

LIST OF ACCREDITED METHODS

ZRS Koper LAB IZO

VELJAVNO

IZVOD ŠT.: 1/2

DATUM: 7.5.2025

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Summary of the methods according to the flexible scope

Flexible type	Methods	Flexibility			
		Method	Characteristic or parameter tested	Range of testing	Items tested
1	- Acidity – ISO - Peroxide value - Stigmastadienes 2-glyceryl monopalmitate	✓	✗	✓	✓
2	- Acidity – COI - UV - ΔECN42 - Biophenols	✓	✗	✓	✗
3	- Waxes - Fatty acid ethyl esters - Sterols, triterpenic dialcohols and aliphatic alcohols - Sensory evaluation	✓	✓	✓	✗
4	- Fatty acid composition - Tocopherols	✓	✓	✓	✓
Legend: ✓... possibility of introducing minor modification ✗... without changes (fixed)					

Flexible type 1: possibility of introducing additional types of test items, minor modifications to the method and to the range of testing						
No.	Identification of the document, describing the testing method	Title of standard or non-standard testing method and eventual relations to other standards or methods	Characteristic or parameter tested	Description of test (type of test, test principle or technique)	Range of testing	Items tested (materials, products)
1.	SIST EN ISO 660:2020	Animal and vegetable fats and oils - Determination of acid value and acidity	Acidity	Titration (neutralization titration)	Range: (0,03 - 3,90) wt. % (as oleic acid) Measurement uncertainty in the range (0,03 - 0,8) wt. % (expressed as absolute value, k=2): 0,03 wt. % Measurement uncertainty in the range (>0,8 - 3,90) wt. % (expressed as relative value, k=2): 3,5 %	Vegetable oils
2.	COI/T.20/Doc. No 35/Rev.1, 2017	Determination of peroxide value	Peroxide value	Titration - Iodometric (visual) endpoint determination	Range: (0,8 - 30) meq O ₂ /kg Measurement uncertainty (expressed as relative value, k=2): 15 %	Vegetable oils
3.	SIST EN ISO 3960:2017	Animal and vegetable fats and oils - Determination of peroxide value – Iodometric (visual) endpoint determination	Peroxide value	Titration - Iodometric (visual) endpoint determination	Range: (0,8 - 30) meq O ₂ /kg (0,4 - 15) mmol O ₂ /kg Measurement uncertainty (expressed as relative value, k=2): 15 %	Vegetable oils
4.	COI/T.20/Doc. No 11/Rev. 4, June 2021, Part A: reference method	Determination of stigmastadienes in vegetables oils	Stigmastadienes content	Saponification, solvent extraction of unsaponifiable matter, separation of steroid hydrocarbons by liquid column chromatography, determination by GC-FID	Range: (0,01 - 4) mg/kg Measurement uncertainty (expressed as relative value, k=2): 12%	Vegetable oils
5.	COI/T.20/Doc. No 23/Rev. 1, 2017	Determination of the percentage of 2-glycerol monopalmitate	Percentage of 2-glycerol monopalmitate	Cleaning of the oil with SPE, specific hydrolysis with lipase, determination of percentage of 2-glycerol monopalmitate by GC-FID	Range: (0,2 - 7,5) % Measurement uncertainty (expressed as relative value, k=2): 12 %	Vegetable oils that are liquid at 20 °C

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Flexible type 2: possibility of introducing minor modifications to the method and to the range of testing

