Oil—Composed of Refined Olive-Pomace Oils and Virgin [or Extra Virgin] Olive Oils
Free fatty acid content (FFA) (% m/m):	≤0.8	≤2.0	>2.0	≤0.3	≤1.0	N/A	≤0.3	≤1.0
Peroxide value (PV) (meq O ₂ /kg oil)	≤20.0	≤20.0	>20.0	≤5.0	≤15.0	N/A	≤5.0	≤15.0
Absorbency in ultraviolet	K ₂₃₂	≤2.50	≤2.60	>2.60	N/A	N/A	N/A	N/A
	K ₂₇₀	≤0.22	≤0.25	>0.25	≤1.10	≤0.90	N/A	≤1.70
	Delta K	≤0.01/	≤0.01/	>0.01/	≤0.16/	≤0.15/	N/A	≤0.18/
Moisture and volatile matter (MOI) (% m/m)	≤0.2	≤0.2	≤0.3	≤0.1	≤0.1	≤1.5	≤0.1	≤0.1
Insoluble impurities (INI) (% m/m)	≤0.1	≤0.1	≤0.2	≤0.1	≤0.1	N/A	≤0.1	≤0.1
Pyrophosphytin a (PPPs) (%)	≤17	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2-Diacylglycerols (DAGs) (%)	≥35	N/A	N/A					
Organoleptic analysis	Median of defects (MeD)	= 0.0	0.0 < MeD ≤2.5	>2.5				
	Median of fruitiness (MeF)	>0.0	>0.0	N/A				

NOTE: These criteria are not required to be concurrent for lampante olive oil, one is sufficient.

TABLE 3
STEROL AND TRITERPENE DIOLCOHOLS COMPOSITION
(Expressed as % of total sterols)

Cholesterol	≤0.5
Brassicasterol	≤0.1
Campesterol	≤4.8
Stigmasterol	≤1.9
Delta-7-stigmasterol	≤0.5
Apparent Beta-sitosterol	≥92.5
Erythrodiol + Uvaol (Olive oils)	≤4.5
Erythrodiol + Uvaol (Olive-pomace oils)	>4.5

TABLE 2
FATTY ACID COMPOSITION
(Expressed as % m/m methyl esters)

Myristic acid (C14:0)	≤0.05
Palmitic acid (C16:0)	7.0–20.0
Palmitoleic acid (C16:1)	0.3–3.5
Heptadecanoic acid (C17:0)	≤0.3
Heptadecenoic acid (C17:1)	≤0.4
Stearic acid (C18:0)	0.5–5.0
Oleic acid (C18:1)	53.0–85.0
Linoleic acid (C18:2)	2.5–22.0
Linolenic acid (C18:3)	≤1.5
Arachidic acid (C20:0)	≤0.6
Gadoleic acid (eicosenoic) (C20:1)	≤0.5
Behenic acid (C22:0)	≤0.2 (See Note)
Timosteric acid (C24:0)	<0.2

TABLE 1

GENERIC CHEMICAL COMPOSITION PARAMETERS

Parameter	Edible natural olive oils	Lampante olive oil	Refined Olive Oil	Olive Oil—Composed of Refined and Virgin [or Extra Virgin] Olive Oils	Crude olive-pomace oil	Refined Olive-Pomace Oil	Olive-Pomace Oil—Composed of Refined Olive-Pomace Oils and Virgin [or Extra Virgin] Olive Oils
Total sterol content (mg/kg)	≥1000	≥1000	≥1000	≥1000	≥2500	≥1800	≥1600
Wax content (C ₄₀ + C ₄₂ + C ₄₄ + C ₄₆) (mg/kg)	≤250	≤300 (See Note 1)	≤350	≤350	>350 (See Note 2)	>350	>350
Trans fatty acid content (% trans fatty acids)	C18:1 T %	≤0.05	≤0.10	≤0.20	≤0.20	≤0.40	≤0.40
	C18:2 T + C18:3 T %	≤0.05	≤0.10	≤0.30	≤0.30	≤0.35	≤0.35
Maximum difference between the actual and theoretical ECN 42 triacylglycerol content	≤0.2/	≤0.3/	≤0.3/	≤0.3/	≤0.6/	≤0.5/	≤0.5/
Stigmastadienes content (mg/kg)	≤0.10	≤0.50	N/A	N/A	N/A	N/A	N/A
Content of 2-glycerol monopalmitate (%)	≤1.5	≤1.5	≤1.8	≤1.8	≤2.2	≤2.2	≤2.2

