METROLOGY SERVICE

50006
Перевірка
професійного рівня

Director
Metrology service Ltd.

Bozhko Nataliia
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PROFICIENCY TESTING PT.UA.3.1.2017

VEGETABLE OIL (QUALITY)

PROFICIENCY TESTING REPORT

ROUND 10 APRIL 2026

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2. SUMMARY

2.1. The purpose of proficiency testing in vegetable oil testing is to demonstrate the laboratory's competence (as described in ISO/IEC 17043:2023[1]) and improve the reliability of test results.

2.2. This proficiency testing involves the use of inter-laboratory comparisons to confirm the performance of individual laboratories' abilities and/or identify areas of improvement. Current PT scheme is registered in the EPTIS database.

2.3. This is the final report on the PT.UA.3.1.2017 Round 10 held in April 2026. This report is issued according to ISO/IEC 17043[1] and PT.UA.3.1.2017 Round 9 Programme. The report is issued in two languages – Ukrainian and English. English should be considered as the basic language of the report. Both versions of this report can be found at: http://www.metrologyservice.com.ua

2.4. A total of 37 participants have reported. Their results are presented in the next clauses.

2.5. Technical experts list and/or subcontractors for this round can be provided to the Participant by request.

2.6. Any calculations, formulas, raw and intermediate data used in this round can be provided to the Participant by request, except confidential information about other participants and information that may contain commercial secret.

2.7. If the Participant does not agree with the proficiency testing results or has any comments on the Provider's work, one can submit a complaint or appeal within 10 days. More information on the complaint procedure can be found at https://www.metrologyservice.com.ua/ or by contacting the Provider.

2.8. The Provider declares that all results presented in this report are confidential. Each participant is identified by a unique number assigned to them based on their registration application for each round of the program separately. This number is confidential information and may only be disclosed at the participant's request

2.9. Where applicable, the metrological traceability of assigned values is ensured, as confirmed by the use of measurement equipment properly calibrated in accordance with current EA and NAAU policies.

2.10. The uncertainty of the assigned values (for quantitative evaluation) may be provided upon the participant's request.

2.11. All users of this report are prohibited from copying or reproducing it, in whole or in part, without the written consent of the Provider.

2.12. Provider is accredited by NAAU in accordance with the requirements of ISO/IEC 17043. The list of parameters is specified in the scope of accreditation, which can be found on the website https://www.metrologyservice.com.ua/ or obtained upon request from the Provider.

2.13. Clause 9 of this report is for information purposes only. Data is taken from voluntary part of the Participants' reports. Provider did not assess any results based in this data.

3. GENERAL PROTOCOL FOR PROFECIENCY TESTING

3.1. MANAGEMENT SYSTEM.

3.1.1. The functioning management system of Metrology Service Ltd. (further - Provider) complies with ISO/IEC 17043[1] requirements and covers all aspects of proficiency testing (further - PT) for all proficiency tests.

3.2. SAMPLES PREPARATION, HOMOGENITY AND STABILITY

3.2.1. Provider has used ППТ 7.3.1 procedure and appropriate technical experts and contractors for the samples' selection, production, homogenization and division designs that is proved to be satisfactory for the purposes of PT programme PT.UA.3.1.2017 Round 10. Details of test material preparation and homogenization are not published in the report, though can be provided to the Participant by request. Tests, required to prove (validate) homogeneity and stability of samples were performed by competent contracting laboratories according to [1]. These results with statistics are published in the report.

3.2.2. Participants may contact the Provider to request details of test material selection, preparation, homogenization and division of those test material samples, for which they tested in PT. Such information can be provided to the Participant in confidence and only if it cannot compromise other Participants and/or is not a commercial secret.

3.2.3. During sample preparation, all necessary procedures (where applicable) were performed, such as the removal of impurities. A sample preparation report can be provided upon request.

3.3. DISPATCH AND RECEIPT OF SAMPLES

3.3.1. Samples of test material – **sunflower oil (Sample A), fat of natural origin (Sample B) and rapeseed oil (Sample B)** were dispatched 23.03.2026 according to schedule of proficiency testing programme PT.UA.3.1.2017 Round 10.

3.3.2. Each produced and identified sample was sealed in a PET bottle.

3.3.3. A total of 36 participants **from 5 countries** received one sample (Sample A). 6 participants, according to their applications, additionally received samples of rapeseed oil (Sample D). 4 participants, according to their applications, additionally received samples of fat (Sample B). Results were returned from 37 participants.

3.3.4. The samples were shipped to participants via the commercial delivery service "Nova Poshta" LLC , delivery outside of Ukraine was performed by courier delivery service.

3.4. FOLLOW-UP SERVICES

3.4.1. If a participant wishes to obtain advice/consultation on any aspect of their performance, one should contact the Provider. Provider can (with agreement with Participant) pass on the Participant's inquiry to a technical expert and/or contracting laboratory.

3.4.2. Surplus samples from this round are available for sale as certified reference materials (CRM) with the certified values and uncertainties. Please email Provider for details.

3.5. PERFORMANCE ASSESMENT

3.5.1. The current PT for detection methods (qualitative methods) express participants' results as either «Satisfactory(S)» or «Not satisfactory (NS)» as compared to the intended result. The assessment is based on the correct detection in all the samples provided according to the best practices [1].

3.5.2. For quantification methods (quantitative methods) Provider express Participant's results as traditional z-scores according to [1]. The assigned value for each analyte was calculated as the robust mean of the trial data using Huber H15 method [2] or Algorithm A variation, Annex C.3 [4].

3.5.3 The target standard deviation for each analyte was chosen from either the appropriate form of the Horwitz equation, method trial standard deviation (if stated in the method from inter-laboratory comparisons), standard deviation from the previous trials (PT rounds), or the robust trial standard deviation, after the removal of outliers. The choice was made using current industry practices used in other collaborative trials and proficiency testing schemes.

3.5.4. z-Scores were deemed satisfactory if $|z| \leq 2$. z-Scores were deemed questionable if $2 < |z| \leq 3$(marked yellow in tables). If $|z| > 3$, the results were considered to be unsatisfactory (marked red in tables). The calculations were made according to [1,3,5]. Provider recommends corrective actions if $|z| > 3$ and preventive actions if $2 < |z| \leq 3$.

3.5.5. Only 2,21% (11 results) of all results in this round are considered to be unsatisfactory. 3,18% (15 results) of all results were deemed unsatisfactory in Round 9.

3.5.6. The results for the parameter «Absence of soap» are considered by the Provider as qualitative for «ДСТУ 6048:2008, p. 8» because the limit of detection for «ДСТУ 6048:2008, p. 8 is «0.02%», the mean value of the homogeneity test, and the participants' results confirmed that the result is less than «0.02%». The results of the participants were assessed by the Provider as "Satisfactory (S)".

3.5.7. Participant №2 provided the result for Sample A for «Phosphorus content, mg/kg (ppm)» according to «Метод розроблений лабораторією» instead of the «ISO 10540-1:2003/ДСТУ ISO 10540-1:2014» proposed by the Provider. This result was assessed by the Provider Provider but was not taken into account when calculating robust mean and robust SD.

3.5.8. Participant №7 provided the result for Sample A for «Phosphorus content, mg/kg (ppm)» according to «ДСТУ 7082:2009» instead of the «ISO 10540-1:2003/ДСТУ ISO 10540-1:2014» proposed by the Provider. This result was assessed by the Provider Provider but was not taken into account when calculating robust mean and robust SD.

3.5.9. Participant №11 provided the results for Sample A for: «Insoluble impurities content, %» according to the method «ISO 663:2000» instead of the «ISO 663:2017 (reference method)/ ДСТУ EN ISO 663:2019 (EN ISO 663:2017, IDT; ISO 663:2017, IDT)/ ДСТУ 5063:2008» proposed by the Provider,

«Acid value, mg KOH/g» according to «Titulimetria – ME-26» instead of the «ISO 660:2020/ДСТУ EN ISO 660:2019 (EN ISO 660:2009, IDT; ISO 660:2009, IDT)/ ДСТУ 4350:2004» proposed by the Provider,

«Free fatty acids, %» according to «Titulimetria – ME-26» instead of the «ISO 660:2020/ДСТУ EN ISO 660:2019 (EN ISO 660:2009, IDT; ISO 660:2009, IDT)/ AOCS Official Method Ca 5a-40:2017» proposed by the Provider,

«Peroxide value, meq of active oxygen/kg» according to «Titulimetria - Regulamento de Execução (UE) 2022/2105 - Anexo I - COI/T.20/ Doc. N.º 35 e suas alterações» instead of the «ISO 3960:2017/ДСТУ EN ISO 3960:2019 (EN ISO 3960:2017, IDT; ISO 3960:2017, IDT)» proposed by the Provider,

«Saponification value, mg KOH/g» according to «NP 973» instead of the «ISO 3657:2023/ ДСТУ ISO 3657:2004 ДСТУ 4604:2006» proposed by the Provider,

«Unsaponifiable matter, % (Without amendment on the free fatty acids)» according to «Método de extração pelo éter etílico - NP 3583» instead of the «ISO 3596:2000/ ДСТУ ISO 3596:2004)» proposed by the Provider,

«Density at 20°C, g/cm³» according to «ME-328.» instead of the (ДСТУ 4633:2006)» proposed by the Provider,

«Refractive index (20°C)» according to «ME-219.» instead of the «(ISO 6320:2017/ ДСТУ EN ISO 6320:2022 (EN ISO 6320:2017, IDT; ISO 6320:2017, IDT))» proposed by the Provider,

«Phosphorus content, mg/kg (ppm)» according to «Molecular absorption spectrophotometry» instead of the «AOCS Official Method Ca 12a-02:2017)» proposed by the Provider. These results were assessed by the Provider but were not taken into account when calculating robust mean and robust SD.

3.5.10. Participant №12 provided the result for Sample A for «Iodine value, g/100g (According ДСТУ 4569:2006 use Wijs method)» according to «метод Гюбля» instead of the «ISO 3961:2024 (reference method)/ ДСТУ EN ISO 3961:2019 (EN ISO 3961:2018, IDT; ISO 3961:2018, IDT)/ ДСТУ 4569:2006 p.9.3.2 (Wijs method)» proposed by the Provider. This result was assessed by the Provider Provider but was not taken into account when calculating robust mean and robust SD.

3.5.11. For the parameter «Flash point at closed cup, °C (ДСТУ 4455:2005)» Participant №14 and Participant №26 reported result as «>225», Participant №16 and Participant №17 reported result as «вище 225», Participant №18 reported result as «>225(no flash)». Due to the robust mean and target PT standard deviation, which was selected from the results of interlaboratory comparisons published in the method, these results were assessed as “Satisfactory (S)”.

3.5.12. Results for parameter Sample A “Transparency” were not assessed by the Provider due to significant inconsistency in the data provided by the participants. Corresponding columns are not presented in the tables.

4. HOMOGENITY AND STABILITY ASSESMENT

4.1. Qualitative methods.

4.1.1. Samples were testes for homogeneity and stability after blending, preparation, packing and identification by selecting five samples (Sample A) of material of all produced. All these samples (Sample A) were tested under repeatability conditions as only 46 samples (Sample A) were produced according to [6]. All samples for stability and homogeneity testing were stored in appropriate conditions in the preparation and reporting of this round.

4.1.2. Homogeneity and stability were deemed satisfactory only if 100% of results are identical with intended results, i.e. with “Satisfactory (S)” result.

4.1.3. Homogeneity and stability for ISO 15267:1998/ДСТУ ISO 15267:2008 "Flash" or "No flash" at 121 °C

Sample N	Method: ISO 15267:1998/ ДСТУ ISO 15267:2008	Test result	Satisfactory/ Not satisfactory
	"Flash" or "No flash" at 121 °C		
1	"Flash" or "No flash" at 121 °C	No flash at 121 °C	«Satisfactory (S)»
2	"Flash" or "No flash" at 121 °C	No flash at 121 °C	«Satisfactory (S)»
3	"Flash" or "No flash" at 121 °C	No flash at 121 °C	«Satisfactory (S)»
4	"Flash" or "No flash" at 121 °C	No flash at 121 °C	«Satisfactory (S)»
5	"Flash" or "No flash" at 121 °C	No flash at 121 °C	«Satisfactory (S)»

Homogeneity and stability confirmed by 100% of satisfactory results.

4.1.4. Homogeneity and stability for ДСТУ 6048:2008, п.8 Absence of soap

Sample N	Method: ISO 15267:1998/ ДСТУ ISO 15267:2008	Test result	Satisfactory/ Not satisfactory
	Absence/present of soap		
1	Absence/present of soap	<0,02*	«Satisfactory (S)»
2	Absence/present of soap	<0,02*	«Satisfactory (S)»
3	Absence/present of soap	<0,02*	«Satisfactory (S)»
4	Absence/present of soap	<0,02*	«Satisfactory (S)»
5	Absence/present of soap	<0,02*	«Satisfactory (S)»

* limit of Quantification

Homogeneity and stability confirmed by 100% of satisfactory results.

4.1.5. Homogeneity and stability for ДСТУ 8842:2019, Transparency

Sample N	Method: ДСТУ 8842:2019	Test result	Satisfactory/ Not satisfactory
	Transparency		
1	Transparency	Ttransparent	«Satisfactory (S)»
2	Transparency	Ttransparent	«Satisfactory (S)»
3	Transparency	Ttransparent	«Satisfactory (S)»
4	Transparency	Ttransparent	«Satisfactory (S)»
5	Transparency	Ttransparent	«Satisfactory (S)»

Homogeneity and stability confirmed by 100% of satisfactory results.

4.1.6. Homogeneity and stability for ДСТУ 8842:2019, Odor and taste

Sample N	Method: ДСТУ 8842:2019	Test result	Satisfactory/ Not satisfactory
	Odor and taste		
1	Odor and taste	Inherent sunflower oil	«Satisfactory (S)»
2	Odor and taste	Inherent sunflower oil	«Satisfactory (S)»
3	Odor and taste	Inherent sunflower oil	«Satisfactory (S)»
4	Odor and taste	Inherent sunflower oil	«Satisfactory (S)»
5	Odor and taste	Inherent sunflower oil	«Satisfactory (S)»

Homogeneity and stability confirmed by 100% of satisfactory results.

4.2. Quantitative methods.

4.2.1 Samples were assessed for homogeneity and stability after blending and packing by selecting five (Sample A) samples of material at random from all those produced. Three (Sample A) of these samples were tested in duplicate under repeatability conditions as only 46 (Sample A) and 14 (Sample B, Sample D) samples were produced according to [7]. Two (Sample A) other samples for stability tests were stored in appropriate conditions for the period of preparation and reporting for this round. They were also tested in duplicate.

4.2.2 Statistical analysis of the resulting data for homogeneity and stability was carried out using the industry standard Cochran's 'C' test and analytical variance test for 'sufficient homogeneity' according to [3] or Annex B.2[4].

4.2.3 Produced samples were found to be sufficiently homogeneous and stable for every analyte according to programme, except for those that can be considered equivalent or homogeneity can be assumed from other analyte homogeneity.

4.2.4 Moisture and volatile matter content, % (ISO 662:2016 (reference method)/ ДСТУ ISO 662:2004)

Moisture and volatile matter content, %			ISO 662:2016 (reference method)/ ДСТУ ISO 662:2004							
Дослідження гомогенності/Homogenity test										
Аналіз викидів за тестом Кохрана(С -тест)/Cohran's C test for outliers						Аналіз на 'достатню однорідність'/Test for 'sufficient homogenity'				
Номер зразку/ Sample number	Результат/ Result A	Результат/ Result B	Average	SD²		Номер зразку /Sample number	Результат/ Result A	Результат/ Result B	SUM	Difference²
1	0,11	0,09	0,10	0,00	0,00	1	0,11	0,09	0,20	0,0001
2	0,09	0,09	0,09	0,00	0,00	2	0,09	0,09	0,18	0,0000
3	0,09	0,09	0,09	0,00	0,00	3	0,09	0,09	0,18	0,0000
4	0,09	0,09	0,09	0,00	0,00	4	0,09	0,09	0,18	0,0000
5	0,09	0,09	0,09	0,00	0,00	5	0,09	0,09	0,18	0,0000
										0,0001
Mean	0,091		Worst pair	0,0001		Mean	0,091			
Max	0,11		SUM of SD²	0,0001		Max	0,11			
Min	0,09		C	0,8288		Min	0,09			
			Ccr, 5%	0,8413						
			Ccr, 1%	0,9279		Analytical variance S²an	0,0000	SD	0,0052	
			Conclusion			Sanal	0,0038	RSDR	5,7247	
			5%	PASS		Ssums	0,0001			
			1%	PASS		MSb	0,0000			
					Between sample variance S²sam		0,0000			
Remarks										
1. Cohran's C test is described in ISO 5727-2 and ISO 13528:2022										
2. Test for 'sufficient homogenity' is performed according to Annex B ISO 13528:2022										

Source of σp value to use		
Use(write '1')	Source	σp
	C>13.8%, HORWITZ	0,0302
1	120ppb<C<13.8%, HORWITZ	0,0052
	C<120 ppb	0,0201
MASS NEGATIVE POWER FOR HORWITZ EQUATION(%=2, ppb=9,ppm=6)		2
	SD	0,0050
	Trial SD	0,0300
	Target SD chosen	0,0052
	σ²all	0,0000
	Replicates	5
	F1	2,372
	F2	2,096
	Critical value	0,00004
	Between sample variance S²sam	0,00001
	Sufficient homogenity test	PASS

4.6.1 Data for all analytes

	ISO 662:2016 (reference method)/ ДСТУ ISO 662:2004	ISO 663:2017 (reference method)/ ДСТУ EN ISO 663:2019 (EN ISO 663:2017, IDT; ISO 663:2017, IDT)/ ДСТУ 5063:2008	ISO 660:2020/ ДСТУ EN ISO 660:2019 (EN ISO 660:2009, IDT; ISO 660:2009, IDT)/ ДСТУ 4350:2004	ISO 3960:2017/ ДСТУ EN ISO 3960:2019 (EN ISO 3960:2017, IDT; ISO 3960:2017, IDT)	ISO 3961:2024 (reference method)/ ДСТУ EN ISO 3961:2019 (EN ISO 3961:2018, IDT; ISO 3961:2018, IDT)/ ДСТУ 4569:2006 p.9.3.2 (Wijs method)	ISO 6885:2016/ ДСТУ EN ISO 6885:2019 (EN ISO 6885:2016, IDT; ISO 6885:2016, IDT)	ISO 3657:2023/ ДСТУ ISO 3657:2004/ ДСТУ 4604:2006	ISO 18609:2000/ ДСТУ ISO 18609:2004	ISO 6883:2017/ ДСТУ EN ISO 6883:2019 (EN ISO 6883:2017, IDT; ISO 6883:2017, IDT)
	Moisture and volatile matter content, %	Insoluble impurities content, %	Acid value, mg KOH/g	Peroxide value, meq of active oxygen/kg	Iodine value, g/100g (According ДСТУ 4569:2006 use Wijs method)	Anisidine value	Saponification value, mg KOH/g	Unsaponifiable matter, % (Without amendment on the free fatty acids)	Conventional mass per volume at 20°C, g/ml
Homogenity and stability (Гомогенність та стабільність)									
Cohran's 'C' test (С-тест "Кохрана")									
Crtitical value (5%,5pairs)=0,8412	0,82880	N/A	0,7191	0,6557	0,4218	0,6207	0,4310	0,4978	0,4000
Mean Result	0,09140	0,0200	1,2330	9,4360	118,4540	1,4560	190,5600	0,7424	0,9168
Conclusion (Висновок)	PASS	N/A	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Analytical variance test (тест аналітичної дисперсії)									
S^2anal	0,00001	0,0000	0,0009	0,0061	0,0882	0,0006	0,0580	0,0007	0,0000
Sanal	0,00382	0,0000	0,0298	0,0781	0,2970	0,0241	0,2408	0,0269	0,0001
S^2sample	0,0000	0,0000	0,0000	0,0411	0,2615	0,0015	0,0403	0,0000	0,0000
σ_p	0,00520	0,0014	0,0676	0,9450	1,4200	0,4090	2,0000	0,0311	0,0007
σ_p source	Horwitz	Horwitz	Horwitz	Method Tr SD	Method Tr SD	Trial SD	Method Tr SD	Horwitz	Method Tr SD
σ^2all	0,000002	0,0000002	0,0004	0,0804	0,1815	0,0151	0,3600	0,0001	0,00000004
Critical value	0,000036	0,0000004	0,0028	0,2034	0,6154	0,0369	0,9755	0,0017	0,00000013
Conclusion (Висновок)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

	ISO 6320:2017/ ДСТУ EN ISO 6320:2022 (EN ISO 6320:2017, IDT; ISO 6320:2017, IDT)	ISO 15305:1998 (reference method)	ISO 15305:1998	ДСТУ 4568:2006	ДСТУ 4455:2005	ISO 10540-1:2003/ ДСТУ ISO 10540-1:2014	Laboratory choice	ISO 15301:2001/ ДСТУ EN ISO 15301:2019 (EN ISO 15301:2001, IDT; ISO 15301:2001, IDT)	ISO 6884:2008/ ДСТУ ISO 6884:2002
	Refractive index (20°C)	Lovibond colour - Red (5,25 inch cell), Lovibond units	Lovibond colour - Yellow (5,25 inch cell), Lovibond units	Color number on a scale of iodine standard solutions, mg I_2 in 100cm³	Flash point at closed cup, °C	Phosphorus content, mg/kg (ppm)	Dynamic viscosity at 20°C, mPa*s	Sediment, ml/100g oil	Ash yield, %
Homogenity and stability (Гомогенність та стабільність)									
Cohran's 'C' test (С-тест "Кохрана")									
Crtitical value (5%,5pairs)=0,8412	N/A	0,5625	0,3769	N/A	0,2432	0,5599	0,5614	0,8065	0,4060
Mean Result	1,4730	3,6800	32,4000	10,0000	238,9000	55,6660	65,2000	0,2860	0,0181
Conclusion (Висновок)	N/A	PASS	PASS	N/A	PASS	PASS	PASS	PASS	PASS
Analytical variance test (тест аналітичної дисперсії)									
S^2anal	0,0000	0,0160	3,2500	0,0000	3,7000	0,0643	0,0011	0,0012	0,0000
Sanal	0,0000	0,1265	1,8028	0,0000	1,9235	0,2536	0,0338	0,0352	0,0005
S^2sample	0,0000	0,0000	0,0000	0,0000	0,0000	0,3636	0,0051	0,0000	0,0000
σ_p	0,0003	0,4800	13,5770	2,0000	3,4390	4,8630	1,5000	0,0138	0,0013
σ_p source	Method Tr SD	Trial SD	Trial SD	Trial SD	Trial SD	Horwitz	Trial SD	Horwitz	Horwitz
σ^2all	0,00000001	0,0207	16,5901	0,3600	1,0644	2,128433	0,2025	0,00002	0,0000002
Critical value	0,00000002	0,0827	46,1630	0,8539	10,2802	5,183277	0,4827	0,00264	0,0000010
Conclusion (Висновок)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

5. DATA SUMMARY
5.1 Sample A

Method	ISO 662:2016 (reference method)/ ДСТУ ISO 662:2004	AOCS Official Method Ca 2c-25:2017	ДСТУ 4603:2006, p.8	ISO 663:2017 (reference method)/ ДСТУ EN ISO 663:2019 (EN ISO 663:2017, IDT; ISO 663:2017, IDT)/ ДСТУ 5063:2008	AOCS Official Method Ca 3a-46:2017	ISO 660:2020/ ДСТУ EN ISO 660:2019 (EN ISO 660:2009, IDT; ISO 660:2009, IDT)/ ДСТУ 4350:2004	ISO 660:2020/ ДСТУ EN ISO 660:2019 (EN ISO 660:2009, IDT; ISO 660:2009, IDT)/ AOCS Official Method Ca 5a-40:2017	ДСТУ 5062:2008	ISO 3960:2017/ ДСТУ EN ISO 3960:2019 (EN ISO 3960:2017, IDT; ISO 3960:2017, IDT)	ДСТУ 4570:2006	ISO 3961:2024 (reference method)/ ДСТУ EN ISO 3961:2019 (EN ISO 3961:2018, IDT; ISO 3961:2018, IDT)/ ДСТУ 4569:2006 p.9.3.2 (Wijs method)	AOCS Official Method Cd 1d-92:2021
	Moisture and volatile matter content, %	Moisture and volatile matter content, %	Moisture and volatile matter content, %	Insoluble impurities content, %	Insoluble impurities content, %	Acid value, mg KOH/g	Free fatty acids, %	Free fatty acids, %	Peroxide value, meq of active oxygen/kg	Peroxide value, ½ O mmol/kg	Iodine value, g/100g (According ДСТУ 4569:2006 use Wijs method)	Iodine value, g/100g
No of Results	24	5	19	26	3	34	20	6	16	26	10	2
No of Results |z|>3 or NS	0	0	0	1	0	3	0	0	1	0	0	0
No of Results |z|>3, % or NS,%	0,000	0,000	0,000	3,846	0,000	8,824	0,000	0,000	6,250	0,000	0,000	0,000
Mean	0,079	0,070	0,073	0,024	0,017	1,260	0,615	0,602	10,968	11,174	116,349	116,600
Min	0,048	0,050	0,039	0,005	0,010	1,130	0,580	0,580	2,300	9,300	112,950	114,000
Max	0,160	0,090	0,110	0,130	0,020	1,683	0,660	0,640	12,860	12,320	119,000	119,200
SD	0,026	0,019	0,021	0,023	0,006	0,123	0,024	0,021	2,482	0,812	1,873	3,677
Median	0,080	0,060	0,080	0,020	0,020	1,225	0,610	0,596	11,515	11,040	116,018	116,600
Robust mean (assigned value)	0,077	0,070	0,074	0,020	0,017	1,229	0,615	0,598	11,423	11,211	116,489	116,600
Robust SD	0,020	0,019	0,020	0,007	0,006	0,067	0,023	0,015	1,027	0,741	1,813	3,677
SD from method (Tr.SD)	0,03	N/A	N/A	N/A	N/A	0,05	0,031	N/A	0,945	N/A	1,42	N/A
SD from Horwitz eq.	0,005	0,004	0,004	0,001	0,001	0,067	0,026	0,026	N/A	N/A	N/A	N/A
Target SD	0,030	0,019	0,020	0,007	0,006	0,067	0,026	0,051	0,945	0,910	1,420	1,894
Source of target SD of PT	Method Tr SD	Trial SD	Trial SD	Trial SD	Trial SD	Horwitz	Horwitz	Trial SD	Method Tr SD	Trial SD	Method Tr SD	Trial SD

Method	ISO 6885:2016/ ДСТУ EN ISO 6885:2019 (EN ISO 6885:2016, IDT; ISO 6885:2016, IDT)	AOCS Official Method Cd 18-90:2017	ISO 3657:2023/ ДСТУ ISO 3657:2004/ ДСТУ 4604:2006	AOCS Official Method Cd 3-25:2017	ISO 18609:2000/ ДСТУ ISO 18609:2004	ISO 3596:2000/ ДСТУ ISO 3596:2004	ДСТУ 6050:2008	ДСТУ 6048:2008, p.8	ISO 6883:2017/ ДСТУ EN ISO 6883:2019 (EN ISO 6883:2017, IDT; ISO 6883:2017, IDT)	AOCS Official Method Cc 10c-95:2017	ДСТУ 4633:2006	ISO 6320:2017/ ДСТУ EN ISO 6320:2022 (EN ISO 6320:2017, IDT; ISO 6320:2017, IDT)	ISO 15305:1998 (reference method)
	Anisidine value	Anisidine value	Saponification value, mg KOH/g	Saponification value, mg KOH/g	Unsaponifiable matter, % (Without amendment on the free fatty acids)	Unsaponifiable matter, % (Without amendment on the free fatty acids)	Unsaponifiable matter, % (Without amendment on the free fatty acids)	Absence of soap	Conventional mass per volume at 20°C, g/ml	Conventional mass per volume at 20°C, g/ml	Density at 20°C, g/cm³	Refractive index (20°C)	Lovibond colour - Red (5,25 inch cell), Lovibond units
No of Results	8	3	7	3	3	7	6	8	10	2	12	9	12
No of Results |z|>3 or NS	0	0	0	0	0	0	0	0	1	0	1	0	0
No of Results |z|>3, % or NS,%	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	10,0000	0,0000	8,3333	0,0000	0,000
Mean	1,431	1,443	191,582	190,000	0,640	0,732	0,649		0,9167	0,9167	0,9171	1,4729	3,967
Min	0,800	0,800	190,000	189,000	0,580	0,680	0,610		0,9144	0,9166	0,9127	1,4725	3,400
Max	1,810	1,800	196,265	191,000	0,720	0,770	0,690		0,9180	0,9168	0,9186	1,4731	4,800
SD	0,410	0,558	2,209	1,000	0,072	0,035	0,037		0,0009	0,0001	0,0016	0,0002	0,398
Median	1,507	1,730	191,000	190,000	0,620	0,740	0,649		0,9168	0,9167	0,9175	1,4730	3,950
Robust mean (assigned value)	1,434	1,443	191,299	190,000	0,640	0,735	0,649		0,9168	0,9167	0,9176	1,4730	3,947
Robust SD	0,404	0,558	1,130	1,000	0,072	0,037	0,037		0,0004	0,0001	0,0007	0,0001	0,316
SD from method (Tr.SD)	N/A	N/A	2	N/A	N/A	N/A	N/A		0,0007	N/A	N/A	0,0003	1
SD from Horwitz eq.	N/A	N/A	4,907	4,879	0,027	0,031	0,028		N/A	N/A	N/A	N/A	N/A
Target SD	0,404	0,388	2,000	1,000	0,125	0,142	0,066		0,0007	0,0002	0,001	0,0003	0,480
Source of target SD of PT	Trial SD	Trial SD	Method Tr SD	Trial SD	Trial SD	Trial SD	Trial SD		Method Tr SD	Trial SD	Trial SD	Method Tr SD	Trial SD

Method	AOCS Official Method Cc-13e-92:2017	ISO 15305:1998	ISO 15305:1998	ISO 15305:1998	ДСТУ 4568:2006	ISO 15267:1998/ ДСТУ ISO 15267:2008	ДСТУ 4455:2005	ISO 10540-1:2003/ ДСТУ ISO 10540-1:2014	AOCS Official Method Ca 12a-02:2017	ДСТУ 7082:2009
	Lovibond colour - Red (5,25 inch cell), Lovibond units	Lovibond colour - Yellow (5,25 inch cell), Lovibond units	Lovibond colour - Red (1 inch cell), Lovibond units	Lovibond colour - Yellow (1 inch cell), Lovibond units	Color number on a scale of iodine standard solutions, mg I2 in 100cm³	"Flash" or "No flash" at 121 °C	Flash point at closed cup, °C	Phosphorus content, mg/kg (ppm)	Phosphorus content, mg/kg (ppm)	Mass fraction of phosphorus-containing substances in recalculation to stearooleolecithin, %
No of Results	2	8	7	7	18	10	11	16	4	22
No of Results |z|>3 or NS	0	0	0	0	0	0	0	0	1	0
No of Results |z|>3, % or NS,%	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	25,000	0,000
Mean	3,700	45,313	1,514	20,371	10,794		238,667	56,355	49,365	0,150
Min	3,400	30,000	1,300	13,000	9,000		235,000	48,000	35,460	0,080
Max	4,000	70,000	1,900	27,000	15,000		245,000	72,000	56,000	0,188
SD	0,424	16,016	0,227	5,307	1,659		3,882	5,368	9,413	0,022
Median	3,700	38,450	1,600	23,000	10,000		238,000	55,350	53,000	0,150
Robust mean (assigned value)	3,700	43,915	1,500	20,371	10,294		238,432	55,203	54,000	0,150
Robust SD	0,424	13,577	0,200	5,307	0,513		3,439	3,019	2,000	0,011
SD from method (Tr.SD)	N/A	6	N/A	N/A	N/A		N/A	9	N/A	N/A
SD from Horwitz eq.	N/A	N/A	N/A	N/A	N/A		N/A	4,829	4,739	0,008
Target SD	0,263	13,577	0,200	5,307	2,000		3,439	9,000	4,739	0,037
Source of target SD of PT	Trial SD	Trial SD	Trial SD	Trial SD	Trial SD		Trial SD	Method Tr SD	Horwitz	Trial SD

Method	Laboratory choice	ISO 15301:2001/ ДСТУ EN ISO 15301:2019 (EN ISO 15301:2001, IDT; ISO 15301:2001, IDT)	ISO 6884:2008/ ДСТУ ISO 6884:2002	ДСТУ 5064:2008	ДСТУ 8842:2019
	Dynamic viscosity at 20°C, mPa*s	Sediment, ml/100g oil	Ash yield, %	Mass fraction of ash, %	Odor and taste
No of Results	2	8	5	5	15
No of Results |z|>3 or NS	0	0	0	1	0
No of Results |z|>3, % or NS,%	0,000	0,000	0,000	20,000	0,000
Mean	67,550	0,316	0,018	0,043	
Min	65,300	0,220	0,014	0,017	
Max	69,800	0,400	0,022	0,100	
SD	3,182	0,057	0,004	0,036	
Median	67,550	0,300	0,018	0,023	
Robust mean (assigned value)	67,550	0,318	0,018	0,029	
Robust SD	3,182	0,049	0,004	0,019	
SD from method (Tr.SD)	N/A	0,138	N/A	N/A	
SD from Horwitz eq.	N/A	0,015	0,001	0,002	
Target SD	1,500	0,138	0,003	0,014	
Source of target SD of PT	Trial SD	Method SD	Trial SD	Trial SD	

5.2 Sample B

Method	ДСТУ 4463:2005/ ДСТУ EN ISO 6321:2019/ ISO 6321:2021
	Melting point, °C
No of Results	4
No of Results |z|>3 or NS	0
No of Results |z|>3, % or NS,%	0,000
Mean	23,575
Min	22,400
Max	25,000
SD	1,072
Median	23,450
Robust mean (assigned value)	23,575
Robust SD	1,072
SD from method (Tr.SD)	N/A
SD from Horwitz eq.	N/A
Target SD	1,072
Source of target SD of PT	Trial SD

5.3 Sample D

Method	ISO 662:2016 (reference method)/ ДСТУ ISO 662:2004	ISO 663:2017 (reference method)/ ДСТУ EN ISO 663:2019 (EN ISO 663:2017, IDT; ISO 663:2017, IDT)/ ДСТУ 5063:2008	ISO 660:2020/ ДСТУ EN ISO 660:2019 (EN ISO 660:2009, IDT; ISO 660:2009, IDT)/ ДСТУ 4350:2004	ISO 3960:2017/ ДСТУ EN ISO 3960:2019 (EN ISO 3960:2017, IDT; ISO 3960:2017, IDT)	ISO 3961:2024 (reference method)/ ДСТУ EN ISO 3961:2019 (EN ISO 3961:2018, IDT; ISO 3961:2018, IDT)/ ДСТУ 4569:2006 p.9.3.2 (Wijs method)	ISO 3657:2023/ ДСТУ ISO 3657:2004/ ДСТУ 4604:2006	ДСТУ 4633:2006	ISO 6320:2017/ ДСТУ EN ISO 6320:2022 (EN ISO 6320:2017, IDT; ISO 6320:2017, IDT)
	Moisture and volatile matter content, %	Insoluble impurities content, %	Acid value, mg KOH/g	Peroxide value, meq of active oxygen/kg	Iodine value, g/100g (According ДСТУ 4569:2006 use Wijs method)	Saponification value, mg KOH/g	Density at 20°C, g/cm³	Refractive index (20°C)
No of Results	6	6	6	6	3	3	5	4
No of Results |z|>3 or NS	0	0	0	0	0	0	0	1
No of Results |z|>3, % or NS,%	0,000	0,000	0,000	0,000	0,000	0,000	0,00000	25,00000
Mean	0,078	0,019	0,966	6,968	109,400	189,933	0,91664	1,47177
Min	0,040	0,010	0,880	6,500	107,200	188,800	0,91560	1,46929
Max	0,100	0,030	1,037	7,750	111,000	191,000	0,91720	1,47300
SD	0,022	0,009	0,053	0,575	1,970	1,102	0,00062	0,00168
Median	0,080	0,017	0,965	6,705	110,000	190,000	0,91680	1,47240
Robust mean (assigned value)	0,081	0,019	0,969	6,968	109,400	189,933	0,91674	1,47260
Robust SD	0,018	0,009	0,047	0,575	1,970	1,102	0,0004	0,00036
SD from method (Tr.SD)	0,03	N/A	N/A	0,927	1,4	1,8	N/A	0,00027
SD from Horwitz eq.	0,005	0,001	0,055	N/A	N/A	4,878	N/A	N/A
Target SD	0,030	0,009	0,055	0,927	1,400	1,800	0,0004	0,00027
Source of target SD of PT	Method Tr SD	Trial SD	Horwitz	Method Tr SD	Method Tr SD	Method Tr SD	Trial SD	Method Tr SD

Method	ISO 15305:1998	ISO 15305:1998	ДСТУ 4568:2006	ISO 10540-1:2003/ ДСТУ ISO 10540-1:2014	ДСТУ 7082:2009	Laboratory choice	ISO 15301:2001/ ДСТУ EN ISO 15301:2019 (EN ISO 15301:2001, IDT; ISO 15301:2001, IDT)	AOCS Cc 13k-13:2017	ISO 10539:2002
	Lovibond colour - Red (1 inch cell), Lovibond units	Lovibond colour - Yellow (1 inch cell), Lovibond units	Color number on a scale of iodine standard solutions, mg I2 in 100cm³	Phosphorus content, mg/kg (ppm)	Mass fraction of phosphorus-containing substances in recalculation to stearooleolecithin, %	Dynamic viscosity at 20°C, mPa*s	Sediment, ml/100g oil	Chlorophyll pigment content, %	Alkalinity, mg/kg
No of Results	3	3	6	5	5	3	4	3	2
No of Results |z|>3 or NS	0	0	0	1	0	0	0	0	0
No of Results |z|>3, % or NS,%	0,000	0,000	0,000	20,000	0,000	0,000	0,000	0,000	0,000
Mean	3,500	38,200	37,500	141,978	0,342	71,130	0,225	11,733	44,075
Min	3,400	32,000	30,000	105,000	0,200	69,900	0,170	11,600	42,000
Max	3,600	43,300	50,000	216,190	0,550	72,090	0,330	12,000	46,150
SD	0,100	5,730	7,583	43,862	0,130	1,120	0,071	0,231	2,934
Median	3,500	39,300	37,500	122,700	0,300	71,400	0,200	11,600	44,075
Robust mean (assigned value)	3,500	38,200	36,978	123,425	0,330	71,130	0,225	11,733	44,075
Robust SD	0,100	5,730	6,594	16,446	0,106	1,120	0,071	0,231	2,934
SD from method (Tr.SD)	N/A	N/A	N/A	20,5	N/A	N/A	0,26	N/A	N/A
SD from Horwitz eq.	N/A	N/A	N/A	9,565	0,016	1,497	0,011	0,324	3,988
Target SD	0,100	5,730	6,594	20,500	0,106	1,497	0,260	0,324	3,988
Source of target SD of PT	Trial SD	Trial SD	Trial SD	Method Tr SD	Trial SD	Horwitz	Method Tr SD	Horwitz	Horwitz

6. RAW DATA
6.1. Sample A

Method	ISO 662:2016 (reference method)/ ДСТУ ISO 662:2004	AOCS Official Method Ca 2c-25:2017	ДСТУ 4603:2006, p.8	ISO 663:2017 (reference method)/ ДСТУ EN ISO 663:2019 (EN ISO 663:2017, IDT; ISO 663:2017, IDT)/ ДСТУ 5063:2008	AOCS Official Method Ca 3a-46:2017	ISO 660:2020/ ДСТУ EN ISO 660:2019 (EN ISO 660:2009, IDT; ISO 660:2009, IDT)/ ДСТУ 4350:2004	ISO 660:2020/ДСТУ EN ISO 660:2019 (EN ISO 660:2009, IDT; ISO 660:2009, IDT)/ AOCS Official Method Ca 5a-40:2017	ДСТУ 5062:2008
Laboratory number	Moisture and volatile matter content, %	Moisture and volatile matter content, %	Moisture and volatile matter content, %	Insoluble impurities content, %	Insoluble impurities content, %	Acid value, mg KOH/g	Free fatty acids, %	Free fatty acids, %
1	0,10	0,09	0,08	0,02	0,02	1,28	0,64	
2	0,10		0,09	0,019		1,17	0,59	
3	0,08					1,36		
4	0,08000					1,30000	0,62000	
5	0,09			0,018		1,22	0,61	
6	0,048			0,010		1,180	0,610	
7	0,106		0,100	0,020		1,230		
8	0,048			0,01		1,16	0,63	
9			0,0700	0,0157		1,4800		
10	0,05			0,01		1,26	0,63	
11		0,0900000		0,1300000		1,6830000	0,6000000	
12	0,07000			0,02920		1,17000	0,59000	
13	-	-	0,04	-	-	1,3	-	-
14	0,06	0,06	0,08	0,04	-	1,3	0,66	-
15	0,16000			0,02000		1,30000		
16	0,08		0,08			1,29	0,61	
17	0,08000	-	0,08000	0,020000	-	1,33000	0,66000	-
18	0,05	0,05	0,05	0,01	0,01	1,26	0,64	0,64
19			0,05000			1,17066		
20	0,06	0,06	0,06	0,03	0,02	1,20	0,61	0,60
21	0,103		0,096	0,03		1,174	0,590	0,591
22	0,07			0,03		1,19	0,599	
23			0,05			1,54		
24			0,095	0,005		1,212		0,609
25	0,08	-	-	0,02	-	1,15	0,58	-
26	0,06	-	-	0,02	-	1,14	0,58	0,58
27	0,10			0,02		1,14		
28	0,07						0,61	
29	0,10	-	0,11	0,024	-	1,17	-	0,589
30	0,06			0,017			0,64	
31			0,065	0,02		1,13		
32			0,039	0,0213		1,258		
33						1,15000		
34			0,07			1,42		
35				0,024		1,21600		
36			0,09			1,3		
37								

Method	ISO 3960:2017/ ДСТУ EN ISO 3960:2019 (EN ISO 3960:2017, IDT; ISO 3960:2017, IDT)	ДСТУ 4570:2006	ISO 3961:2024 (reference method)/ ДСТУ EN ISO 3961:2019 (EN ISO 3961:2018, IDT; ISO 3961:2018, IDT)/ ДСТУ 4569:2006 p.9.3.2 (Wijs method)	AOCS Official Method Cd 1d-92:2021	ISO 6885:2016/ ДСТУ EN ISO 6885:2019 (EN ISO 6885:2016, IDT; ISO 6885:2016, IDT)	AOCS Official Method Cd 18-90:2017	ISO 3657:2023/ ДСТУ ISO 3657:2004/ ДСТУ 4604:2006	AOCS Official Method Cd 3-25:2017	ISO 18609:2000/ ДСТУ ISO 18609:2004	ISO 3596:2000/ ДСТУ ISO 3596:2004	ДСТУ 6050:2008
Laboratory number	Peroxide value, meq of active oxygen/kg	Peroxide value, ½ O mmol/kg	Iodine value, g/100g (According ДСТУ 4569:2006 use Wijs method)	Iodine value, g/100g	Anisidine value	Anisidine value	Saponification value, mg KOH/g	Saponification value, mg KOH/g	Unsaponifiable matter, % (Without amendment on the free fatty acids)	Unsaponifiable matter, % (Without amendment on the free fatty acids)	Unsaponifiable matter, % (Without amendment on the free fatty acids)
1	10,65	10,80	118,8	119,2	1,55	1,73	190,5	191,0	0,72	0,75	0,69
2	12,28	12,19									
3		11,34									
4	12,31000										
5	12,27										
6											
7	12,650	12,290								0,680	
8											
9		9,9500									
10	2,3										
11	11,7300000						190,0100000			0,7120000	
12		10,90000	115,90000								
13	-	9,3	-	-	-	-	-	-	-	-	-
14	-	11,8	119	-	-	-	-	-	-	-	-
15		12,10000	116,00000								
16	10,80	10,65									
17	10,36000	11,08000	118,00000	-	1,40000	-	-	-	-	-	-
18	10,87	10,80	115	-	0,8	0,8	191	189	-	0,77	0,61400
19		10,79433									
20	12,04	10,98	115	114	1,81	1,80	190	190	0,58	0,70	0,61
21	10,13	10,84	112,95		1,81		191,0			0,74	0,62
22	12,49										
23		12,28									
24		12,05	116,035		0,835		196,265				0,677
25	-	11,98	-	-	1,776	-	-	-	-	-	0,68
26	11,30	11,30	116,80	-	-	-	192,30	-	0,62	-	-
27	12,86										
28	10,45										
29	-	11,0	-	-	-	-	-	-	-	-	-
30											
31		11,28									
32		10,582									
33		10,10000									
34		11,73									
35		12,32000			1,46300					0,77000	
36		10,1									
37											

Method	ДСТУ 6048:2008, p.8	ISO 6883:2017/ ДСТУ EN ISO 6883:2019 (EN ISO 6883:2017, IDT; ISO 6883:2017, IDT)	AOCS Official Method Cc 10c-95:2017	ДСТУ 4633:2006	ISO 6320:2017/ ДСТУ EN ISO 6320:2022 (EN ISO 6320:2017, IDT; ISO 6320:2017, IDT)	ISO 15305:1998 (reference method)	AOCS Official Method Cc-13e-92:2017	ISO 15305:1998	ISO 15305:1998	ISO 15305:1998	ДСТУ 4568:2006	ISO 15267:1998/ ДСТУ ISO 15267:2008
Laboratory number	Absence of soap	Conventional mass per volume at 20°C, g/ml	Conventional mass per volume at 20°C, g/ml	Density at 20°C, g/cm³	Refractive index (20°C)	Lovibond colour - Red (5,25 inch cell), Lovibond units	Lovibond colour - Red (5,25 inch cell), Lovibond units	Lovibond colour - Yellow (5,25 inch cell), Lovibond units	Lovibond colour - Red (1 inch cell), Lovibond units	Lovibond colour - Yellow (1 inch cell), Lovibond units	Color number on a scale of iodine standard solutions, mg I_2 in 100cm³	"Flash" or "No flash" at 121 °C
1	<0.02	0,9168		0,9173	1,4730	3,80		35,0	1,6	15,0	10	No flash
2												
3					1.47285						10.0	
4												
5												
6												
7											11,100	
8												
9												Не спалахне
10	<0,02					4,3		70,0	1,6	23,6		
11	not detected	0,9144000		0,9127000	1,4731400	3,9000000		40,9000000				
12												
13	-	-	-	-	-	-	-	-	-	-	-	-
14	-	0,9165	-	0,9186	-	3,7	-	-	1,6	24	9	Не спалахнула
15	відсутнє											
16				0,9181	1,4725	4,0					11,0	не спалахне
17	-	0,91675	-	0,91745	-	3,40000	-	30,00000	1,30000	17,00000	10,00000	не спалахує
18	-	0,9168	0,9168	0,9178	-	3,4	3,4	34,0	1,3	13	10 (еталон №12)	>121 (no flash)
19												
20	absent	0,9165	0,9166	0,9170	1,4731	4,0	4,0	46,6	1,3	23,0	15	no flash
21	відсутність			0,916	1,473						14,0	
22				0,9160	1,47312						10,0	
23											13,70	
24	відсутнє				1,4730	4,0					10	
25	-	0,918	-	-	-	-	-	-	-	-	10	-
26	Відсутнє	0,9170	-	0,9176	1,4728	4,8	-	70,0	-	-	10,0	Не спалахнуло
27											10	Не спалахне
28						3,9						
29	-	0,9176	-	0,9183	-	-	-	-	-	-	10,0	не спалахне
30												
31												
32						4,40		36,0	1,90	27,0	10,5	
33												
34				0,9180								
35		0,91650									10,00000	
36												
37												