No.	Identification of the document, describing the testing method	Title of standard or non-standard testing method and eventual relations to other standards or methods	Characteristic or parameter tested	Description of test (type of test, test principle or technique)	Range of testing	Items tested (materials, products)
6.	COI/T.20/Doc. No 34/Rev. 1, 2017	Determination of free fatty acids, cold method	Acidity	Titration (neutralization titration)	Range: (0,03 - 3,90) wt. % (as oleic acid) Measurement uncertainty in the range (0,03 - 0,8) wt. % (expressed as absolute value, $k=2$): 0,03 wt. % Measurement uncertainty in the range (>0,8 - 3,90) wt. % (expressed as relative value, $k=2$): 2,8 %	Olive oils and olive pomace oils
7.	COI/T.20/Doc. No 19/Rev. 5, 2019	Spectrophotometric investigation in the ultraviolet	Specific extinction at 232 nm (K_{232}) Specific extinction at 268 nm (K_{268}) Variation of the specific extinction (ΔK)	Spectrophotometric investigation in the ultraviolet	Range: K_{232} : (1,40 - 2,90) K_{268} : (0,090 - 1,400) ΔK : (-0,005 - 0,200) K_{232} : Measurement uncertainty (expressed as relative value, $k=2$): 6 % K_{268} : Measurement uncertainty (expressed as relative value, $k=2$): 9 % ΔK : Measurement uncertainty (expressed as relative value, $k=2$): 39 %	Olive oils
8.	COI/T.20/Doc. No 20/Rev. 4, 2017	Determination of the difference between actual and theoretical content of triacylglycerols with ECN 42	Absolute difference between actual and theoretical content of triacylglycerols with equivalent carbon number 42 ($\Delta ECN42$)	Gas and liquid chromatography (HPLC), calculation	Range: 0,01 - 2 Measurement uncertainty in the range (0,01- 0,05) (expressed as relative value, $k=2$): 95 % Measurement uncertainty in the range (>0,05 - 2) (expressed as relative value, $k=2$): 16 %	Olive oils
9.	COI/T.20/Doc. No 29/Rev. 2, June 2022, Method of analysis No 1	Determination of biophenols in olive oils by HPLC	Total biophenols	Liquid-liquid extraction, determination by HPLC-DAD at 280 nm	Range: (77 - 991) mg/kg (as tyrosol) Measurement uncertainty (expressed as relative value, $k=2$): 12 %	Olive oils

Flexible type 3: possibility of introducing additional parameters, minor modifications to the method and to the range of testing						
No.	Identification of the document, describing the testing method	Title of standard or non-standard testing method and eventual relations to other standards or methods	Characteristic or parameter tested	Description of test (type of test, test principle or technique)	Range of testing	Items tested (materials, products)
10.	CO/IT.20/Doc. No 28/Rev. 4 November 2024, Method A	Determination of the content of waxes and fatty acid ethyl esters by capillary gas chromatography	Waxes content $C_{40}+C_{42}+C_{44}+C_{46}$ $C_{42}+C_{44}+C_{46}$ Fatty acid ethyl esters content	Fractionation with column chromatography, determination by GC-FID	Range: Waxes ($C_{42}+C_{44}+C_{46}$): (35–500) mg/kg Waxes ($C_{40}+C_{42}+C_{44}+C_{46}$): (65–2000) mg/kg Fatty acid ethyl esters: (6–800) mg/kg Measurement uncertainty for waxes (expressed as relative value, $k=2$): 14 % ($C_{40}+C_{42}+C_{44}+C_{46}$) 15 % ($C_{42}+C_{44}+C_{46}$) Measurement uncertainty for fatty acid ethyl esters (expressed as relative value, $k=2$): 19 %	Olive oils

