CODEX ALIMENTARIUS COMMISSION E

Food and Agriculture Organization of the United Nations

World Health Organization

Viale delle Terme di Caracalla, 00153 Rome, Italy - Tel: (+39) 06 57051 - E-mail: codex@fao.org - www.codexalimentarius.org

Agenda Item 4.2 **CX/FO 21/27/4**

June 2021

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON FATS AND OILS

Twenty-Seventh Session

Virtual, 18 – 22 October 2021

PROPOSED DRAFT REVISION TO THE STANDARD FOR NAMED VEGETABLE OILS (CXS 210-1999) (Sunflowerseed oil - Revision of refractive index, saponification value, iodine values and relative density)

(Step 3)

(Prepared by the Electronic Working Group[1] chaired by Argentina and co-chaired by Brazil)

Codex members and observers wishing to submit comments, at Step 3, on the proposed draft revised provisions for sunflowerseed oil in CXS 210-1999 (see Appendix I to this report) should do so as instructed in CL 2021/27/OCS-FO available on the Codex webpage/Circular Letters 2021:
http://www.fao.org/fao-who-codexalimentarius/resources/circular-letters/en/

Background

1. The 26th Session of the Codex Committee on Fats and Oils (CCFO26), held in Kuala Lumpur, Malaysia, from February 25 to March 1, 2019, decided to establish the following ranges for oleic and linoleic acids in sunflowerseed oil:

Fatty acid	GLC ranges of fatty acid composition (expressed as percentages)
Oleic acid (C18:1)	14.0 - 43.0
Linoleic acid (C18:2)	45.4 - 74.0

2. Following the introduction of these modifications, CCFO26 noted that the refractive index, saponification value, iodine value, and relative density should be reviewed for this category, and appropriate values for these parameters should be proposed and established an electronic working group (EWG) for this purpose.

Terms of Reference

3. CCFO26 agreed to establish an EWG, chaired by Argentina and co-chaired by Brazil, with the mandate:

   i. to collect, analyse, and review data for refractive index, saponification value, iodine value, and relative density, propose appropriate values for these parameters; and

   ii. prepare an EWG report for submission to the Codex Secretariat.

4. CCFO26 also agreed to request the Codex Secretariat to issue a Circular Letter (CL) calling for data and information on the parameters mentioned above;

Participation and methodology

5. To collect the necessary data for the analysis, the Codex Secretariat sent, in July 2019, CL 2019/53-FO to which five (5) Codex members and one observer provided data and information i.e. Argentina, Brazil, Peru, Japan, China, and FEDIOL.

6. Twenty members and three observers responded to the invitation to participate in the EWG (See Footnote 1).

Summary discussion

Methods of analysis

7. The Circular Letter requested that the indexes should be determined according to the following methods recommended in Standard CXS 210-1999.

[1] Argentina, Brazil, Canada, China, Egypt, France, Germany, Hungary, India, Italy, Malaysia, Mexico, Peru, the United Kingdom, the Russian Federation, Spain, Thailand, the United States of America, Uruguay, Yemen, USP, FEDIOL and ICGMA

Parameter	Method of analysis
Refractive index:	ISO 6320:2000; or AOCS Cc 7-25 (02)
Saponification value:	ISO 3657:2002; or AOCS Cd 3-25 (03)
Iodine value:	Wijs - ISO 3961:1996; or AOAC 993.20; or AOCS Cd 1d-1992 (97); or NMKL 39(2003)
Relative density:	IUPAC 2.101, with the appropriate conversion factor.

Statistical analysis

8. In case these methods were not used, this should be specified, and the change should be justified. Brazil did so and indicated that the iodine values were obtained with AOCS Cd 1c-85 and the saponification index data by AOCS Cd 3a-94, which are simpler and faster practices recommended and published by AOCS.

9. From the data received, those of oils outside the values of fatty acids corresponding to this category in CXS 210-1999 and the values of oleic and linoleic acids established in the last CCFO session were discarded, leaving 112 samples that met the requirements

10. These 112 samples accounted for the following results:

Parameter	Number of results
Refractive index	26
Saponification value	86
Iodine value	112
Relative density	31

11. It was not possible to include the responses of China and FEDIOL in the statistical analysis because they have just indicated the ranges of fatty acids and other parameters and not the results individually nor the number of samples analysed.

12. The statistical analysis included identifying the upper and lower values, the weighted mean of the values, and the standard deviations. The values found were the following:

Parameter	Lower value	Upper value	Mean	Standard deviation
Refractive index	1.466	1.475	1.468	0.003
Saponification value	173	195	191	2.888
Iodine value	109	135	126	3.432
Relative density	0.916	0.923	0.919	0.001

Saponification value and Iodine value

13. Some values, such as the lower saponification value (173) and the iodine value (109), were discarded because they presented a mean-related deviation several times higher than the standard deviation. So, the next minimum value was proposed as the lower value, which in case of saponification value is 187 and with regard to iodine value, is 118. So based on this information and considering the upper value of the data received falls within the current range, it is not necessary to change the current range for iodine value in the standard.

14. Regarding saponification value, although the upper value was 195, it represents only one sample and thus the recommendation is to keep the current value (194).

Refractive Index

15. In the case of the refractive index, although the lower value was 1.466, the recommendation is to keep the current value, 1.461. Regarding upper value, Japan and Peru presented values between 1.472 and 1.475, so these countries were asked if the values had been obtained at 40°C as requested. Peru replied that this had been the case, so it remains to be determined whether the upper limit of the refractive index is established at 1.468 as established by the current Codex standard or if it should be modified to 1.475.

Conclusion and recommendation

16. Based on the data analysis above, the EWG proposes the draft revised values for the parameters under evaluation (**Appendix I)** for consideration by CCFO27.

Appendix I

PROPOSED DRAFT REVISION TO THE STANDARD FOR NAMED VEGETABLE OILS (CXS 210-1999)
(Sunflowerseed oil - Revision of refractive index, saponification value, iodine values and relative density)

(Step 3)

3. CHEMICAL AND PHYSICAL CHARACTERISTICS

Chemical and Physical Characteristics are given in Table 2.

Table 2: Chemical and physical characteristics of crude vegetable oils (see Appendix of the Standard)

Parameter	Current values	Proposed values
Refractive index	1.461 -1.468	1.461 – [1.468] or [1.475]
Saponification value	188 - 194	[187] - 194
Iodine value	118 - 141	118 -141
Relative density	0.918 - 0.923	[0.916] - 0.923