Method	ДСТУ 4455:2005	ISO 10540-1:2003/ ДСТУ ISO 10540-1:2014	AOCS Official Method Ca 12a-02:2017	ДСТУ 7082:2009	Laboratory choice	ISO 15301:2001/ ДСТУ EN ISO 15301:2019 (EN ISO 15301:2001, IDT; ISO 15301:2001, IDT)	ISO 6884:2008/ ДСТУ ISO 6884:2002	ДСТУ 5064:2008
Laboratory number	Flash point at closed cup, °C	Phosphorus content, mg/kg (ppm)	Phosphorus content, mg/kg (ppm)	Mass fraction of phosphorus-containing substances in recalculation to stearooleolecithin, %	Dynamic viscosity at 20°C, mPa*s	Sediment, ml/100g oil	Ash yield, %	Mass fraction of ash, %
1	239	55,7		0,136	65,30	0,3	0,01820	
2		58,41*						
3		54.27		0,14				
4								
5								
6		59,0						
7	235,000	72,000		0,1840				
8		59						
9				0,16000				
10		52,50						
11			35,4600000				0,0140000	
12								0,05670
13	-	-	-	-	-	-	-	-
14	>225	48	52	0,13	-	-	0,014	0,017
15	235,00000			0,15000				
16	вище 225	53,0		0,14		0,40		
17	вище 225	55,00000	-	0,14500	-	0,34000	-	-
18	>225 (no flash)	56	56	0,15	-	0,3		
19								
20	241	55	54	0,08	69,8	0,30	0,02	0,02
21				0,15			0,022	0,023
22	237,0	60,835		0,155		0,22		
23				0,17				0,10
24				0,188				
25	-	-	-	0,152	-	-	-	-
26	>225	-	-	0,145	-	0,38	-	-
27		52		0,13				
28								
29	245	58,96	-	0,15	-	-	-	-
30		52				0,29		
31				0,157				
32				0,157				
33								
34				0,175				
35				0,14800				
36								
37								

6.2. Sample B

Method	ДСТУ 8842:2019	ДСТУ 8842:2019
Laboratory number	Transparency	Odor and taste
1	Прозорий/кристалічний, без осаду	Притаманний соняшниковій олії з легким присмаком гіркоти
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	Прозорий/кристалічний, без осаду	Притаманний соняшниковій олії без стороннього присмаку, гіркоти та запаху
8		
9	-	-
10	-	-
11	-	-
12	Інше* Прозорість неповна, злегка мутна, зразок характерного золотисто-жовтого кольору, осад відсутній	Інше* Запах притаманний соняшниковій олії, без сторонніх запахів, смак - з легким присмаком гіркоти
13	Прозора, без осаду, жовтого кольору	Запах та смак притаманні даній олії, без стороннього присмаку, гіркоти та запаху
14	Невелике помутніння над осадом	Притаманний соняшниковій олії з легким присмаком гіркоти
15		
16	Невелике помутніння над осадом	Притаманний соняшниковій олії без стороннього присмаку, гіркоти та запаху
17	Прозорий/кристалічний, без осаду	Притаманний соняшниковій олії без стороннього присмаку, гіркоти та запаху
18	"Сітка" над осадом	властивий, притаманний
19	Прозорий/кристалічний, без осаду	Притаманний соняшниковій олії без стороннього присмаку, гіркоти та запаху
20	Slight turbidity above the sediment	Inherent sunflower oil without foreign taste, bitterness and odor
21	присутнє легке помутніння	притаманний соняшниковій олії без стороннього присмаку, гіркоти та запаху.
22	-	-
23	-	-
24	Невелике помутніння над осадом	Притаманний соняшниковій олії без стороннього присмаку, гіркоти та запаху
25	-	-
26	-	Притаманний соняшниковій олії без стороннього присмаку, гіркоти та запаху
27	-	-
28	-	-
29	Невелике помутніння над осадом	Притаманний соняшниковій олії з легким присмаком гіркоти
30	-	-
31	-	-
32	-	-
33	Прозорий/кристалічний, без осаду	Притаманний соняшниковій олії без стороннього присмаку, гіркоти та запаху
34	-	-
35	-	-
36		
37		

Method	ДСТУ 4463:2005/ ДСТУ EN ISO 6321:2019/ ISO 6321:2021
Laboratory number	Melting point, °C
1	23,4
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	22,4
21	
22	
23	
24	25,0
25	
26	23,5
27	
28	
29	
30	
31	
32	
33	
34	
35	
36	
37	

6.3. Sample D

Method	ISO 662:2016 (reference method)/ ДСТУ ISO 662:2004	ISO 663:2017 (reference method)/ ДСТУ EN ISO 663:2019 (EN ISO 663:2017, IDT; ISO 663:2017, IDT)/ ДСТУ 5063:2008	ISO 660:2020/ ДСТУ EN ISO 660:2019 (EN ISO 660:2009, IDT; ISO 660:2009, IDT)/ ДСТУ 4350:2004	ISO 3960:2017/ ДСТУ EN ISO 3960:2019 (EN ISO 3960:2017, IDT; ISO 3960:2017, IDT)	ISO 3961:2024 (reference method)/ ДСТУ EN ISO 3961:2019 (EN ISO 3961:2018, IDT; ISO 3961:2018, IDT)/ ДСТУ 4569:2006 p.9.3.2 (Wijs method)	ISO 3657:2023/ ДСТУ ISO 3657:2004/ ДСТУ 4604:2006	ДСТУ 4633:2006	ISO 6320:2017/ ДСТУ EN ISO 6320:2022 (EN ISO 6320:2017, IDT; ISO 6320:2017, IDT)
Laboratory number	Moisture and volatile matter content, %	Insoluble impurities content, %	Acid value, mg KOH/g	Peroxide value, meq of active oxygen/kg	Iodine value, g/100g (According ДСТУ 4569:2006 use Wijs method)	Saponification value, mg KOH/g	Density at 20°C, g/cm³	Refractive index (20°C)
1	0,08	0,03	0,97	6,50	107,2	188,8	0,9168	1,4730
20	0,04	0,02	0,88	6,71	111	191	0,9166	1,4725
22	0,07	0,03	0,96	7,75			0,9156	1,46929
27	0,10	0,01	0,95	7,65				
29	0,10	0,013	1,037	6,7	-	-	0,9170	-
37	0,08	0,01	1,00	6,50	110	190	0,9172	1,4723

Method	ISO 15305:1998	ISO 15305:1998	ДСТУ 4568:2006	ISO 10540-1:2003/ ДСТУ ISO 10540-1:2014	ДСТУ 7082:2009	Laboratory choice	ISO 15301:2001/ ДСТУ EN ISO 15301:2019 (EN ISO 15301:2001, IDT; ISO 15301:2001, IDT)	AOCS Cc 13k-13:2017	ISO 10539:2002
Laboratory number	Lovibond colour - Red (1 inch cell), Lovibond units	Lovibond colour - Yellow (1 inch cell), Lovibond units	Color number on a scale of iodine standard solutions, mg I_2 in 100cm³	Phosphorus content, mg/kg (ppm)	Mass fraction of phosphorus-containing substances in recalculation to stearooleolecithin, %	Dynamic viscosity at 20°C, mPa*s	Sediment, ml/100g oil	Chlorophyll pigment content, %	Alkalinity, mg/kg
1	3,5	32,0	35,0	122,7	0,300	71,4	0,20	11,60	42,0
20	3,6	43,3	40	105	0,20	69,9	0,33	11,60	46,15
22			30				0,17		
27			40	145	0,36				
29	-	-	30,0	216,19	0,55	-	-	-	-
37	3,4	39,3	50	121	0,30	72,09	0,2	12	-

7. Z SCORES

7.1 Sample A

Method	ISO 662:2016 (reference method)/ ДСТУ ISO 662:2004	AOCS Official Method Ca 2c-25:2017	ДСТУ 4603:2006, p.8	ISO 663:2017 (reference method)/ ДСТУ EN ISO 663:2019 (EN ISO 663:2017, IDT; ISO 663:2017, IDT)/ ДСТУ 5063:2008	AOCS Official Method Ca 3a-46:2017	ISO 660:2020/ ДСТУ EN ISO 660:2019 (EN ISO 660:2009, IDT; ISO 660:2009, IDT)/ ДСТУ 4350:2004	ISO 660:2020/ДСТУ EN ISO 660:2019 (EN ISO 660:2009, IDT; ISO 660:2009, IDT)/ AOCS Official Method Ca 5a-40:2017	ДСТУ 5062:2008	ISO 3960:2017/ ДСТУ EN ISO 3960:2019 (EN ISO 3960:2017, IDT; ISO 3960:2017, IDT)
Laboratory number	Moisture and volatile matter content, %	Moisture and volatile matter content, %	Moisture and volatile matter content, %	Insoluble impurities content, %	Insoluble impurities content, %	Acid value, mg KOH/g	Free fatty acids, %	Free fatty acids, %	Peroxide value, meq of active oxygen/kg
1	0,76	1,07	0,33	-0,06	0,58	0,75	0,96		-0,82
2	0,76		0,84	-0,21		-0,88	-0,93		0,91
3	0,09					1,94			
4	0,09					1,05	0,20		0,94
5	0,43			-0,36		-0,14	-0,17		0,90
6	-0,97			-1,54		-0,73	-0,17		
7	0,96		1,35	-0,06		0,01			1,30
8	-0,97			-1,54		-1,03	0,58		
9			-0,18	-0,70		3,72			
10	-0,91			-1,54		0,45	0,58		-9,65
11		1,07		16,21		6,73	-0,55		0,32
12	-0,24			1,30		-0,88	-0,93		
13			-1,71			1,05			
14	-0,57	-0,53	0,33	2,90		1,05	1,72		
15	2,76			-0,06		1,05			
16	0,09		0,33			0,90	-0,17		-0,66
17	0,09		0,33	-0,06		1,49	1,72		-1,12
18	-0,91	-1,07	-1,20	-1,54	-1,15	0,45	0,96	0,82	-0,58
19			-1,20			-0,87			
20	-0,57	-0,53	-0,69	1,42	0,58	-0,44	-0,17	0,04	0,65
21	0,86		1,15	1,42		-0,82	-0,93	-0,14	-1,37
22	-0,24			1,42		-0,58	-0,59		1,13
23			-1,20			4,61			
24			1,10	-2,28		-0,26		0,21	
25	0,09			-0,06		-1,18	-1,31		
26	-0,57			-0,06		-1,33	-1,31	-0,36	-0,13
27	0,76			-0,06		-1,33			1,52
28	-0,24						-0,17		-1,03
29	0,76		1,86	0,53		-0,88		-0,18	
30	-0,57			-0,50			0,96		
31			-0,44	-0,06		-1,47			
32			-1,76	0,13		0,42			
33						-1,18			
34			-0,18			2,83			
35				0,53		-0,20			
36			0,84			1,05			
37									

Method	ДСТУ 4570:2006	ISO 3961:2024 (reference method)/ ДСТУ EN ISO 3961:2019 (EN ISO 3961:2018, IDT; ISO 3961:2018, IDT)/ ДСТУ 4569:2006 p.9.3.2 (Wijs method)	AOCS Official Method Cd 1d-92:2021	ISO 6885:2016/ ДСТУ EN ISO 6885:2019 (EN ISO 6885:2016, IDT; ISO 6885:2016, IDT)	AOCS Official Method Cd 18-90:2017	ISO 3657:2023/ ДСТУ ISO 3657:2004/ ДСТУ 4604:2006	AOCS Official Method Cd 3-25:2017	ISO 18609:2000/ ДСТУ ISO 18609:2004	ISO 3596:2000/ ДСТУ ISO 3596:2004	ДСТУ 6050:2008	ДСТУ 6048:2008, p.8	ISO 6883:2017/ ДСТУ EN ISO 6883:2019 (EN ISO 6883:2017, IDT; ISO 6883:2017, IDT)	AOCS Official Method Cc 10c-95:2017
Laboratory number	Peroxide value, ½ O mmol/kg	Iodine value, g/100g (According ДСТУ 4569:2006 use Wijs method)	Iodine value, g/100g	Anisidine value	Anisidine value	Saponification value, mg KOH/g	Saponification value, mg KOH/g	Unsaponifiable matter, % (Without amendment on the free fatty acids)	Unsaponifiable matter, % (Without amendment on the free fatty acids)	Unsaponifiable matter, % (Without amendment on the free fatty acids)	Absence of soap	Conventional mass per volume at 20°C, g/ml	Conventional mass per volume at 20°C, g/ml
1	-0,45	1,63	1,37	0,29	0,74	-0,40	1,00	0,64	0,11	0,63	S	0,04	
2	1,08												
3	0,14												
4													
5													
6													
7	1,19								-0,39				
8													
9	-1,39												
10											S		
11						-0,64			-0,16		S	-3,39	
12	-0,34	-0,42											
13	-2,10												
14	0,65	1,77										-0,39	
15	0,98	-0,34									S		
16	-0,62												
17	-0,14	1,06		-0,08								-0,03	
18	-0,45	-1,05		-1,57	-1,66	-0,15	-1,00		0,25	-0,52		0,04	0,50
19	-0,46												
20	-0,25	-1,05	-1,37	0,93	0,92	-0,65	0,00	-0,48	-0,25	-0,58	S	-0,39	-0,50
21	-0,41	-2,49		0,93		-0,15			0,04	-0,43	S		
22													
23	1,17												
24	0,92	-0,32		-1,48		2,48				0,43	S		
25	0,85			0,85						0,48		1,76	
26	0,10	0,22				0,50		-0,16			S	0,33	
27													
28													
29	-0,23											1,18	
30													
31	0,08												
32	-0,69												
33	-1,22												
34	0,57												
35	1,22			0,07					0,25			-0,39	
36	-1,22												
37													

Method	ДСТУ 4633:2006	ISO 6320:2017/ ДСТУ EN ISO 6320:2022 (EN ISO 6320:2017, IDT; ISO 6320:2017, IDT)	ISO 15305:1998 (reference method)	AOCS Official Method Cc-13e-92:2017	ISO 15305:1998	ISO 15305:1998	ISO 15305:1998	ДСТУ 4568:2006	ISO 15267:1998/ ДСТУ ISO 15267:2008	ДСТУ 4455:2005	ISO 10540-1:2003/ ДСТУ ISO 10540-1:2014	AOCS Official Method Ca 12a-02:2017
Laboratory number	Density at 20°C, g/cm³	Refractive index (20°C)	Lovibond colour - Red (5,25 inch cell), Lovibond units	Lovibond colour - Red (5,25 inch cell), Lovibond units	Lovibond colour - Yellow (5,25 inch cell), Lovibond units	Lovibond colour - Red (1 inch cell), Lovibond units	Lovibond colour - Yellow (1 inch cell), Lovibond units	Color number on a scale of iodine standard solutions, mg I2 in 100cm³	"Flash" or "No flash" at 121 °C	Flash point at closed cup, °C	Phosphorus content, mg/kg (ppm)	Phosphorus content, mg/kg (ppm)
1	-0,40	0,16	-0,31		-0,66	0,50	-1,01	-0,15	S	0,17	0,06	
2											0,36	
3		-0,34						-0,15			-0,10	
4												
5												
6											0,42	
7								0,40		-1,00	1,87	
8											0,42	
9									S			
10			0,73		1,92	0,50	0,61				-0,30	
11	-7,23	0,63	-0,10		-0,22							-3,91
12												
13												
14	1,53		-0,52			0,50	0,68	-0,65	S	S	-0,80	-0,42
15										-1,00		
16	0,79	-1,51	0,11					0,35	S	S	-0,24	
17	-0,17		-1,14		-1,02	-1,00	-0,64	-0,15	S	S	-0,02	
18	0,35		-1,14	-1,14	-0,73	-1,00	-1,39	-0,15	S	S	0,09	0,42
19												
20	-0,84	0,49	0,11	1,14	0,20	-1,00	0,50	2,35	S	0,75	-0,02	0,00
21	-2,33	0,16						1,85				
22	-2,33	0,56						-0,15		-0,42	0,63	
23								1,70				
24		0,16	0,11					-0,15				
25								-0,15				
26	0,05	-0,51	1,78		1,92			-0,15	S	S		
27								-0,15	S		-0,36	
28			-0,10									
29	1,09							-0,15	S	1,91	0,42	
30											-0,36	
31												
32			0,94		-0,58	2,00	1,25	0,10				
33												
34	0,64											
35								-0,15				
36												
37												

7.2. Sample B

Method	ДСТУ 7082:2009	Laboratory choice	ISO 15301:2001/ ДСТУ EN ISO 15301:2019 (EN ISO 15301:2001, IDT; ISO 15301:2001, IDT)	ISO 6884:2008/ ДСТУ ISO 6884:2002	ДСТУ 5064:2008	ДСТУ 8842:2019
Laboratory number	Mass fraction of phosphorus-containing substances in recalculation to stearooleolecithin, %	Dynamic viscosity at 20°C, mPa*s	Sediment, ml/100g oil	Ash yield, %	Mass fraction of ash, %	Odor and taste
1	-0,38	-1,50	-0,13	0,19		S
2						
3	-0,27					
4						
5						
6						
7	0,91					S
8						
9	0,27					
10						
11				-1,21		
12					1,97	S
13						S
14	-0,54			-1,21	-0,87	S
15	0,00					
16	-0,27		0,59			S
17	-0,14		0,16			S
18	0,00		-0,13			S
19						S
20	-1,90	1,50	-0,13	0,79	-0,66	S
21	0,00			1,45	-0,44	S
22	0,13		-0,71			
23	0,54				5,06	
24	1,02					S
25	0,05					
26	-0,14		0,45			S
27	-0,54					
28						
29	0,00					S
30			-0,21			
31	0,19					
32	0,19					
33						S
34	0,67					
35	-0,06					
36						
37						

Method	ДСТУ 4463:2005/ ДСТУ EN ISO 6321:2019/ ISO 6321:2021
Laboratory number	Melting point, °C
1	-0,16
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	-1,10
21	
22	
23	
24	1,33
25	
26	-0,07
27	
28	
29	
30	
31	
32	
33	
34	
35	
36	
37	

Remarks

1. Blank cell – results were reported as “not tested” by the Participants.
2. Results that are considered to be unsatisfactory are marked by red colored cell.
3. Results that are considered to be questionable are marked by yellow colored cell.
4. Results that are considered to be satisfactory are marked by green colored cell.

7.3. Sample D

Method	ISO 662:2016 (reference method)/ ДСТУ ISO 662:2004	ISO 663:2017 (reference method)/ ДСТУ EN ISO 663:2019 (EN ISO 663:2017, IDT; ISO 663:2017, IDT)/ ДСТУ 5063:2008	ISO 660:2020/ ДСТУ EN ISO 660:2019 (EN ISO 660:2009, IDT; ISO 660:2009, IDT)/ ДСТУ 4350:2004	ISO 3960:2017/ ДСТУ EN ISO 3960:2019 (EN ISO 3960:2017, IDT; ISO 3960:2017, IDT)	ISO 3961:2024 (reference method)/ ДСТУ EN ISO 3961:2019 (EN ISO 3961:2018, IDT; ISO 3961:2018, IDT)/ ДСТУ 4569:2006 p.9.3.2 (Wijs method)	ISO 3657:2023/ ДСТУ ISO 3657:2004/ ДСТУ 4604:2006	ДСТУ 4633:2006	ISO 6320:2017/ ДСТУ EN ISO 6320:2022 (EN ISO 6320:2017, IDT; ISO 6320:2017, IDT)
Laboratory number	Moisture and volatile matter content, %	Insoluble impurities content, %	Acid value, mg KOH/g	Peroxide value, meq of active oxygen/kg	Iodine value, g/100g (According ДСТУ 4569:2006 use Wijs method)	Saponification value, mg KOH/g	Density at 20°C, g/cm³	Refractive index (20°C)
1	-0,02	1,19	0,01	-0,51	-1,57	-0,63	0,13	1,48
20	-1,36	0,12	-1,62	-0,28	1,14	0,59	-0,35	-0,37
22	-0,36	1,19	-0,17	0,84			-2,77	-12,26
27	0,64	-0,94	-0,35	0,74				
29	0,64	-0,62	1,23	-0,29			0,62	
37	-0,02	-0,94	0,56	-0,51	0,43	0,04	1,10	-1,11

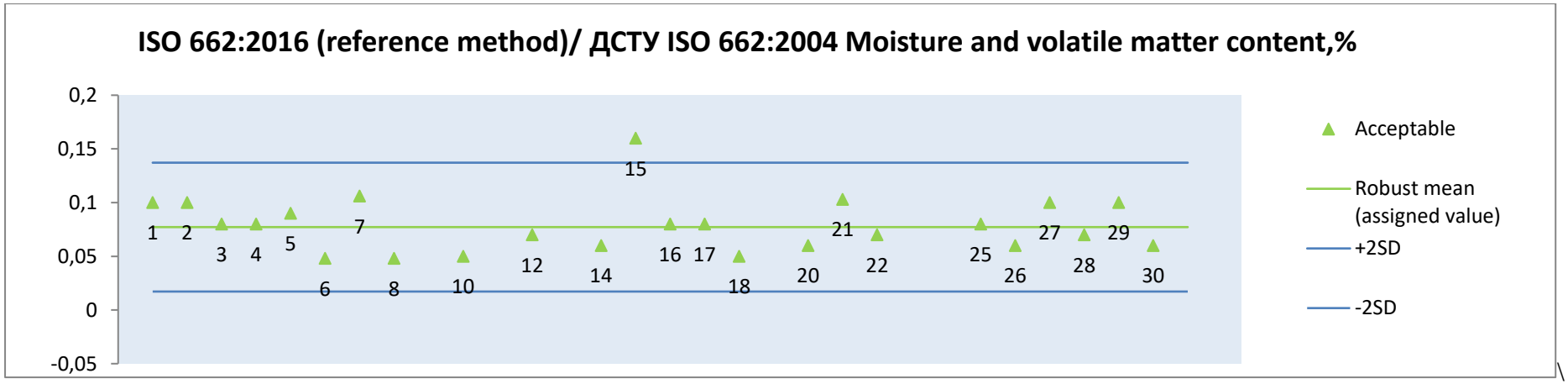
Method	ISO 15305:1998	ISO 15305:1998	ДСТУ 4568:2006	ISO 10540-1:2003/ ДСТУ ISO 10540-1:2014	ДСТУ 7082:2009	Laboratory choice	ISO 15301:2001/ ДСТУ EN ISO 15301:2019 (EN ISO 15301:2001, IDT; ISO 15301:2001, IDT)	AOCS Cc 13k-13:2017	ISO 10539:2002
Laboratory number	Lovibond colour - Red (1 inch cell), Lovibond units	Lovibond colour - Yellow (1 inch cell), Lovibond units	Color number on a scale of iodine standard solutions, mg I_2 in 100cm³	Phosphorus content, mg/kg (ppm)	Mass fraction of phosphorus-containing substances in recalculation to stearooleolecithin, %	Dynamic viscosity at 20°C, mPa*s	Sediment, ml/100g oil	Chlorophyll pigment content, %	Alkalinity, mg/kg
1	0,00	-1,08	-0,30	-0,04	-0,28	0,18	-0,10	-0,41	-0,52
20	1,00	0,89	0,46	-0,90	-1,23	-0,82	0,40	-0,41	0,52
22			-1,06				-0,21		
27			0,46	1,05	0,29				
29			-1,06	4,53	2,08				
37	-1,00	0,19	1,97	-0,12	-0,28	0,64	-0,10	0,82	

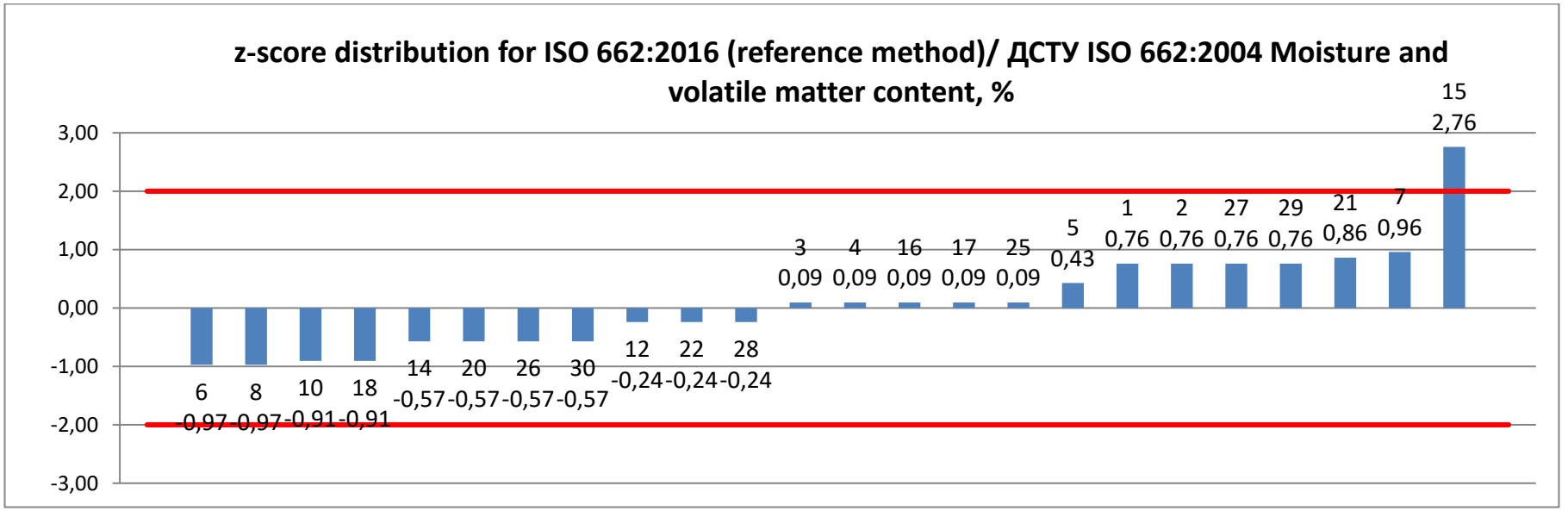
Remarks

1. Blank cell – results were reported as “not tested” by the Participants.
2. Results that are considered to be unsatisfactory are marked by red colored cell.
3. Results that are considered to be questionable are marked by yellow colored cell.
4. Results that are considered to be satisfactory are marked by green colored cell.

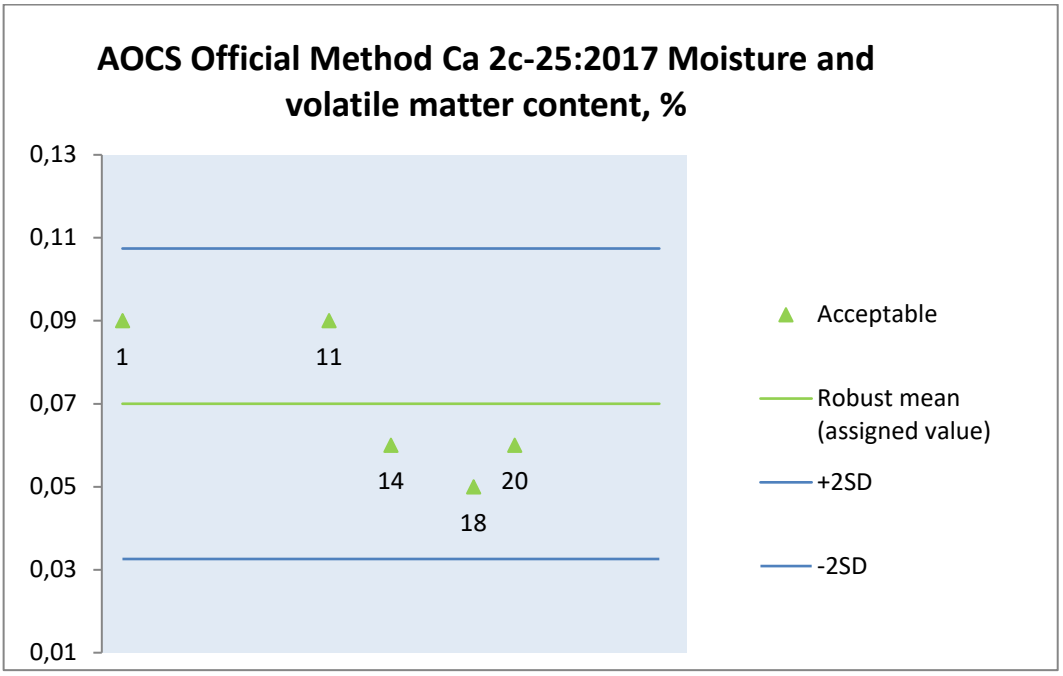
8. Z SCORE PLOTS AND RESULTS CHARTS.

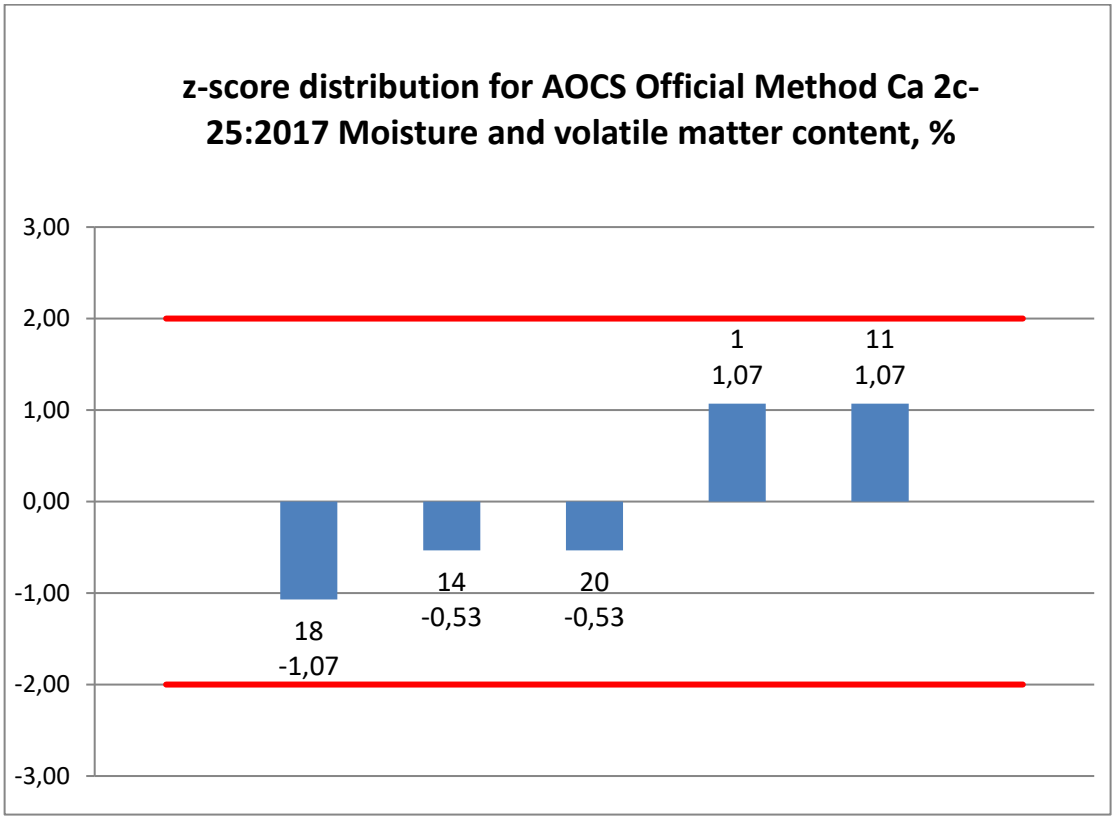
8.1.1 ISO 662:2016 (reference method)/ ДСТУ ISO 662:2004 Moisture and volatile matter content, %



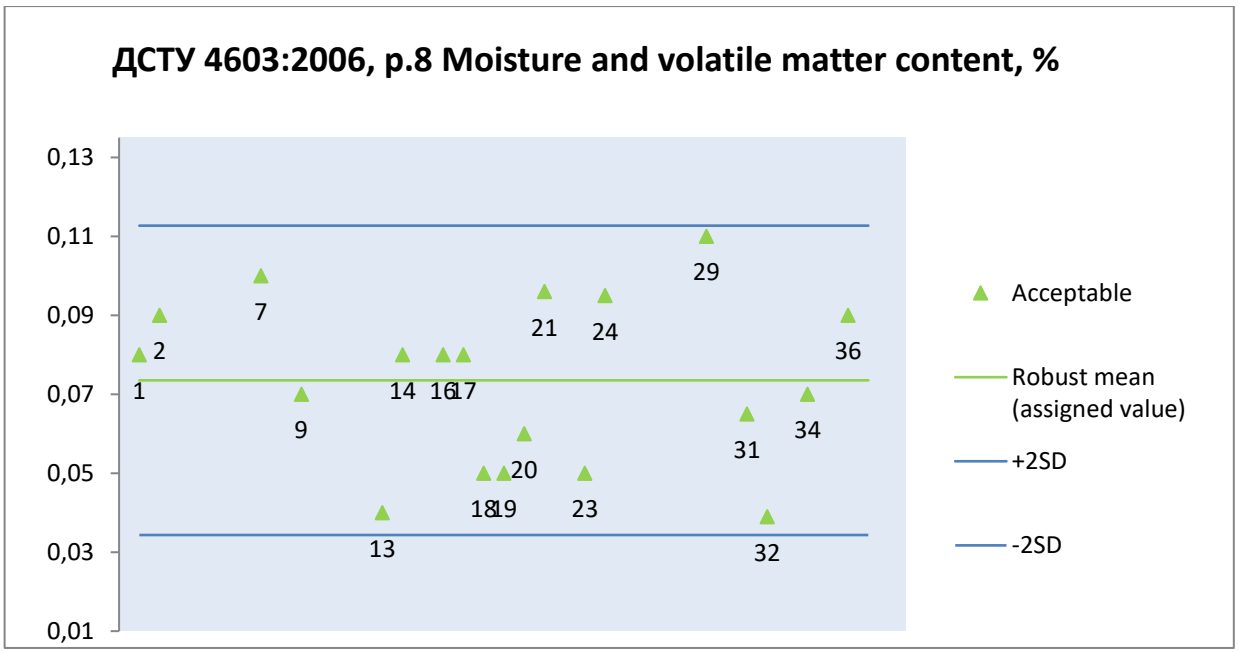


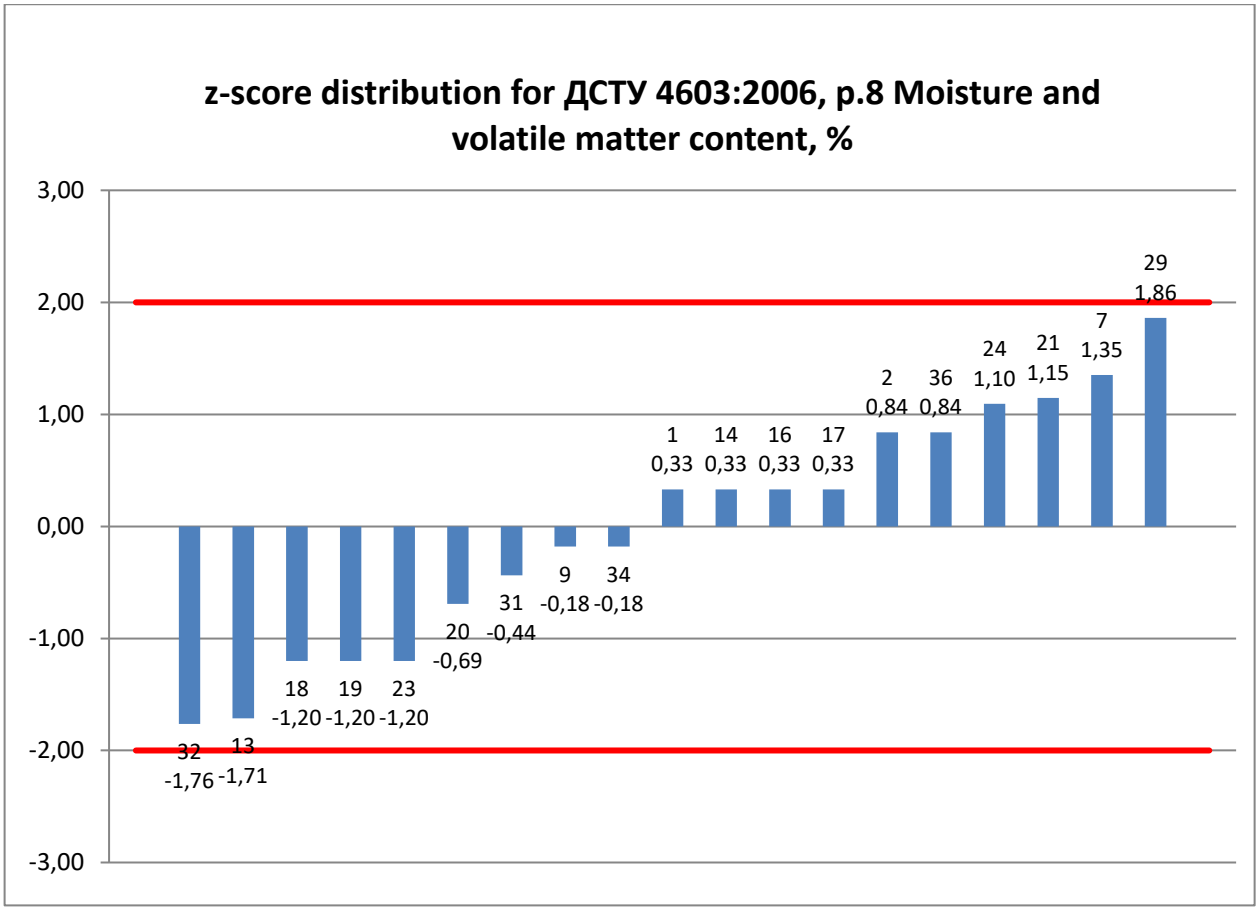
8.1.2 AOCS Official Method Ca 2c-25:2017 Moisture and volatile matter content, %



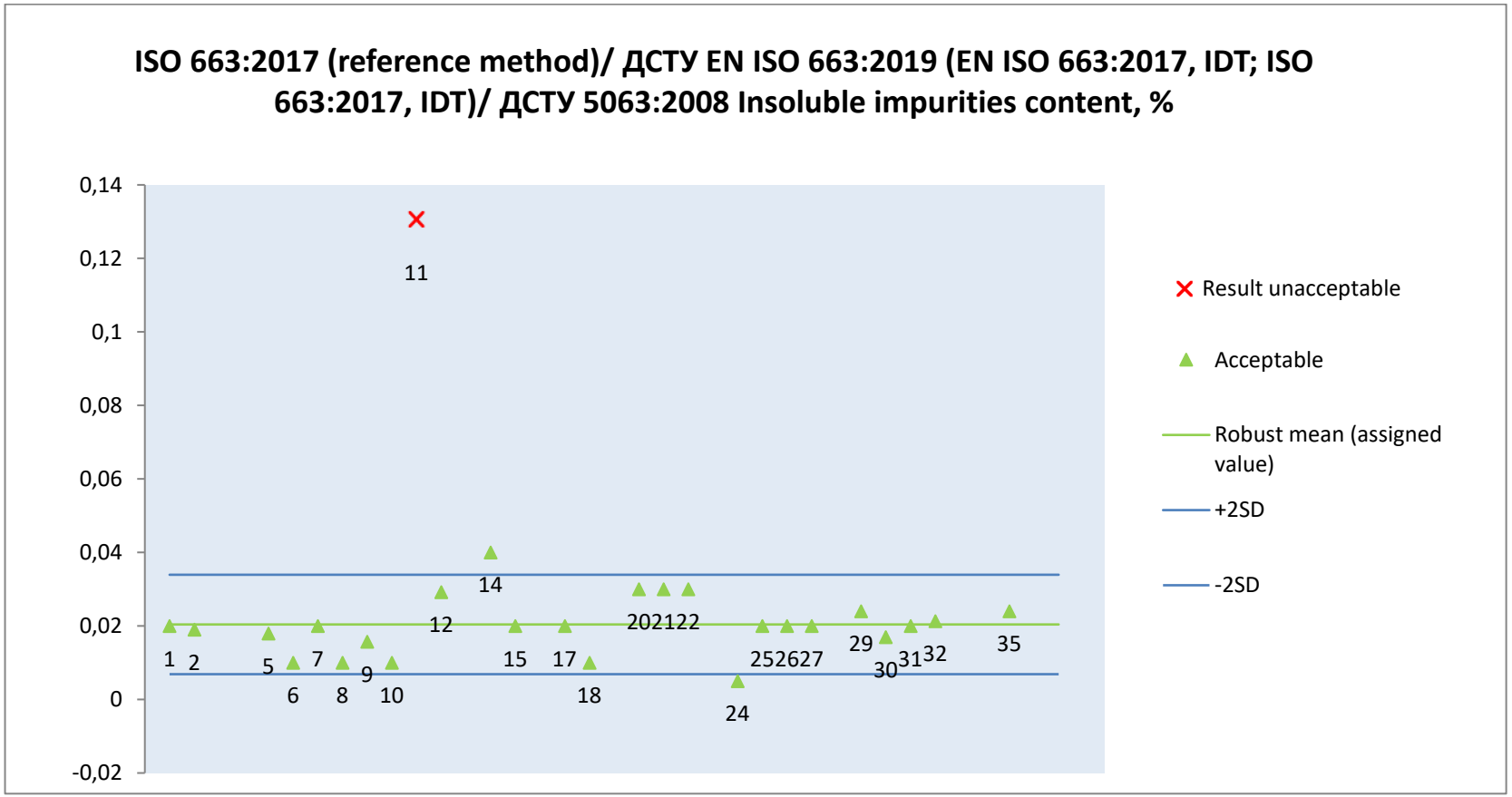


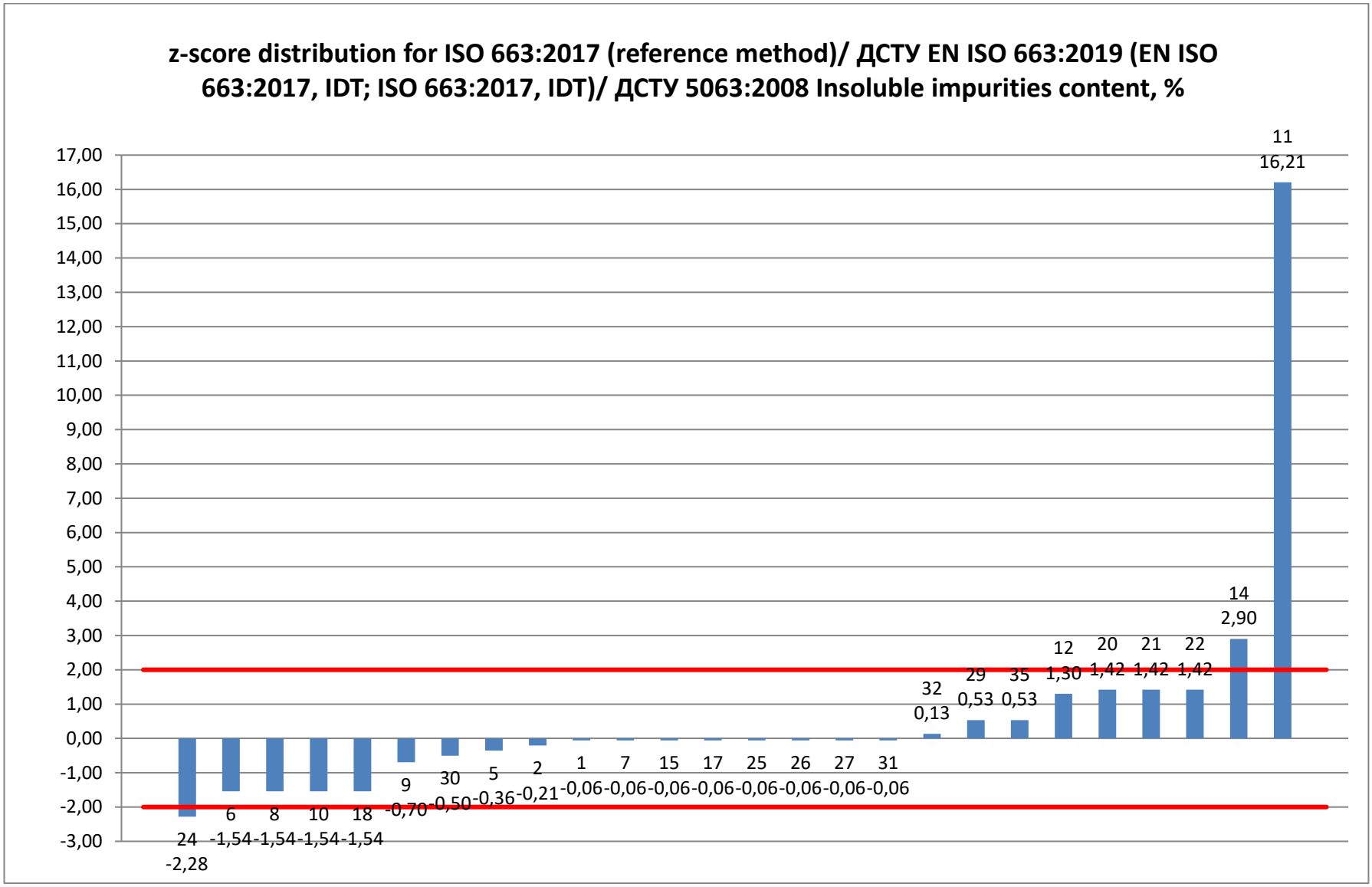
8.1.3 ДСТУ 4603:2006, p.8 Moisture and volatile matter content, %