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No.	Identification of the document, describing the testing method	Title of standard or non-standard testing method and eventual relations to other standards or methods	Characteristic or parameter tested	Description of test (type of test, test principle or technique)	Range of testing	Items tested (materials, products)
11.	COI/T.20/ Doc. No 26/Rev. 5, June 2020	Determination of the composition and content of sterols, triterpenic dialcohols and aliphatic alcohols by capillary column gas chromatography	Content and composition of sterols, triterpenic dialcohols and aliphatic alcohols: • Cholesterol • Brassicasterol • 24-methylene- cholesterol • Campesterol • Campestanol • Stigmasterol • Δ-7-campesterol • Δ-5,23- stigmasteradienol • Clerosterol • β-sitosterol • Sitostanol • Δ-5-avenasterol • Δ-5,24- stigmasteradienol • Δ-7-stigmasterol • Δ-7-avenasterol • Apparent β- sitosterol • Total sterols • Erythrodiol and uvaol • Total aliphatic alcohols	Saponification, solvent extraction of unsaponifiable matter with diethyl ether, separation of sterol and triterpenic dialcohols or aliphatic alcohols by thin-layer chromatography, derivatization into trimethylsilyl ethers, determination by GC- FID	Range is given in parenthesis, measurement uncertainty (expressed as relative value, $k=2$) is given in square bracket. Cholesterol: (0.04 - 5) % [48 %] Brassicasterol: (0.01 - 5.5) % [54 %] 24-methylene-cholesterol: (0.08 - 0.8) % [36 %] Campesterol: (2 - 21) % [4, 5 %] Campestanol: (0.03 - 0.5) % [76 %] Stigmasterol: (0.2 - 18) % [15 %] Δ -7-campesterol: (0.04 - 1.2) % [81 %] Δ -5,23-stigmasteradienol: (0.02 - 1) % [93 %] Clerosterol: (0.6 - 1.3) % [10 %] β -sitosterol: (50 - 90) % [0, 7 %] Sitostanol: (0.2 - 2) % [13 %] Δ -5-avenasterol: (2 - 24) % [12 %] Δ -5,24-stigmasteradienol: (0.3 - 2.1) % [28 %] Δ -7-stigmasterol: (0.1 - 6.5) % [26 %] Δ -7-avenasterol: (0.2 - 2) ut. % [15 %] Apparent β -sitosterol: (56 - 97) % [0, 5 %] Total sterols: (650 - 4000) mg/kg [7 %] Erythrodiol and uvaol: (0.9 - 20) % [22 %] Erythrodiol: (10 - 112) mg/kg [22 %] Total aliphatic alcohols (80 - 1400) mg/kg [29 %]	Olive oils, olive pomace oils and blends of these two oils

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No.	Identification of the document, describing the testing method	Title of standard or non-standard testing method and eventual relations to other standards or methods	Characteristic or parameter tested	Description of test (type of test, test principle or technique)	Range of testing	Items tested (materials, products)
12.	COI/T.20/Doc. No 15/Rev. 11, June 2024	Method for the organoleptic assessment of virgin olive oil	Sensory characteristics: • Fruity • Bitter • Pungent • Fusty/muddy sediment • Musty/humid/earthy • Winey/vinegary, acid/sour • Frostbitten olives (wet wood) • Rancid • Sensory category	Determination of sensory descriptors intensifies with panel of sensory assessors of virgin olive oil	Range: 0 - 10	Virgin olive oils

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Flexible type 4: possibility of introducing additional parameters, additional types of tested items, minor modifications to the method and to the range of testing

No.	Identification of the document, describing the testing method	Title of standard or non-standard testing method and eventual relations to other standards or methods	Characteristic or parameter tested	Description of test (type of test, test principle or technique)	Range of testing	Items tested (materials, products)
13.	COI/T.20/Doc. No 33/Rev. 1, 2017	Determination of fatty acid methyl esters by gas chromatography	Fatty acid composition C 14:0 C 16:0 C 16:1 C 17:0 C 17:1 C 18:0 C 18:1 C 18:2 C 18:3 C 20:0 C 20:1 C 22:0 C 24:0 trans-C 18:1 trans-C 18:2 trans-C 18:3 (trans-C 18:2 + trans-C 18:3)	Cold transesterification and determination of fatty acid methyl esters by GC-FID	Range is given in parenthesis, measurement uncertainty (expressed as relative value, k=2) is given in square bracket. C 14:0 (0,01 - 20) [23 %] C 16:0 (3 - 30) [2,2 %] C 16:1 (0,10 - 4) [3,4 %] C 17:0 (0,04 - 0,6) [9,2 %] C 17:1 (0,05 - 0,3) [11 %] C 18:0 (1,5 - 35) [5,5 %] C 18:1 (0,2 - 86) [0,26 %] C 18:2 (0,1 - 71) [1,7 %] C 18:3 (0,1 - 11) [8,1 %] C 20:0 (0,1 - 2) [5,1 %] C 20:1 (0,1 - 1,5) [12 %] C 22:0 (0,08 - 3) [14 %] C 24:0 (0,04 - 1,5) [14 %] trans-C 18:1 (0,009 - 0,2) [47 %] trans-C 18:2 (0,007 - 0,25) [27 %] trans-C 18:3 (0,007 - 0,35) [8,7 %] (trans-C 18:2 + trans-C 18:3) (0,01 - 0,7) [48 %]	Vegetable oils