NOTES:

- When the oil has a wax content between 300 mg/kg and 350 mg/kg, it is considered a lampante olive oil if the erythrodiol + uvaol content is ≤3.5% and the total aliphatic alcohol content is ≤350 mg/kg.
- When the oil has a wax content between 300 mg/kg and 350 mg/kg, it is considered a crude olive-pomace oil if the erythrodiol + uvaol content is >3.5% and the total aliphatic alcohol content is >350 mg/kg.

Regulation



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Australia New Zealand Food Standards Code – Schedule 12 – Nutrition information

In force

Administered by Department of Health, Disability and Ageing

This item is authorised by the following title:

[Food Standards Australia New Zealand Act 1991](#)

Latest version

F2017C00342 C02
13 April 2017

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Australia New Zealand Food Standards Code – Schedule 12 – Nutrition information panels – [Legislative Instrument Compilation]

Schedule 12 Nutrition information panels

Note 1 This instrument is a standard under the Food Standards Australia New Zealand Act 1991 (Cth). The standards together make up the Australia New Zealand Food Standards Code. See also section 1.1.1–1.1.3.
Note 2 This instrument is a standard for nutrition information requirements. This Standard sets out nutrition information panels for subsection 1.2.8–6(2), subsection 1.2.8–6(3), subsection 1.2.8–6(5), subsection 1.2.8–6(6), paragraph 2.6.4–5(2)(b), subsection 2.9.2–11(3) and subsection 2.10.3–5(3).
Note 3 The provisions of the Code that apply in New Zealand are incorporated in, or adopted under, the Food Act 2014 (NZ). See also section 1.1.1–1.1.3.



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Australia New Zealand Food Standards Code – Schedule 18 – Processing aids

In force

Administered by Department of Health, Disability and Ageing

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[Food Standards Australia New Zealand Act 1991](#)

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F2025C00918 C49
02 September 2025

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Schedule 18 Processing aids

Note 1 This instrument is a standard under the Food Standards Australia New Zealand Act 1991 (Cth). The standards together make up the Australia New Zealand Food Standards Code. See also section 1.1.1–1.1.3.
Substances used as processing aids are regulated by Standard 1.1.1 and Standard 1.3.3. This standard lists substances that may be used as processing aids for paragraph 1.1.2–13(3)(a) and contains permissions to use substances as processing aids for Standard 1.3.3.



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Australia New Zealand Food Standards Code – Schedule 20 – Maximum residue limits

In force

Administered by Department of Health, Disability and Ageing

This item is authorised by the following title:

[Food Standards Australia New Zealand Act 1991](#)

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F2025C00851 C84
02 September 2025

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Schedule 20 Maximum residue limits

Note This instrument is a standard under the Food Standards Australia New Zealand Act 1991 (Cth). The standards together make up the Australia New Zealand Food Standards Code. See also section 1.1.1–1.1.3.
Maximum residue limits are regulated by subsection 1.1.1–10(6) and Standard 1.4.2. This Standard identifies agvet chemicals, and their permitted residues, for the purpose of section 1.4.2–4.

S20–1

Name

This Standard is Australia New Zealand Food Standards Code – Schedule 20 – Maximum residue limits



The most important factor in quality olive oil, is everything.