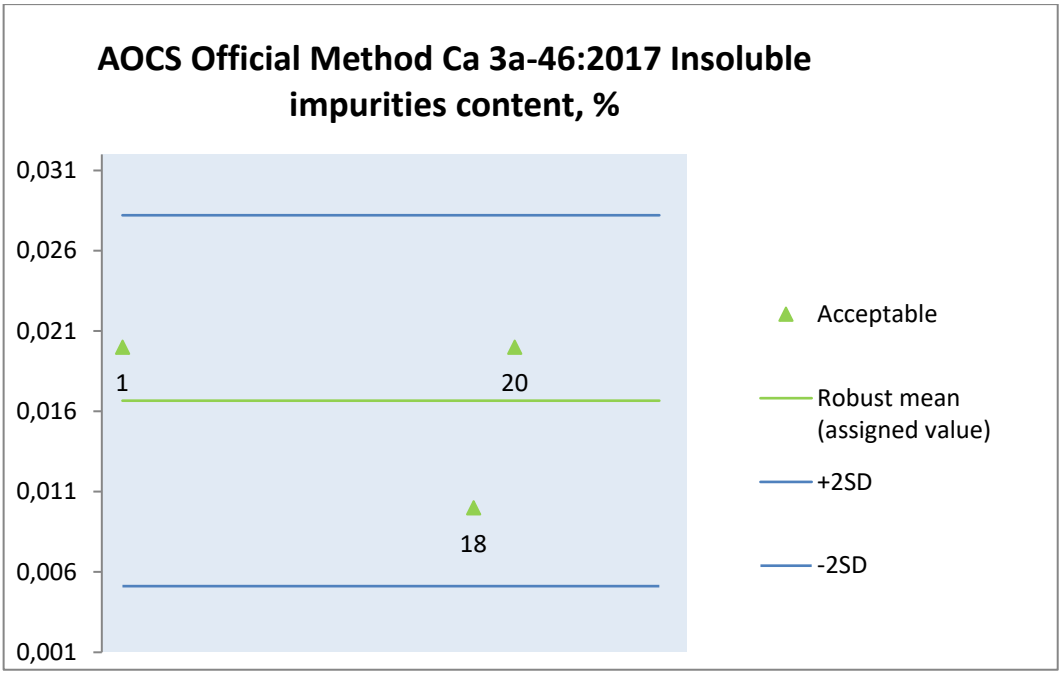


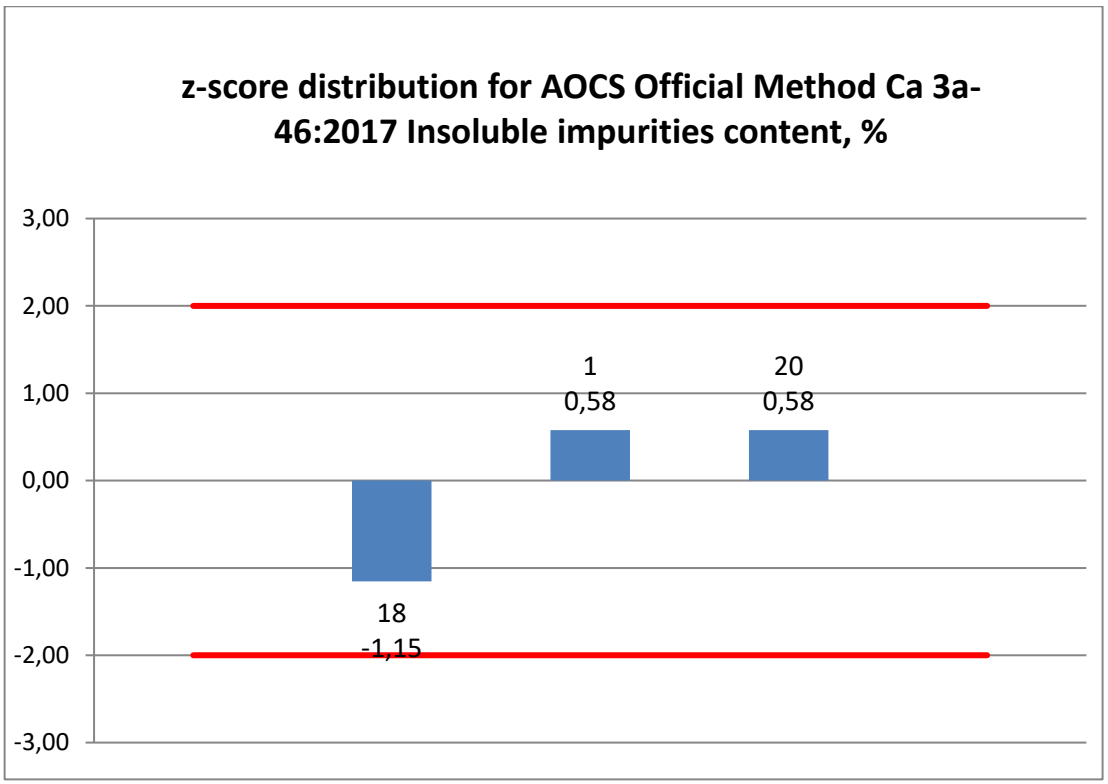
8.1.4 ISO 663:2017 (reference method)/ ДСТУ EN ISO 663:2019 (EN ISO 663:2017, IDT; ISO 663:2017, IDT)/ ДСТУ 5063:2008 Insoluble impurities content, %



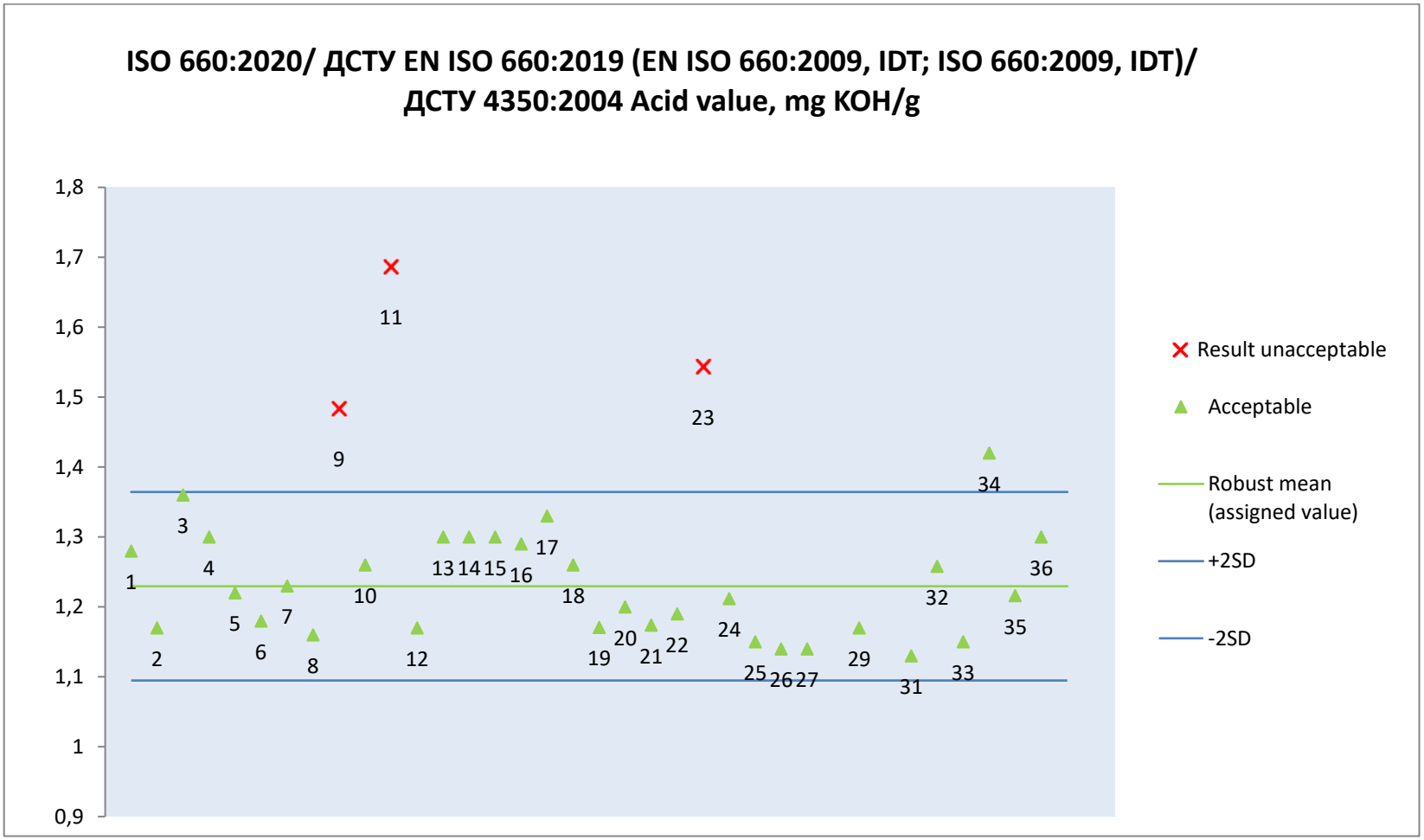

z-score distribution for ISO 663:2017 (reference method)/ ДСТУ EN ISO 663:2019 (EN ISO 663:2017, IDT; ISO 663:2017, IDT)/ ДСТУ 5063:2008 Insoluble impurities content, %
17,00
16,00
15,00
14,00
13,00
12,00
11,00
10,00
9,00
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00
0,00
-1,00
-2,00
-3,00
24 -2,28
6 -1,54
8 -1,54
10 -1,54
18 -1,54
9 -0,70
30 -0,50
5 -0,36
2 -0,21
1 -0,06
7 -0,06
15 -0,06
17 -0,06
25 -0,06
26 -0,06
27 -0,06
31 -0,06
32 0,13
29 0,53
35 0,53
12 1,30
20 1,42
21 1,42
22 1,42
14 2,90
11 16,21

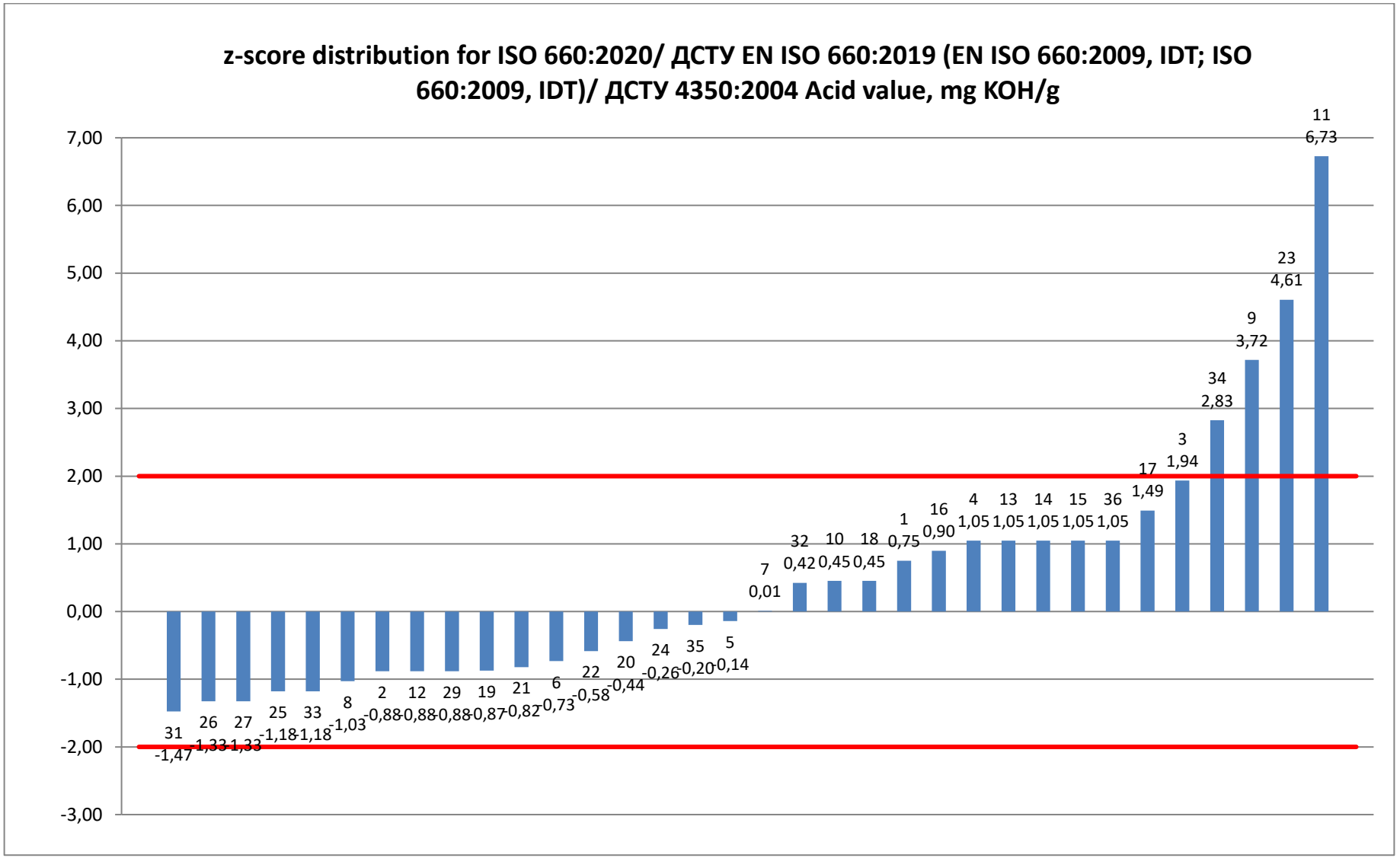
8.1.5 AOCS Official Method Ca 3a-46:2017 Insoluble impurities content, %



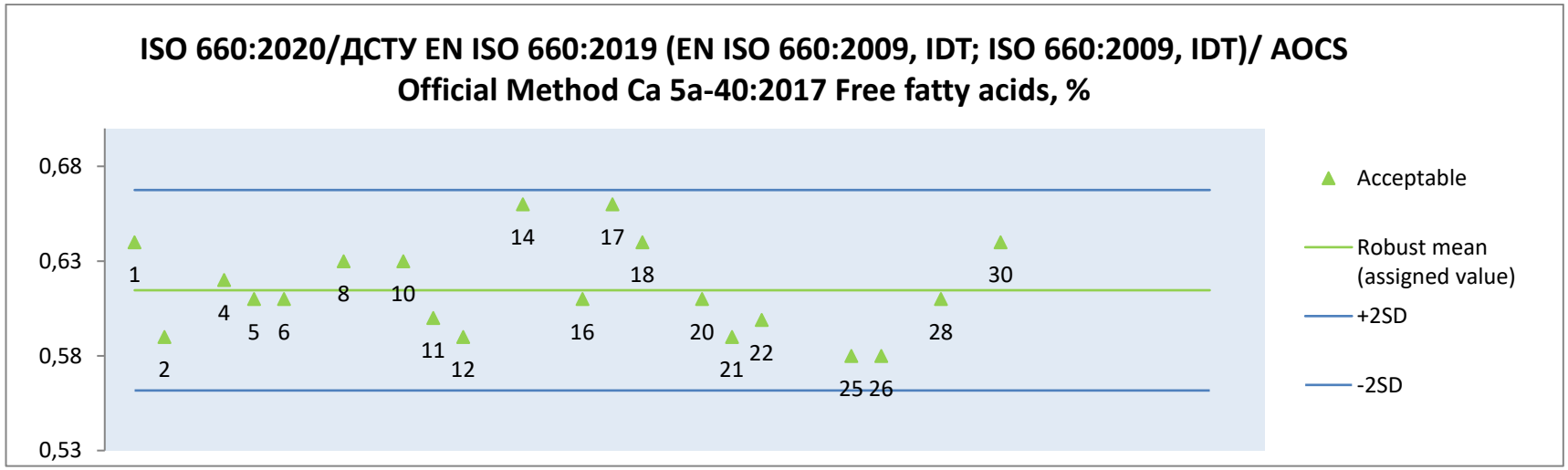


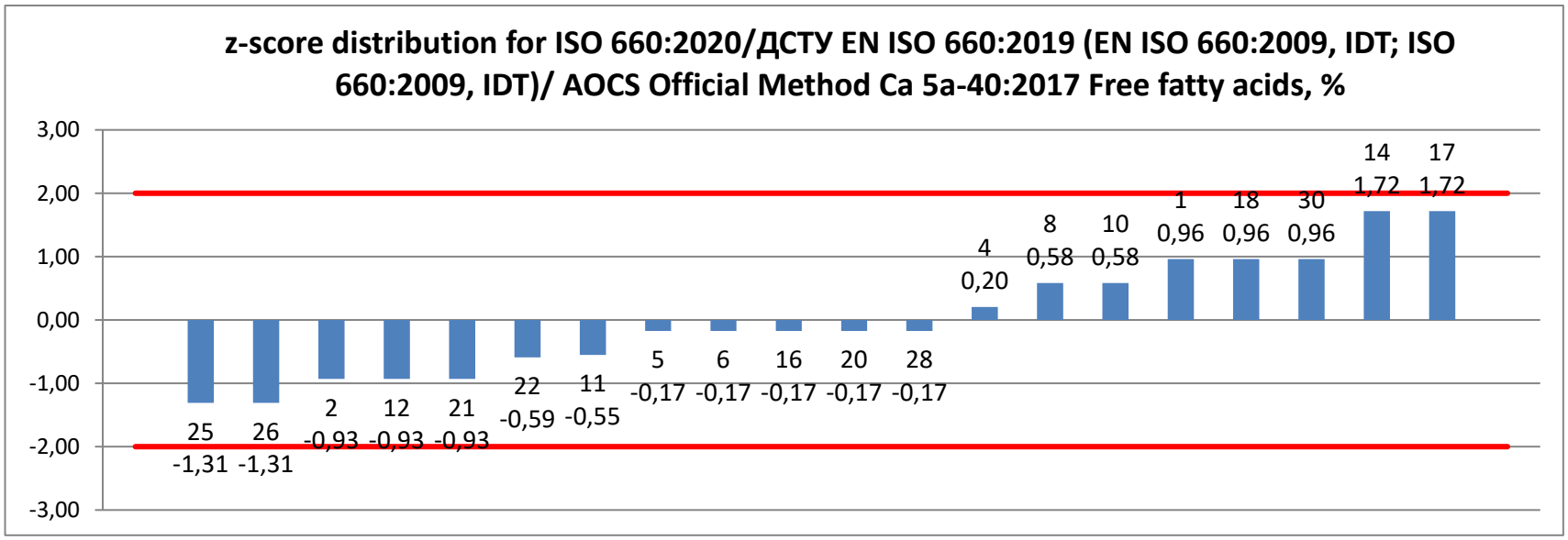
8.1.6 ISO 660:2020/ДСТУ EN ISO 660:2019(EN ISO 660:2009, IDT; ISO 660:2009, IDT)/ДСТУ 4350:2004 Acid value, mg KOH/g



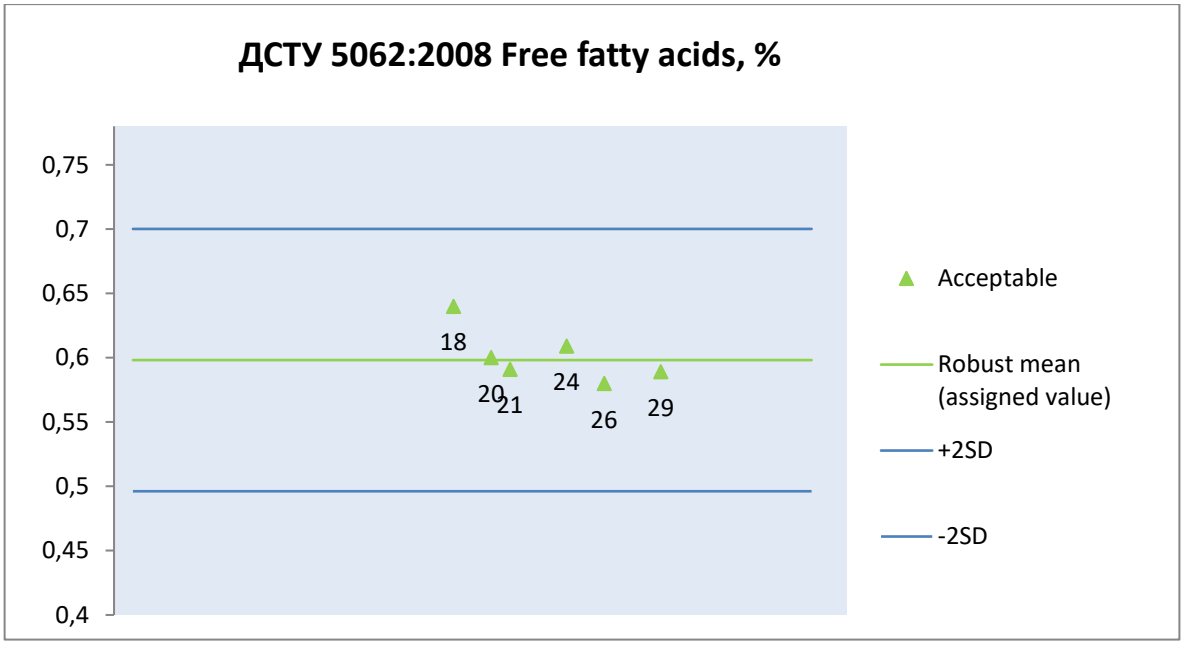

z-score distribution for ISO 660:2020/ ДСТУ EN ISO 660:2019 (EN ISO 660:2009, IDT; ISO 660:2009, IDT)/ ДСТУ 4350:2004 Acid value, mg KOH/g
7,00
6,00
5,00
4,00
3,00
2,00
1,00
0,00
-1,00
-2,00
-3,00
31 -1,47
26 -1,33
27 -1,33
25 -1,18
33 -1,18
8 -1,03
2 -0,88
12 -0,88
29 -0,88
19 -0,87
21 -0,82
6 -0,73
22 -0,58
20 -0,44
24 -0,26
35 -0,20
5 -0,14
7 0,01
32 0,42
10 0,45
18 0,45
1 0,75
16 0,90
4 1,05
13 1,05
14 1,05
15 1,05
36 1,05
17 1,49
3 1,94
34 2,83
9 3,72
23 4,61
11 6,73

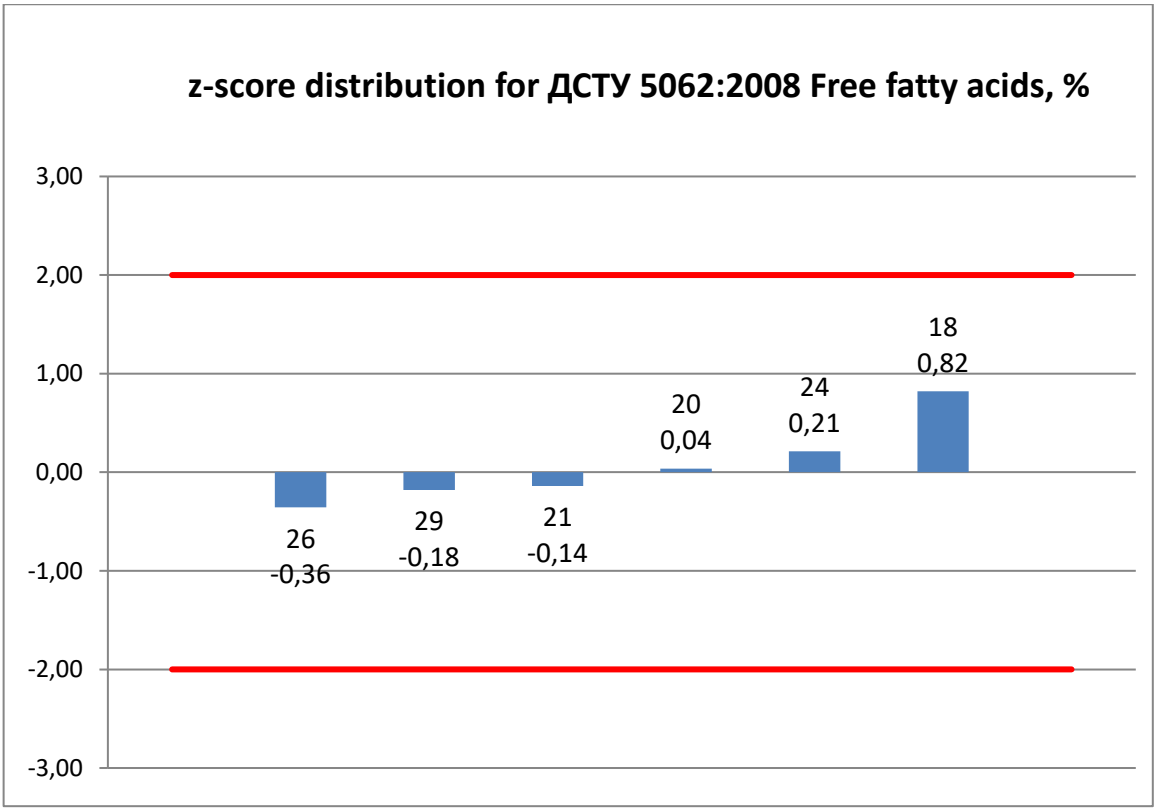
8.1.7 ISO 660:2020/ДСТУ EN ISO 660:2019 (EN ISO 660:2009, IDT; ISO 660:2009, IDT)/ AOCS Official Method Ca 5a-40:2017 Free fatty acids, %



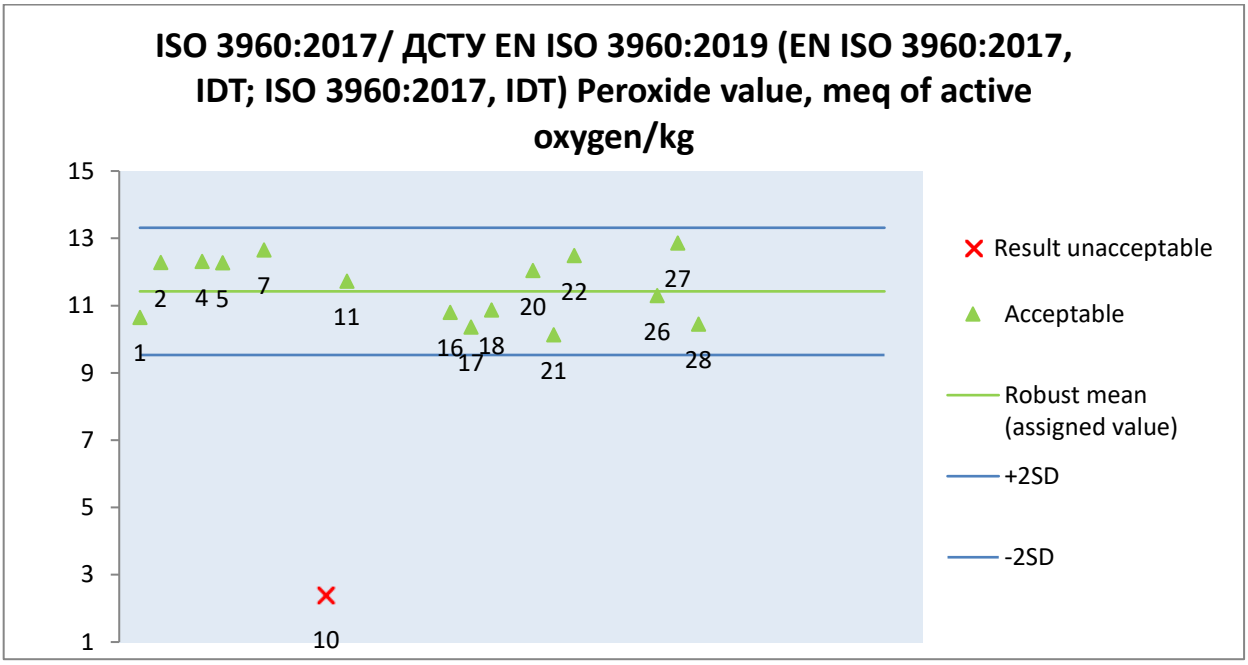


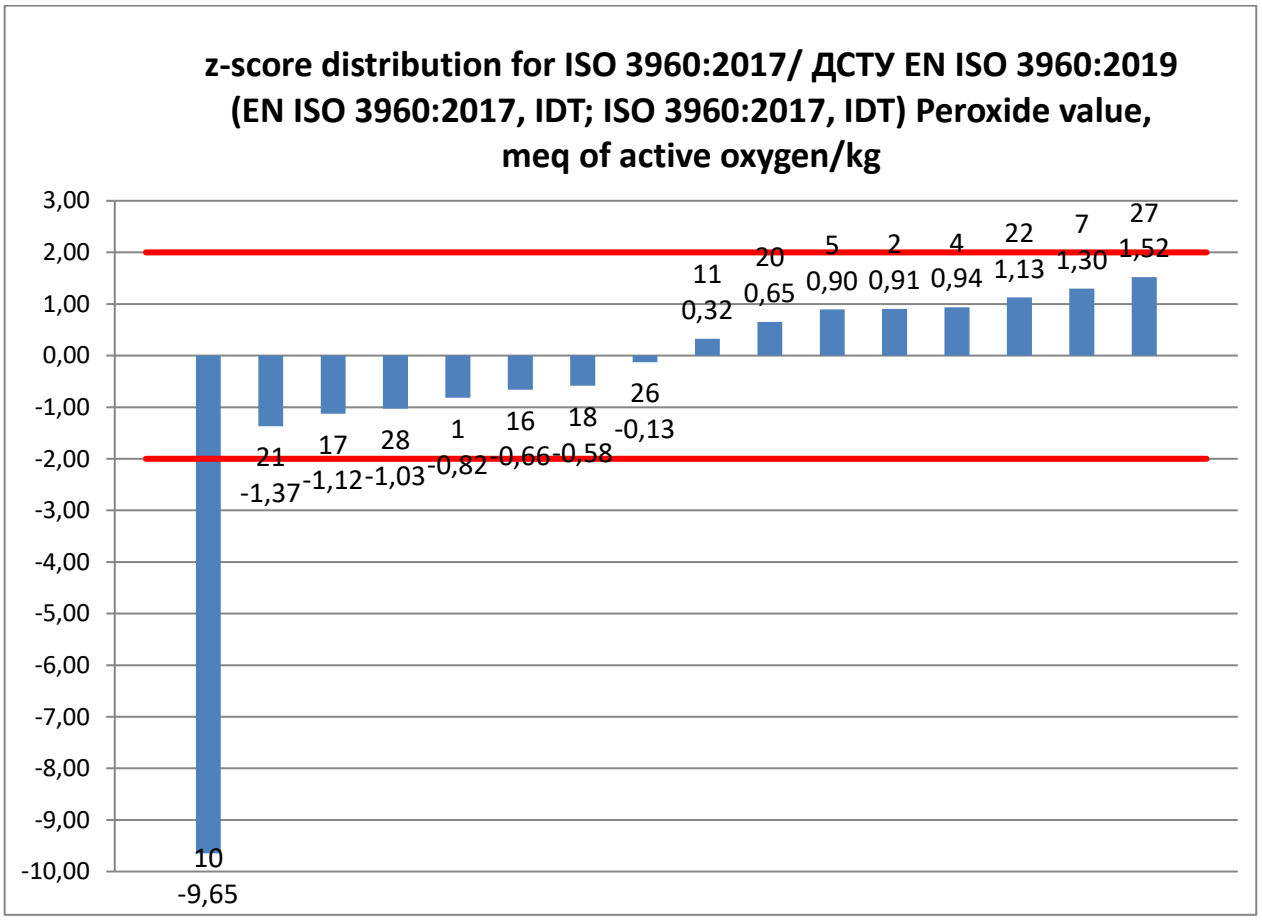
8.1.8 ДСТУ 5062:2008 Free fatty acids, %



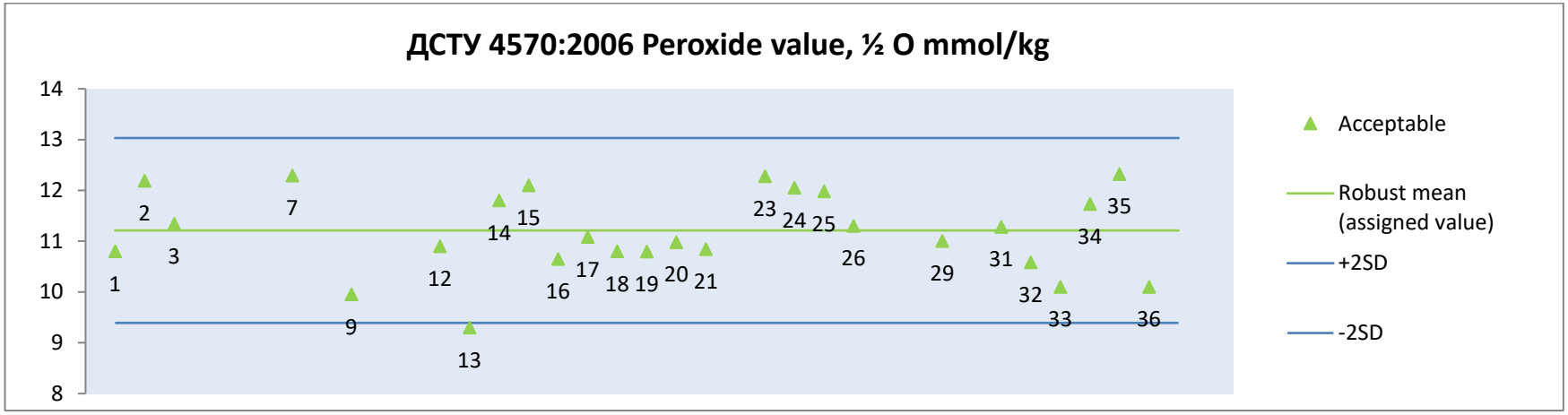


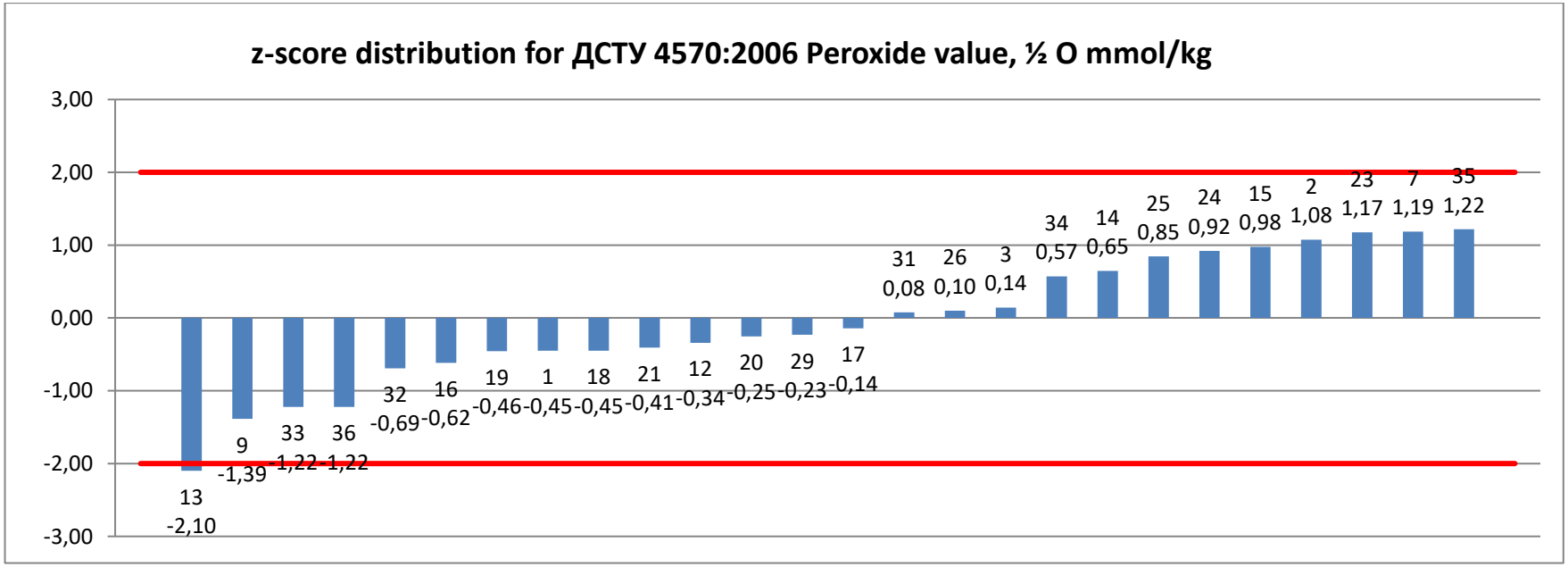
8.1.9 ISO 3960:2017/ ДСТУ EN ISO 3960:2019 (EN ISO 3960:2017, IDT; ISO 3960:2017, IDT) Peroxide value, meq of active oxygen/kg



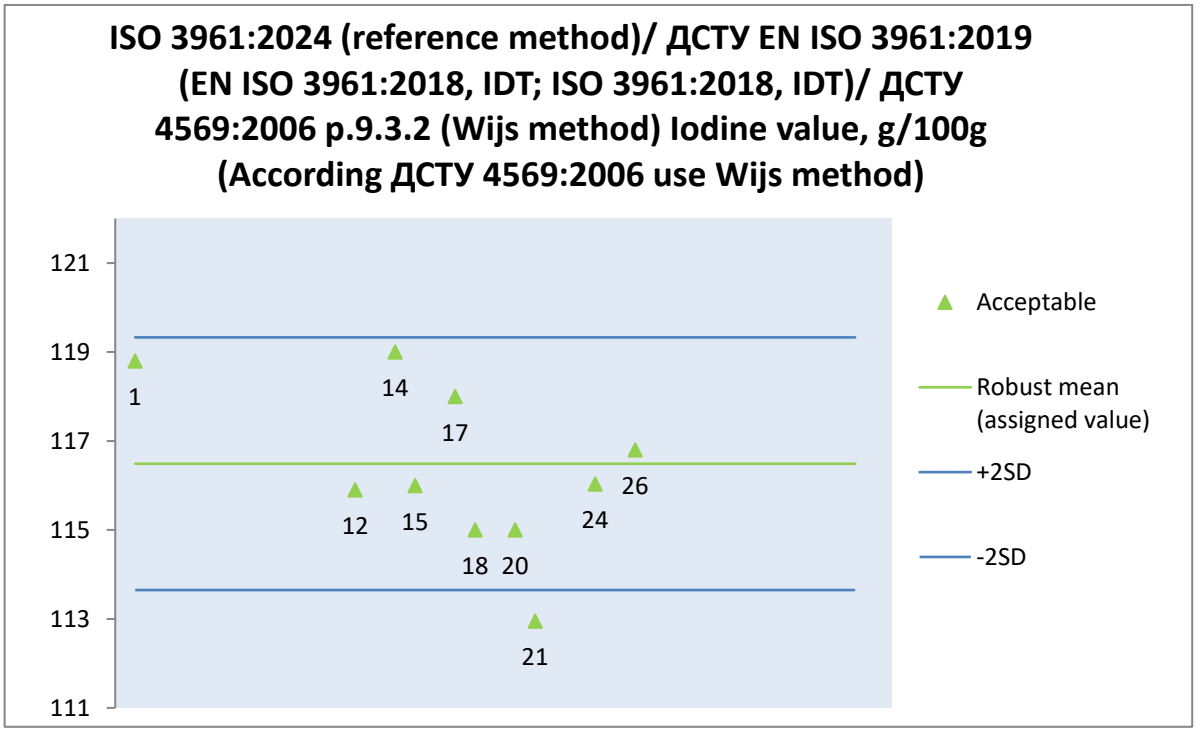


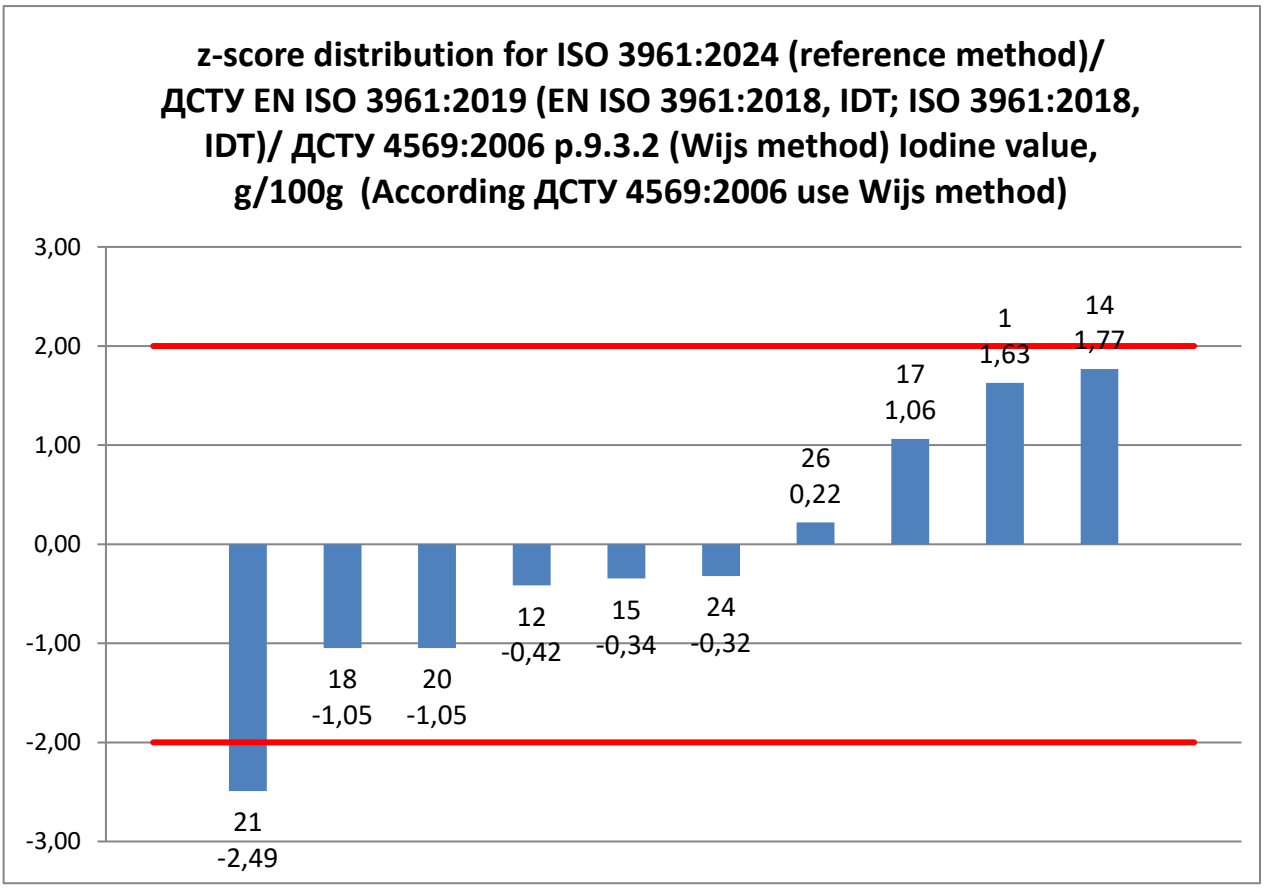
8.1.10 ДСТУ 4570:2006 Peroxide value, ½ O mmol/kg



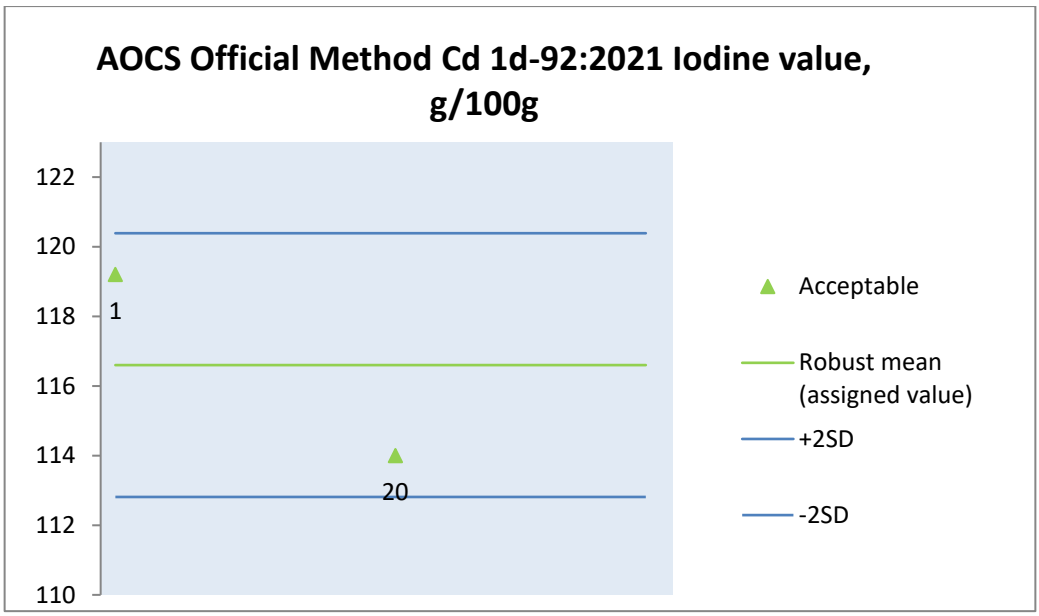


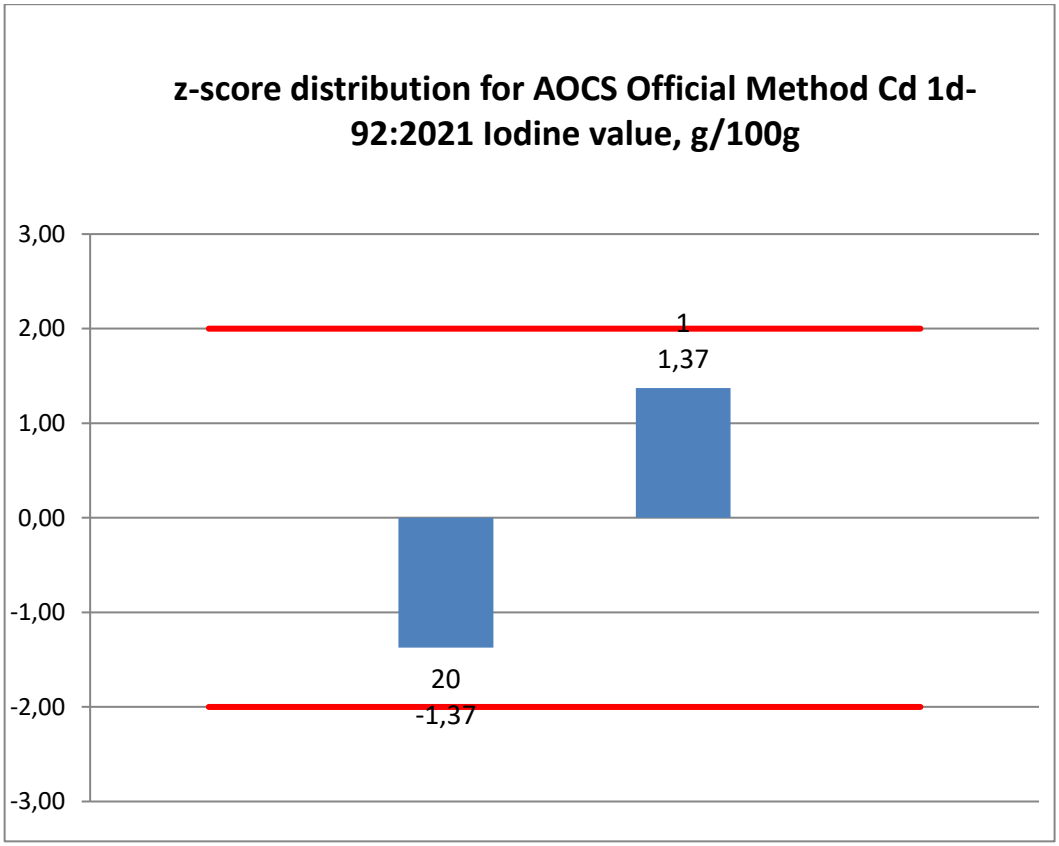
8.1.11 ISO 3961:2024 (reference method)/ ДСТУ EN ISO 3961:2019 (EN ISO 3961:2018, IDT; ISO 3961:2018, IDT)/ ДСТУ 4569:2006 p.9.3.2 (Wijs method) Iodine value, g/100g (According ДСТУ 4569:2006 use Wijs method)