Flexible type 4: possibility of introducing additional parameters, additional types of tested items, minor modifications to the method and to the range of testing						
No.	Identification of the document, describing the testing method	Title of standard or non-standard testing method and eventual relations to other standards or methods	Characteristic or parameter tested	Description of test (type of test, test principle or technique)	Range of testing	Items tested (materials, products)
14.	SIST EN ISO 12966-4:2015	Animal and vegetable fats and oils – Gas chromatography of fatty acid methyl esters – Part 4: Determination by capillary gas chromatography	Fatty acid composition C 14:0 C 16:0 C 16:1 C 17:0 C 17:1 C 18:0 C 18:1 C 18:2 C 18:3 C 20:0 C 20:1 C 22:0 C 24:0 trans-C 18:1 trans-C 18:2 trans-C 18:3 (trans-C 18:2 + trans-C 18:3)	Cold transesterification and determination of fatty acid methyl esters by GC-FID	Range is given in parenthesis, measurement uncertainty (expressed as relative value, k=2) is given in square bracket. C 14:0 (0,01 - 20) [23 %] C 16:0 (3 - 30) [2,2 %] C 16:1 (0,10 - 4) [3,4 %] C 17:0 (0,04 - 0,6) [9,2 %] C 17:1 (0,05 - 0,3) [11 %] C 18:0 (1,5 - 35) [5,5 %] C 18:1 (0,2 - 86) [0,26 %] C 18:2 (0,1 - 71) [1,7 %] C 18:3 (0,1 - 11) [8,1 %] C 20:0 (0,1 - 2) [5,1 %] C 20:1 (0,1 - 1,5) [12 %] C 22:0 (0,08 - 3) [14 %] C 24:0 (0,04 - 1,5) [14 %] trans-C 18:1 (0,009 - 0,2) [47 %] trans-C 18:2 (0,007 - 0,25) [27 %] trans-C 18:3 (0,007 - 0,35) [8,7 %] (trans-C 18:2 + trans-C 18:3) (0,01 - 0,7) [48 %]	Vegetable oils

Flexible type 4: possibility of introducing additional parameters, additional types of tested items, minor modifications to the method and to the range of testing						
No.	Identification of the document, describing the testing method	Title of standard or non-standard testing method and eventual relations to other standards or methods	Characteristic or parameter tested	Description of test (type of test, test principle or technique)	Range of testing	Items tested (materials, products)
15.	SIST EN ISO 9936:2016	Animal and vegetable fats and oils – Determination of tocopherol and tocotrienol contents by high-performance liquid chromatography	Tocopherol content Alpha tocopherol Beta tocopherol Gamma tocopherol Delta tocopherol	Determination by high-performance liquid chromatography with fluorescence detector	Range is given in parenthesis, measurement uncertainty (expressed as relative value, k=2) is given in square bracket. Alpha tocopherol (3 - 39) mg/kg [11 %] (39 - 2220) mg/kg [6 %] Beta tocopherol (3 - 35) mg/kg [13 %] (35 - 2220) mg/kg [9 %] Gamma tocopherol (3 - 36) mg/kg [13 %] (36 - 2220) mg/kg [9 %] Delta tocopherol (3 - 44) mg/kg [11 %] (44 - 2220) mg/kg [9 %]	Vegetable oils