Regulation



Australian Government

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Australia New Zealand Food Standards Code – Schedule 19 – Maximum levels of contaminants and natural toxicants

In force

Administered by Department of Health, Disability and Ageing

This item is authorised by the following title:

Food Standards Australia New Zealand Act 1991

Latest version

F2024C00908 C06

13 September 2024

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Schedule 19 Maximum levels of contaminants and natural toxicants

Note 1 This instrument is a standard under the Food Standards Australia New Zealand Act 1991 (Cth). The standards together make up the Australia New Zealand Food Standards Code. See also section 1.1.1–3.

Maximum levels of contaminants and natural toxicants are regulated by subsection 1.1.1–10(6) and Standard 1.4.1. This Standard lists contaminants and natural toxicants for food for subsection 1.4.1–3(1), and sets out the requirements for and method of calculating the level of mercury in fish for subsection 1.4.1–3(2).

Note 2 The provisions of the Code that apply in New Zealand are incorporated in, or adopted under, the Food Act 2014 (NZ). See also section 1.1.1–3.

S19–1

Name

Mineral oil hydrocarbons in food

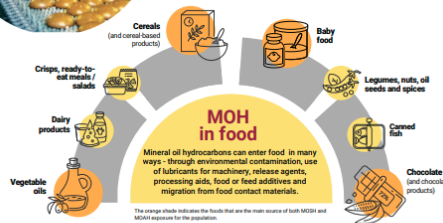


What are mineral oil hydrocarbons?

Mineral oil hydrocarbons (MOH) are a diverse group of chemical compounds mainly derived from petroleum distillation and refining.

They are divided into two main categories based on their chemical structure:

- Mineral oil saturated hydrocarbons (MOSH)
- Mineral oil aromatic hydrocarbons (MOAH)



Health impact

The potential human health impact of MOH varies widely. MOSH, which are known to accumulate in the liver and lymphoid system, do not present a public health risk at current levels of dietary exposure. One type of MOAH may contain genotoxic substances that can damage DNA in cells and may cause cancer. For substances such as these, a safe level cannot be established.



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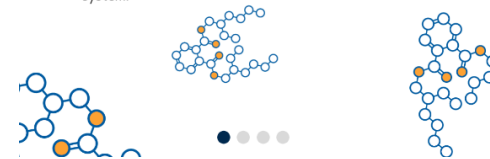
Chemical contaminants in the food chain

Published: 17 July 2

Protecting our future fathers

DEHP, DBP, DIBP and BBP

The phthalates DEHP, DBP, DIBP and BBP are chemicals added to plastics to increase their flexibility, transparency, durability, and longevity. They are toxic for reproduction and interfere with the human hormonal system.



Microplastics



Plastics make our lives easier in many ways and are often lighter or cost less than alternative materials. However, if they are not properly disposed of or recycled, they may end up in the environment where they stay for centuries and degrade into smaller and smaller pieces. These small pieces (typically smaller than 5mm) are called **microplastics** and they are of concern.

Bisphenols



Bisphenols are used to produce polymers and resins, which are then used to make plastic materials. They form a big family with many substances that have similar chemical structures and uses. Some of the most well-known ones are Bisphenol A (BPA) and Bisphenol S (BPS).

Due to their hazardous properties, the use of some bisphenols has been limited or is being limited in the EU to protect people's health and the environment.

Blending and Consistency

1 - Factors influencing EVOO characters



- Olive Variety
- Fruit maturity (time of harvesting)
- Irrigation practices
- Oil extraction system (method, temperature, etc)
- Climate / Weather
- Soil composition

Frantoio	Leccino	Barnea	Picual	Coratina	Koroneiki	Arbequina
Buttery	Caramel	Banana Fruit	Tomato fruit	Green grass	Green grass	Red apples
Floral	Toffee	Banana skin	Tomato leaves	Woody	Cut grass	Confectionary
Dried Herbs	Vanilla custard	Buttery	Tomato leaves	Cut grass	Green tomatoes	Tropical fruits
Green almonds	Condense milk	Shallots	Fig tree	Leafy	Green banana	Creamy
	Vanilla biscuits	Grassy	Cat pee	Nutty	Timber	Berries
	Cream	Woody	Overripe apples	Green almonds	Pine	Ripe fruits
		Sea weeds				