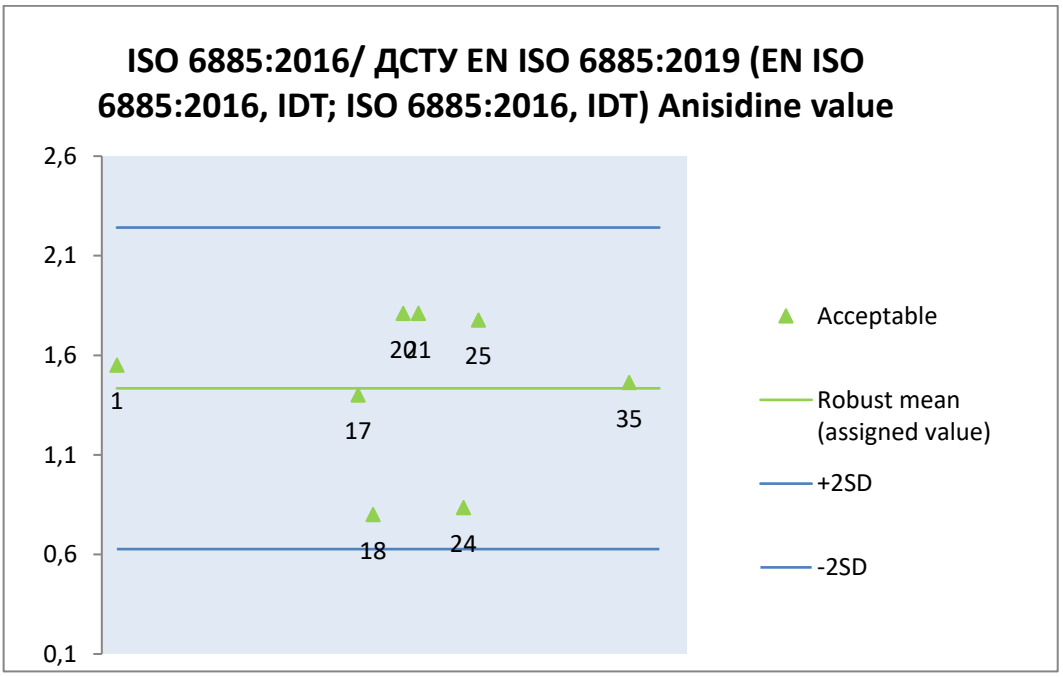


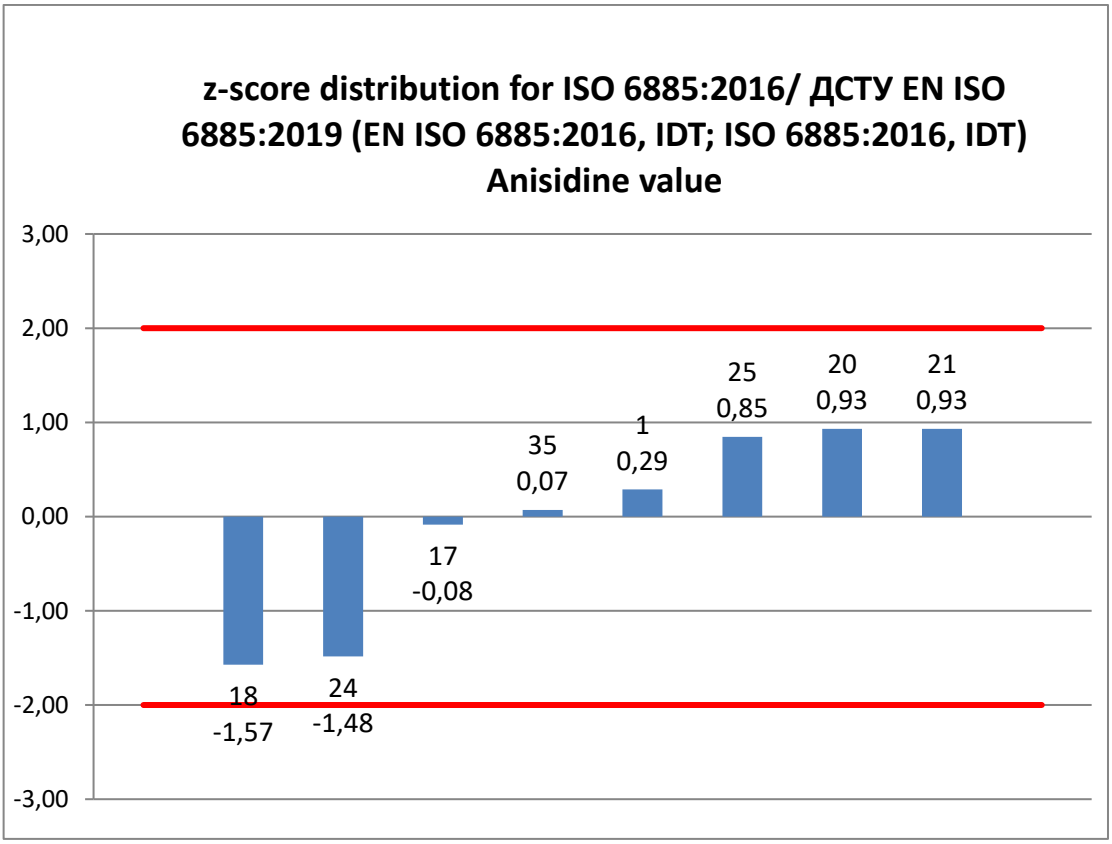
8.1.12 AOCS Official Method Cd 1d-92:2017 Iodine value, g/100g



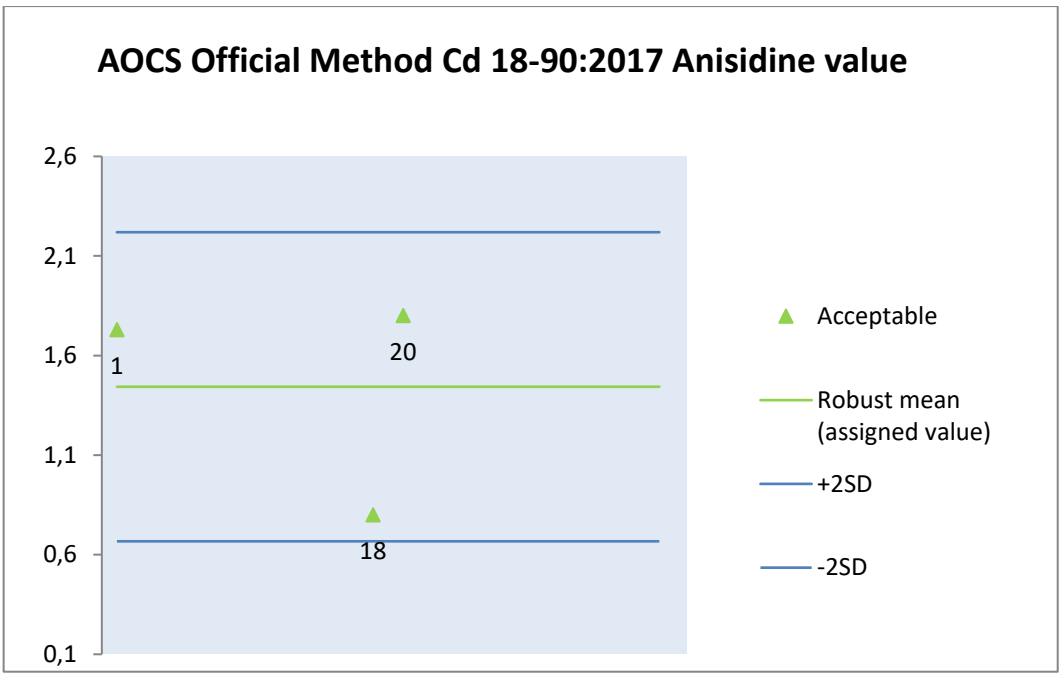


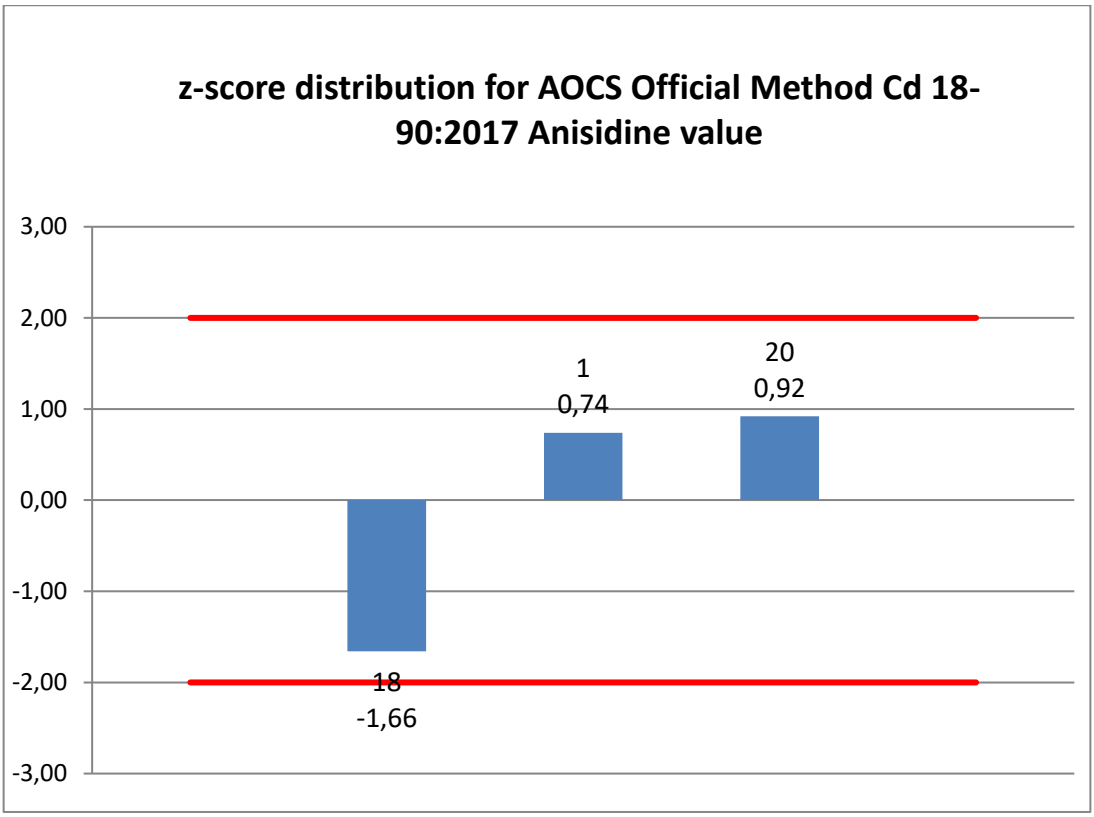
8.1.13 ISO 6885:2016/ ДСТУ EN ISO 6885:2019 (EN ISO 6885:2016, IDT; ISO 6885:2016, IDT) Anisidine value



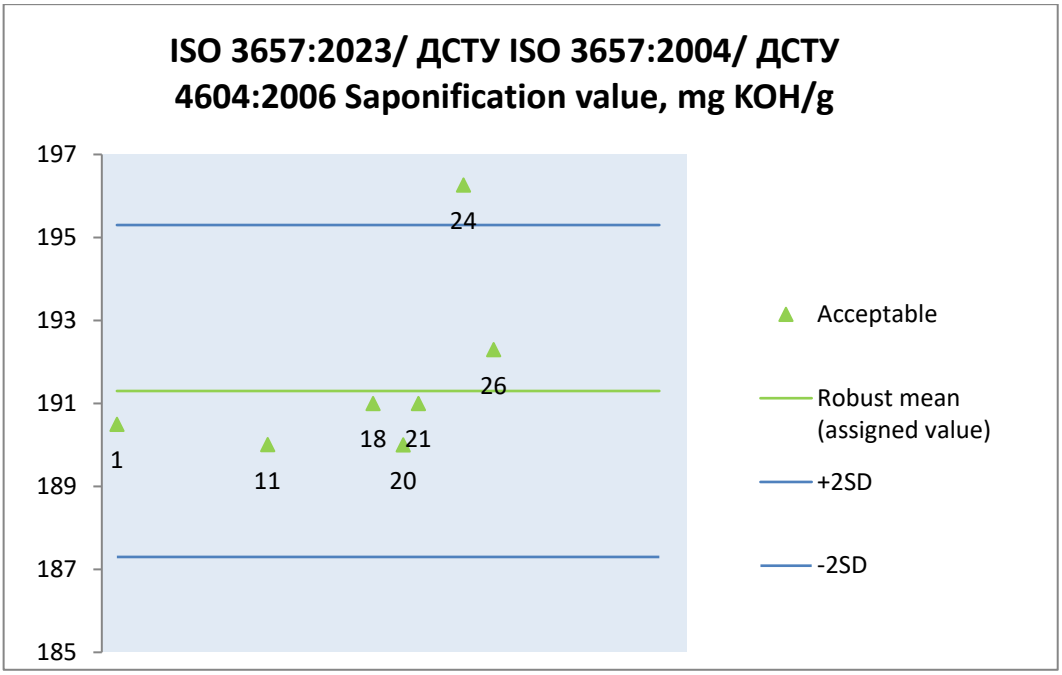


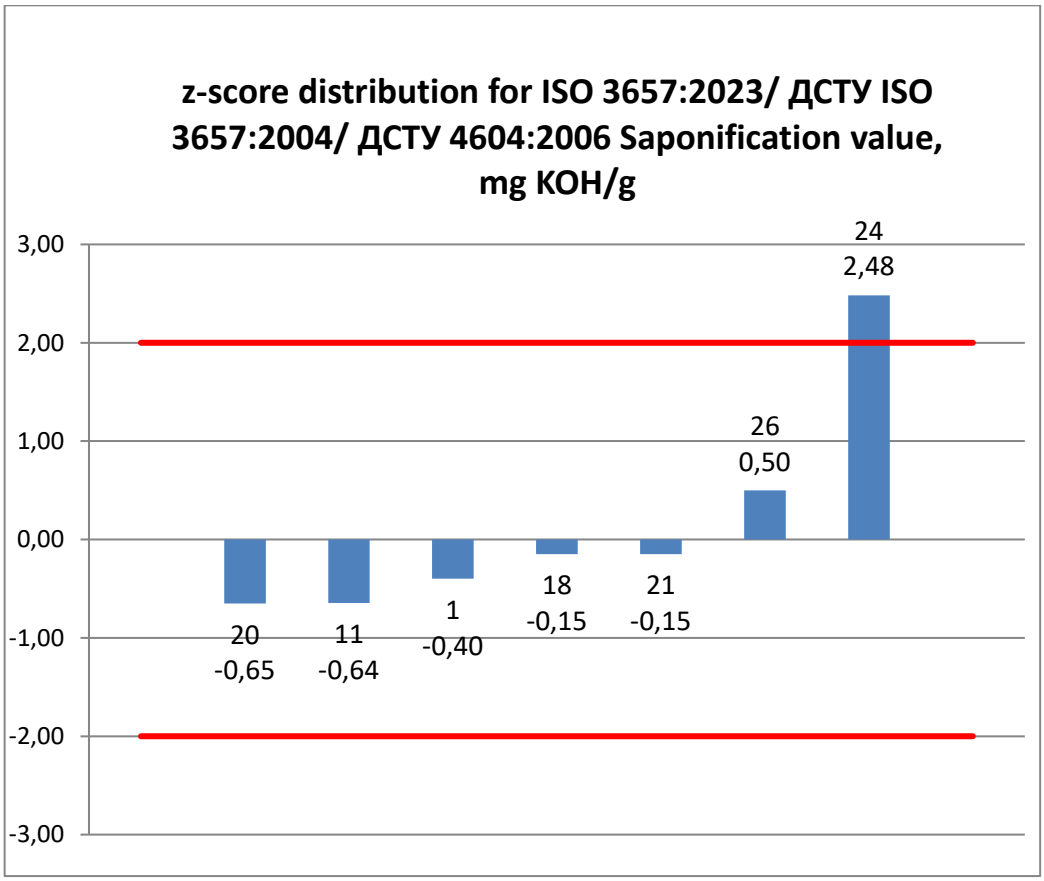
8.1.14 AOCS Official Method Cd 18-90:2017 Anisidine value



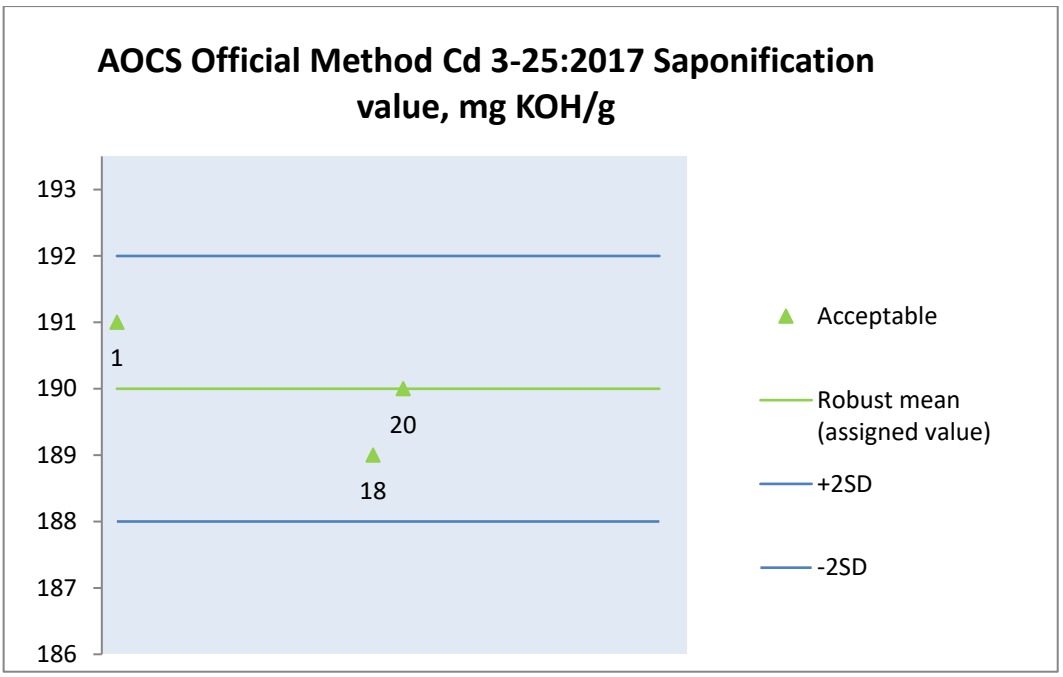


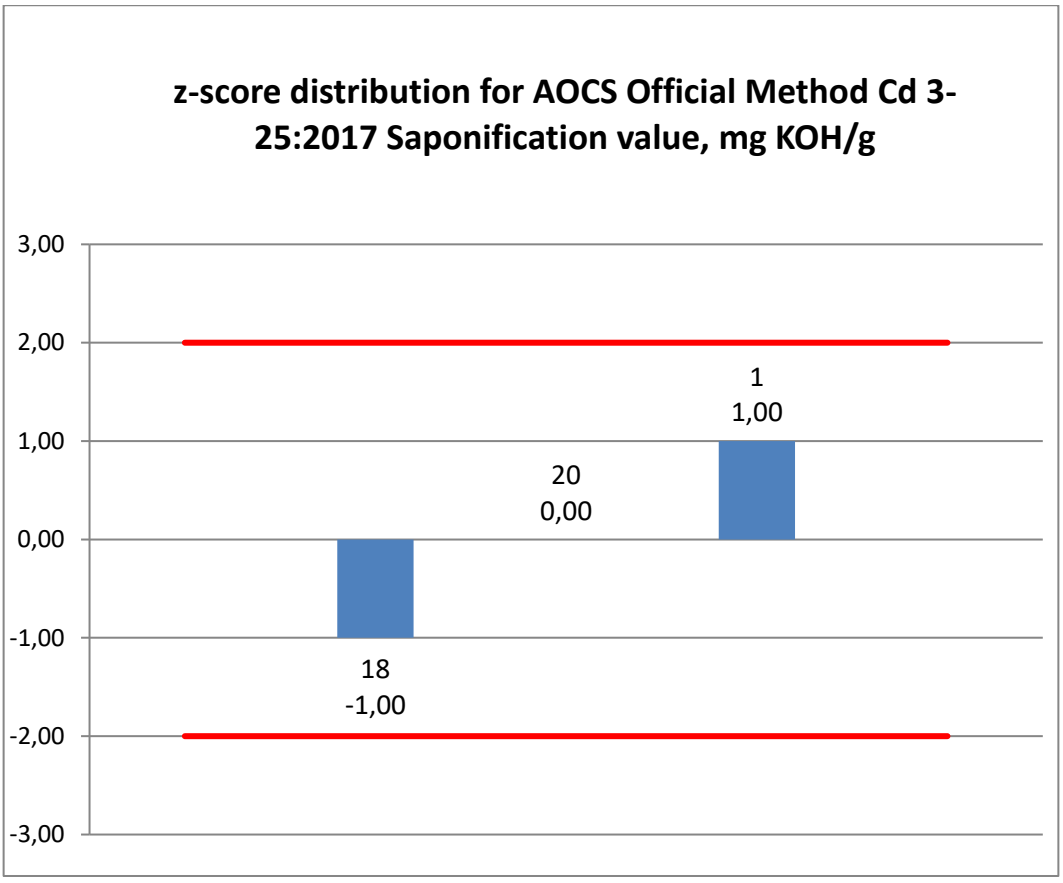
8.1.15 ISO 3657:2023/ ДСТУ ISO 3657:2004 ДСТУ 4604:2006 Saponification value, mg KOH/g



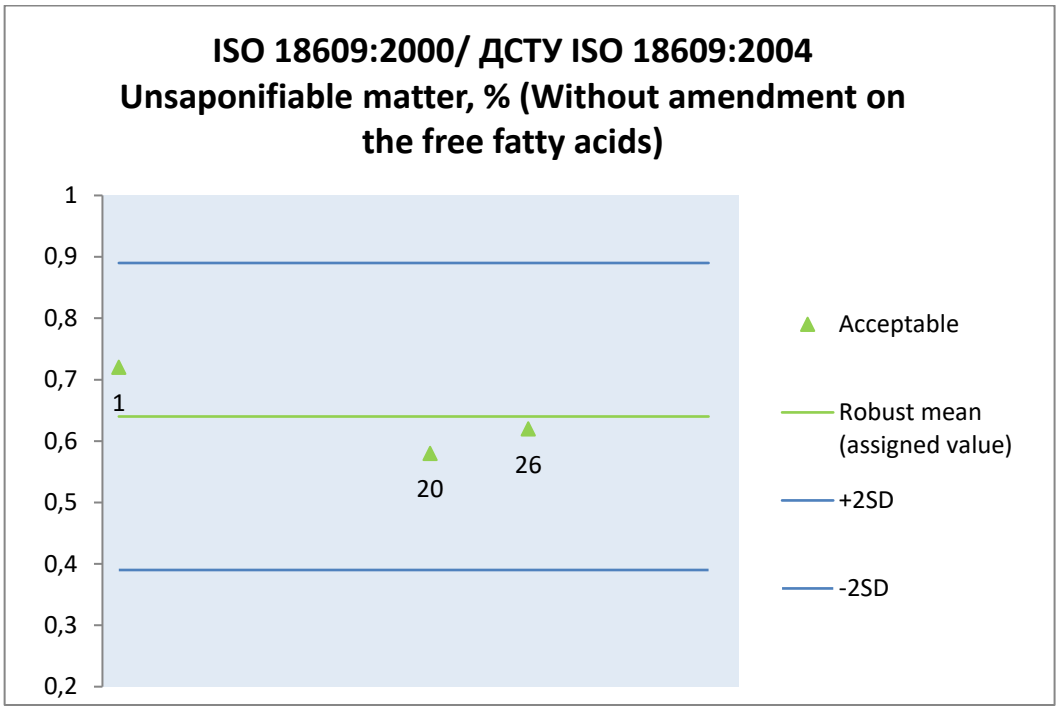


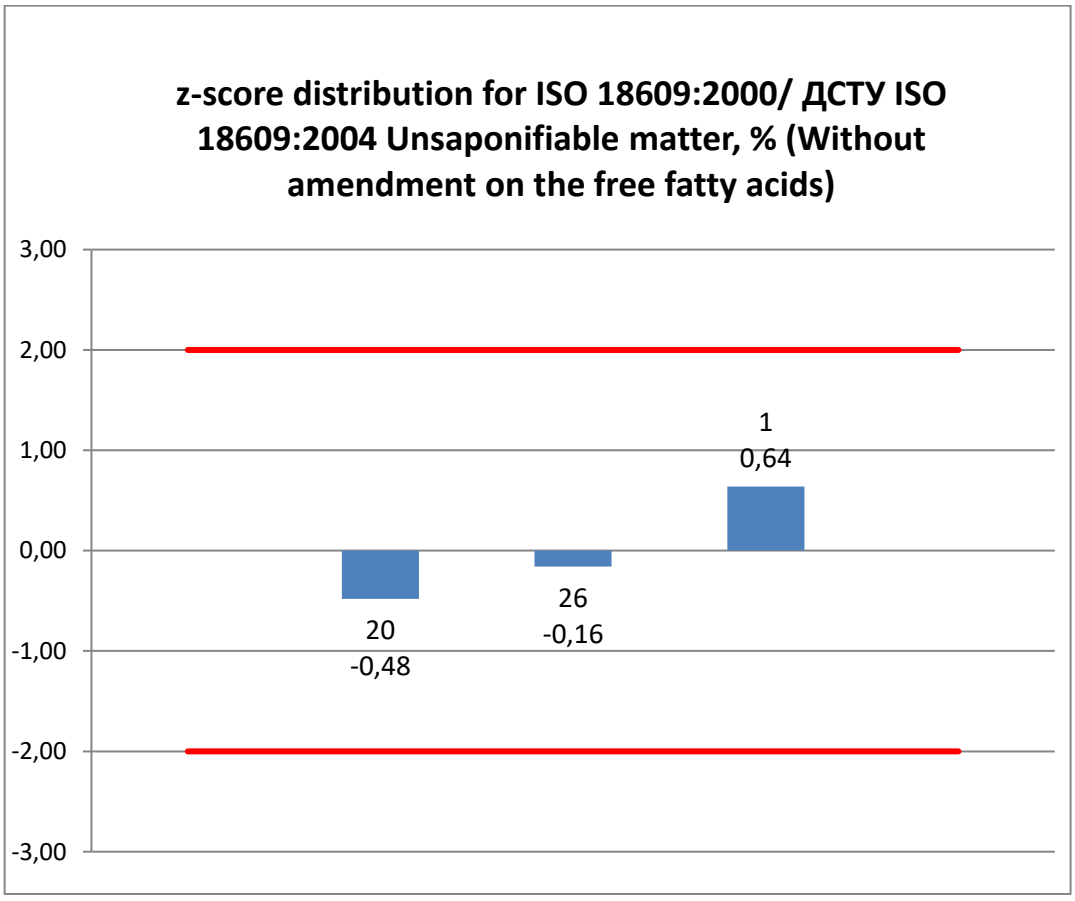
8.1.16 AOCS Official Method Cd 3-25:2017 Saponification value, mg KOH/g



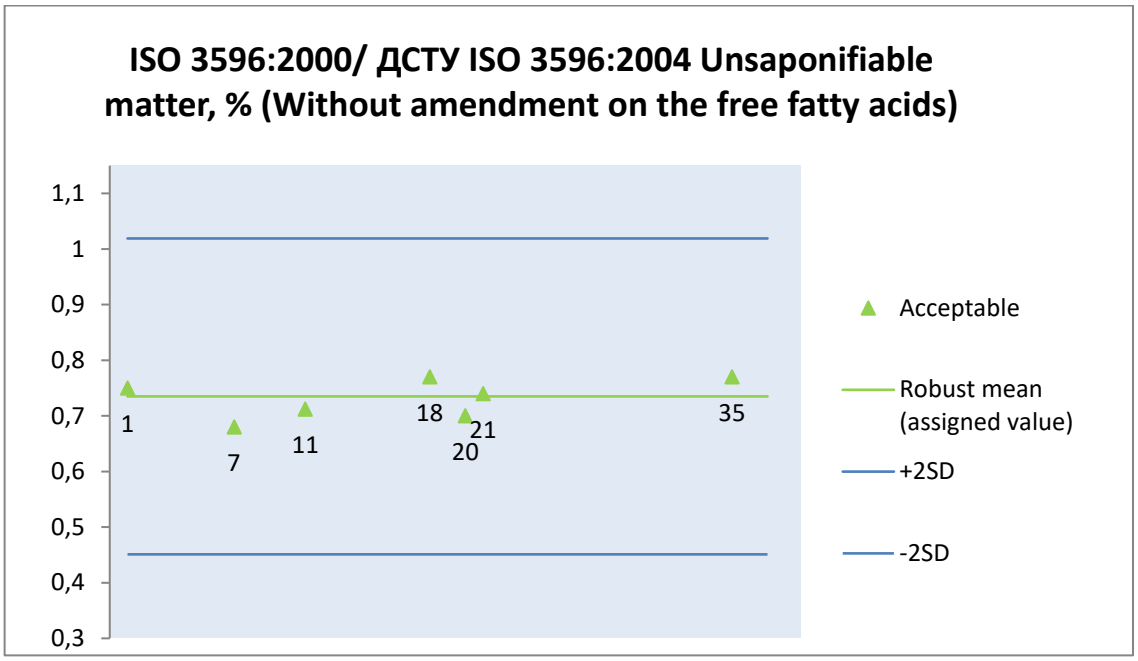


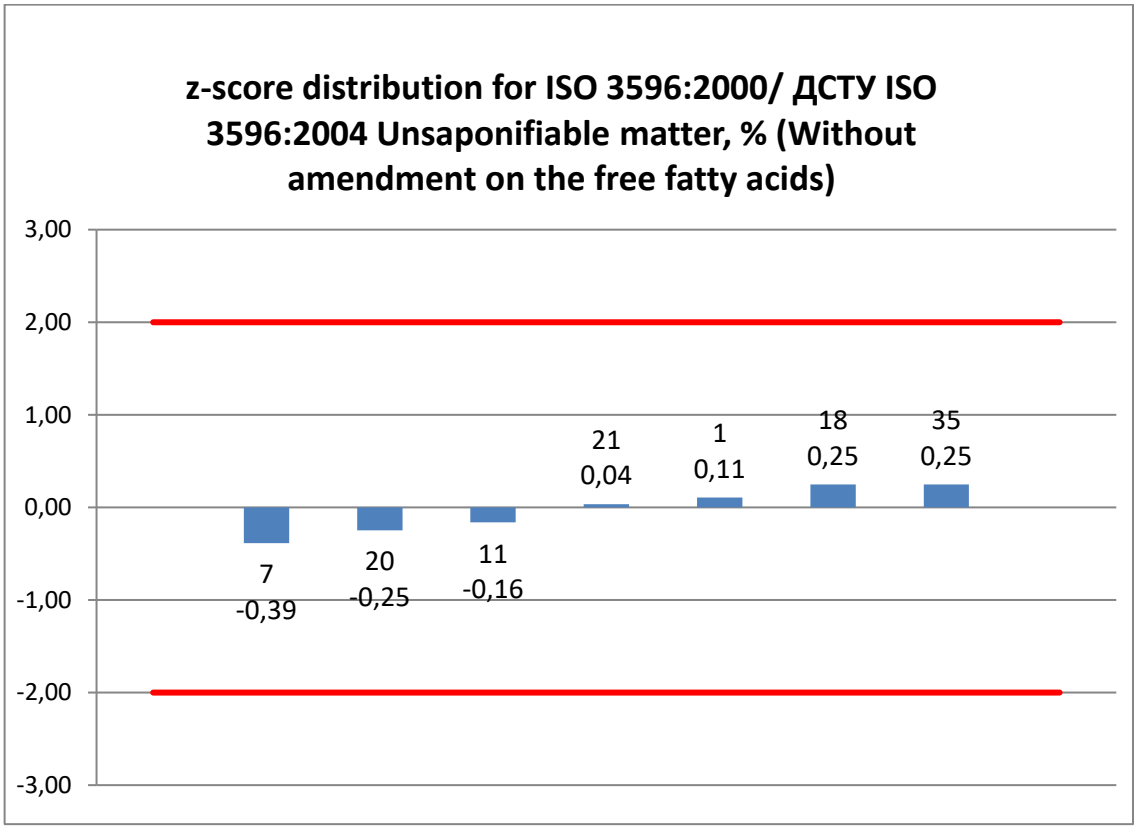
8.1.17 ISO 18609:2000/ ДСТУ ISO 18609:2004 Unsaponifiable matter, % (Without amendment on the free fatty acids)



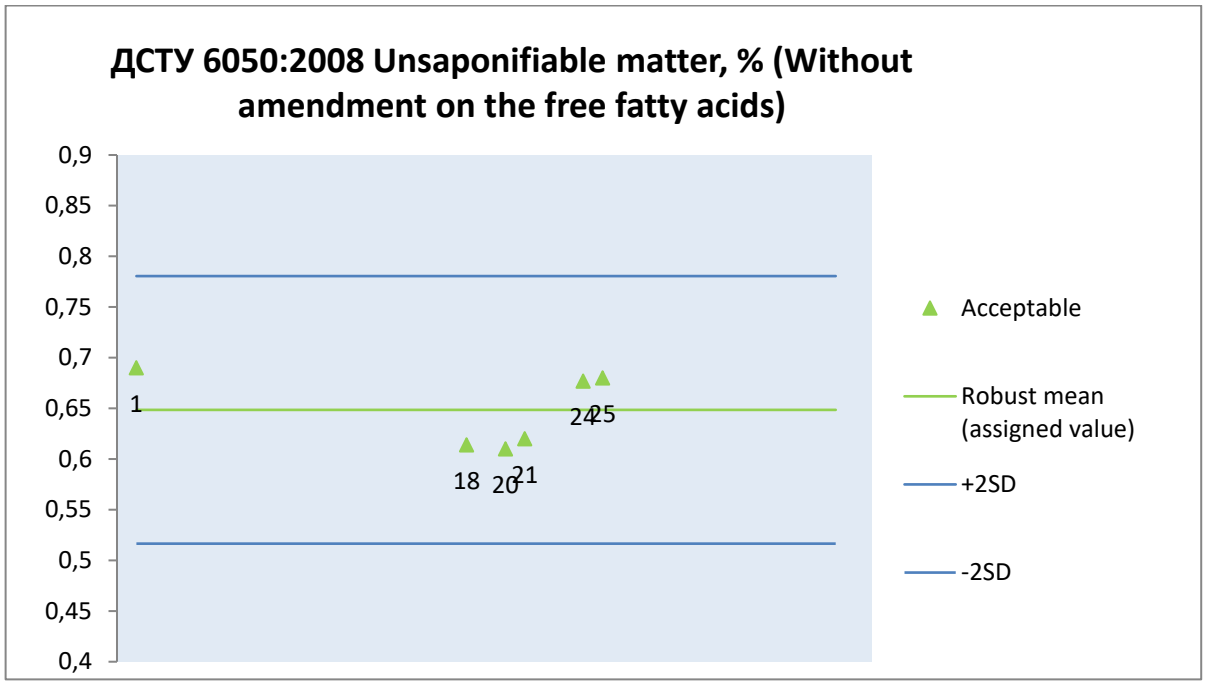


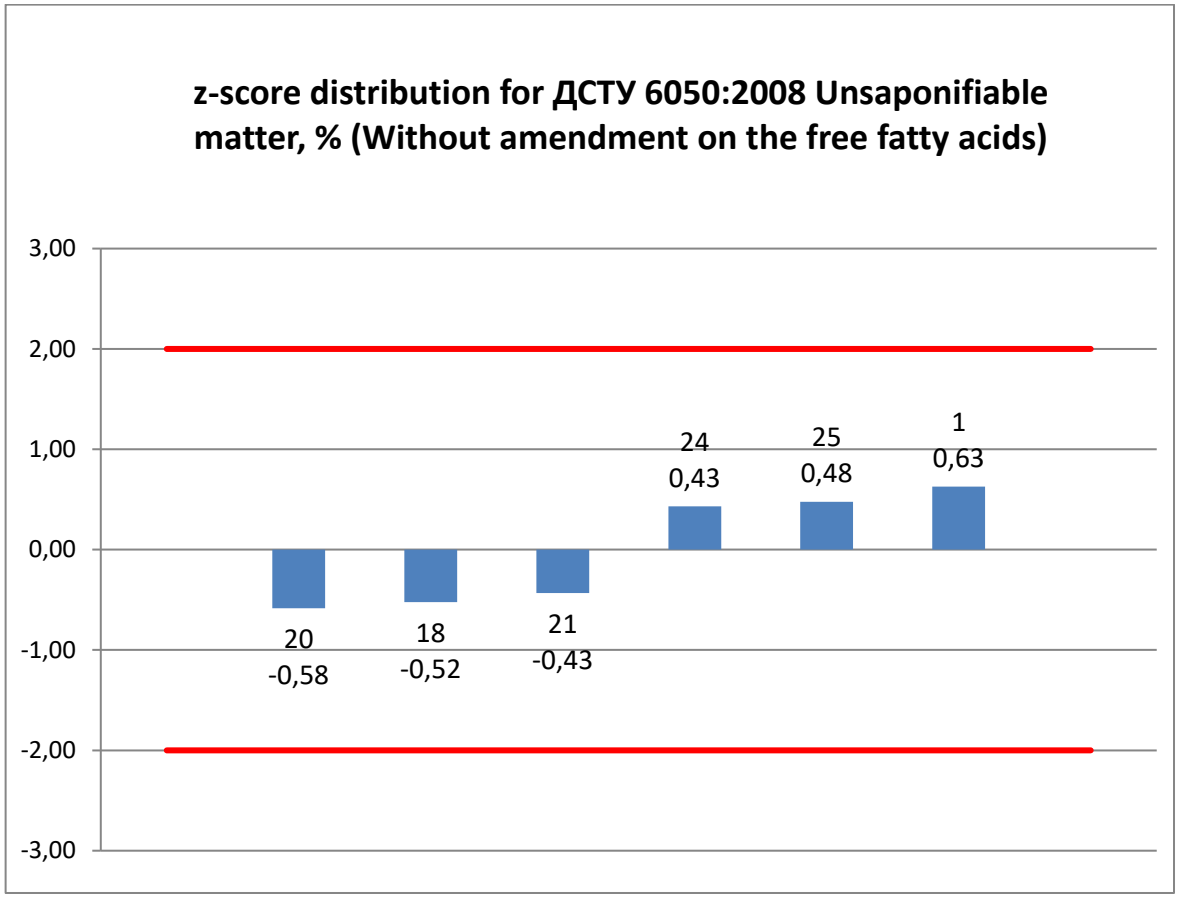
8.1.18 ISO 3596:2000/ ДСТУ ISO 3596:2004 Unsaponifiable matter, % (Without amendment on the free fatty acids)



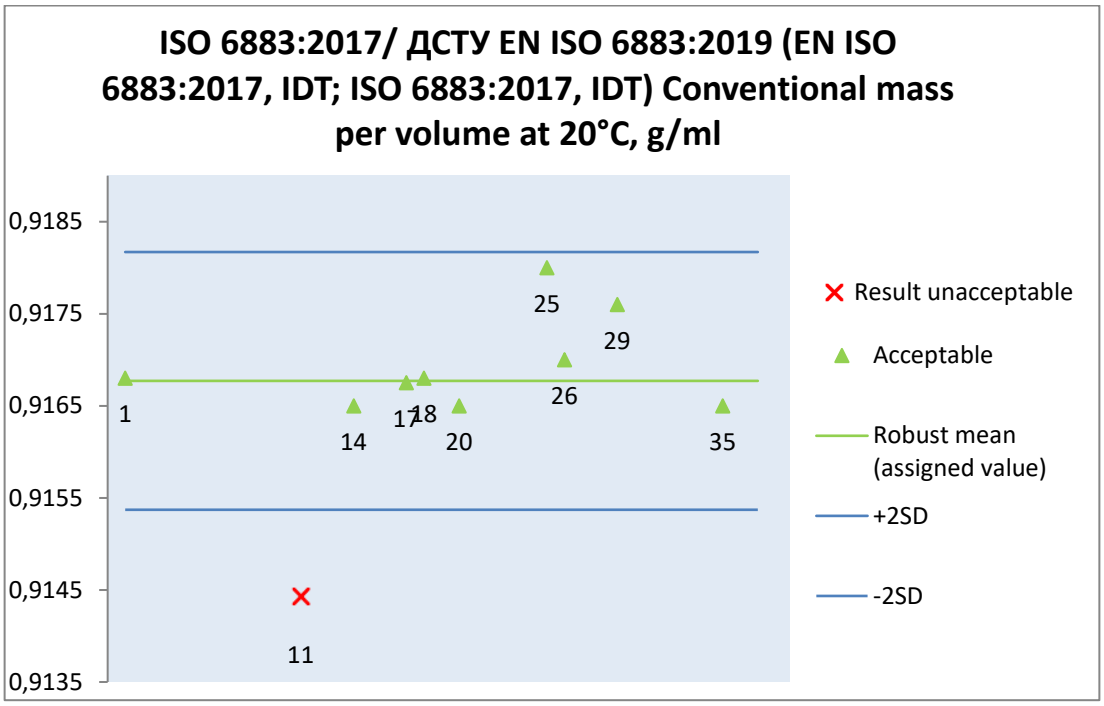


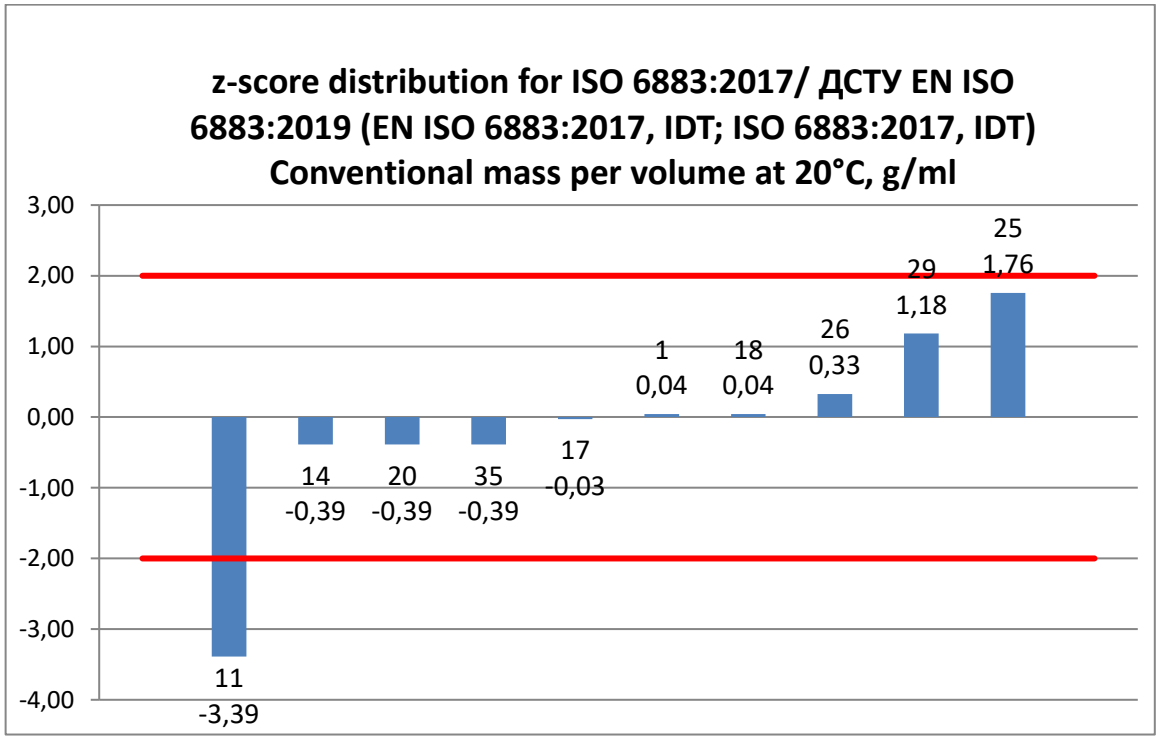
8.1.19 ДСТУ 6050:2008 Unsaponifiable matter, % (Without amendment on the free fatty acids)



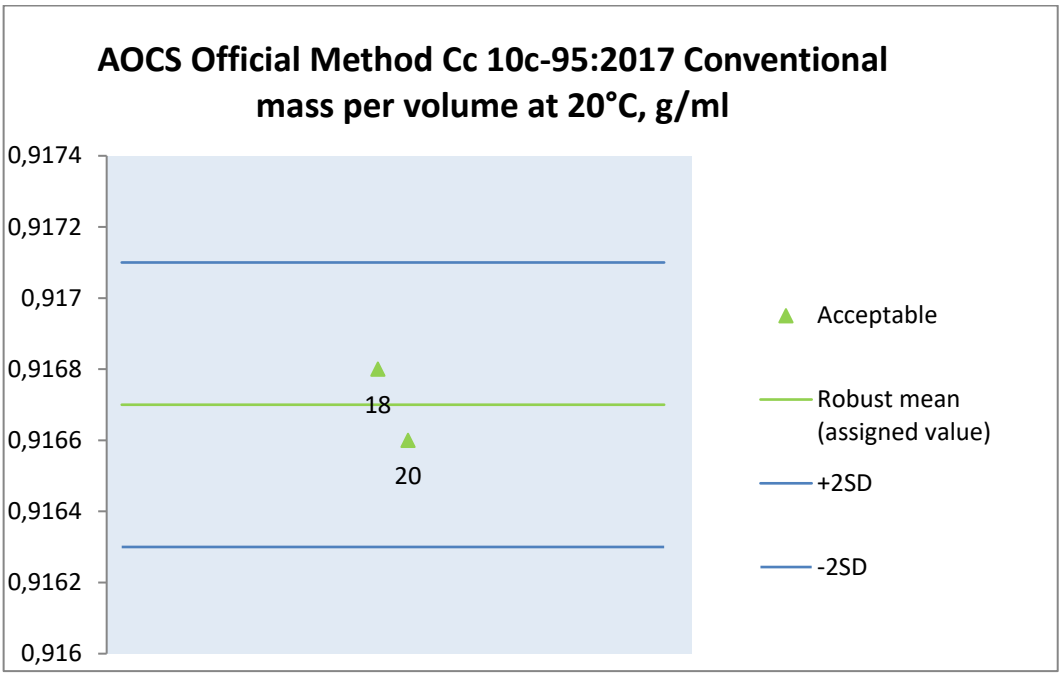


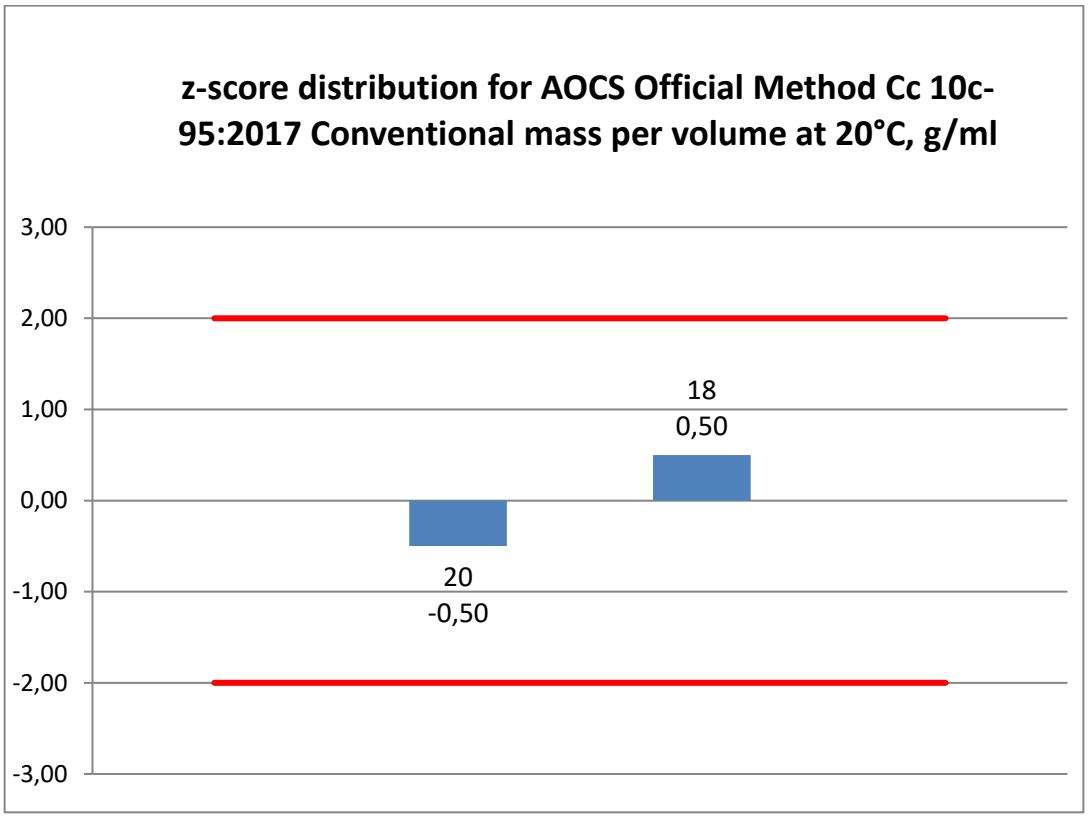
8.1.20 ISO 6883:2017/ ДСТУ EN ISO 6883:2019 (EN ISO 6883:2017, IDT; ISO 6883:2017, IDT) Conventional mass per volume at 20°C, g/ml



