

Olive Oil Analysis: Quality and Grade

Extra Virgin Olive Oil Quality parameters

International standards define virgin olive oil as obtained exclusively from olives, using mechanical or other physical means in conditions that do not alter the oil in any way, specifically excluding heating and chemical processing.

Extra Virgin olive oil is the highest quality virgin olive oil. According to current trade standards, it must have fruitiness, no organoleptic defects and must meet the following analytical criteria:

Parameter	IOC *	COOC **
Free Acidity	< 0.8 %	< 0.5 %
Peroxide	< 20	< 15
UV - K232	< 2.50	
UV - K270	< 0.22	
UV Delta K	< 0.01	

* IOC = International Olive Council

** COOC = California Olive Oil Council

Collectively, these parameters give indication of fruit quality and handling prior to processing, and of the oil's present state of oxidation.

What do these parameters measure?

Free Acidity (FFA) commonly referred to as “free fatty acid percent”. High values are an indicator of poor fruit quality or improper handling prior to milling, as free acidity arises from the hydrolytic breakdown of the oil. Free acidity is measured as free fatty acids expressed as percent of oleic acid, the predominant fatty acid in olive oil.

Peroxide Value (PV) measures the amount of primary oxidation in the oil. High values are caused by improper handling of olive fruit or olive paste. Olive oil with high peroxide value may not keep well. Peroxides are expressed as milliequivalent of free oxygen per kilogram of oil (meq O₂/kg).

Ultraviolet Absorbency (UV) is an indicator of secondary oxidation, especially in oils that have been refined. The value of UV absorbance at two different wavelengths, 232 nanometers (nm) and 270 nm, indicates the quantity of oxidized compounds present in the oil. Pomace and refined oils have higher values than virgin oils.

What analyses are required?

USDA standards require FFA, PV and UV to determine grade.

The **California Olive Oil Council (COOC)** Extra Virgin Olive Oil Certification program also requires FFA, PV and UV.

Los Angeles Extra Virgin Olive Oil International Competition requires FFA and PV.



Submitting samples

- Use 250 ml or larger bottles
- Label each sample
- Enclose submission form indicating the desired analyses:
- Pack bottles with padding to prevent breakage in transit.
- When weather is hot, consider shipping with overnight delivery to prevent damage

Photograph by fdecomite from flickr by CC 2.0