



50006
Перевірка
професійного рівня

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PROFICIENCY TESTING PT.UA.1.4.2017
MILLING PRODUCTS (QUALITY)
PROFICIENCY TESTING REPORT –
ROUND 9 JUNE 2026

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2. SUMMARY

2.1. The purpose of proficiency testing in milling products 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.1.4.2017 Round 9 held in May-June 2026. This report is issued according to ISO/IEC 17043[1] and PT.UA.1.4.2017 Round 8 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 16 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.

3. GENERAL PROTOCOL FOR PROFICIENCY 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 IIII 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.1.4.2017 Round 9. 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. Sample preparation report can be provided upon request.

3.3. DISPATCH AND RECEIPT OF SAMPLES

3.3.1. Samples of test material – **Wheat flour** were dispatched 26.05.2025 according to schedule of proficiency testing programme PT.UA.1.4.2017 Round 8.

3.3.2. Each produced and identified sample was hermetically sealed.

3.3.3. A total of 16 participants from **four countries** received one sample. Results were returned from 16 participants.

3.3.4. The samples were shipped to participants via the commercial delivery service “Nova Poshta” LL, the delivery to abroad was done by courier delivery.

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 e-mail Provider for details.

3.5. PERFORMANCE ASSESMENT

3.5.1. Provider expressed Participant's results as traditional z-scores according to [1].

3.5.2. 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 0.75% (1 results) of all results in this round were considered to be unsatisfactory. Only 1.67% (3 results) of all results in Round 6 were considered to be unsatisfactory.

3.5.6. There was only one result reported for «Dry gluten content, % (ISO 21415-3:2006 / ДСТУ EN ISO 21415-3:2022 (EN ISO 21415-3:2007, IDT; ISO 21415-3:2006, IDT))». This result was not assessed by the Provider. Corresponding columns are not presented in the tables.

3.5.7. Participant №8 provided result for «Moisture, %» according to «Експрес-метод (термогравіметричний метод вимірювання)...» method instead of the «ISO 712-1:2024/ ДСТУ ISO 712:2015/ ДСТУ EN ISO 712:2022 (EN ISO 712:2009, IDT; ISO 712:2009, IDT))» proposed by the Provider. This result was assessed by the Provider but was not taken into account when calculating robust mean and robust SD.

3.5.8. Participant №6 stated the result for «Crude protein content, % (expressed on absolute dry matter, factor for converting nitrogen content to protein content – 5,7) (ISO 20483:2013/ ДСТУ ISO 20483:2016/ ДСТУ EN ISO 20483:2022 (EN ISO 20483:2013, IDT; ISO 20483:2013, IDT))» was determined using a device «Аналізатор зерна і борошна (IM-9520)». This result was assessed by the Provider but was not taken into account when calculating robust mean and robust SD.

3.5.9. Participant №16 provided result: for «Crude protein content, % (expressed on absolute dry matter, factor for converting nitrogen content to protein content – 5,7)» according to «ГОСТ 26889-86» method instead of the «ISO 20483:2013/ ДСТУ ISO 20483:2016/ ДСТУ EN ISO 20483:2022 (EN ISO 20483:2013, IDT; ISO 20483:2013, IDT))» proposed by the Provider. This result was assessed by the Provider and was taken into account when calculating robust mean and robust SD.

for «Mass fraction of fat, % (expressed on dry matter)» according to «ГОСТ» instead of the «ДСТУ ISO 7302:2003» proposed by the Provider. This result was assessed by the Provider but was not taken into account when calculating robust mean and robust SD.

3.5.10. Participant №17 provided result for «Crude protein content, % (expressed on absolute dry matter, factor for converting nitrogen content to protein content – 5,7)» according to «ДСТУ 4117:2007» method instead of the «ISO 20483:2013/ ДСТУ ISO 20483:2016/ ДСТУ EN ISO 20483:2022 (EN ISO 20483:2013, IDT; ISO 20483:2013, IDT))» proposed by the Provider. This result was assessed by the Provider but was not taken into account when calculating robust mean and robust SD.

3.5.11. For «Ash yield, % (expressed on dry matter)» Participant №12 provided result according to «ДСТУ ГОСТ 27494:2019 (ГОСТ 27494–2016, IDT)», Participant №9 provided result according to «ГОСТ 27494-87» and Participant №16 provided result according to «ГОСТ 27494» instead of the «ISO 2171:2023/ ДСТУ ISO 2171:2009» proposed by the Provider. These results were assessed by the Provider but were not taken into account when calculating robust mean and robust SD.

4. HOMOGENITY AND STABILITY ASSESMENT

4.1. Samples were assessed for homogeneity and stability after blending and packing by selecting three samples of material at random from all those produced. The samples were tested in duplicate under repeatability conditions as only 19 samples were produced according to [6].