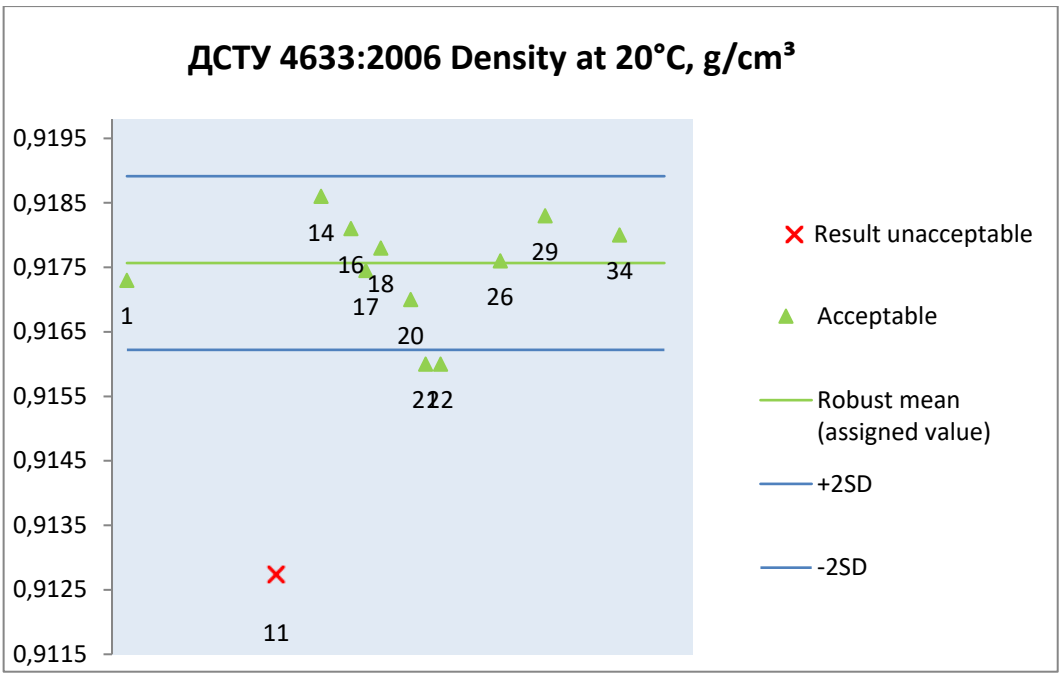


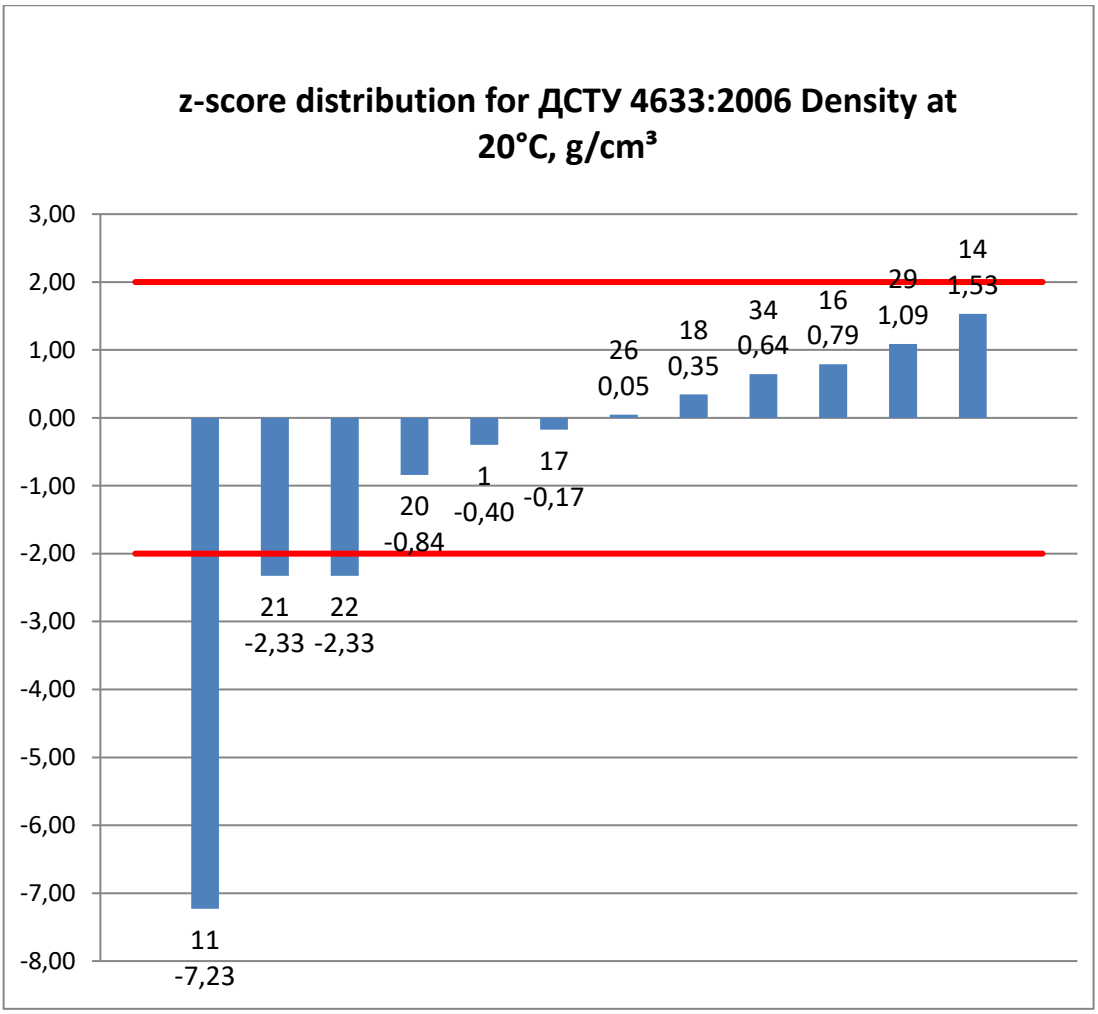
8.1.21 AOCS Official Method Cc 10c-95:2017 Conventional mass per volume at 20°C, g/ml



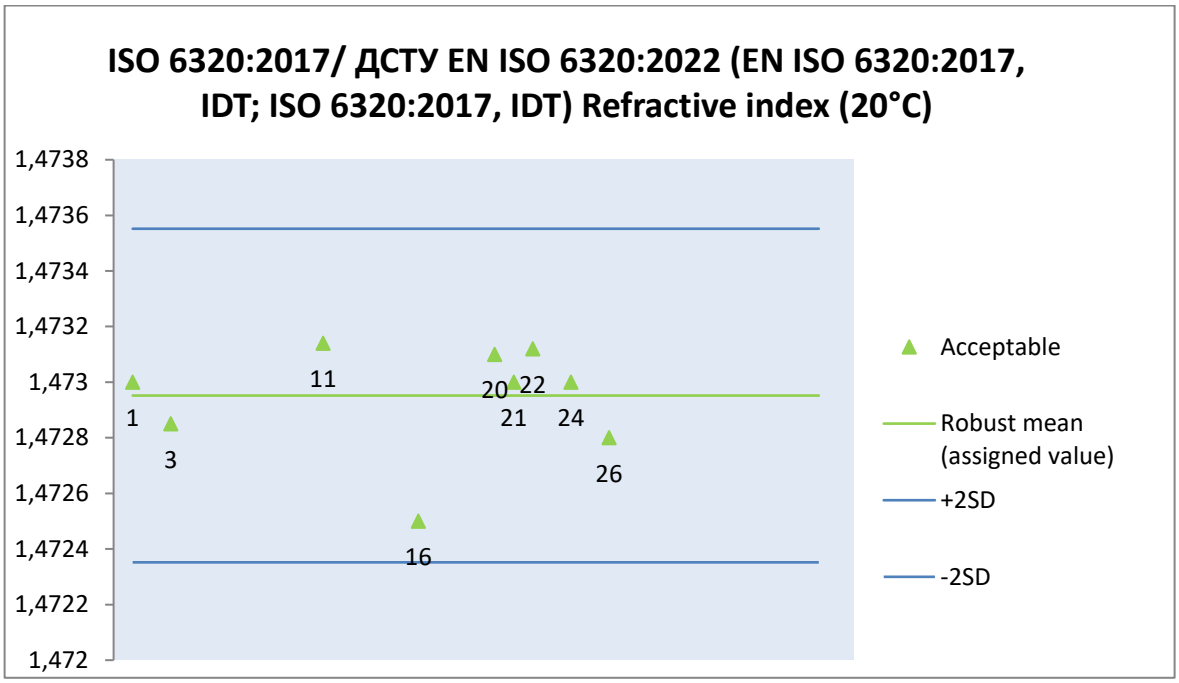


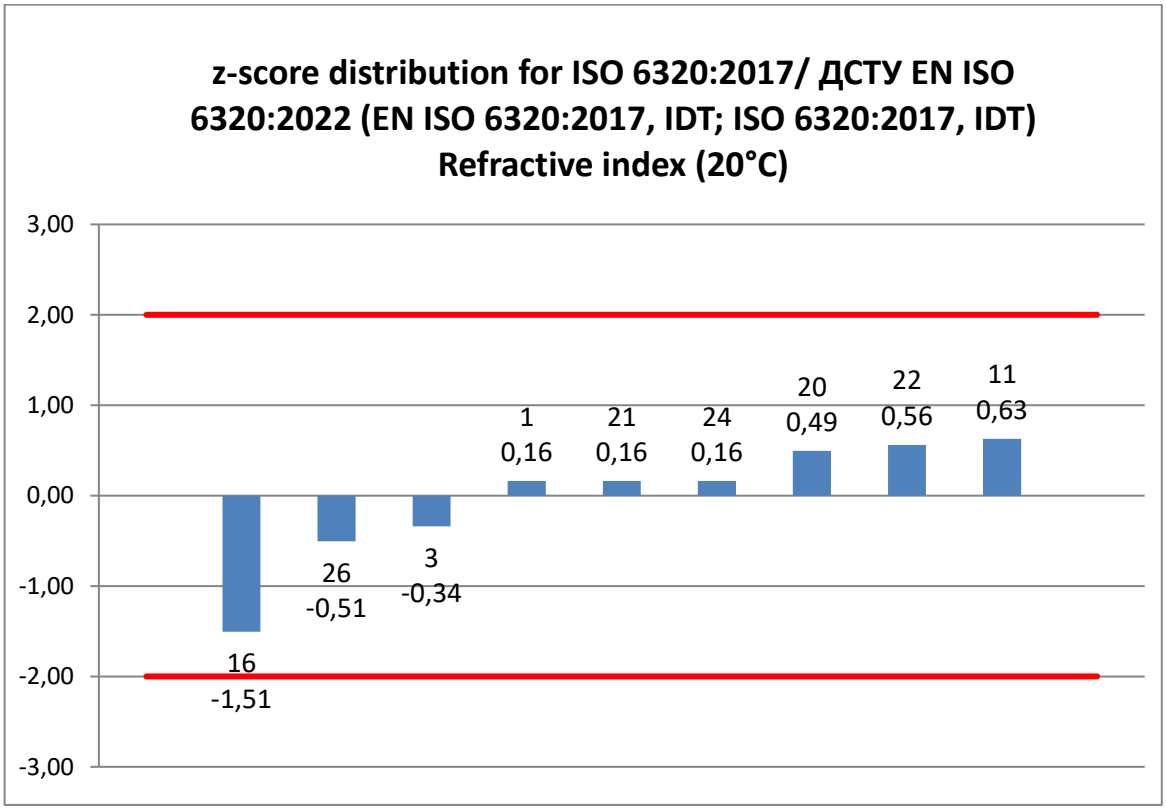
8.1.22 ДСТУ 4633:2006 Density at 20°C, g/cm³



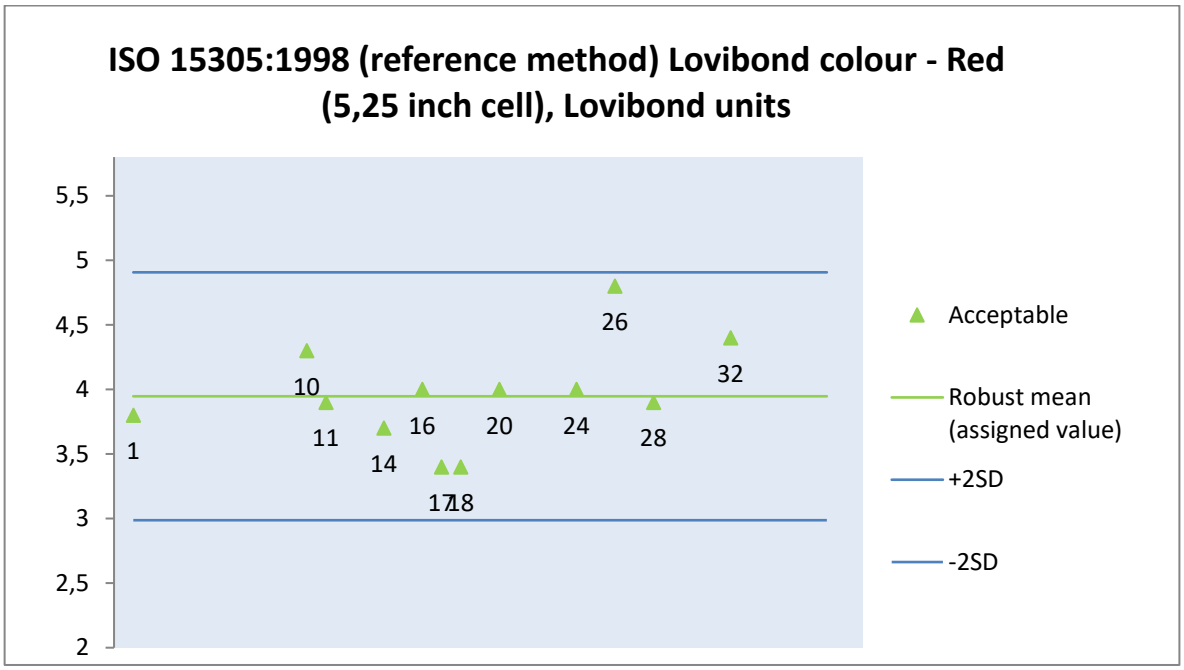


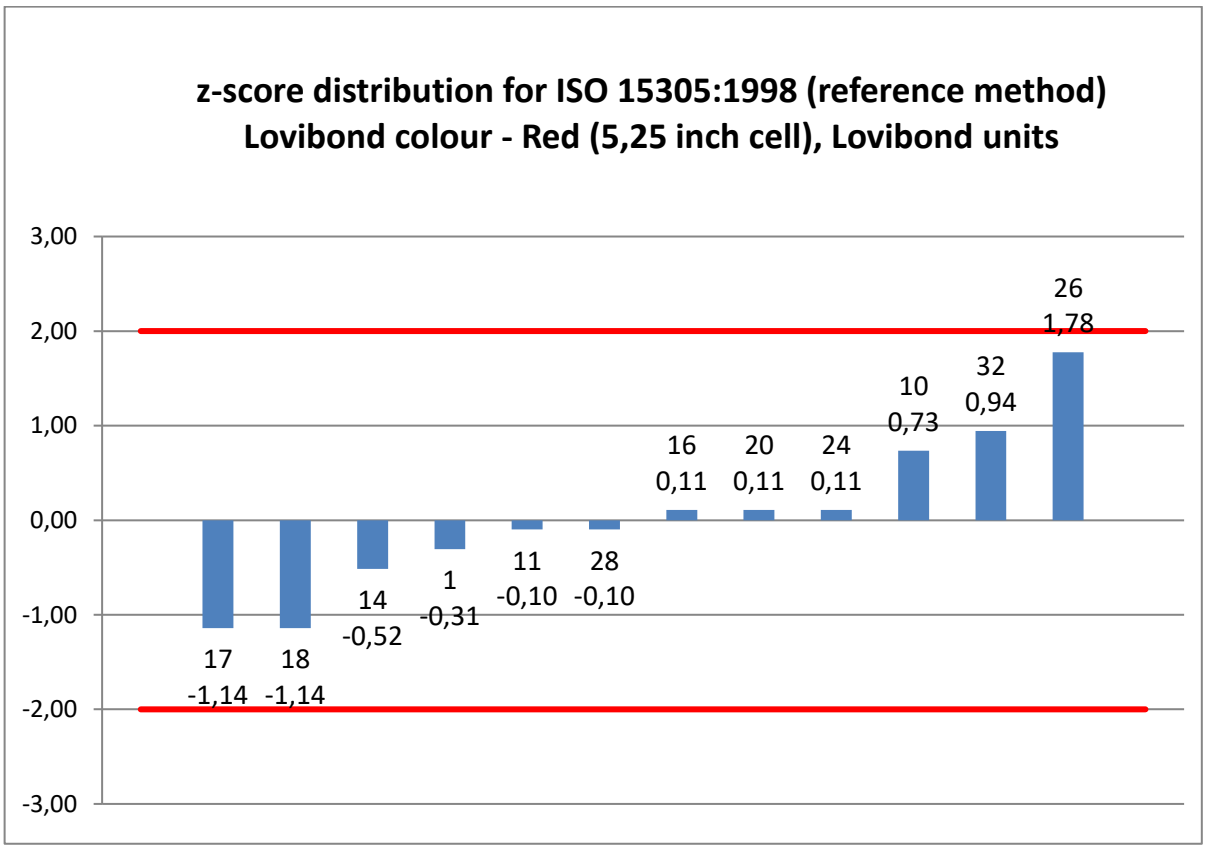
8.1.23 ISO 6320:2017 /ДСТУ ISO 6320:2015 (ISO 6320:2000, IDT) Refractive index (20°C)



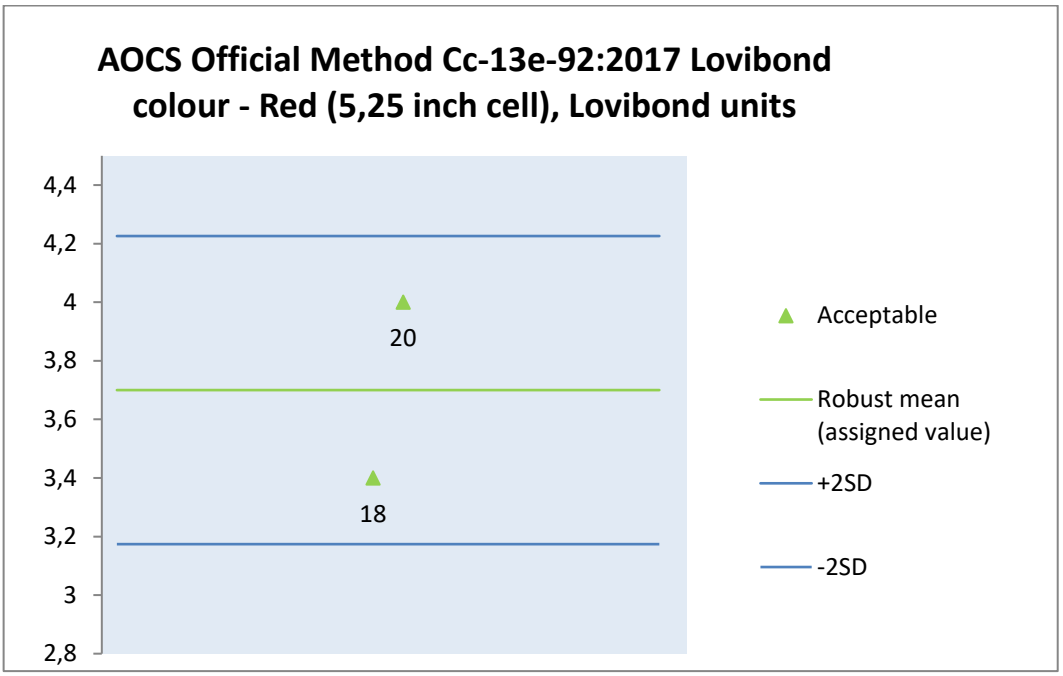


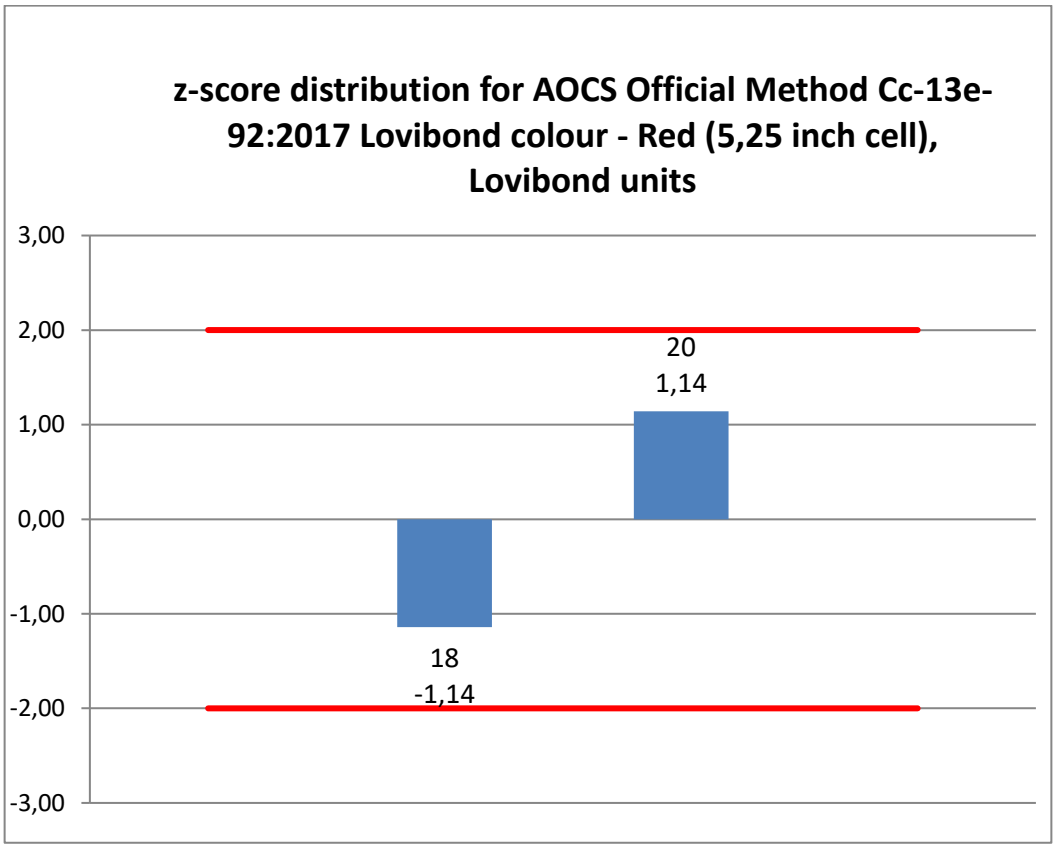
8.1.24 ISO 15305:1998 (reference method) Lovibond colour - Red (5,25 inch cell), Lovibond units



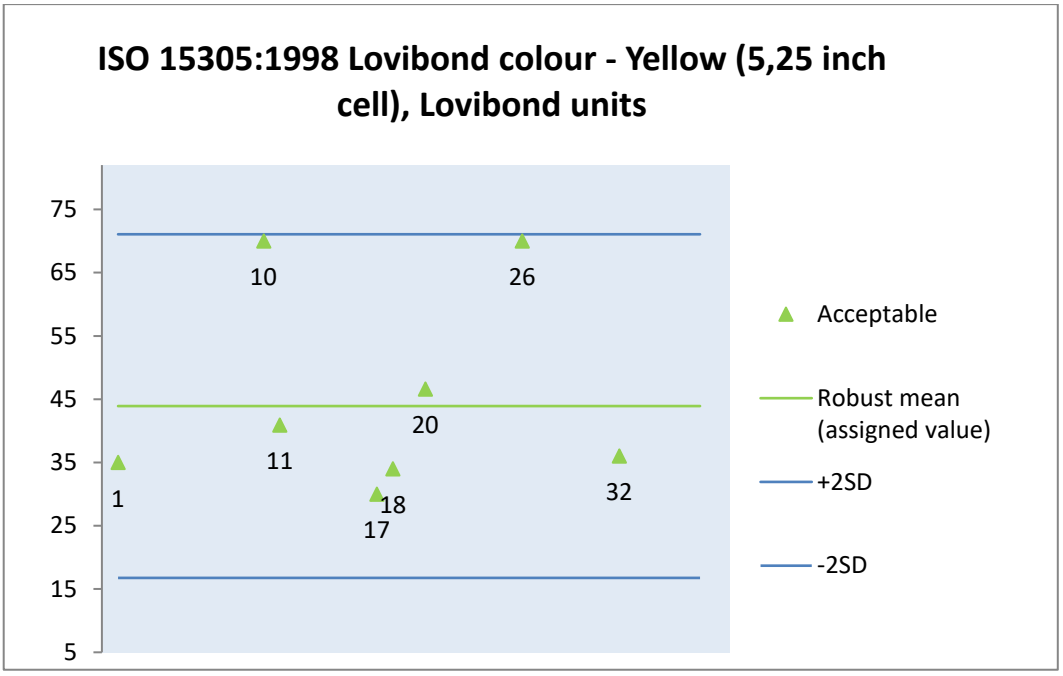


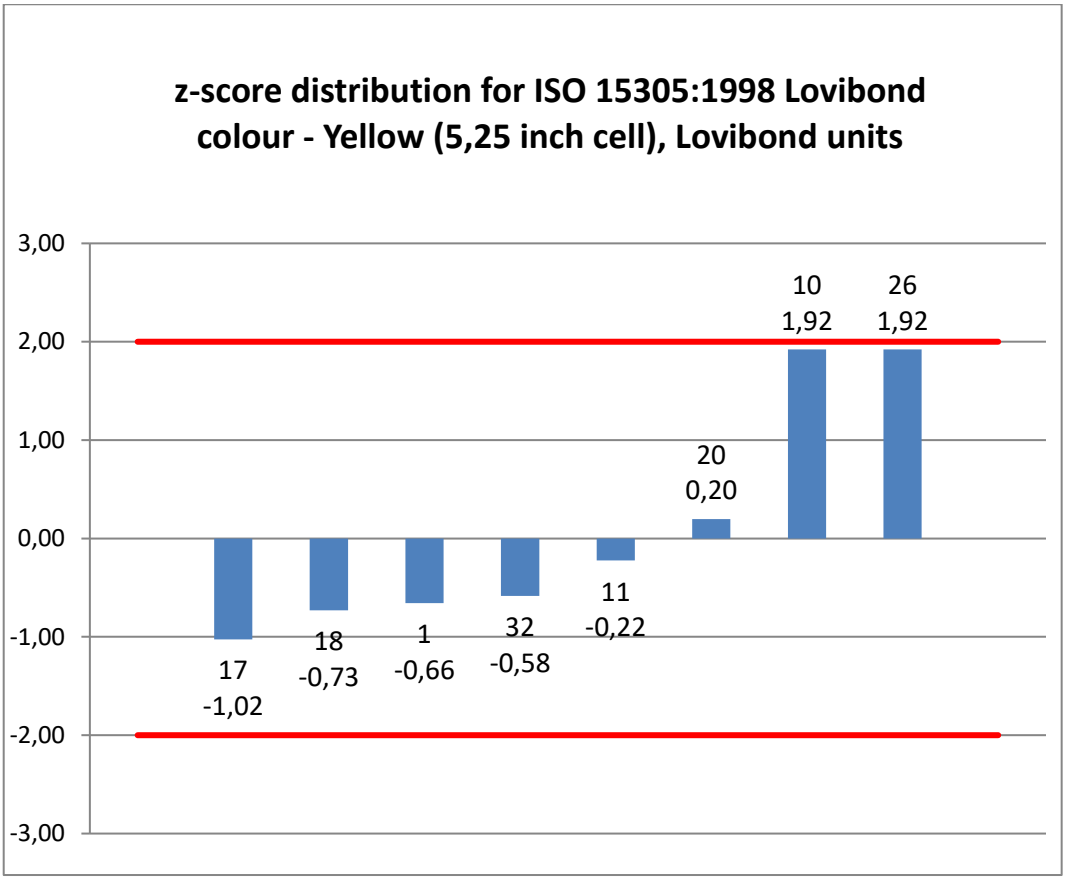
8.1.25 AOCS Official Method Cc-13e-92:2017 Lovibond colour - Red (5,25 inch cell), Lovibond units



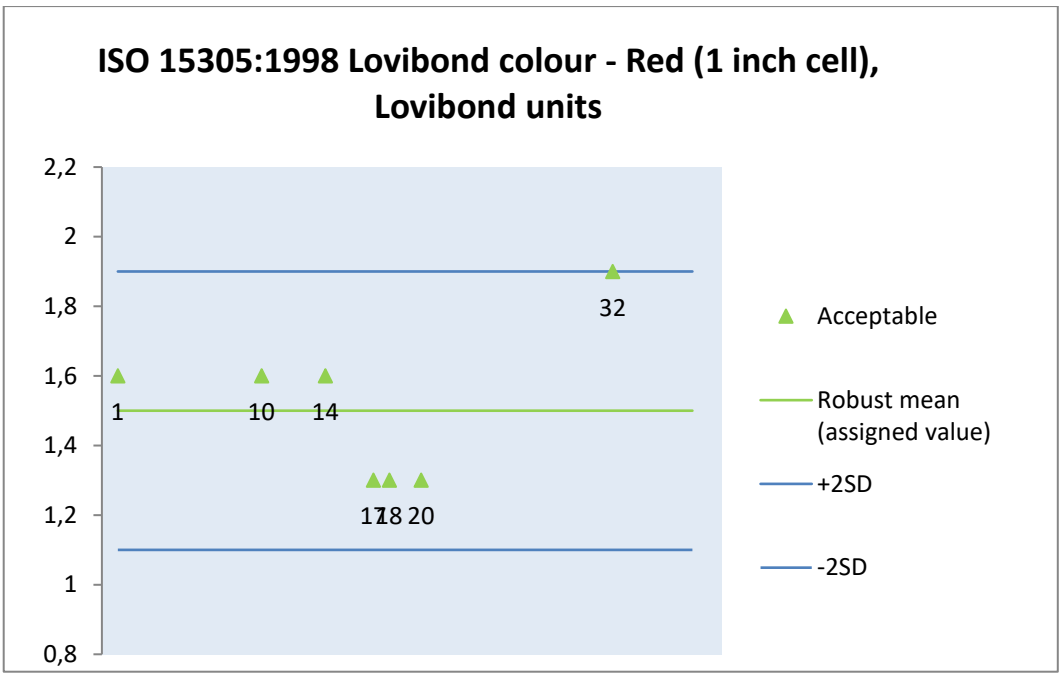


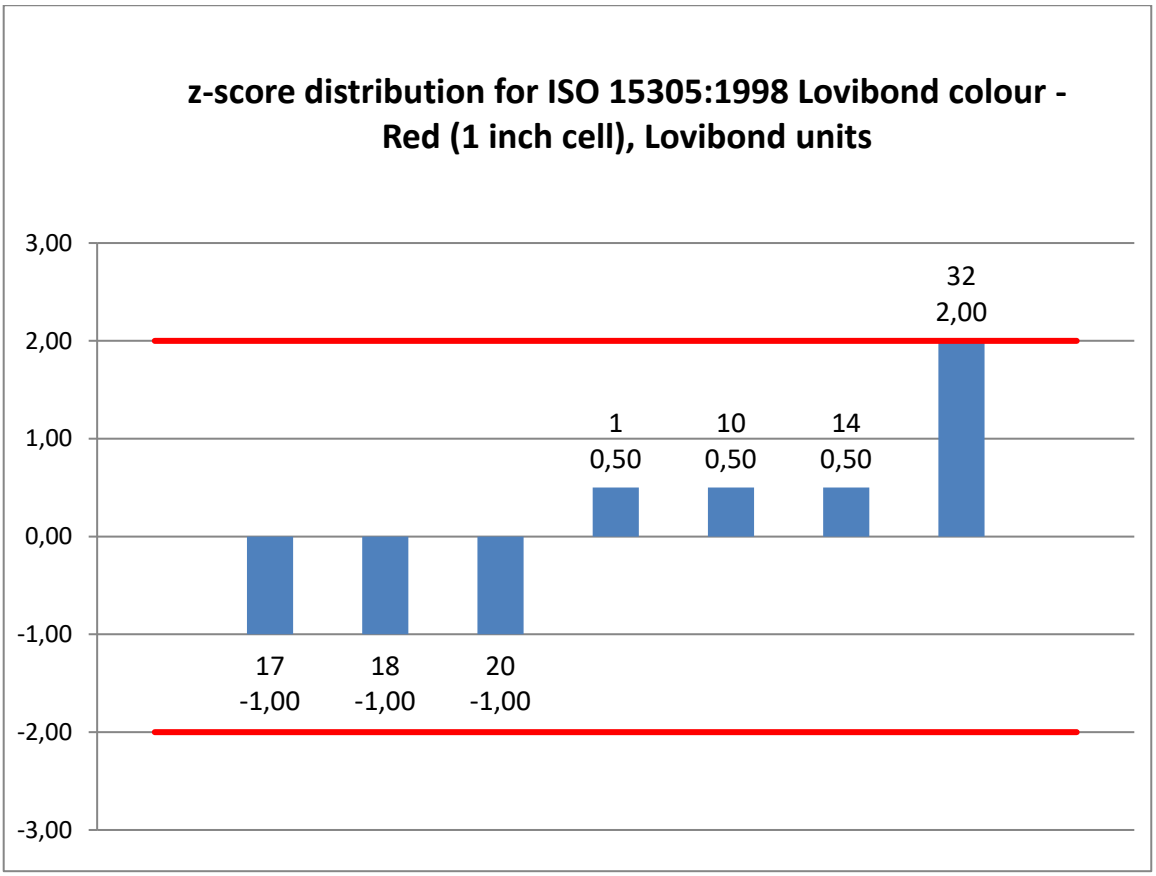
8.1.26 ISO 15305:1998 Lovibond colour - Yellow (5,25 inch cell), Lovibond units



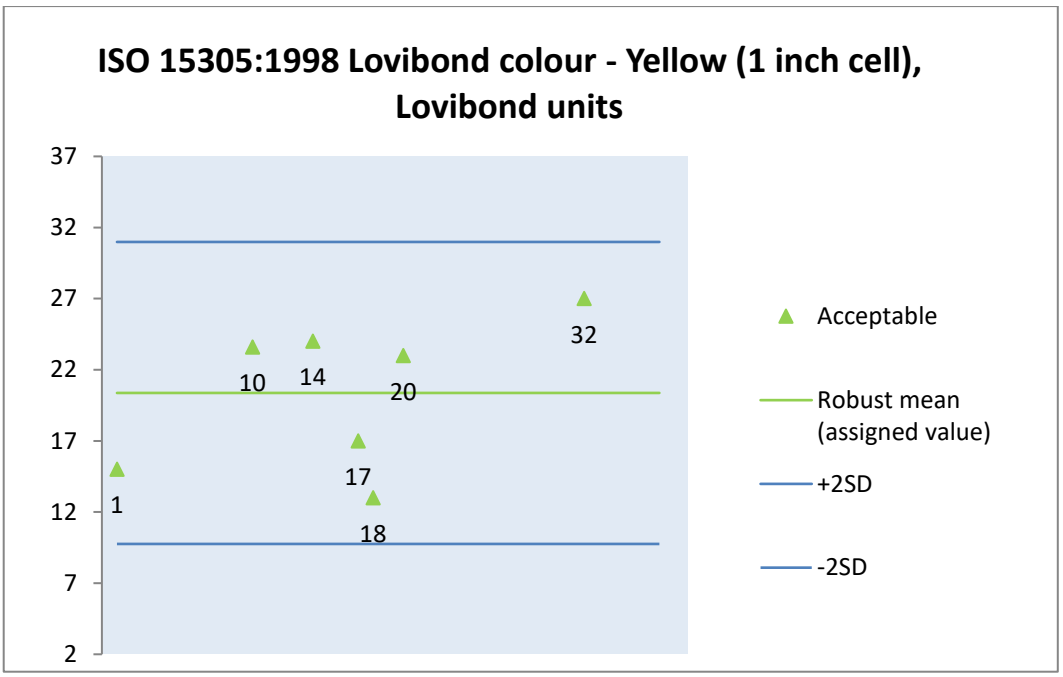


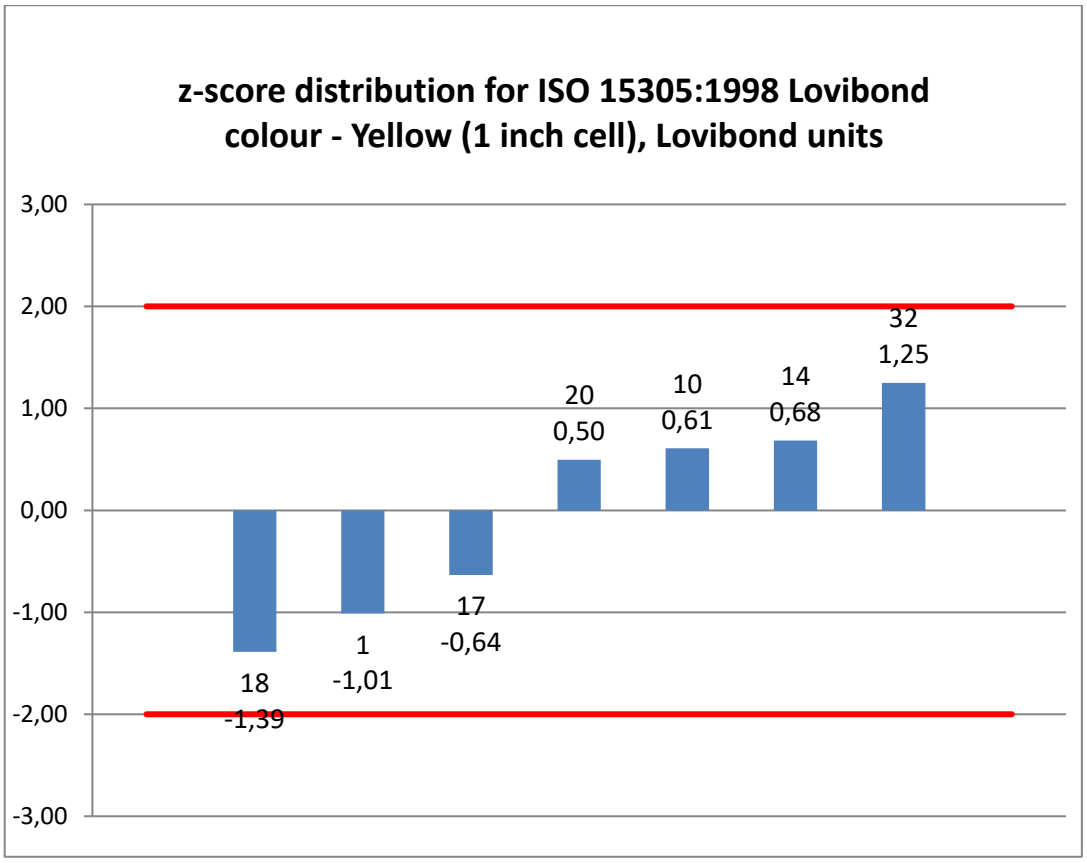
8.1.27 ISO 15305:1998 Lovibond colour - Red (1 inch cell), Lovibond units



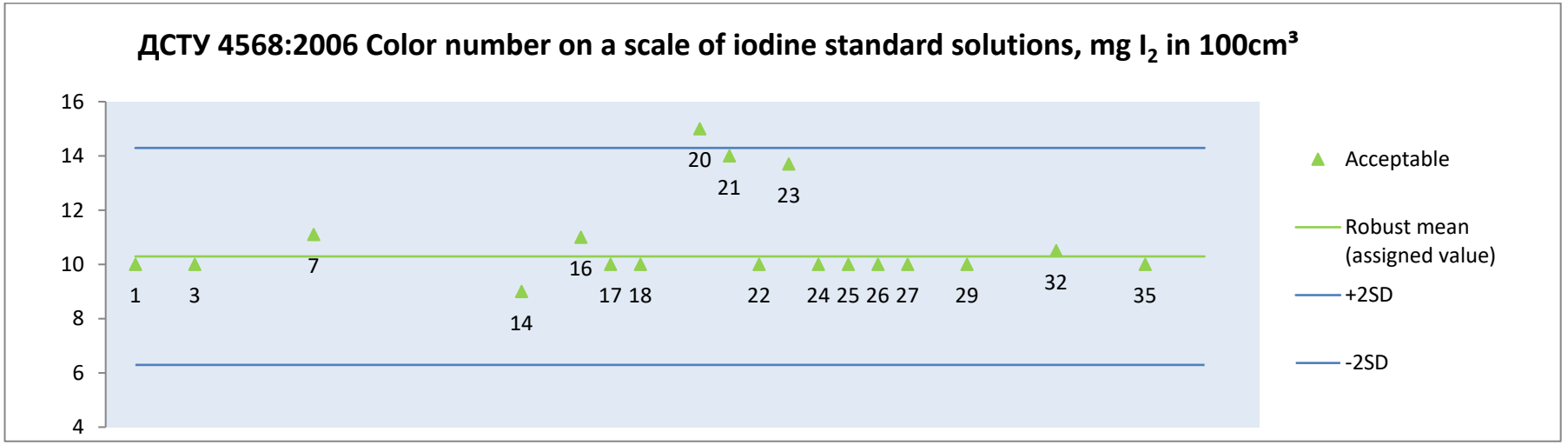


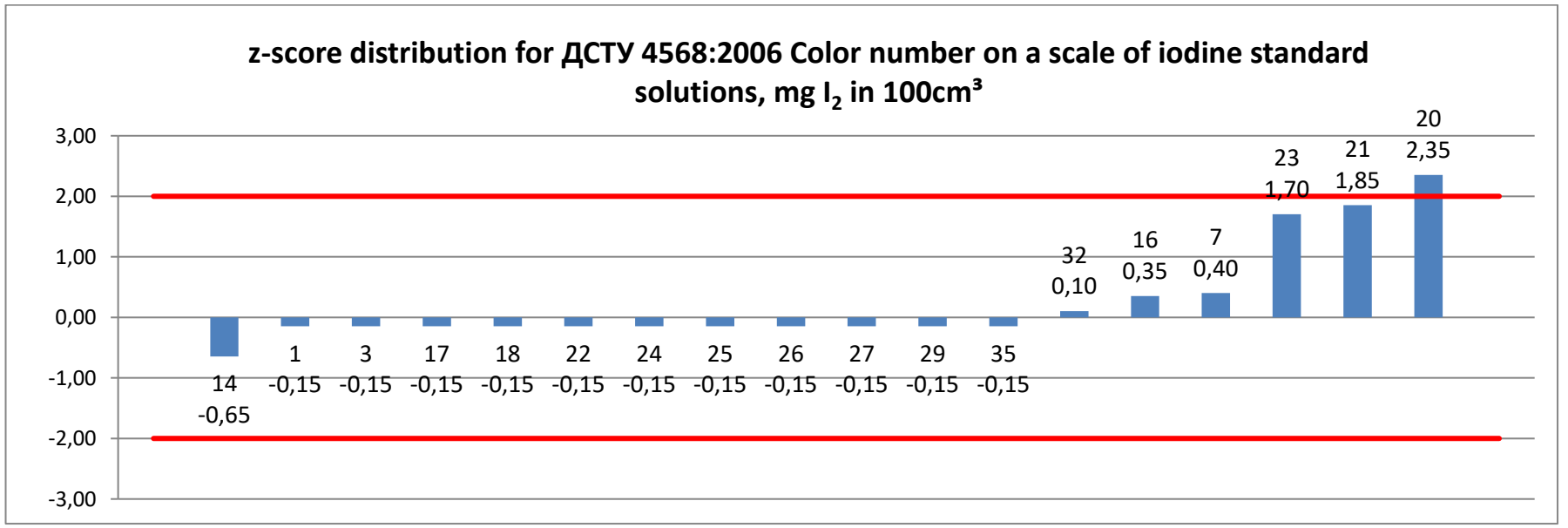
8.1.28 ISO 15305:1998 Lovibond colour - Yellow (1 inch cell), Lovibond units