Blending and Consistency

2 - Style

- Mild or Light
- Medium
- Robust

Ripe fruits aroma. Sweet and tropical notes.
Light bitterness and pungency
Absence of any “hard” character in the
aftertaste. PPH < 150 ppm

Fruity aroma, mix of ripe and unripe fruits.
Moderate bitterness and pungency.
Moderate flavour depth on the palate
PPH: 150 – 250 ppm

Typically, “green” characters. Unripe fruits aroma.
Firm bitterness and pungency.
Real flavour depth on the palate.
PPH > 250 ppm

Packing and Distribution

Glass



PET



Tins



Bag in box



Pouches



Until when? – End of the shelf life

12.2.7 *Best-before date*

12.2.7.1 *General*

The best-before date shall be declared in accordance with the *Australia New Zealand Food Standards Code*. Edible natural olive oils, refined olive oils and olive-pomace oils shall not display a best-before date greater than two years from the date of packaging. Harvest date may also be included on the label.

12.2.7.2 *Determination of best-before date*

The best-before date shall be supported by technical evidence. Methods used to determine oil durability may include:

- (a) Oil oxidative stability index in accordance with Clause 13.20.
- (b) Fatty acid profile in accordance with Clause 13.3 and antioxidant content in accordance with Clause 13.18.

AS 5264-2011[®]

- Mandatory
- Max. 2 years

Shelf-life – BEST BEFORE DATE

Best before date is determined by the lowest of the following three estimations:

(i) Hours of induction time at 110°C × 1 = expected shelf-life (in months).

(ii) $(17.0\% - \text{PPPs}) / 0.6\% = \text{expected shelf-life (in months)}$.

(iii) $(\text{DAGs} - 35.0\%) / \text{FFA factor} = \text{expected shelf-life (in months)}$.

- FFA factor = 1.7% (if FFA < 0.4%); 2.1% (if 0.4% < FFA < 0.6%); or 2.5% (if FFA > 0.6%).

Shelf-life – BEST BEFORE DATE

Example

OIL # 1	
FFA	0.21
PPP	0.5
DAG	94.1
Defect	0.0
IND	37.2
OIL # 2	
FFA	0.45
PPP	0.5
DAG	61.5
Defect	0.0
IND	28.8

28 months

BBD (months)	
PPP	28.3
DAG	35.5

15 months

BBD (months)	
PPP	28.3
DAG	15.9

Customer services – The final dot in Quality

While production, chemical, sensory and regulatory standards define the technical excellence of EVOO, customer service ensures that excellence is understood, trusted, and valued by the consumer. It's the bridge between 'technical' and 'perception'.

Key Roles:

Education: Helping customers understand what EVOO quality means—how to taste, store, and use it.

Transparency: Providing clear information about origin, harvest date, and production methods.

Responsiveness: Addressing concerns, feedback, and questions with empathy and expertise.

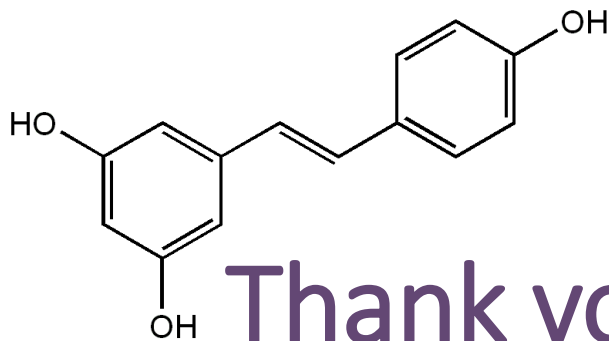
Trust-building: Reinforcing the integrity of the brand and the product through consistent, honest communication.

Why It Matters? Even the finest oil can lose its impact if the customer feels confused, misled, or unsupported.

Customer service completes the quality journey—from grove to bottle to table.



Modern
Olives



Thank you

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