LIST OF ACCREDITED METHODS

ZRS Koper LAB IZO
VELJAVNO
IZVOD ŠT.: 1/2
DATUM: 16.10.2023

		Date:	Signature:
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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-glyceryl monopalmitate*	*Percentage of 2-glyceryl monopalmitate*	*Cleaning of the oil with SPE, specific hydrolysis with lipase, determination of percentage of 2-glyceryl 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*

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 (ΔECN42)*	*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*

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)*
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.	*COI/T.20/Doc. No 28/Rev. 3, November 2022, 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:* (50 - 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*

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)*
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-stigmastadienol* • *Clerosterol* • *β-sitosterol* • *Sitostanol* • *Δ-5-avenasterol* • *Δ-5,24-stigmastadienol* • *Δ-7-stigmastenol* • *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-stigmastadienol:* *(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-stigmastadienol:* *(0,3 - 2,1) % [28 %]* *Δ-7-stigmastenol:* *(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*

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)*
12.	COI/T.20/Doc. No 15/Rev. 10, 2018	*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 intensities with panel of sensory assessors of virgin olive oil*	*Range:* *0 - 10*	*Virgin olive 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)*
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 fluorecsenece 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*