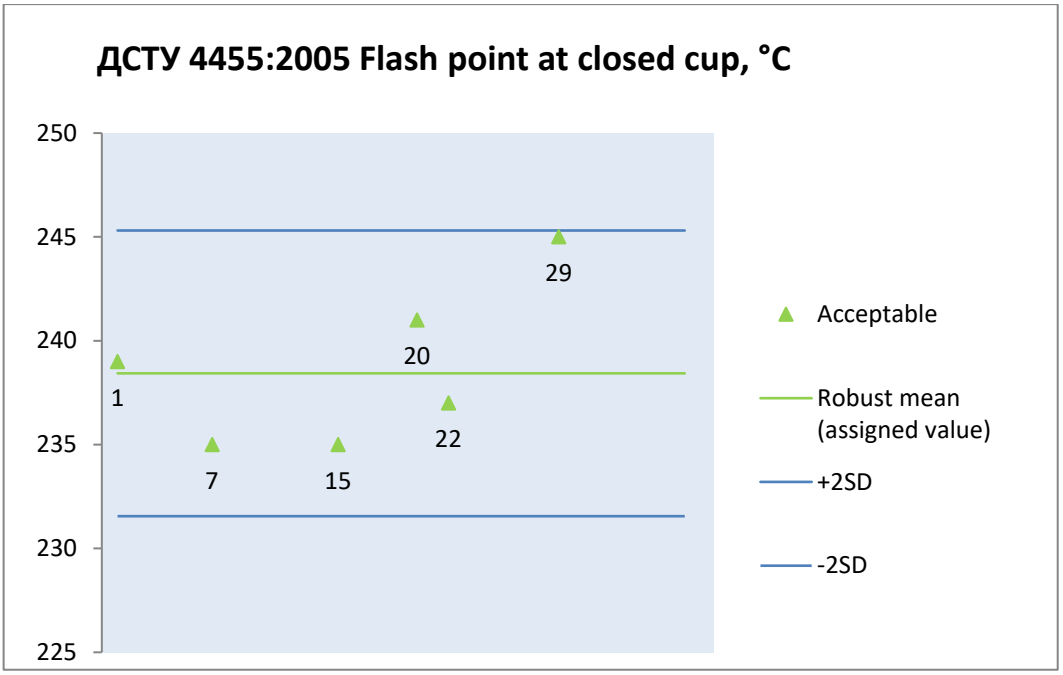


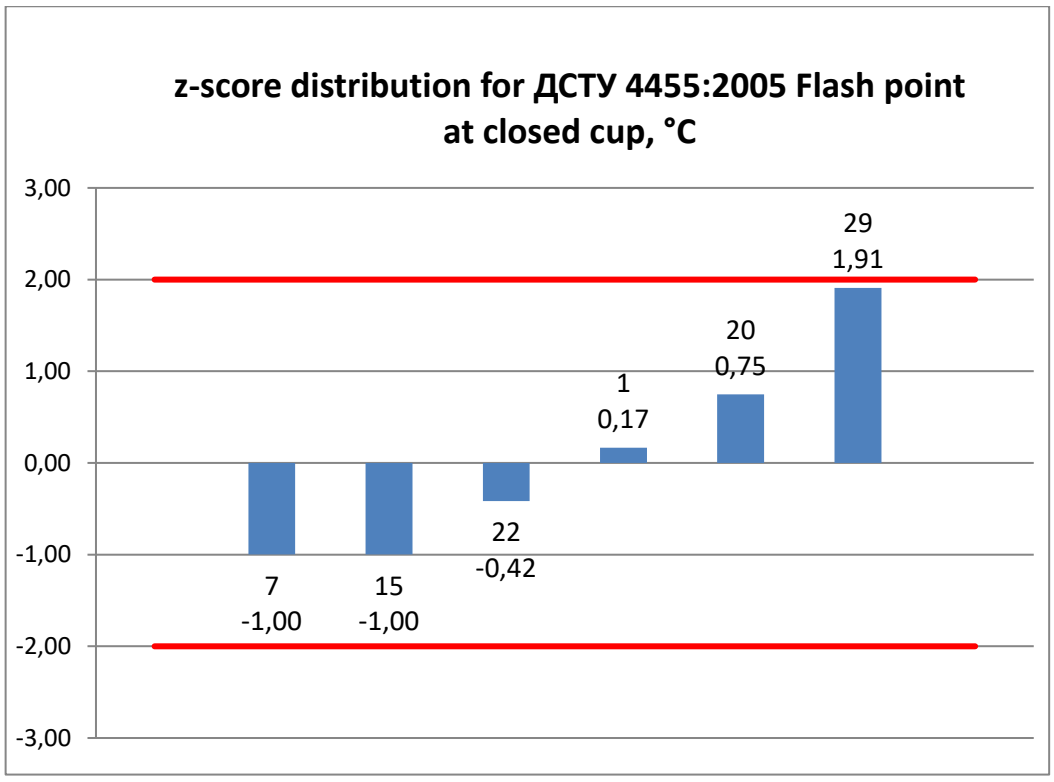
8.1.29 ДСТУ 4568:2006 Color number on a scale of iodine standard solutions, mg I_2 in 100cm³



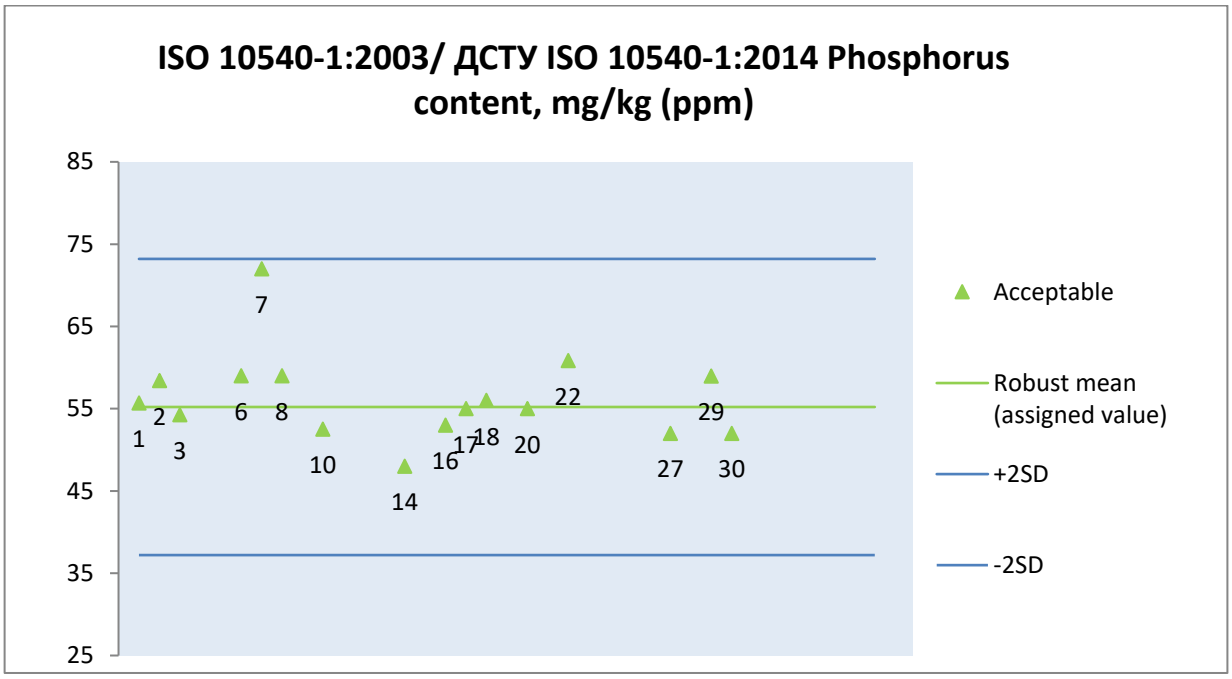


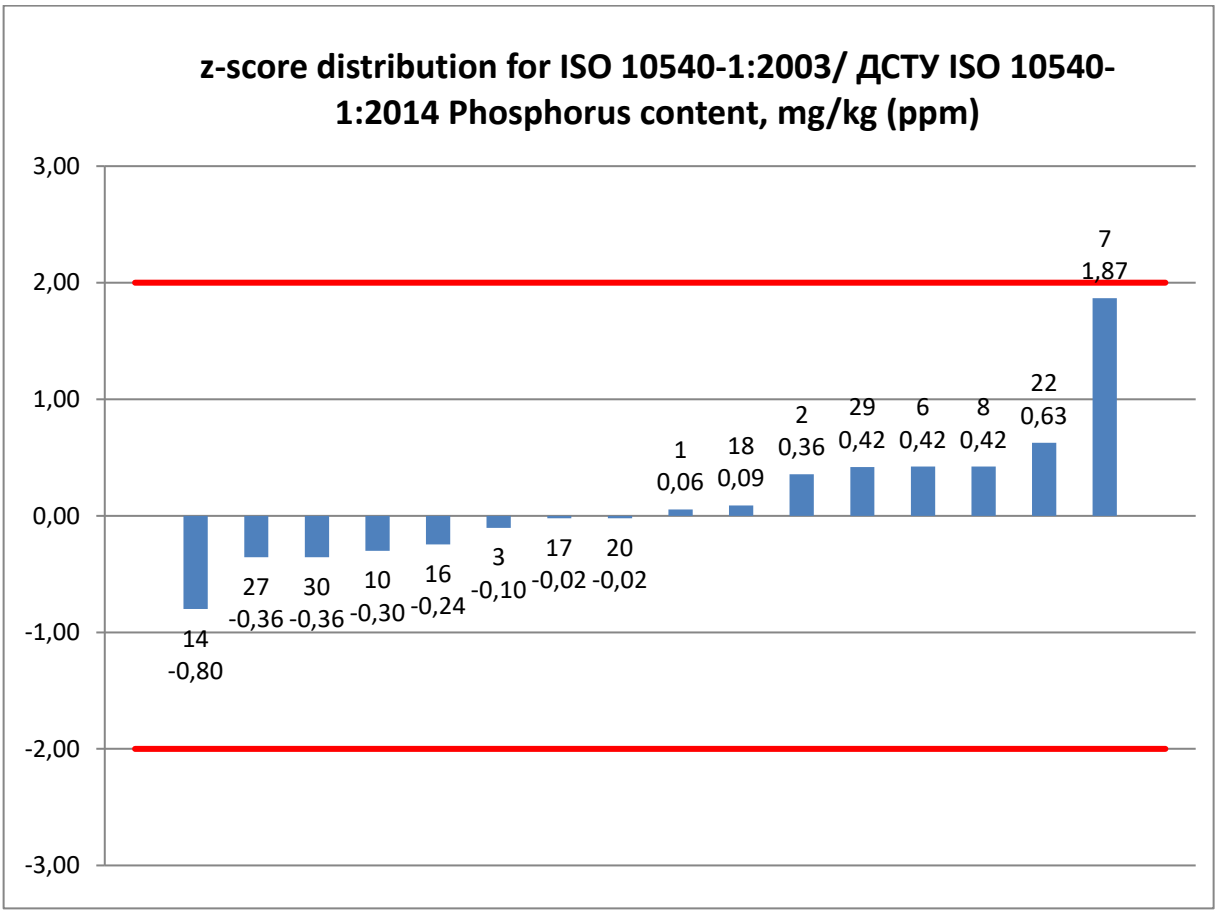
8.1.30 ДСТУ 4455:2005 Flash point at closed cup, °C



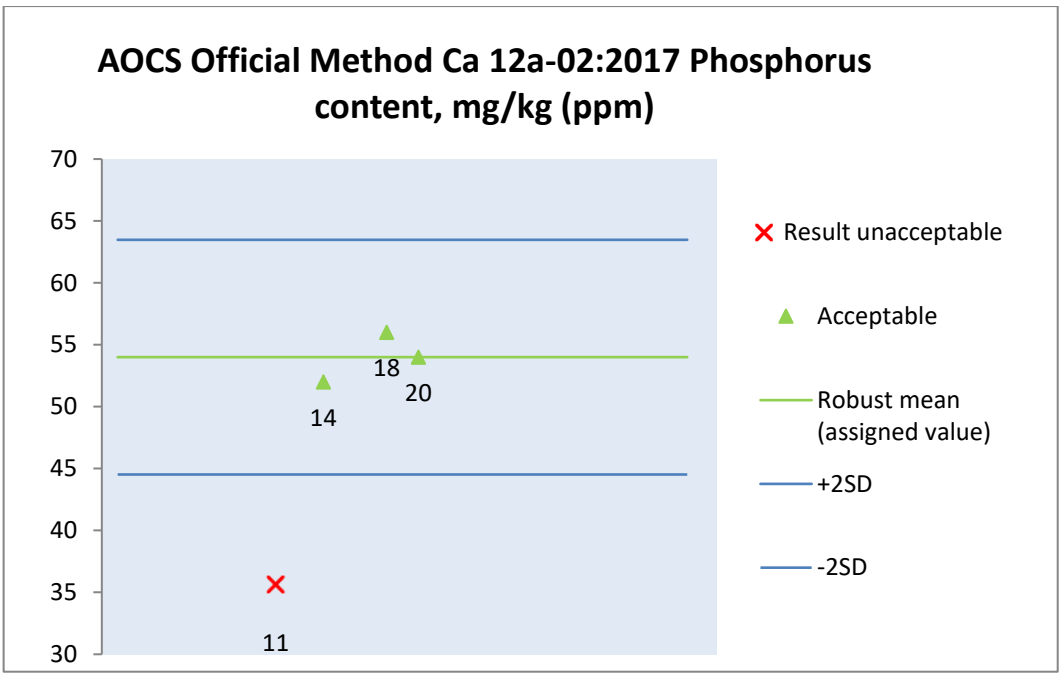


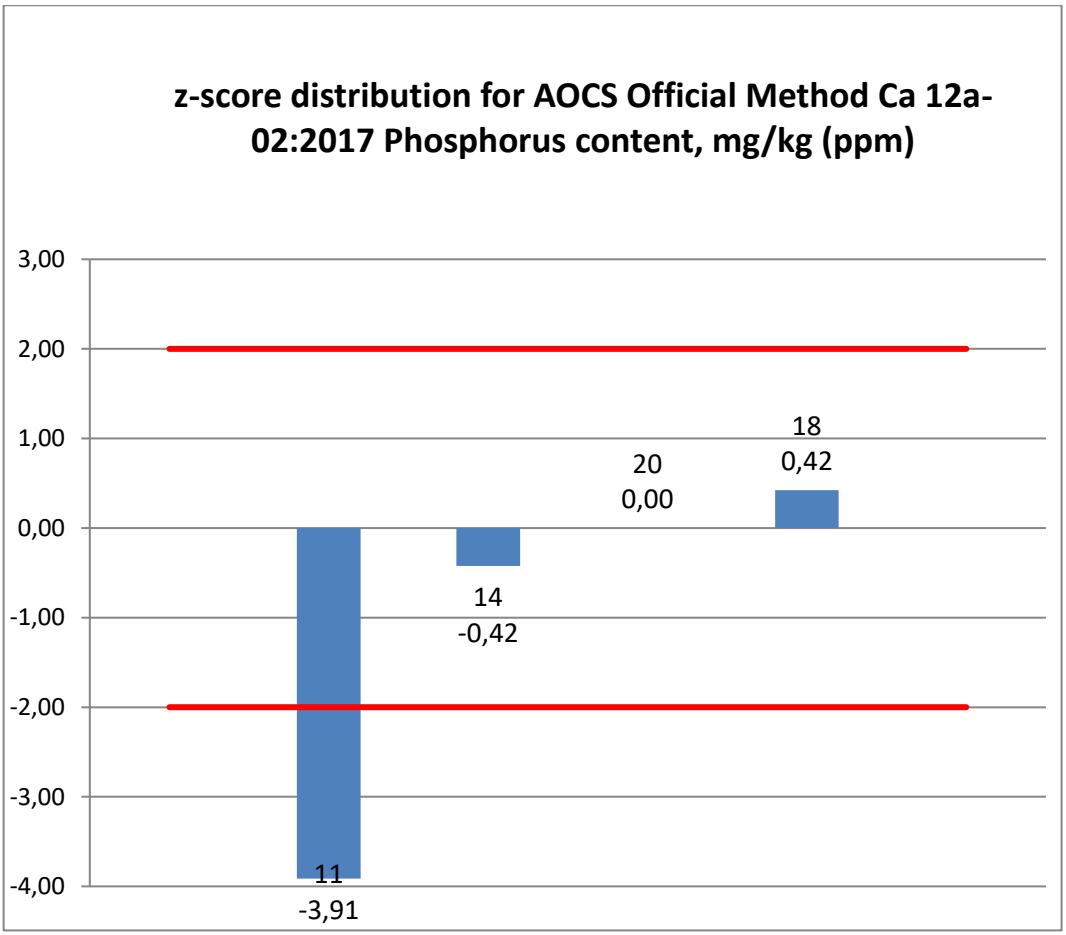
8.1.31 ISO 10540-1:2003/ ДСТУ ISO 10540-1:2014 Phosphorus content, mg/kg (ppm)



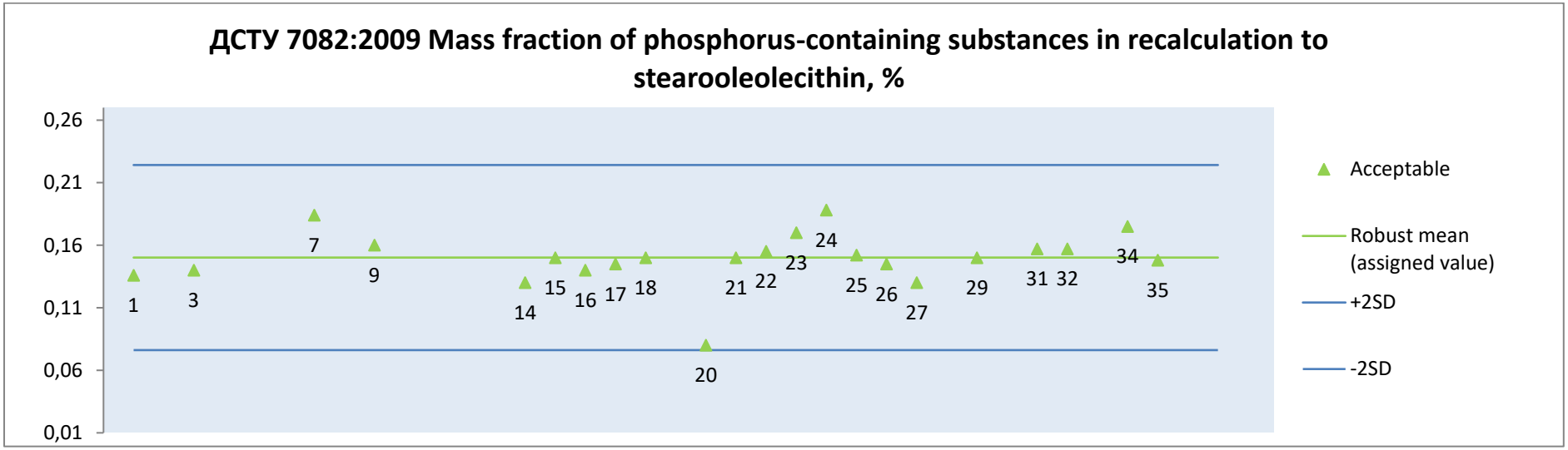


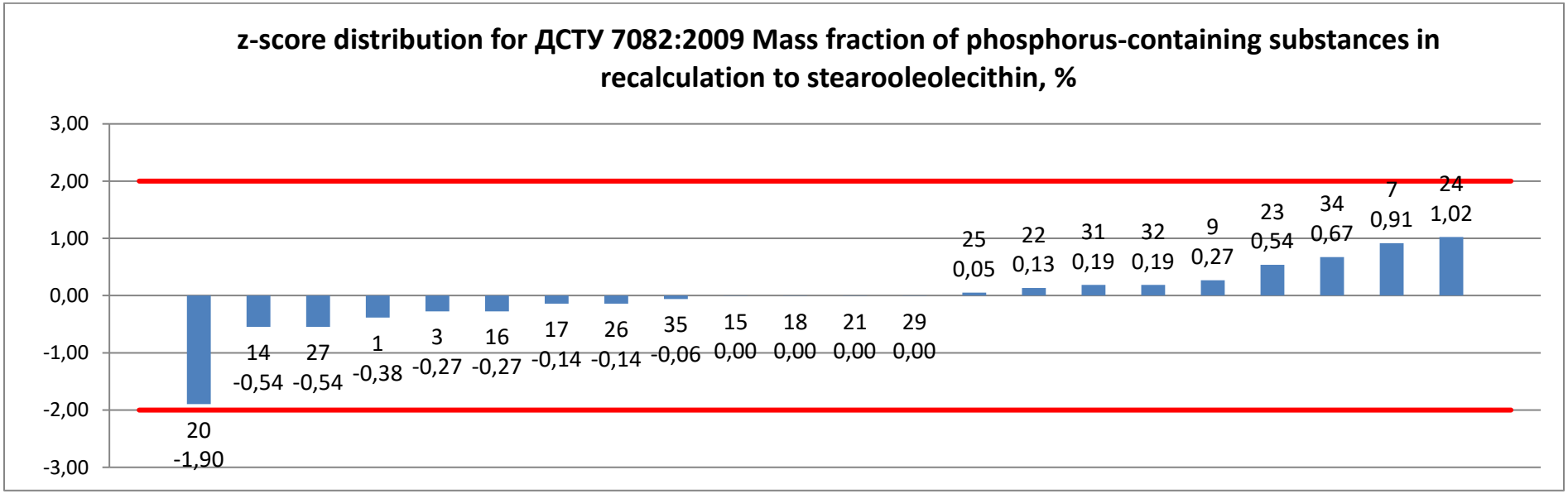
8.1.32 AOCS Official Method Ca 12a-02:2017 Phosphorus content, mg/kg (ppm)



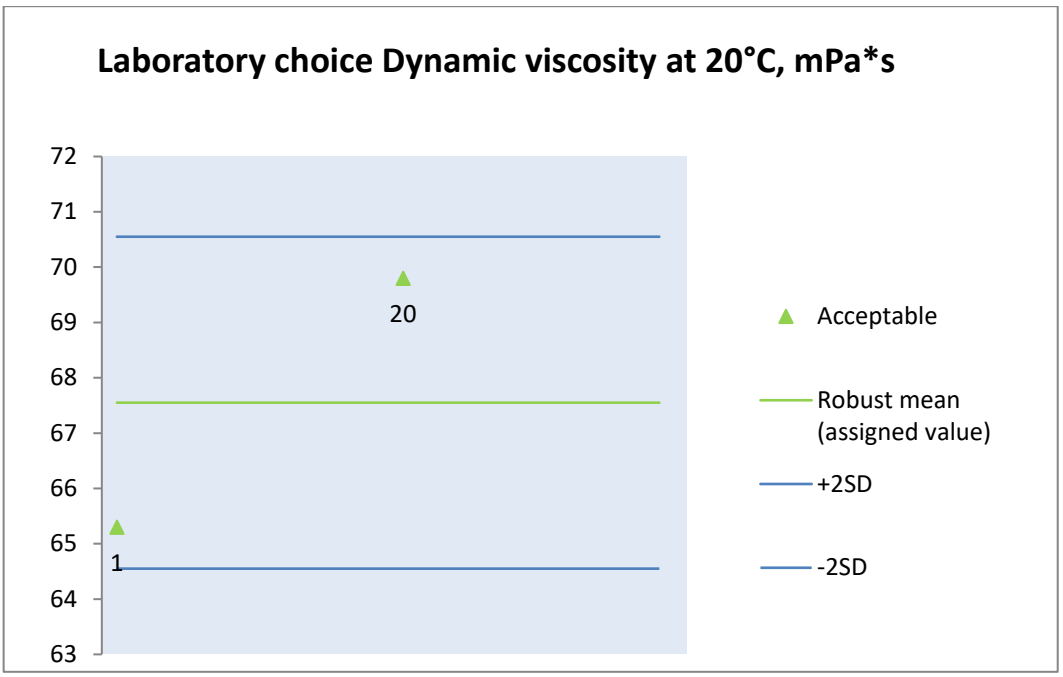


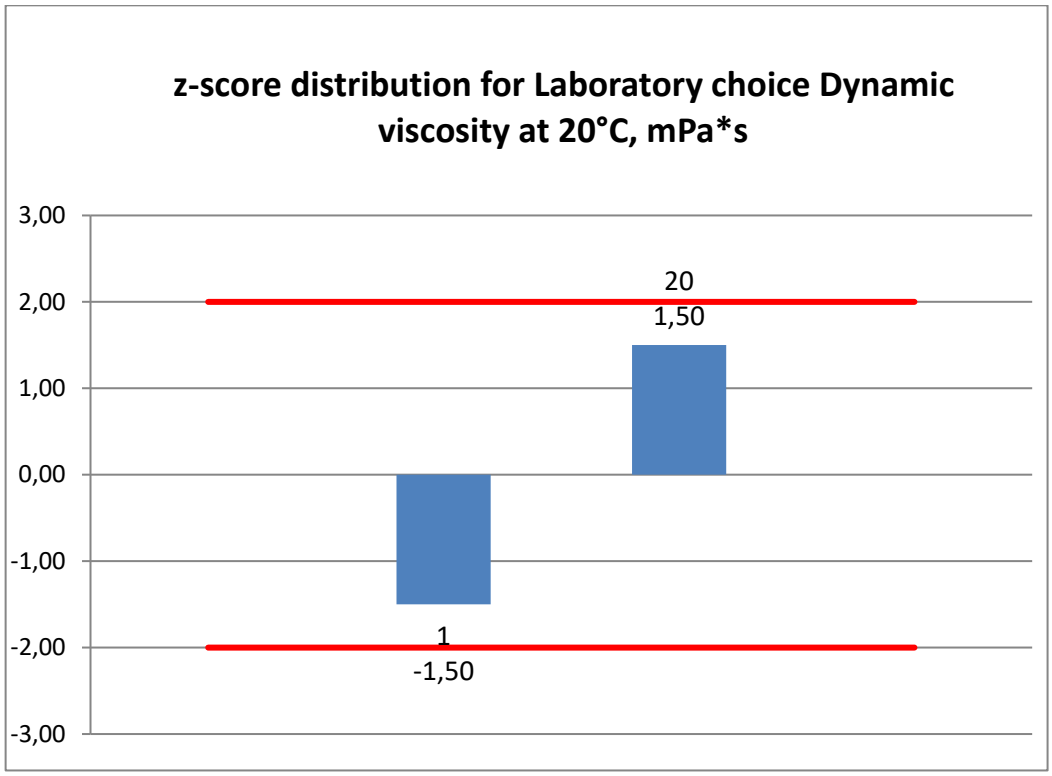
8.1.33 ДСТУ 7082:2009 Mass fraction of phosphorus-containing substances in recalculation to stearooleolecithin, %



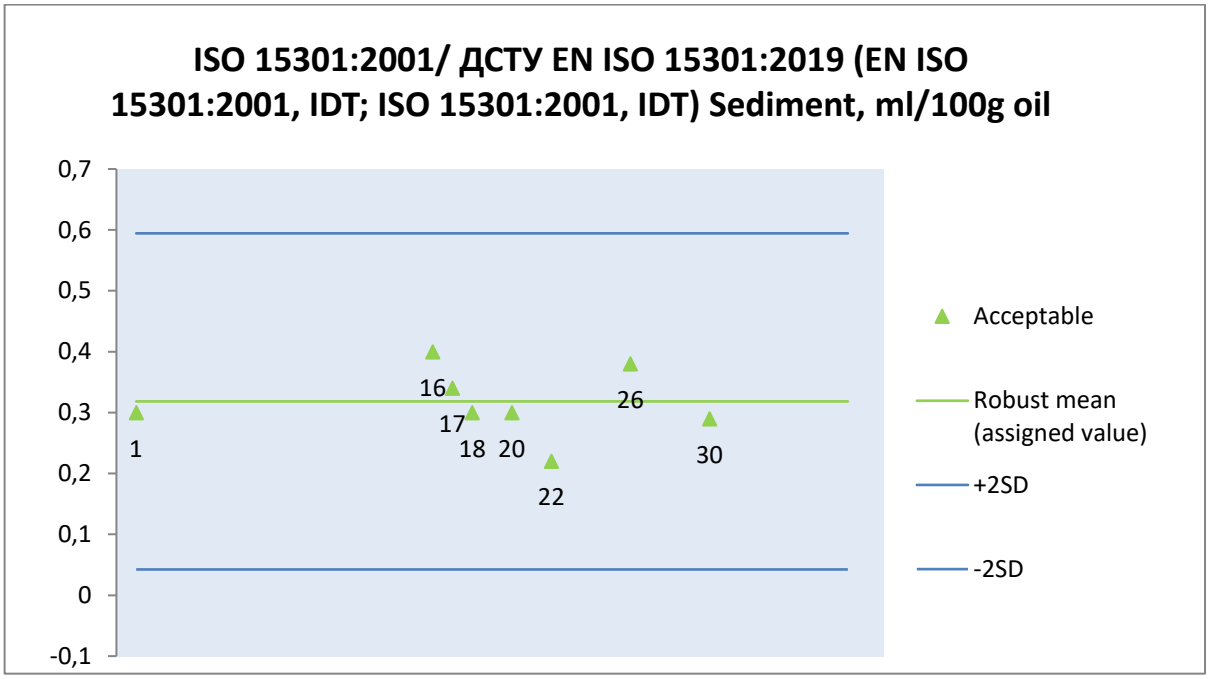


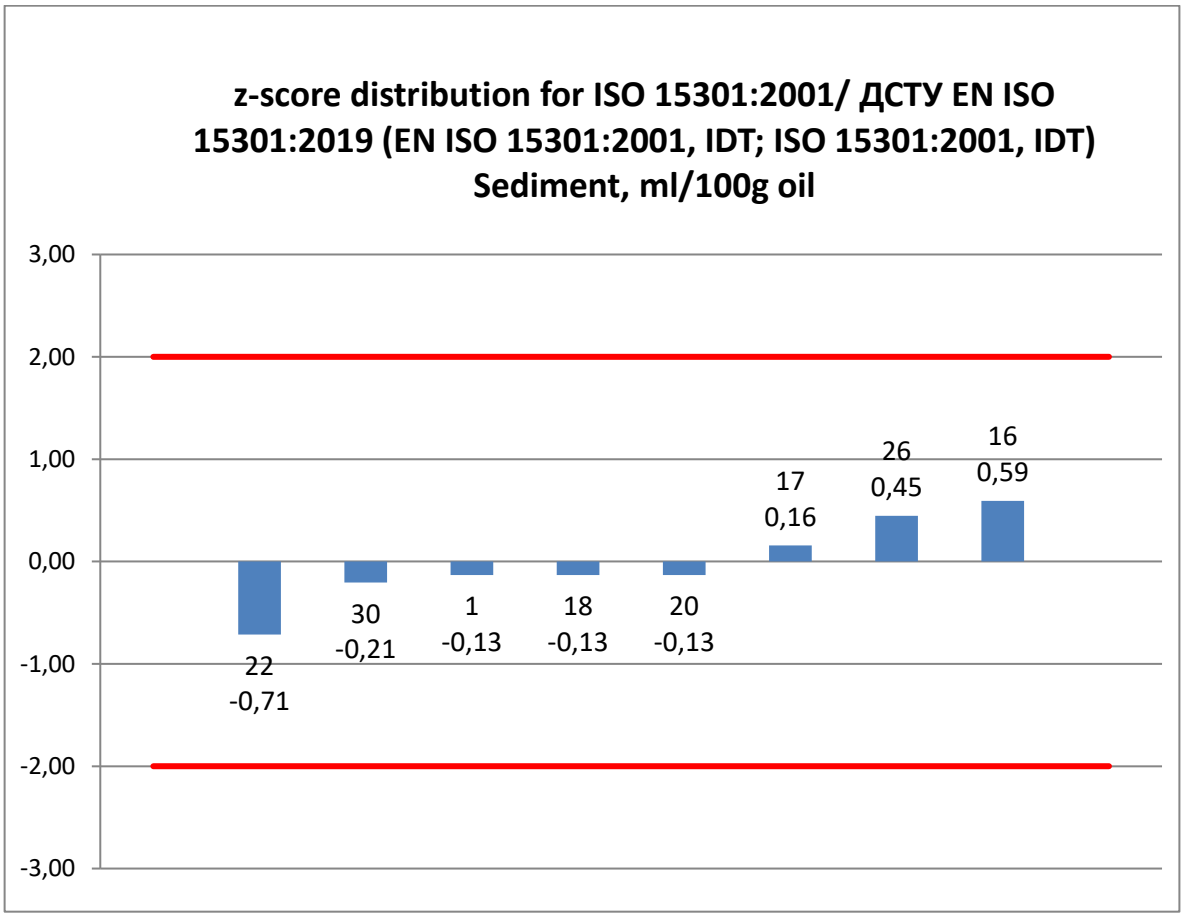
8.1.34 Dynamic viscosity at 20°C, mPa*s



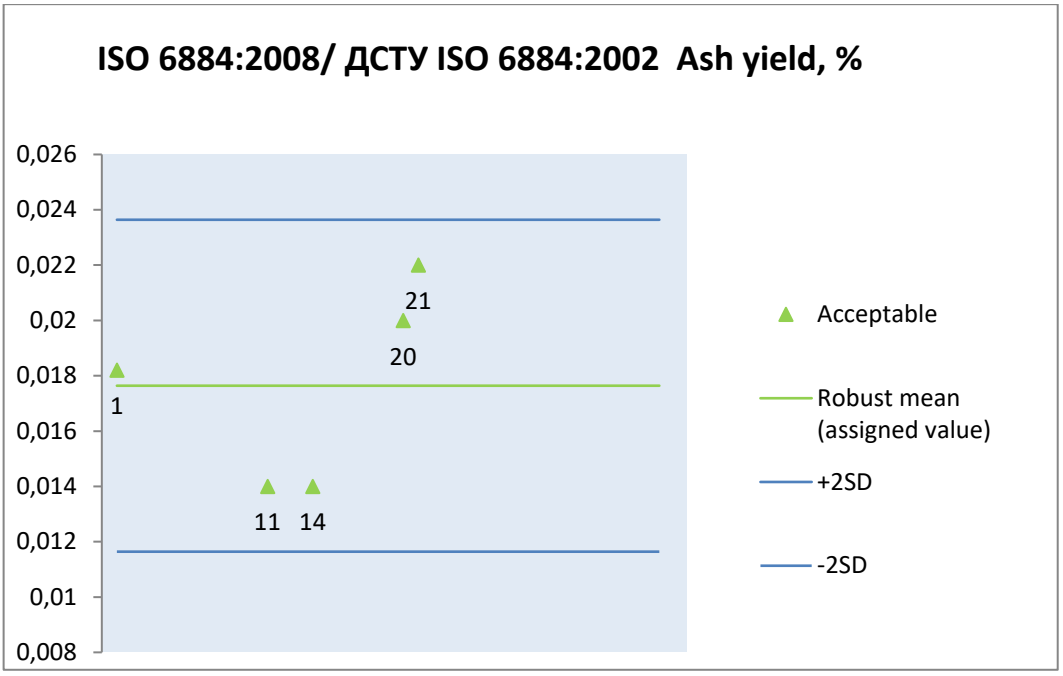


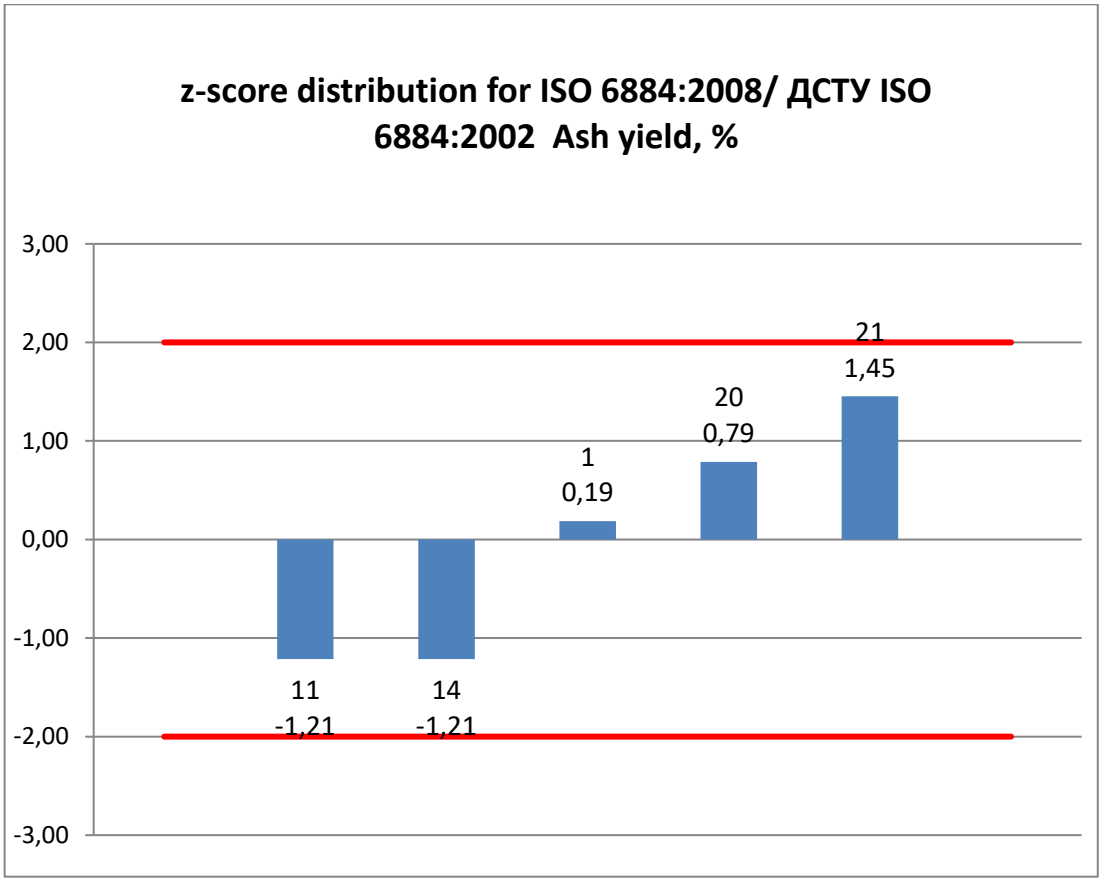
8.1.35 ISO 15301:2001/ ДСТУ EN ISO 15301:2019 (EN ISO 15301:2001, IDT; ISO 15301:2001, IDT) Sediment, ml/100g oil



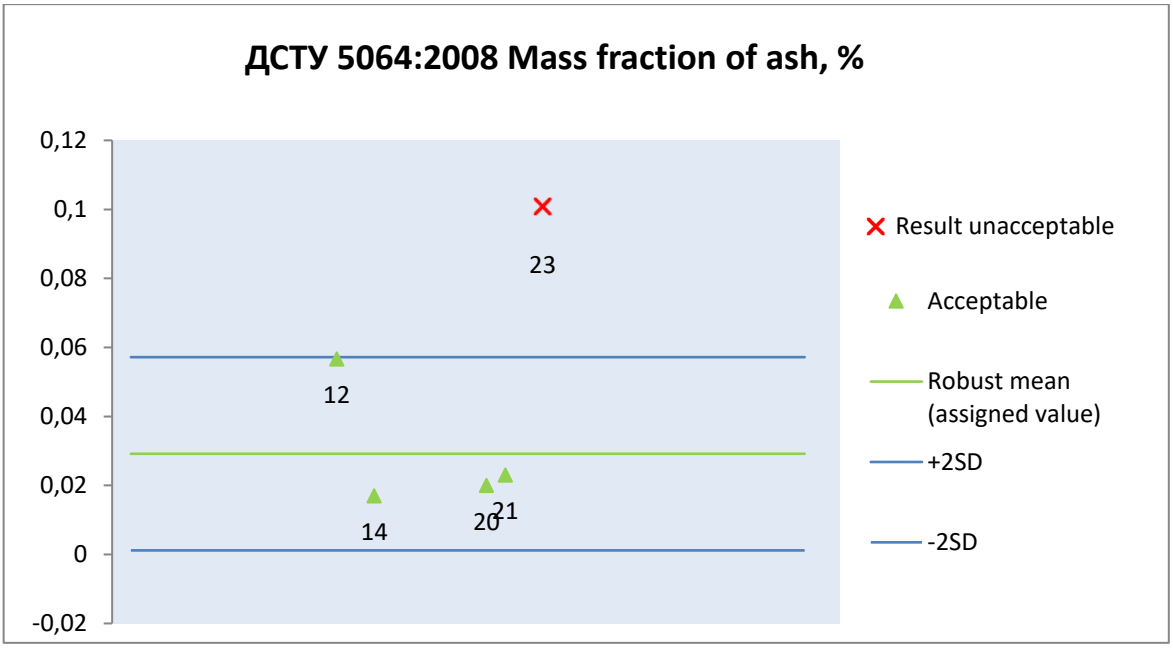


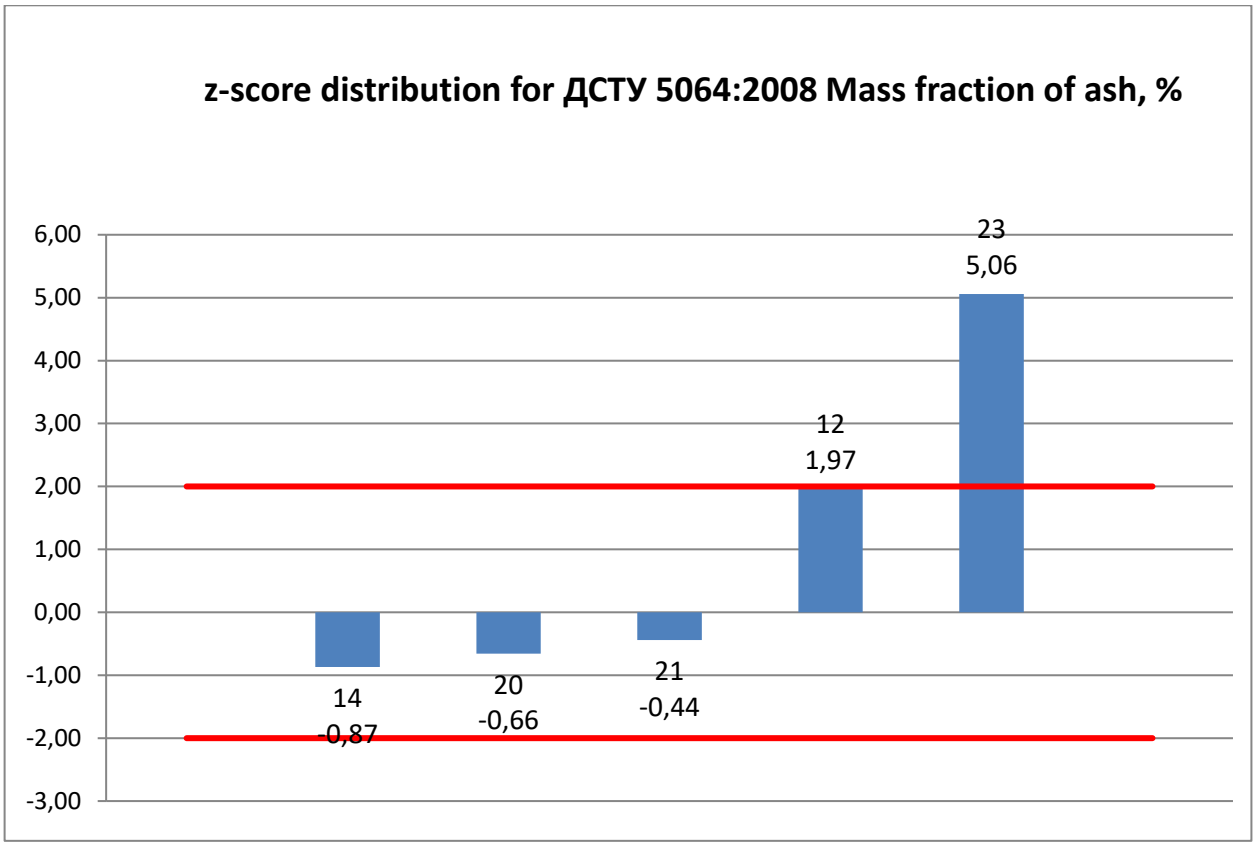
8.1.36 ISO 6884:2008/ ДСТУ ISO 6884:2002 Ash yield, %





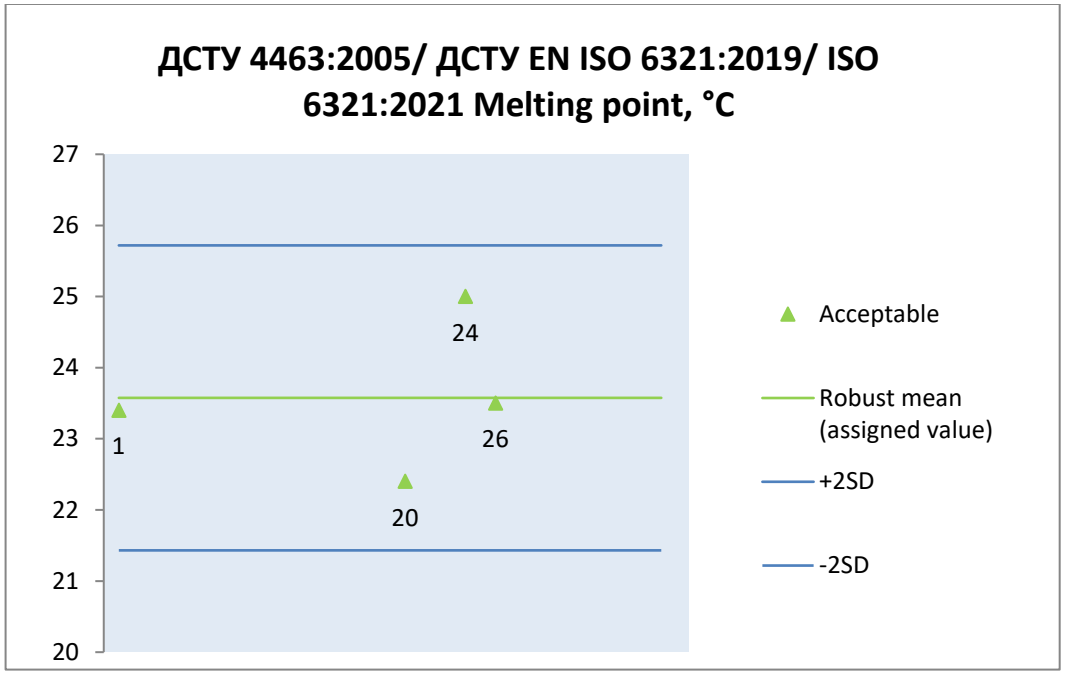
8.1.37 ДСТУ 5064:2008 Mass fraction of ash, %

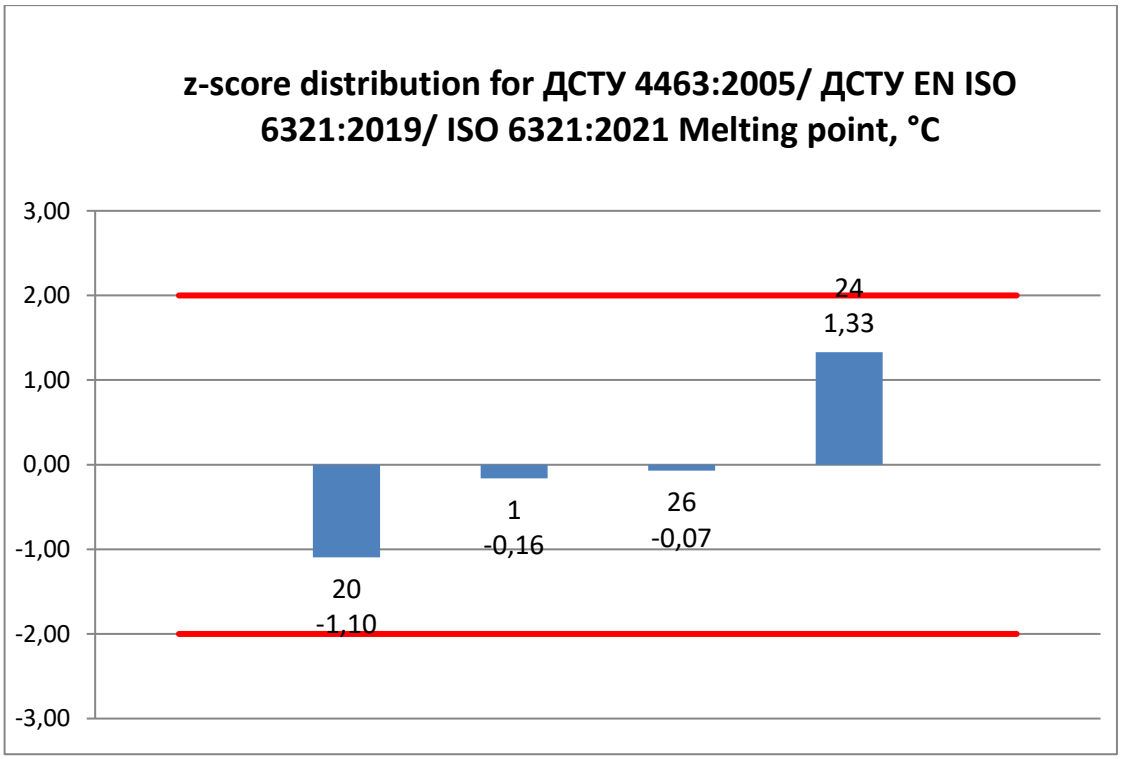




Sample B

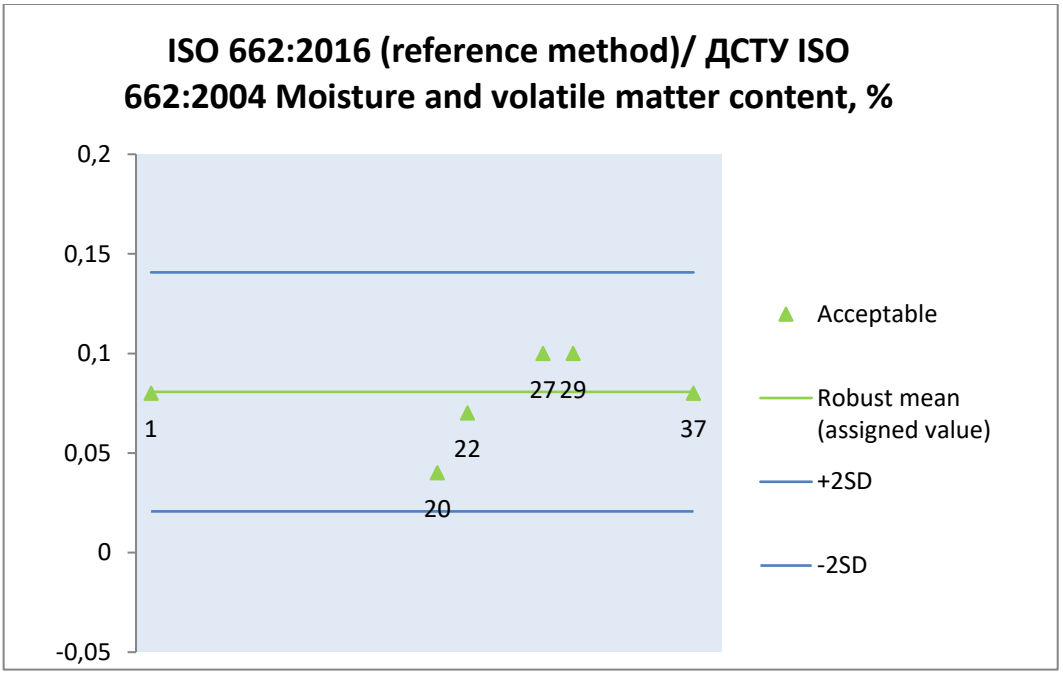
8.2.1 ДСТУ 4463:2005/ ДСТУ EN ISO 6321:2019/ ISO 6321:2021 Melting point, °C

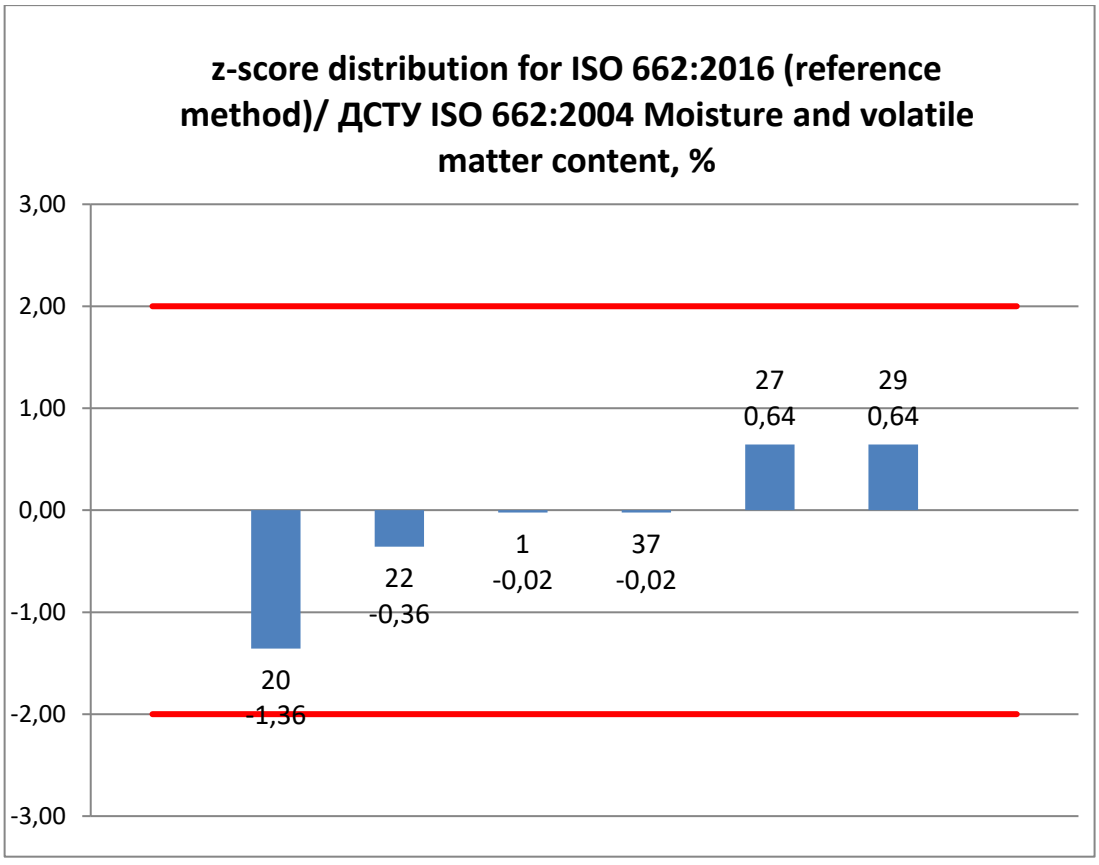




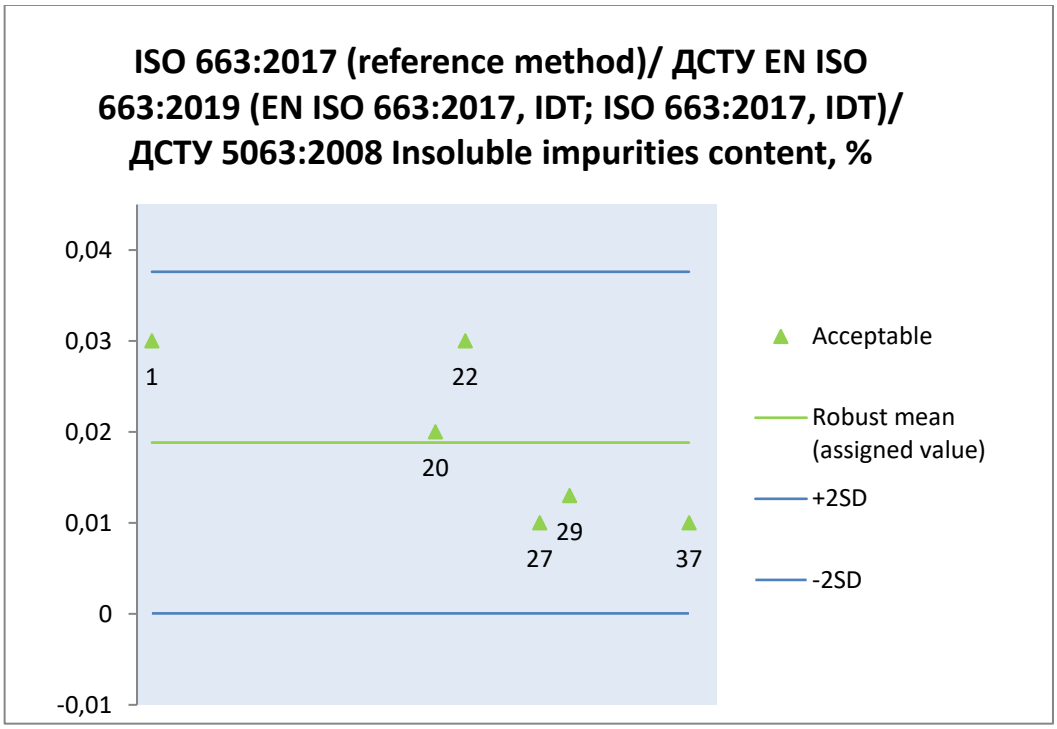
Sample D

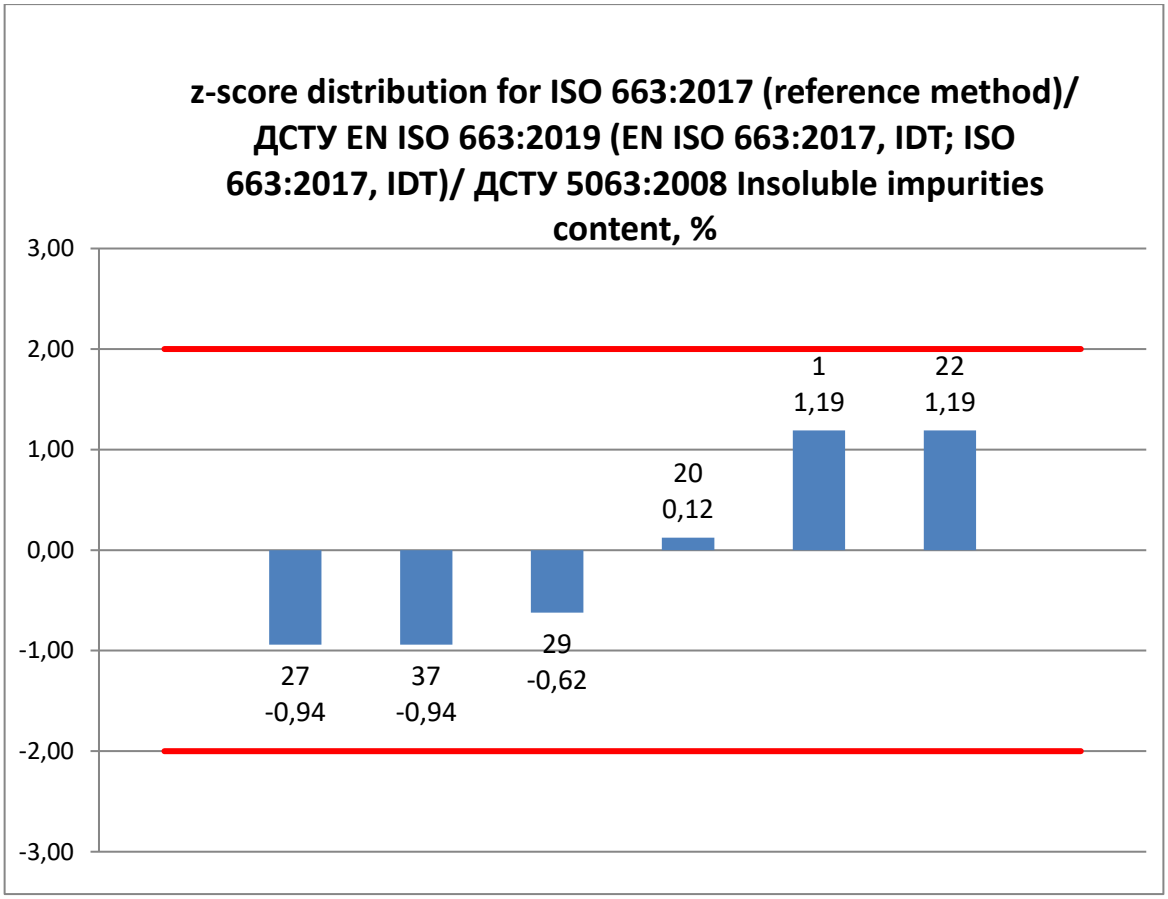
8.3.1. ISO 662:2016 (reference method)/ ДСТУ ISO 662:2004 Moisture and volatile matter content, %



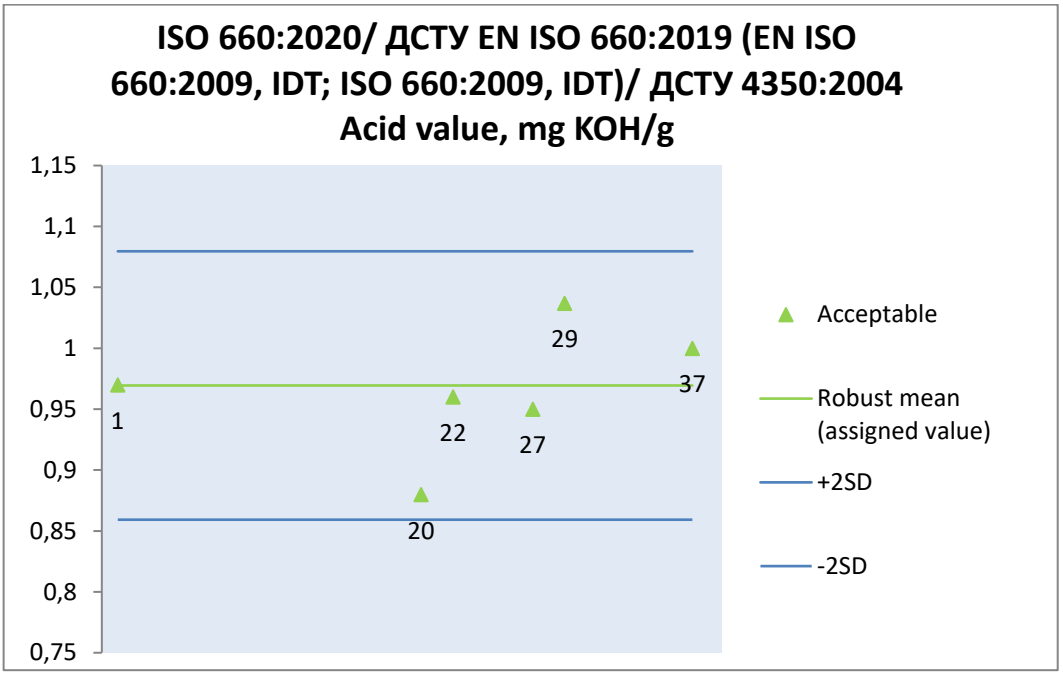


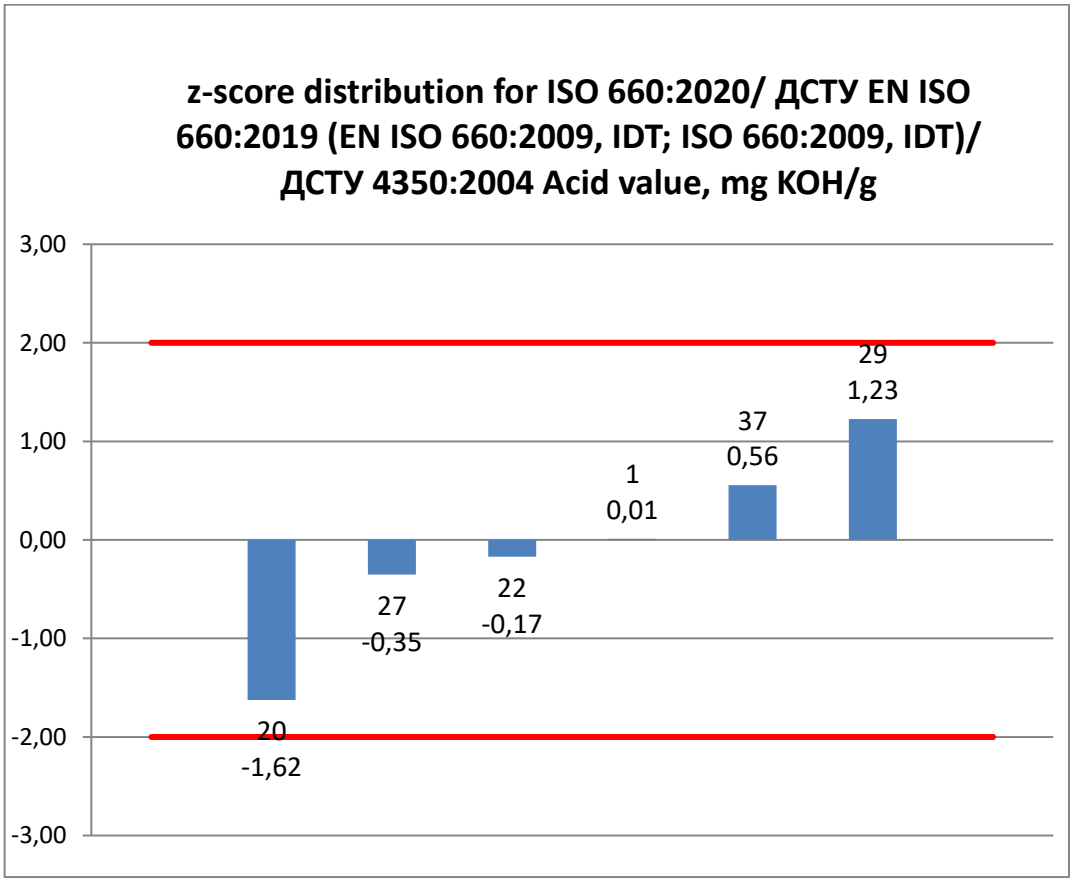
8.3.2. ISO 663:2017 (reference method)/ ДСТУ EN ISO 663:2019 (EN ISO 663:2017, IDT; ISO 663:2017, IDT)/ ДСТУ 5063:2008 Insoluble impurities content, %



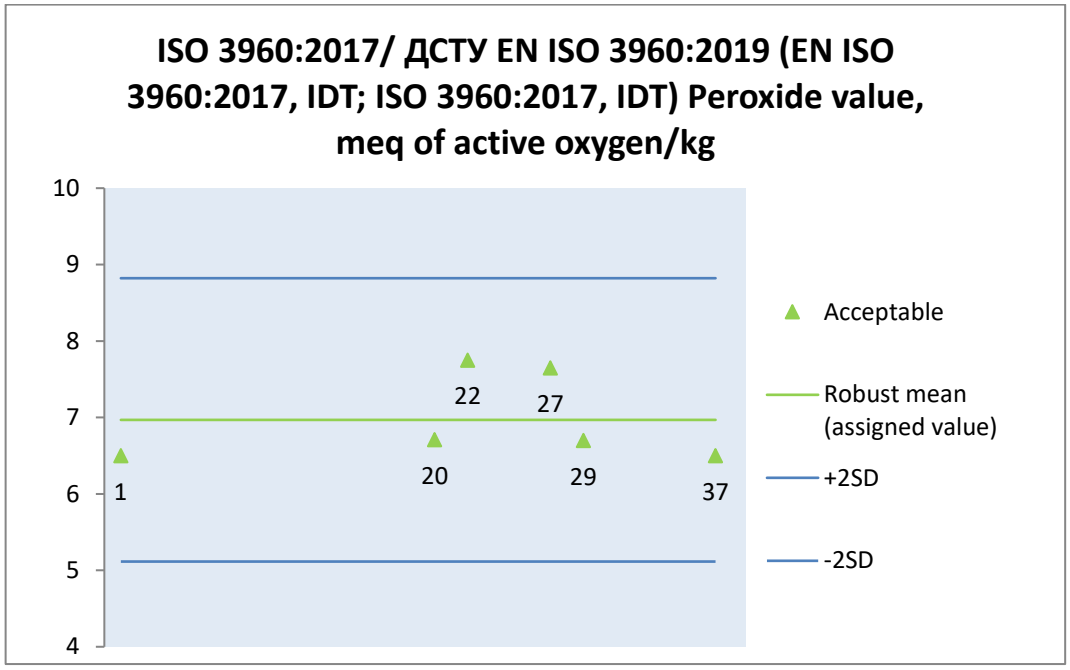


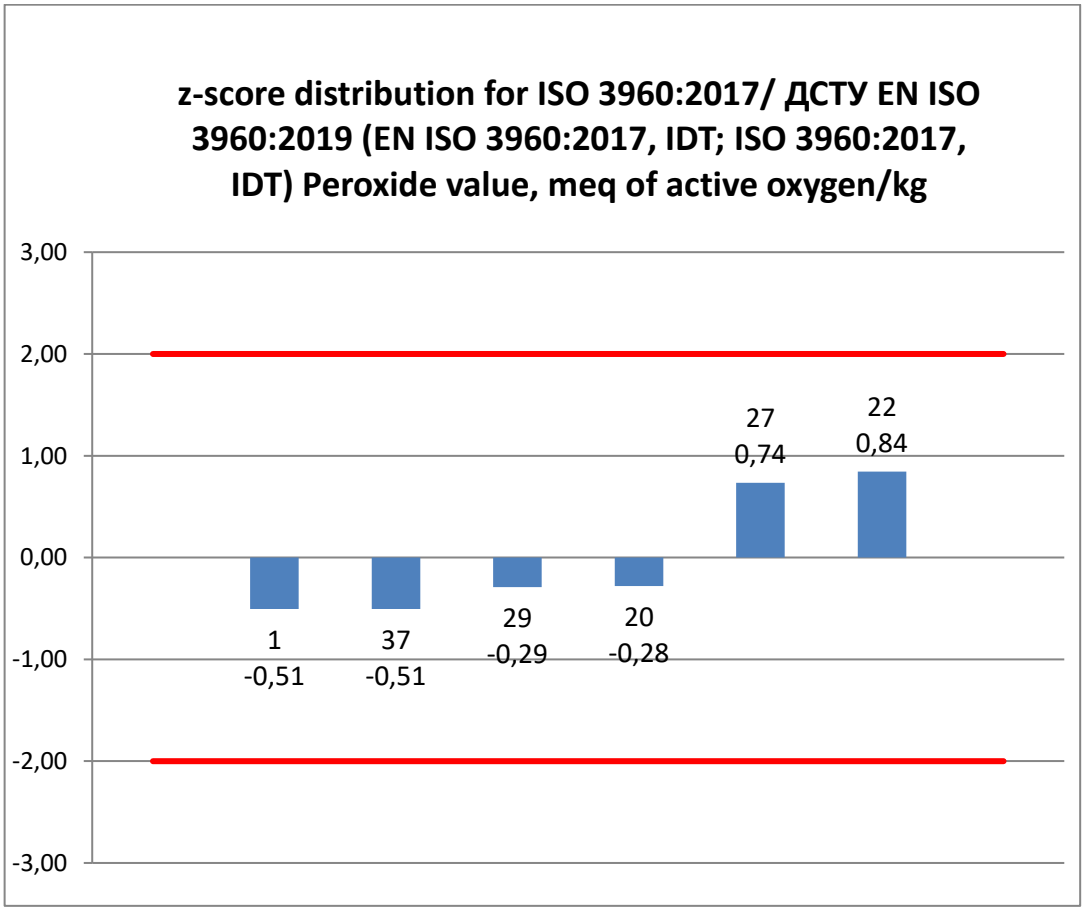
8.3.3. ISO 660:2020/ ДСТУ EN ISO 660:2019 (EN ISO 660:2009, IDT; ISO 660:2009, IDT)/ ДСТУ 4350:2004 Acid value, mg KOH/g



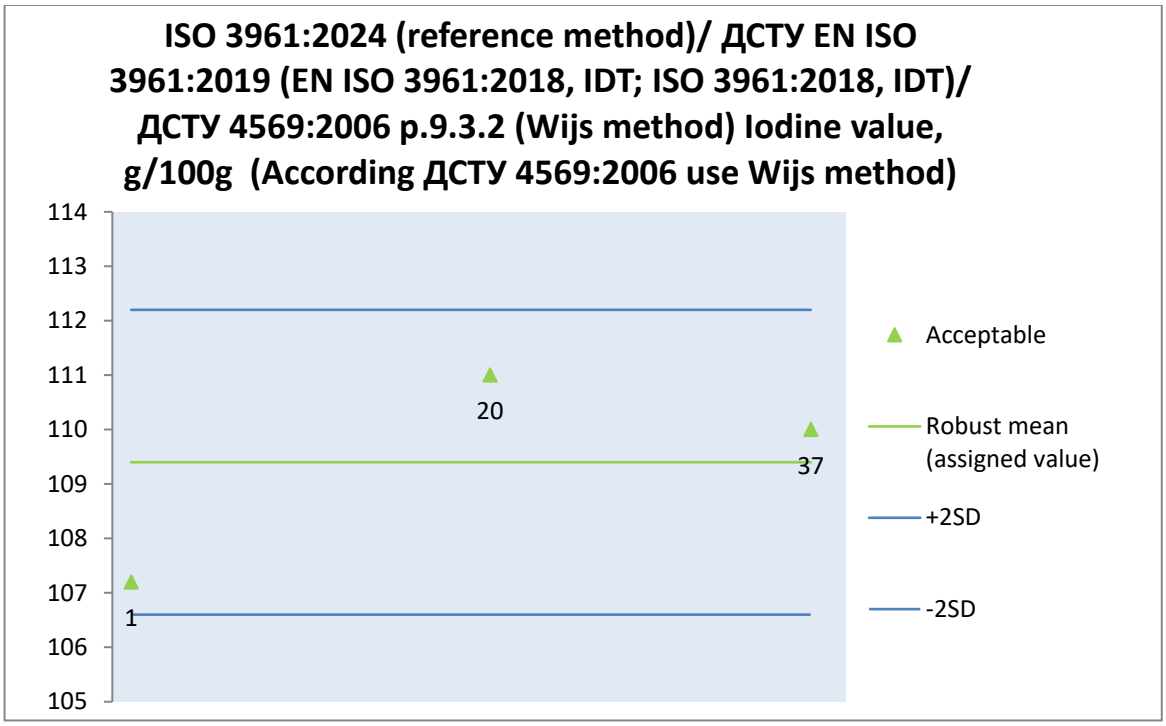


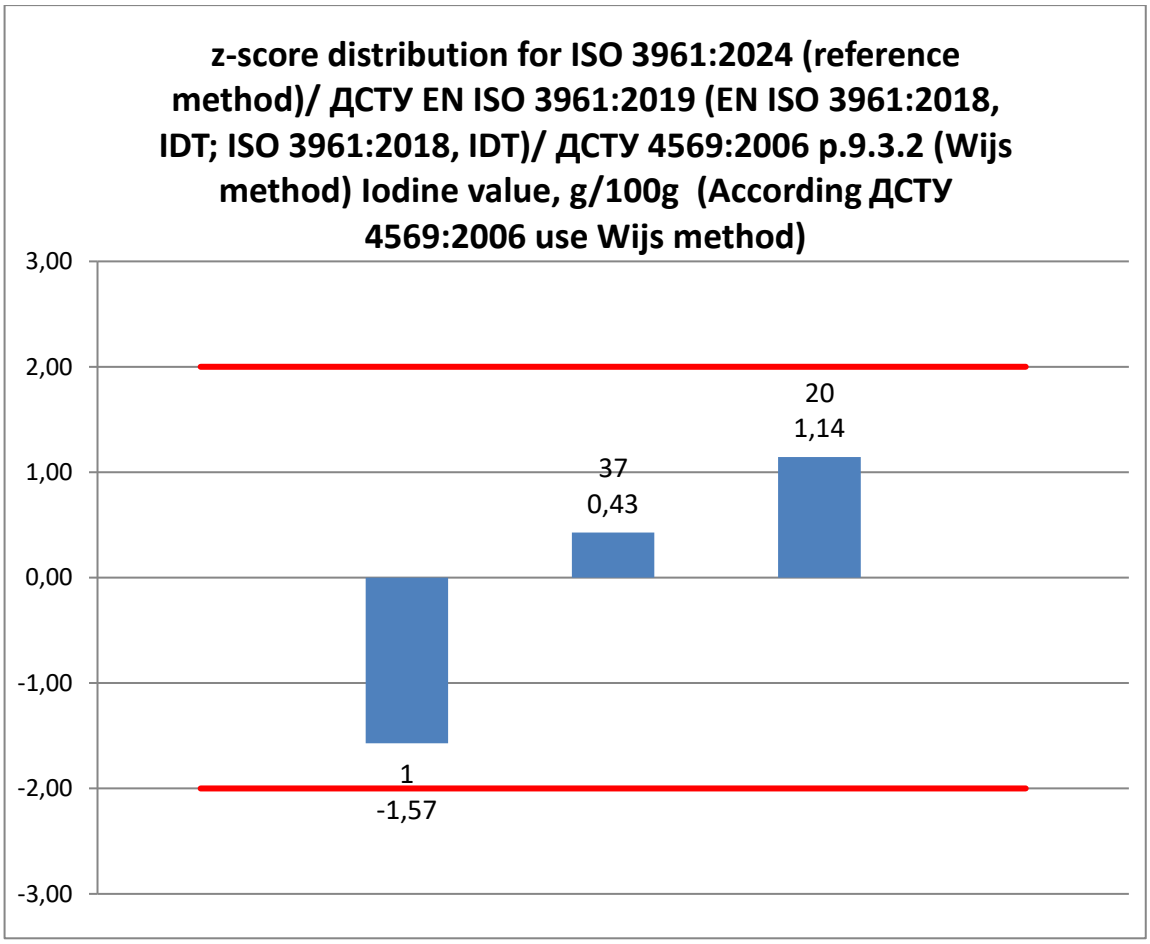
8.3.4. ISO 3960:2017/ ДСТУ EN ISO 3960:2019 (EN ISO 3960:2017, IDT; ISO 3960:2017, IDT) Peroxide value, meq of active oxygen/kg



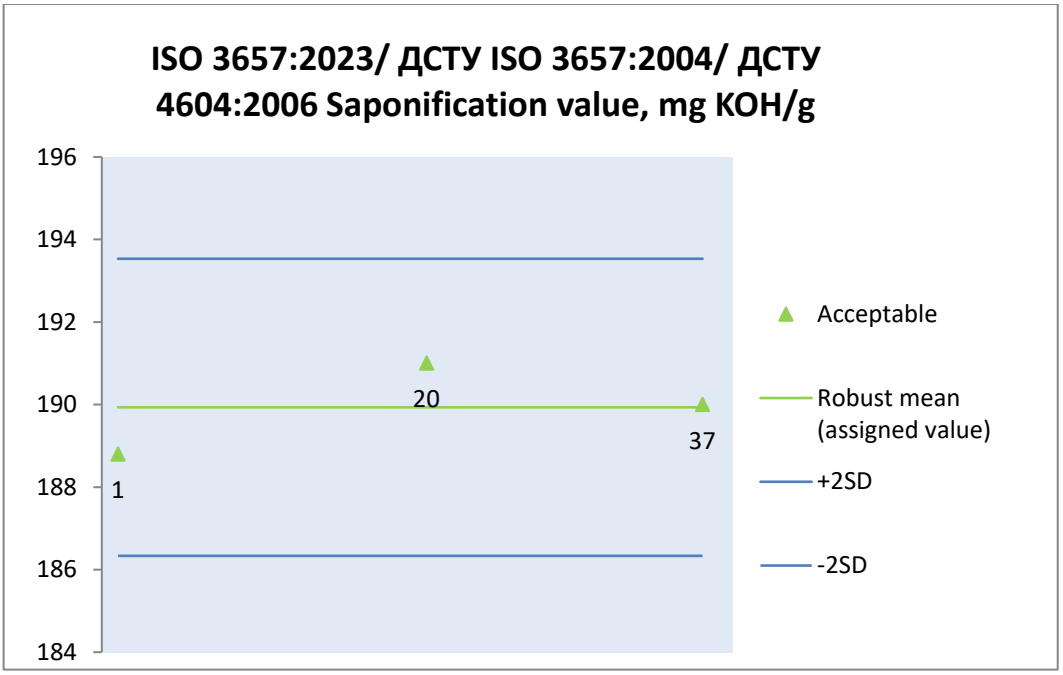


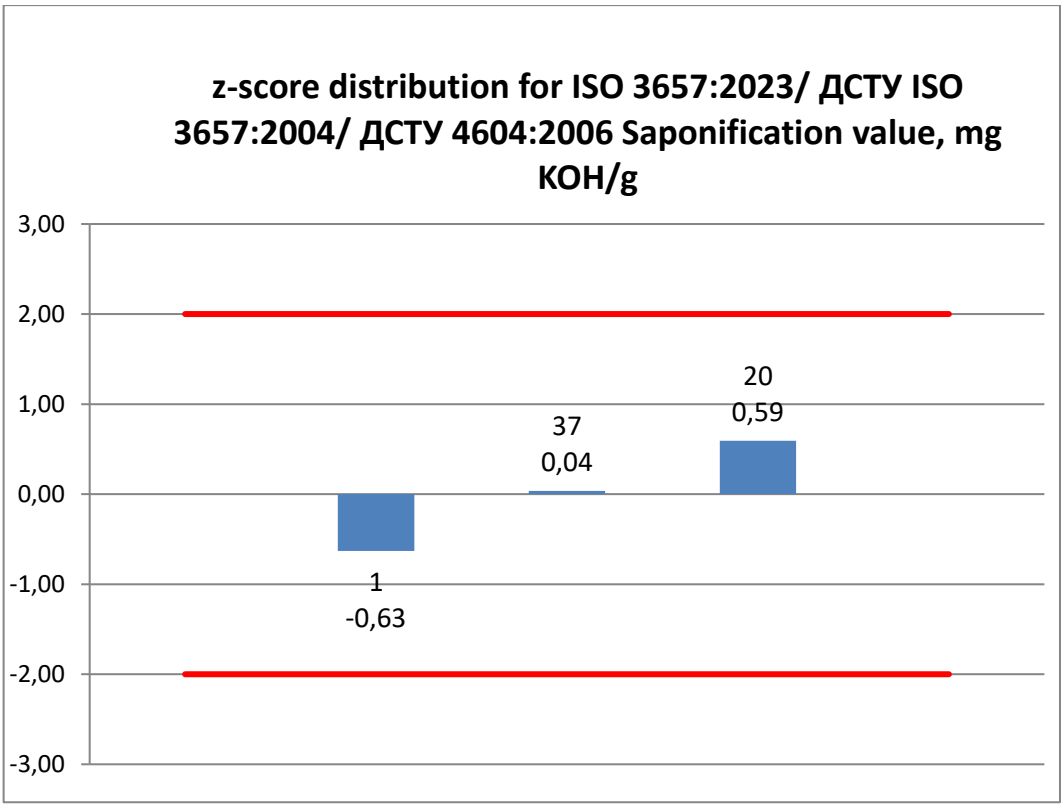
8.3.5. ISO 3961:2024 (reference method)/ ДСТУ EN ISO 3961:2019 (EN ISO 3961:2018, IDT; ISO 3961:2018, IDT)/ ДСТУ 4569:2006 p.9.3.2 (Wijs method) Iodine value, g/100g (According ДСТУ 4569:2006 use Wijs method)



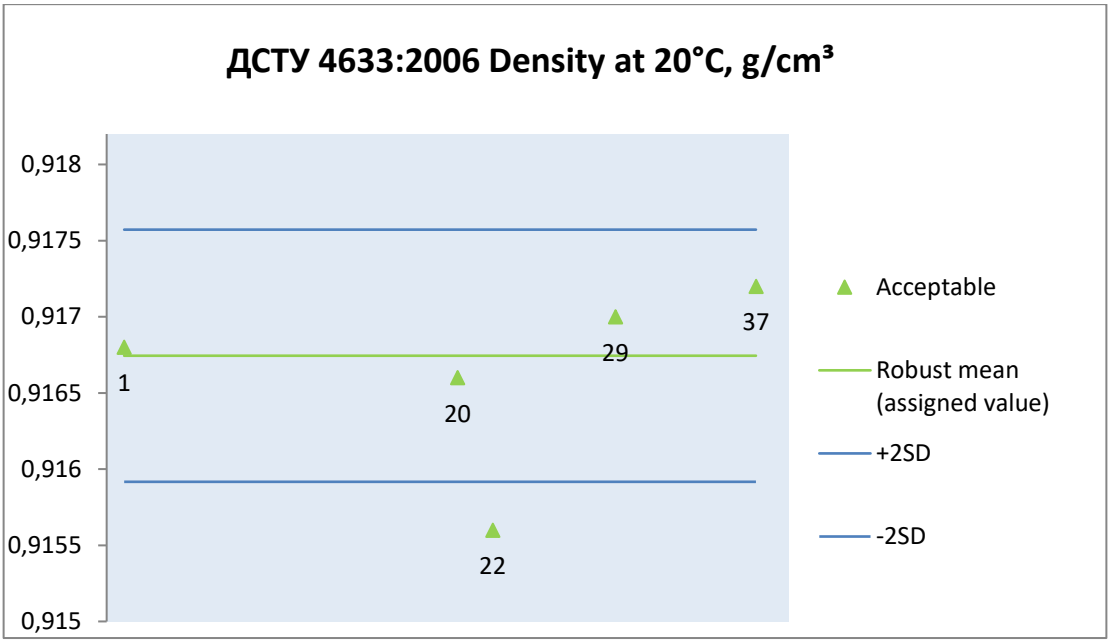


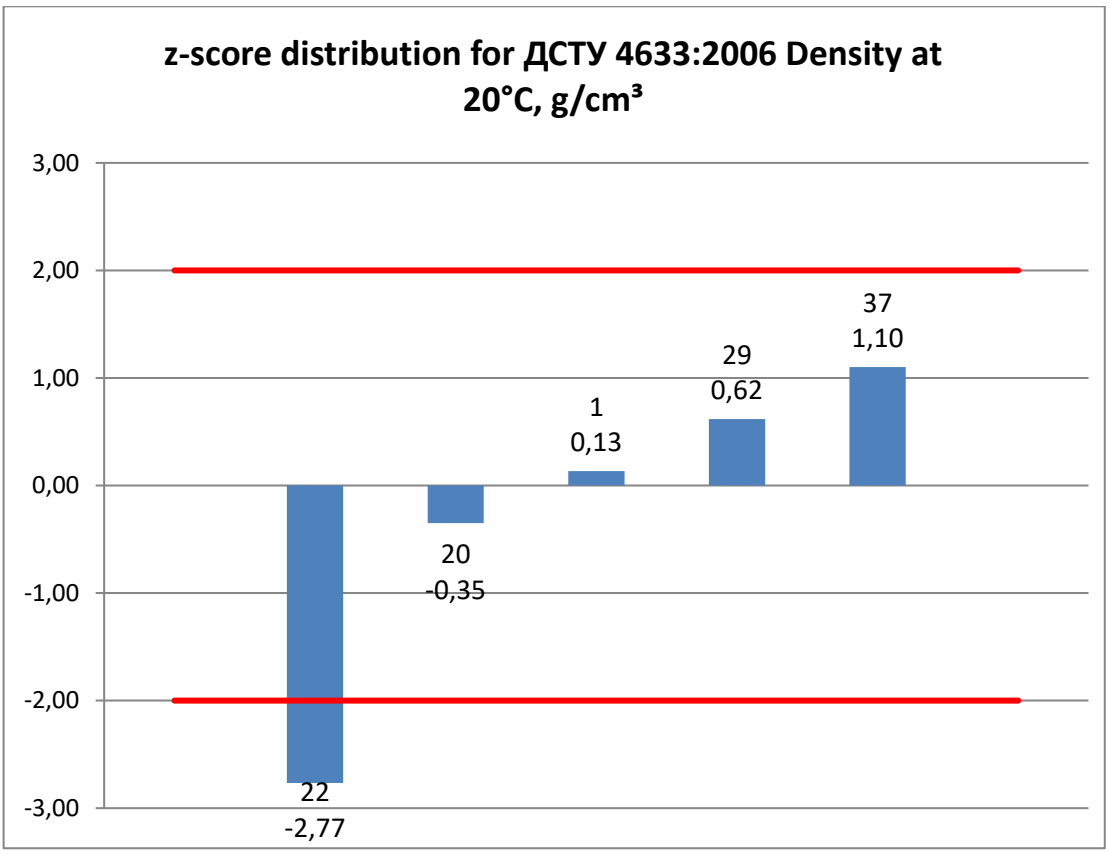
8.3.6. ISO 3657:2023/ ДСТУ ISO 3657:2004/ ДСТУ 4604:2006 Saponification value, mg KOH/g



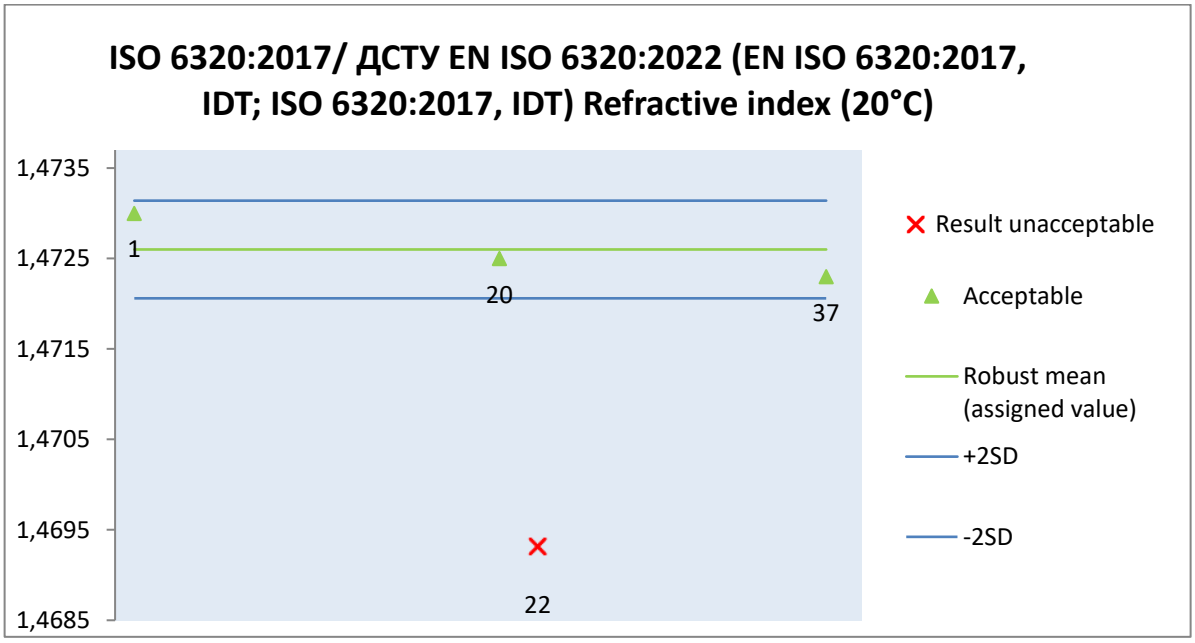


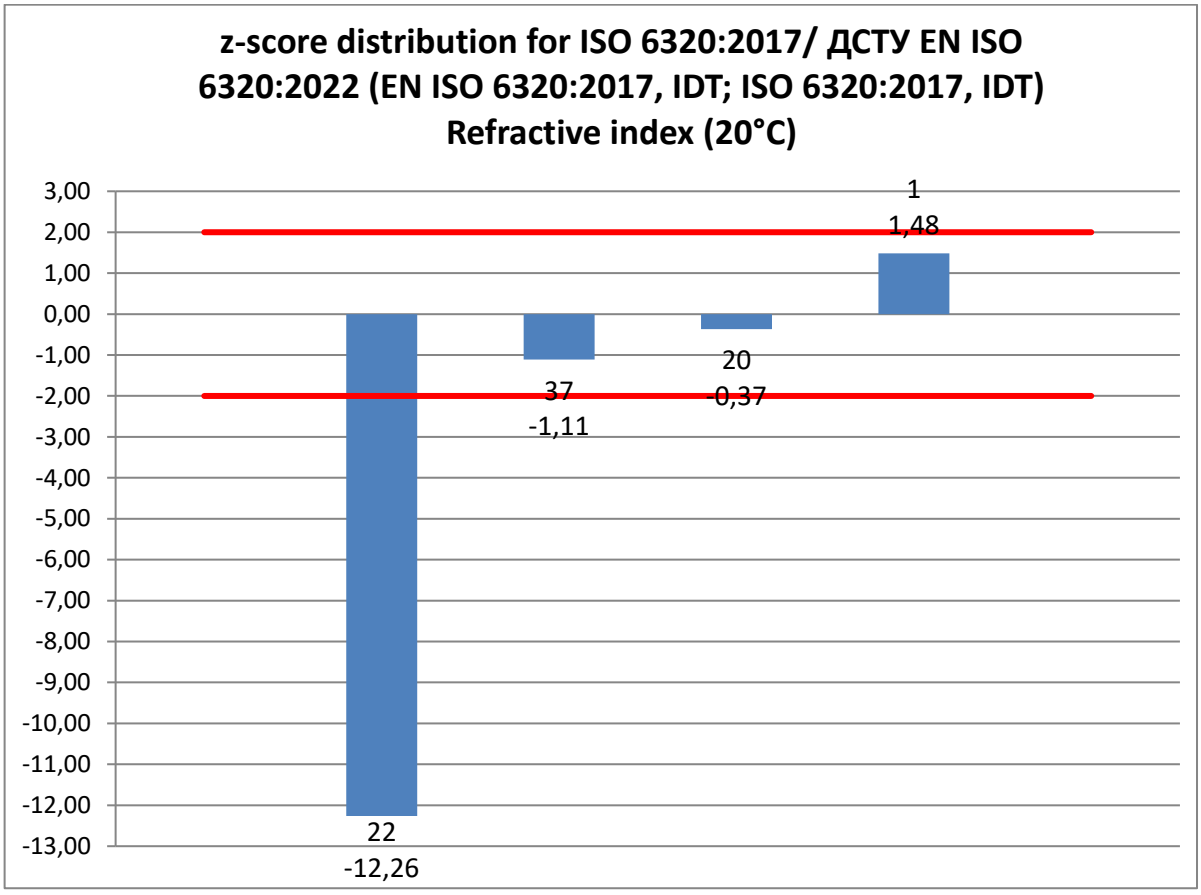
8.3.7. ДСТУ 4633:2006 Density at 20°C, g/cm³



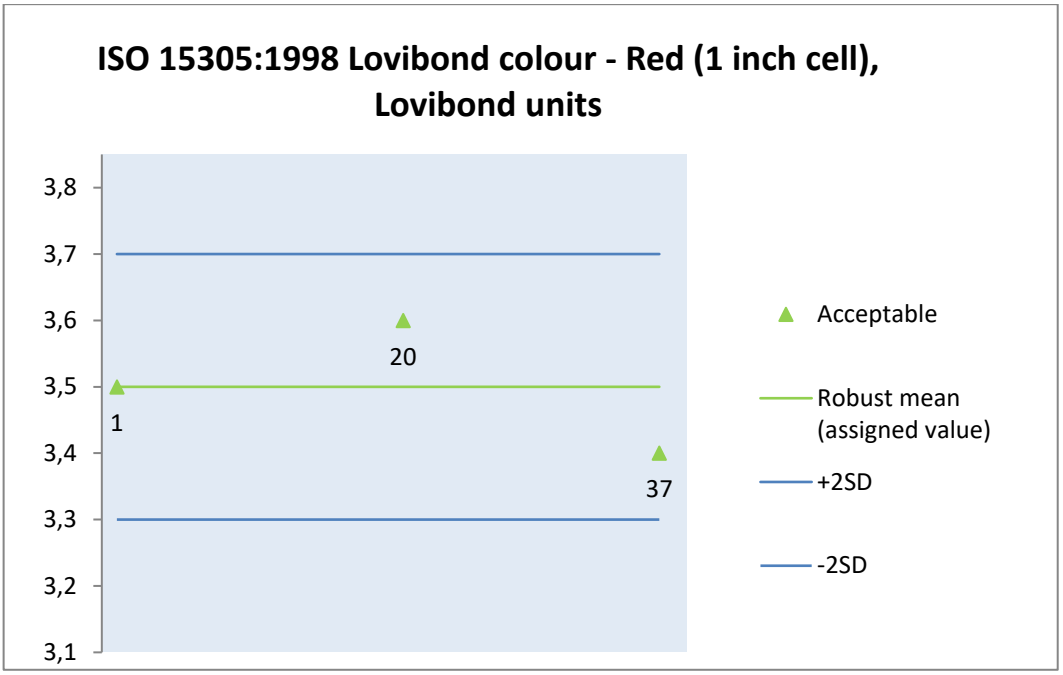


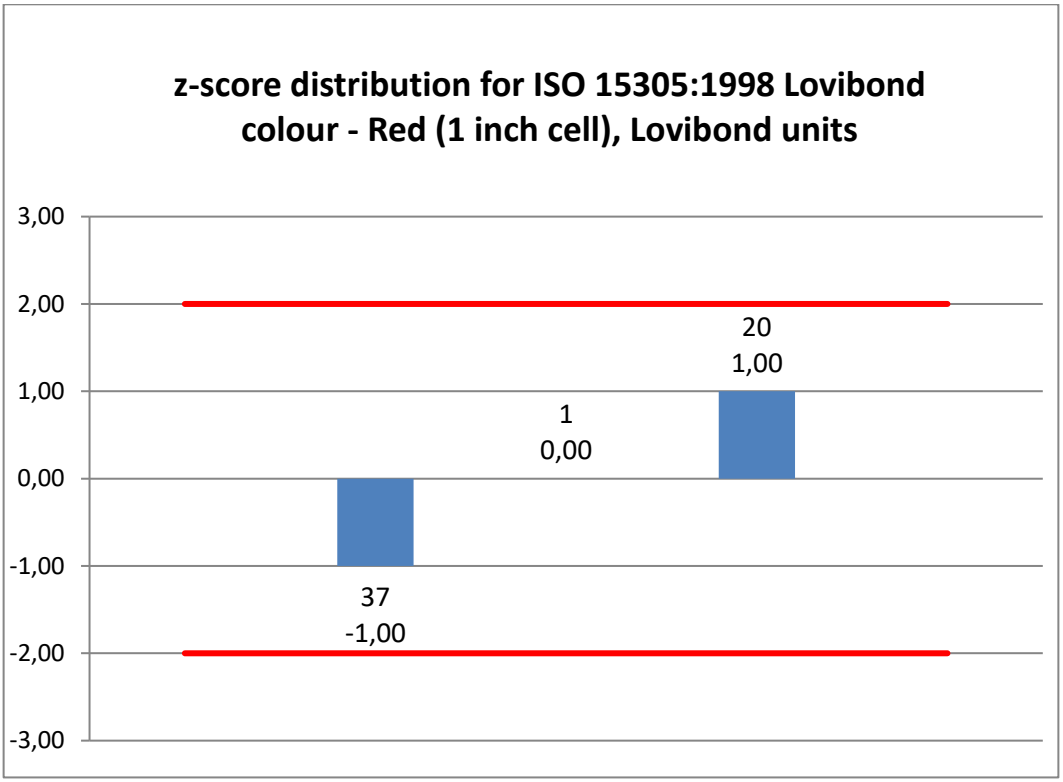
8.3.8. ISO 6320:2017/ ДСТУ EN ISO 6320:2022 (EN ISO 6320:2017, IDT; ISO 6320:2017, IDT) Refractive index (20°C)



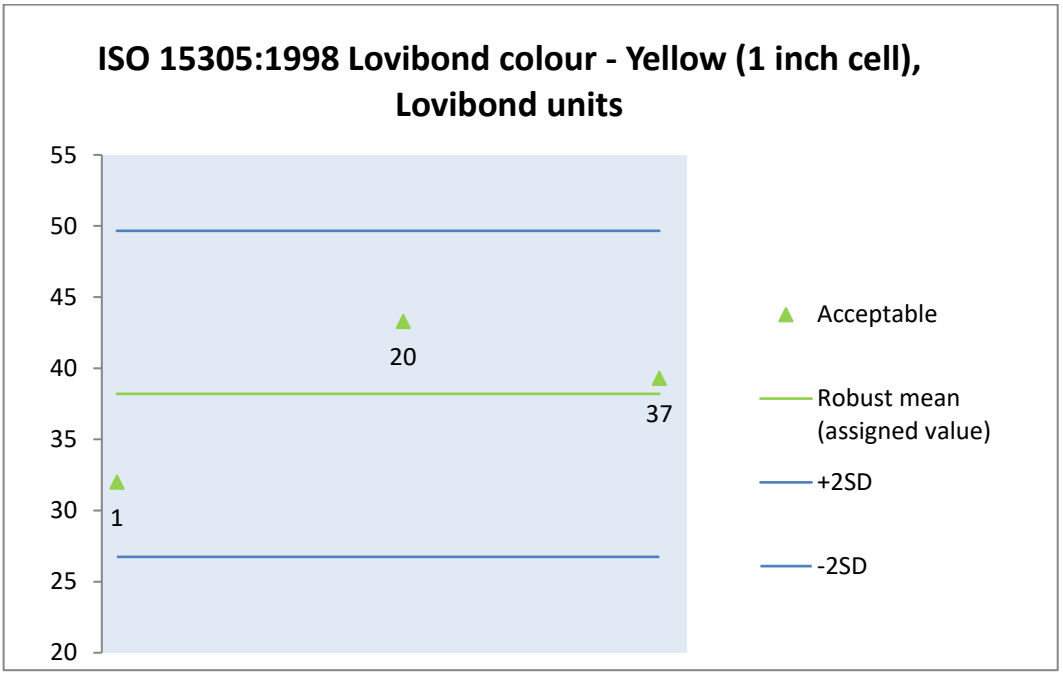


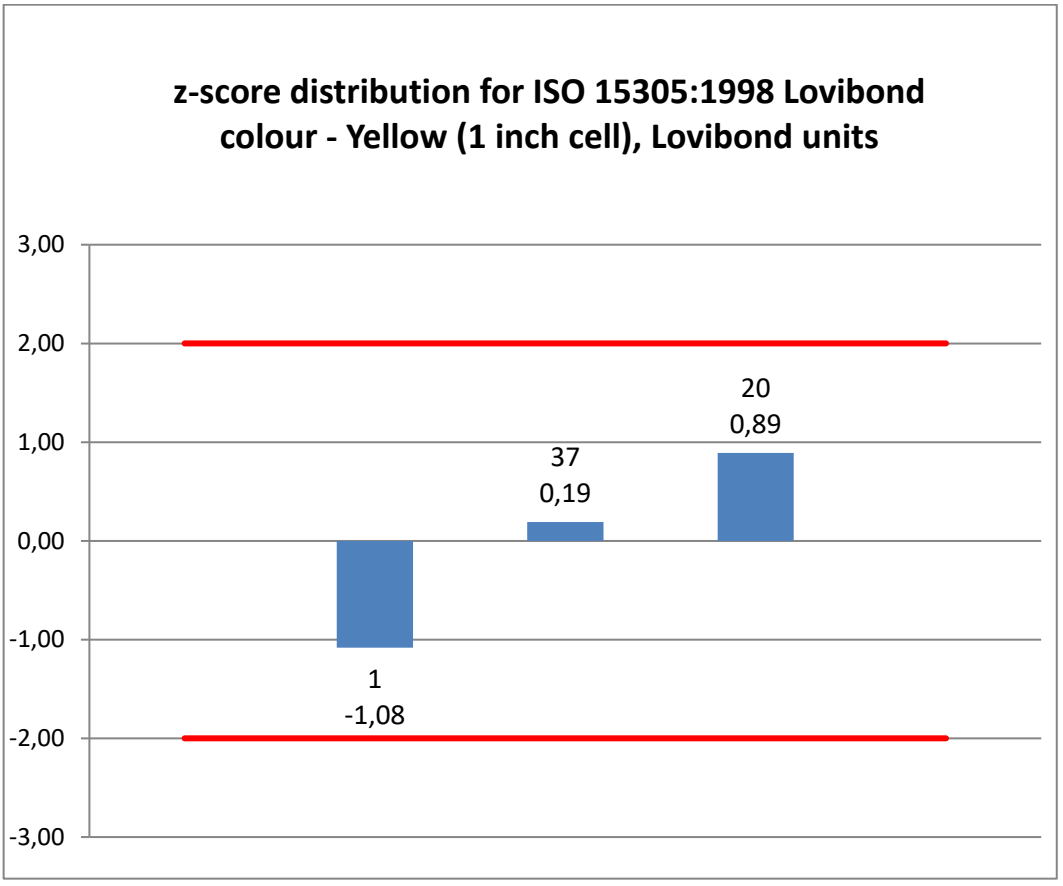
8.3.9. ISO 15305:1998 Lovibond colour - Red (1 inch cell), Lovibond units



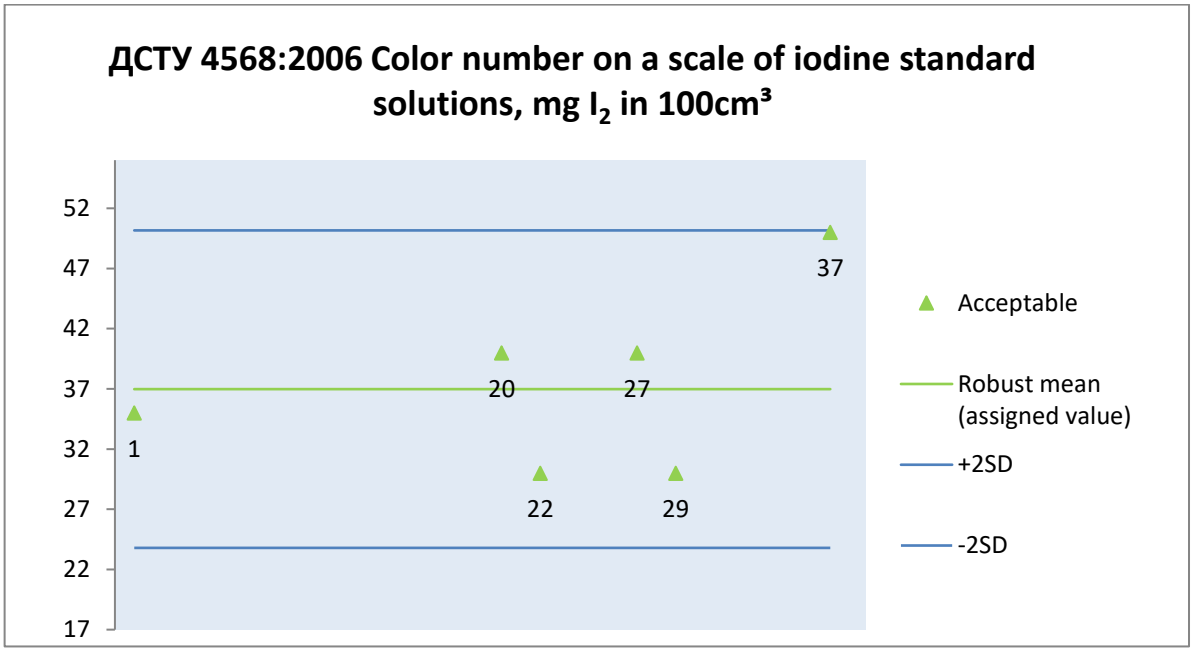


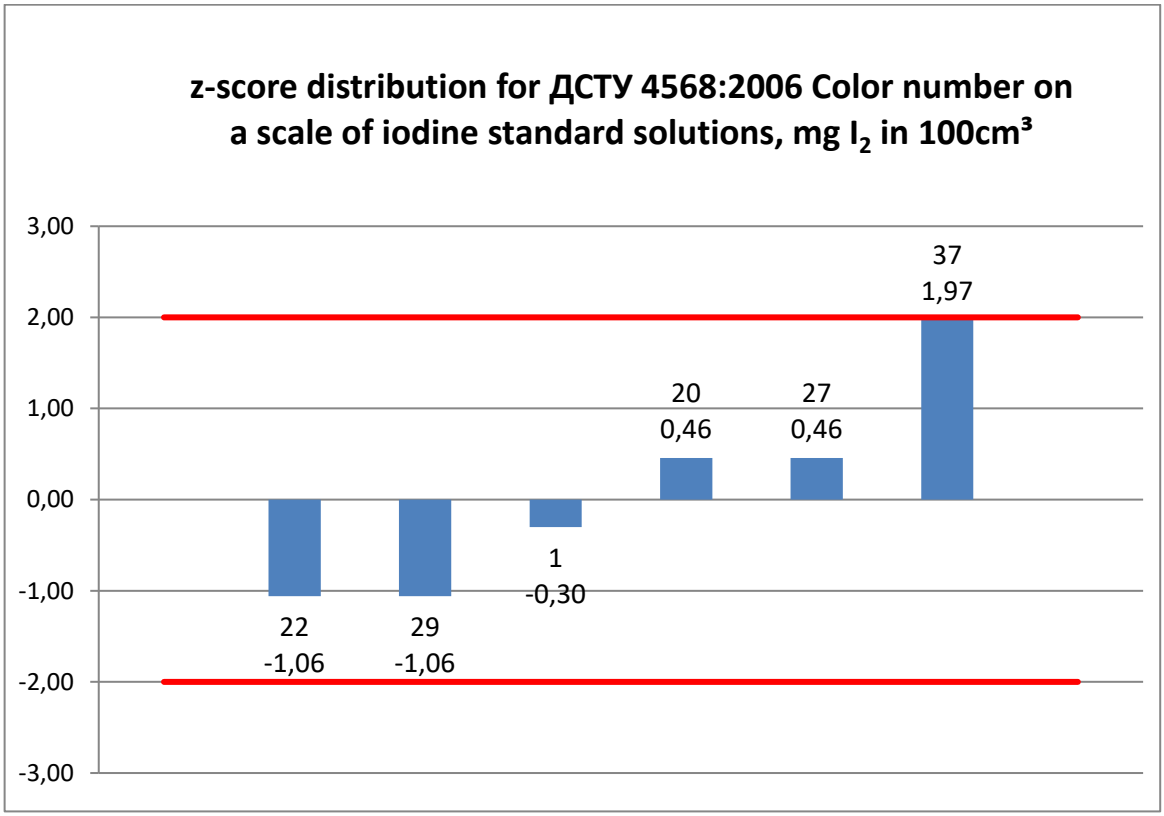
8.3.10. ISO 15305:1998 Lovibond colour - Yellow (1 inch cell), Lovibond units



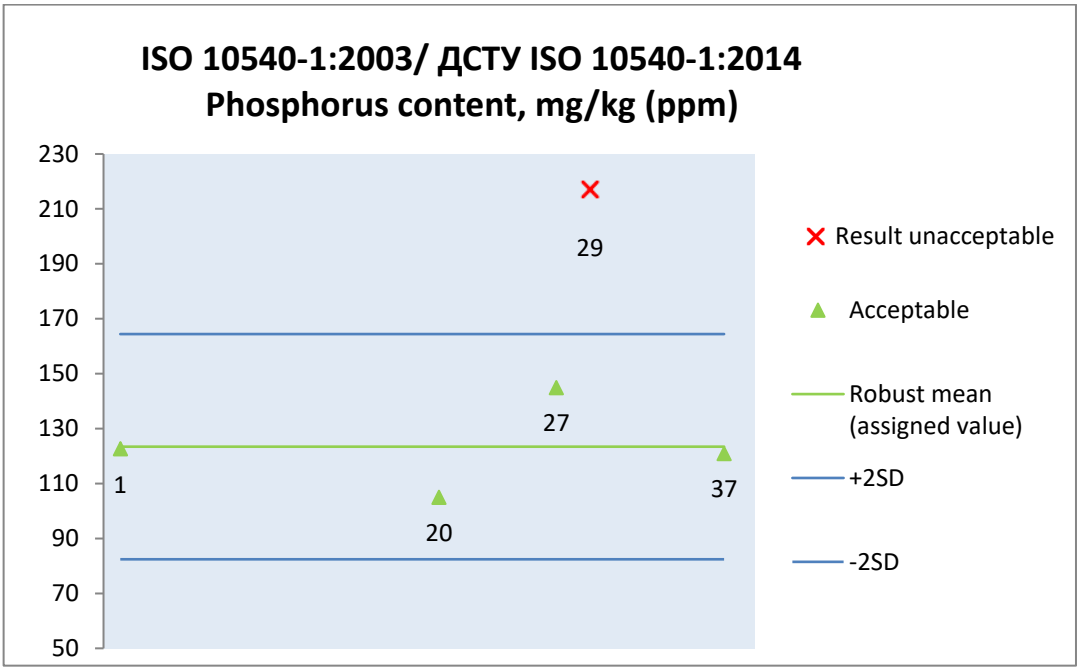


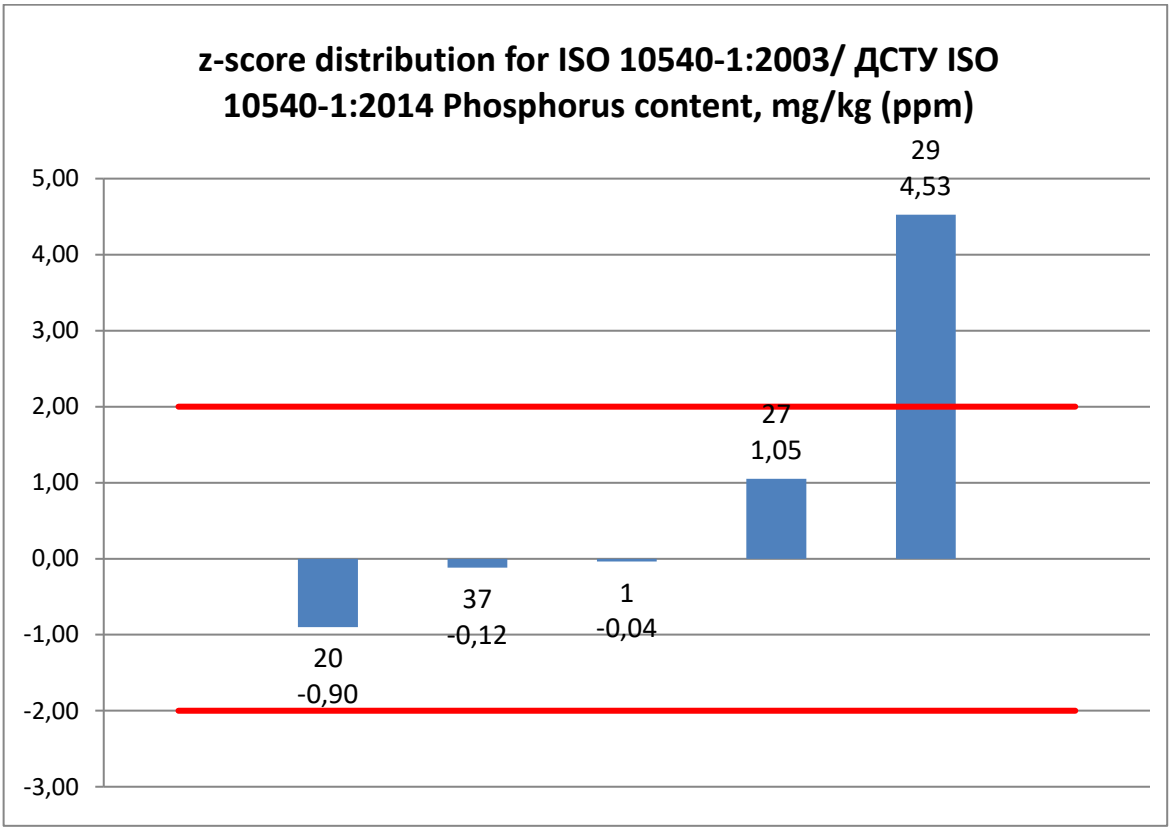
8.3.11. ДСТУ 4568:2006 Color number on a scale of iodine standard solutions, mg I_2 in 100cm³



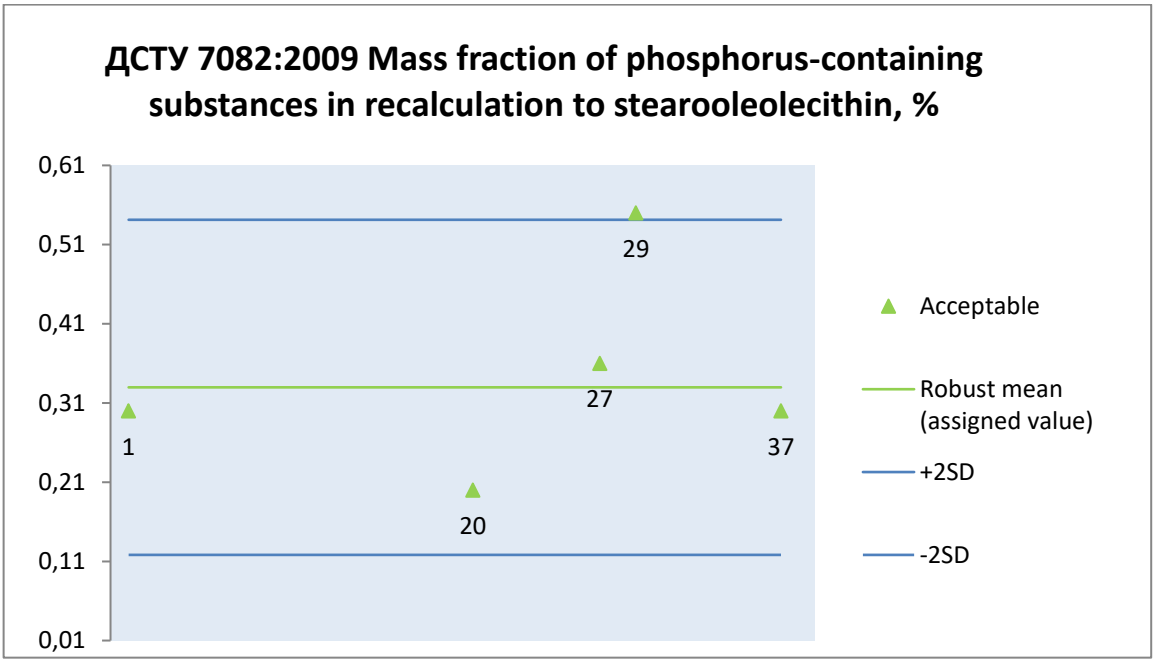


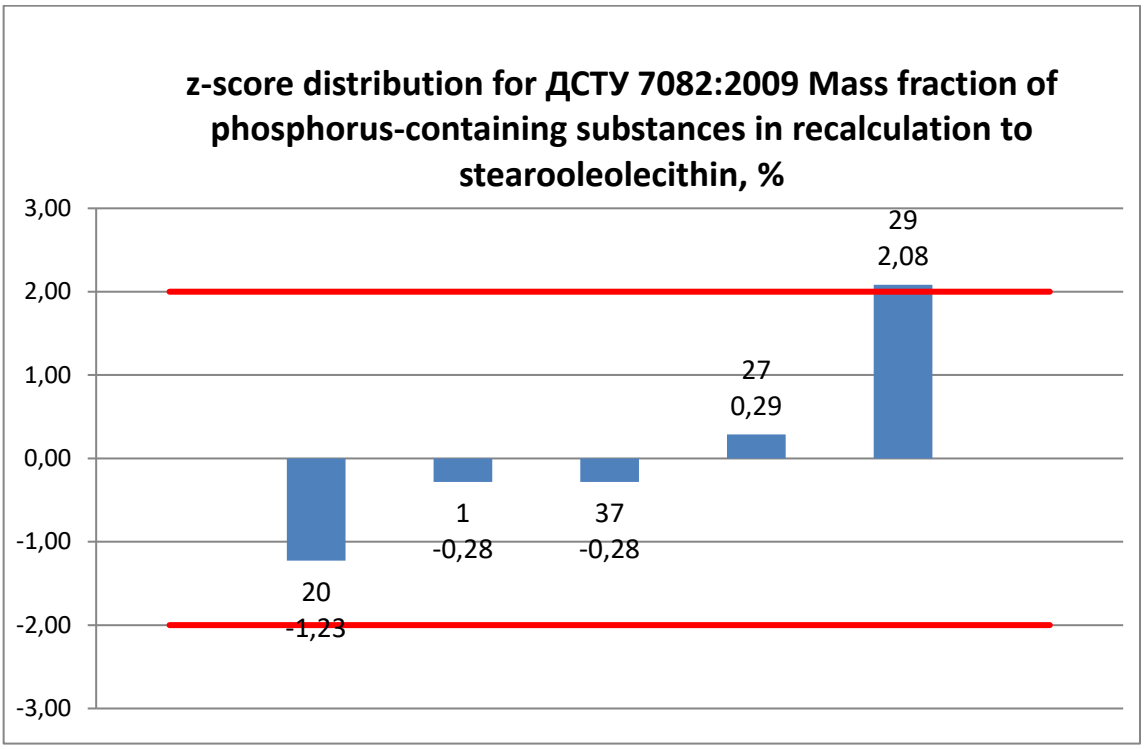
8.3.12. ISO 10540-1:2003/ ДСТУ ISO 10540-1:2014 Phosphorus content, mg/kg (ppm)



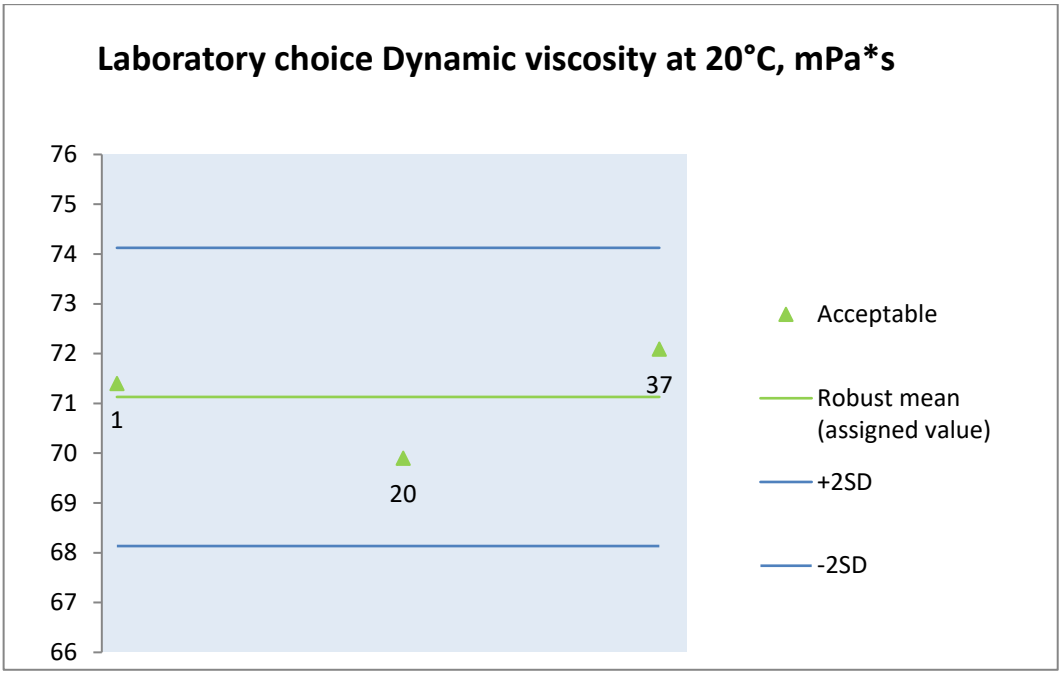


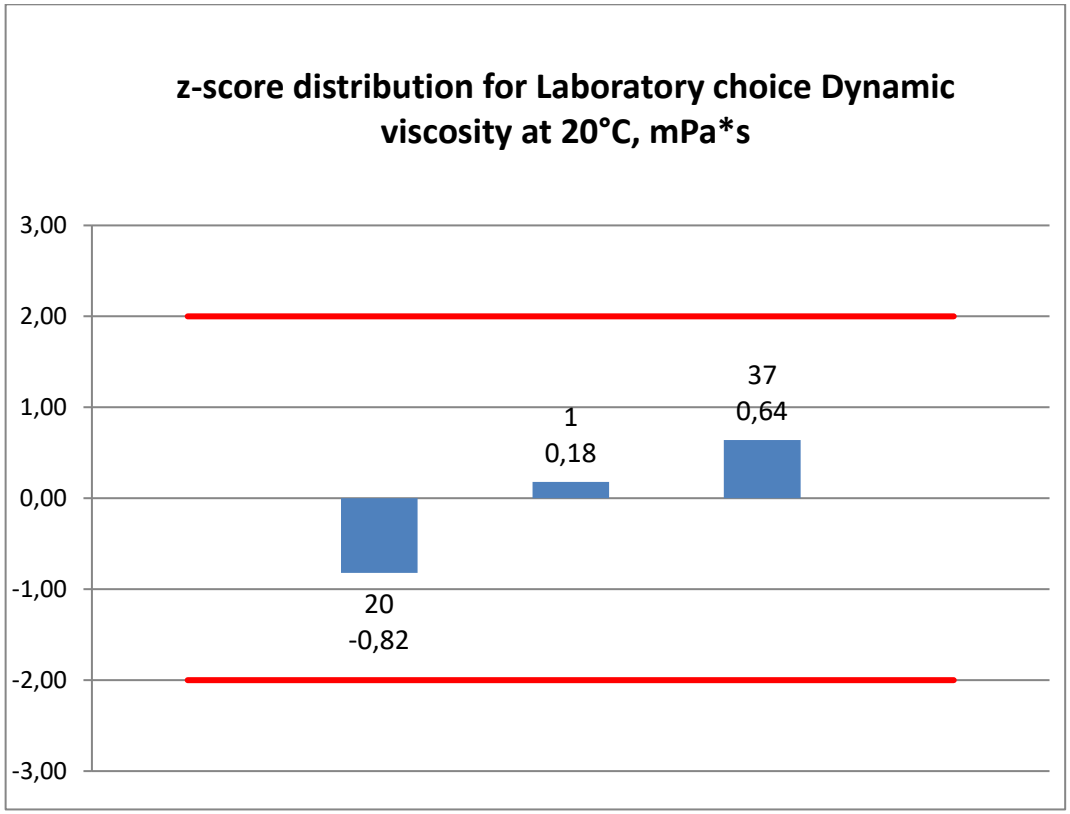
8.3.13. ДСТУ 7082:2009 Mass fraction of phosphorus-containing substances in recalculation to stearooleolecithin, %



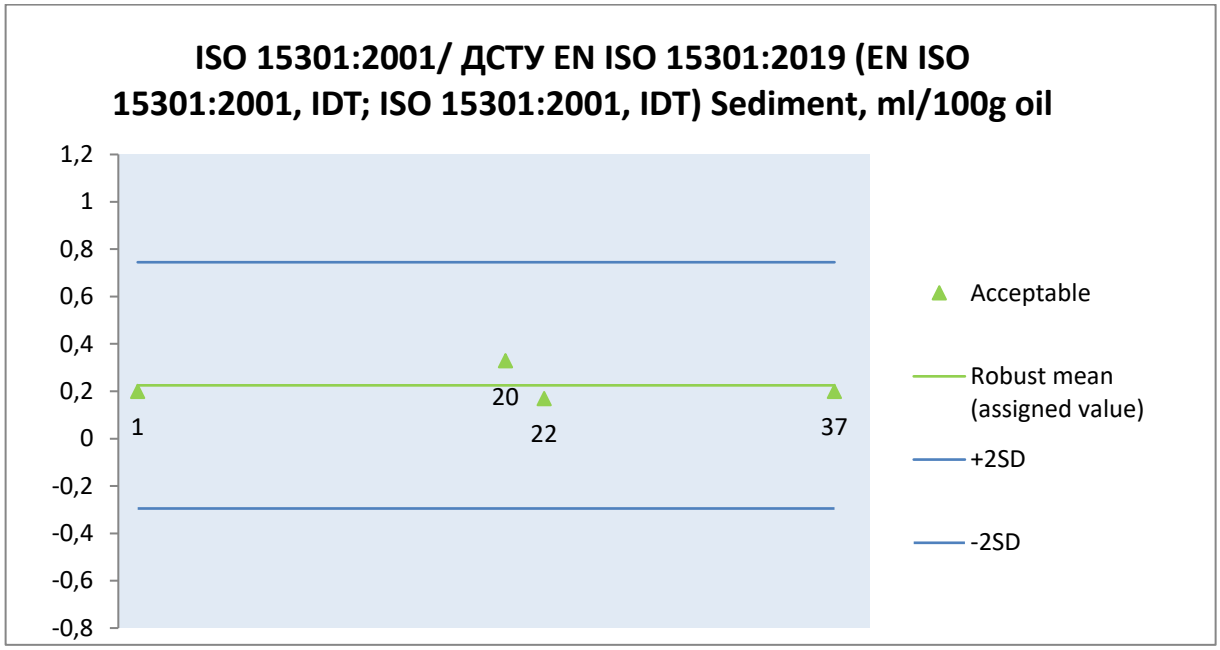


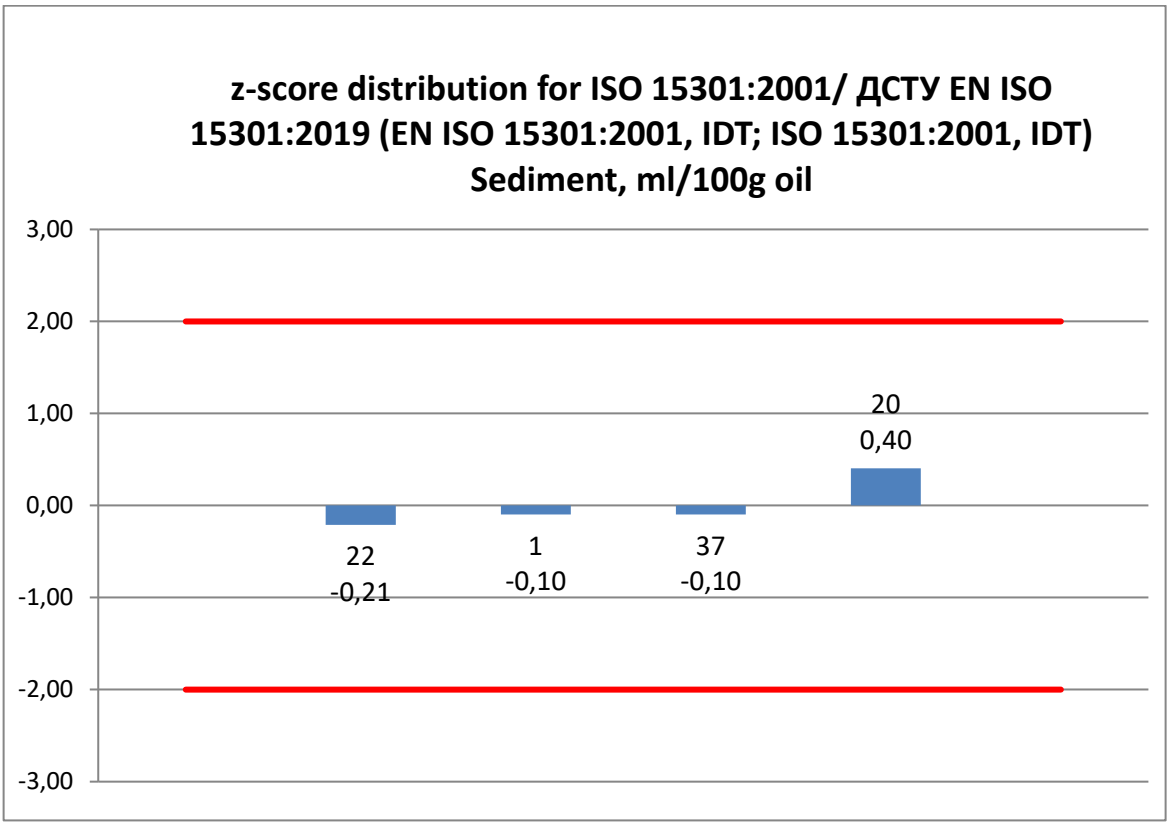
8.3.14. Laboratory choice Dynamic viscosity at 20°C, mPa*s



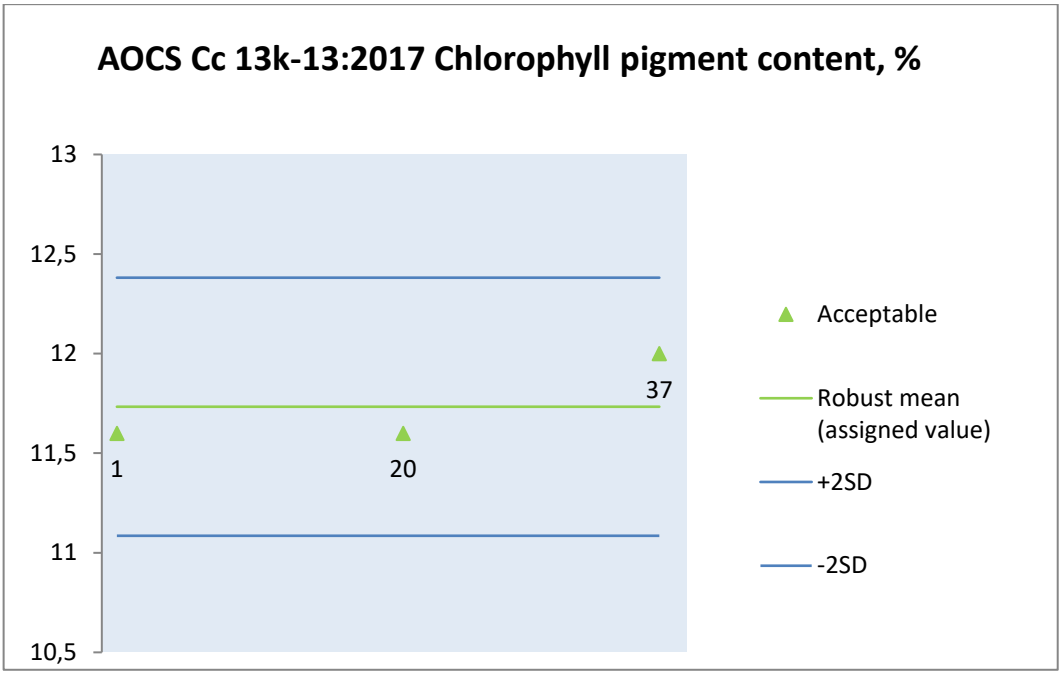


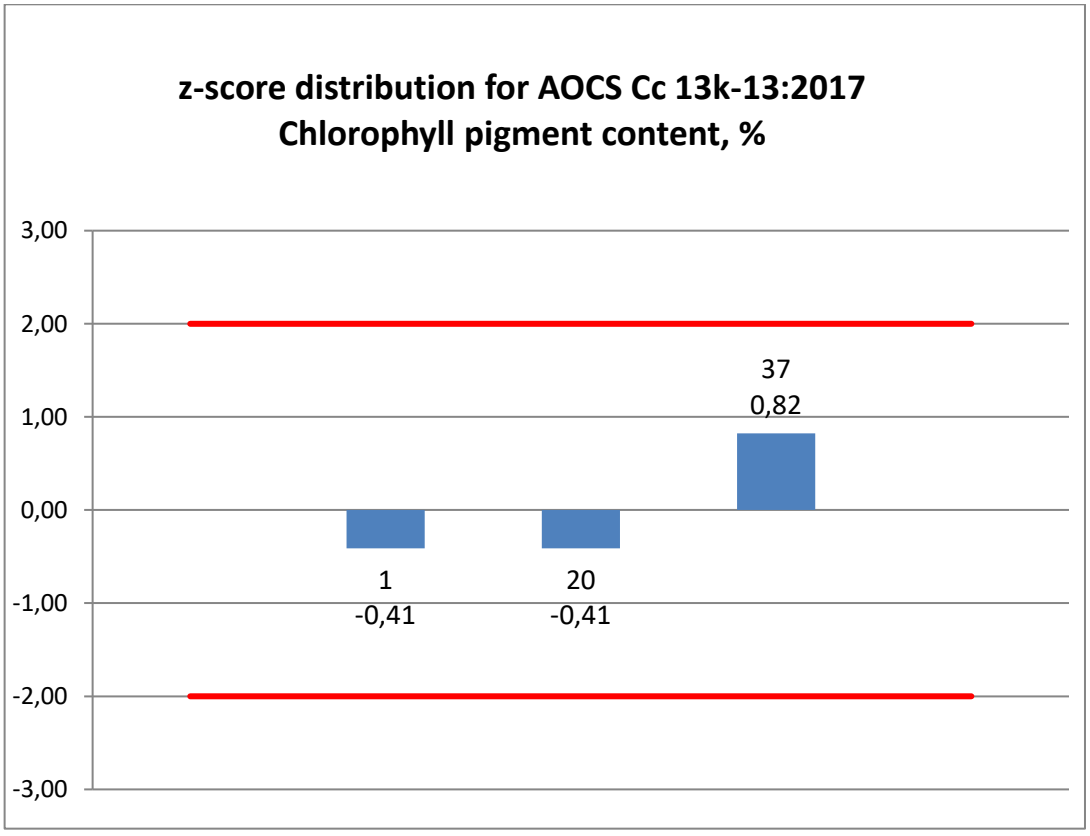
8.3.15. ISO 15301:2001/ ДСТУ EN ISO 15301:2019 (EN ISO 15301:2001, IDT; ISO 15301:2001, IDT) Sediment, ml/100g oil



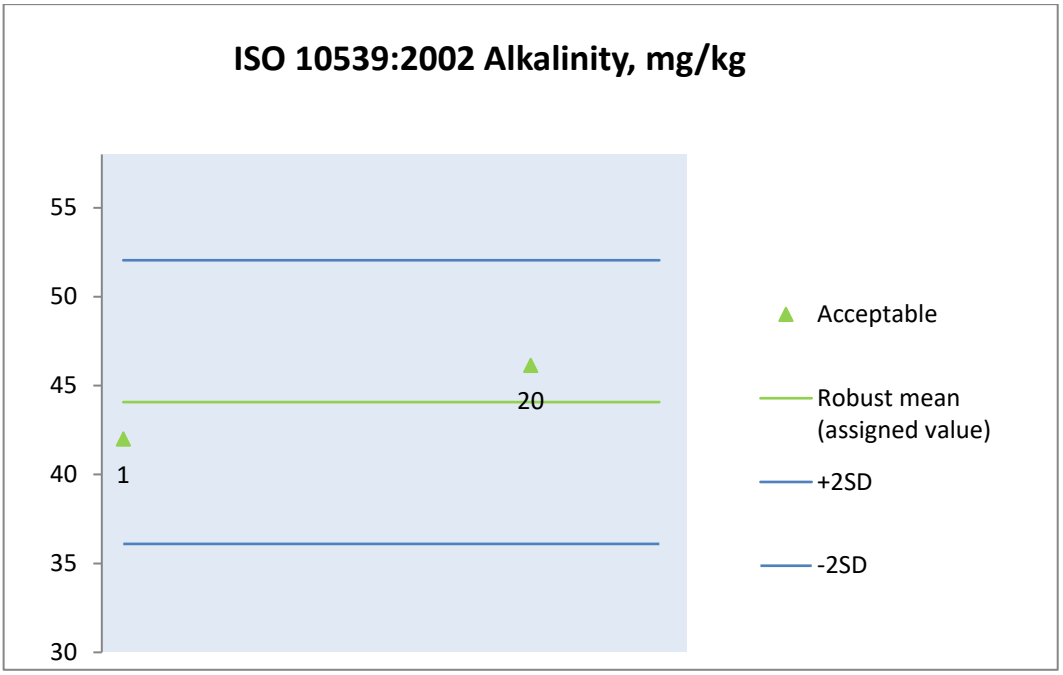


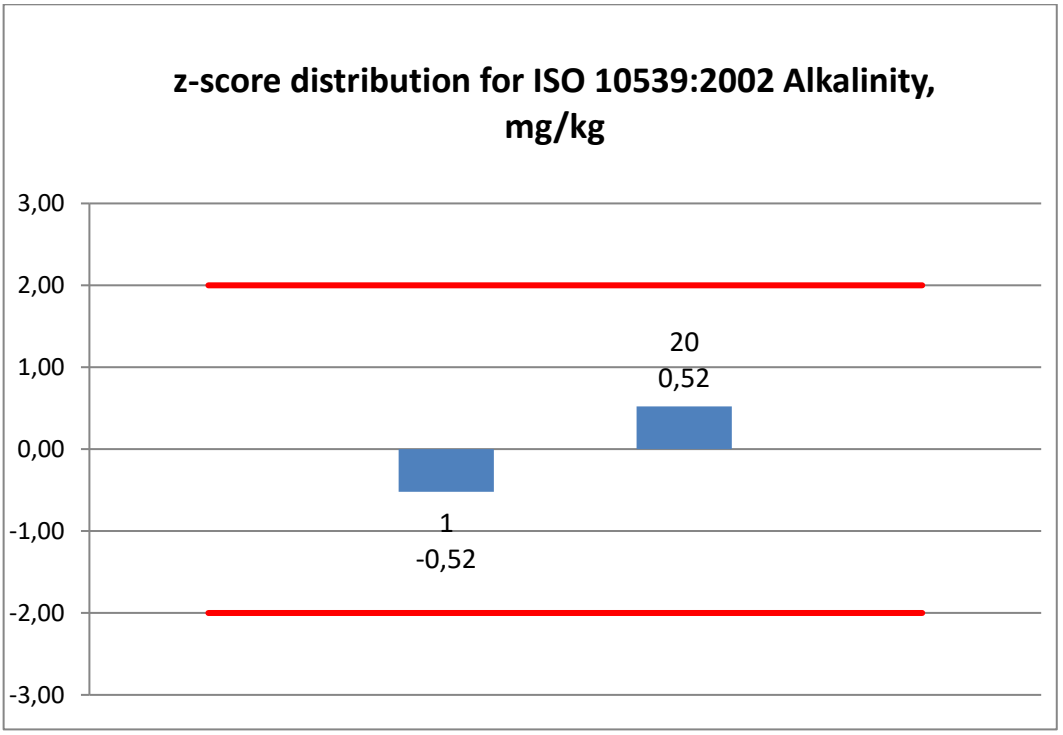
8.3.16. AOCS Cc 13k-13:2017 Chlorophyll pigment content, mg/kg





8.3.17. ISO 10539:2002 Alkalinity, mg/kg





9. INFORMATION, STATED BY THE PARTICIPANTS

9.1. Sample A

Номер лабораторії	Тип пікнометру згідно ISO 6883:2017/ ДСТУ EN ISO 6883:2019 (EN ISO 6883:2017, IDT; ISO 6883:2017, IDT)	Метод згідно ДСТУ 7082	Розчинник згідно ДСТУ 6050:2008	Тип віскозиметра
1	Jaulmes pyknometer	Colorimetric method	petroleum ether	Cannon-Fenske opaque
7		колориметричний метод п.6		
9		п. 6. (колориметричний метод)		
12			петролейний ефір	
14	Жолмеса	Колориметричний		
17	Жолмеса	п.5		
18	Гей-Люссак	ваговий		
19				
20	Jaulmes pyknometer	gravimetric	hexane	Viscometer IKA Rotavisc lo-vi
21		Колориметричний метод	Петролейний ефір	
22		колориметричний		
23		визначення фосфоровмфсних речовин колорометричним методом, п.6		
24		колориметричний метод	Діетиловий ефір	
25	Пікнометр Гей-Люсака SIMAX ПР-3-10 мл	колориметричний	диетиловий ефір	
26	Жолмеса	Колориметричний (пункт 6)		
27		колориметричний		
32		колориметричний метод		
34		колориметричний		
35		п.6		

9.2. Sample D

Номер лабораторії	Метод згідно ДСТУ 7082 -	Тип віскозиметра -
1	Колориметричний	Cannon-Fenske opaque
20	gravimetric	Viscometer IKA Rotavisc lo-vi
27	колориметричний	
37	п.6, колориметричний метод	Каннон-Фенске

10. NORMATIVE REFERENCE

1. ISO/IEC 17043:2023 Conformity assessment – General requirements for the competence of proficiency testing providers.

2. Analytical Methods Committee, Robust Statistics – How not to reject outliers Part 1. Basic Concepts, Analyst, 1989, 114, 1693-1697.

3. Fearn, T. and Thompson, M, A new test for ‘sufficient homogeneity’, Analyst, 2001, 126, 1414-1417.

4. ISO 13528:2022 Statistical methods for use in proficiency testing by interlaboratory comparison.

5. ISO 33405:2024 Reference materials — Approaches for characterization and assessment of homogeneity and stability.

6. ILAC Discussion Paper on Homogeneity and Stability Testing, April 2008.