4.2. 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].

4.3. 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.

4.4. ISO 712-1:2024/ ДСТУ ISO 712:2015/ ДСТУ EN ISO 712:2022 (EN ISO 712:2009, IDT; ISO 712:2009, IDT) Moisture, %

Moisture, %		ISO 712-1:2024/ ДСТУ ISO 712:2015/ ДСТУ EN ISO 712:2022 (EN ISO 712:2009, IDT; ISO 712:2009, IDT)									
Дослідження гомогенності/Homogeneity test						Аналіз на 'достатню однорідність'/Test for 'sufficient homogeneity'					
Аналіз викидів за тестом Кохрана(C -тест)/Cohran's C test for outliers											
Номер зразку/ Sample number	Результат/ Result A	Результат/ Result B	Average	SD ²		Номер зразку /Sample number	Результат/ Result A	Результат/ Result B	SUM	Difference ²	
1	12,650	12,680	12,665	0,0004	0,00	1	12,65	12,68	25,33	0,0009	
2	12,590	12,570	12,580	0,0002	0,00	2	12,59	12,57	25,16	0,0004	
3	12,560	12,580	12,570	0,0002	0,00	3	12,56	12,58	25,14	0,0004	
											0,0017
Mean	12,605		Worst pair	0,0004		Mean	12,605				
Max	12,68		SUM of SD ²	0,0008		Max	12,68				
Min	12,56		C	0,5294		Min	12,56				
			Ccr, 5%	0,9669							
			Ccr, 1%	0,9933		Analytical variance S ² an	0,0003	SD		0,0485	
			Conclusion			Sanal	0,0168	RSDR		0,3846	
			5% PASS			Ssums	0,0109				
			1% PASS			MSb	0,0054				
						Between sample variance S ² sam	0,0026				
Remarks											
1. Cohran's C test is described in ISO 5727-2 and ISO 13528:2022											
2. Test for 'sufficient homogeneity' is performed according to Annex B ISO 13528:2022											

Source of σp value to use		
Use(write '1')	Source	σp
	C>13.8%, HORWITZ	0,3550
	120ppb<C<13.8%, HORWITZ	0,3443
	C<120 ppb	2,7731
	MASS NEGATIVE POWER FOR HORWITZ EQUATION(%=2, ppb=9,ppm=6)	2
	SD	0,0443
1	Trial SD	0,1600
	Target SD chosen	0,1600
	σ ² all	0,0023
	Replicates	3
	F1	2,996
	F2	4,276
	Critical value	0,0081
	Between sample variance S ² sam	0,0026
	Sufficient homogeneity test	PASS

4.5. Data for all analytes

	ISO 712-1:2024/ ДСТУ ISO 712:2015/ ДСТУ EN ISO 712:2022 (EN ISO 712:2009, IDT; ISO 712:2009, IDT)	ISO 20483:2013/ ДСТУ ISO 20483:2016/ ДСТУ EN ISO 20483:2022 (EN ISO 20483:2013, IDT; ISO 20483:2013, IDT)	ISO 2171:2023/ ДСТУ ISO 2171:2009	ISO 3093:2009/ ДСТУ ISO 3093:2019 (ISO 3093:2009, IDT)	ISO 7305:2019/ ДСТУ 4250:2003	ISO 21415- 1:2006/ ДСТУ ISO 21415- 1:2009	ISO 21415- 2:2015/ ДСТУ ISO 21415- 2:2009	ISO 21415- 2:2015/ ДСТУ ISO 21415-2:2009	ISO 21415- 3:2006 / ДСТУ EN ISO 21415-3:2022 (EN ISO 21415-3:2007, IDT; ISO 21415-3:2006, IDT)	ISO 21415- 4:2006/ ДСТУ EN ISO 21415- 4:2022 (EN ISO 21415- 4:2007, IDT; ISO 21415- 4:2006, IDT)
	Moisture, %	Crude protein content, % (expressed on absolute dry matter, factor for converting nitrogen content to protein content – 5,7)	Ash yield, % (expressed on dry matter)	Falling number,s	Fat acidity, mg NaOH per 100g. of dry matter	Wet gluten content, %	Wet gluten content, %	Gluten index,%	Dry gluten content, %	Dry gluten content, %

Homogeneity and stability (Гомогенність та стабільність)

Cohran's 'C' test (С-тест "Кохрана")

Critical value (5%,3pairs)=0,9669	0,5294	0,7576	0,8607	0,7101	0,6343	0,3805	0,7364	0,8930	0,5506	0,9000
Mean Result	12,6050	11,6550	0,5781	431,8333	31,9617	28,1950	28,2600	79,1467	9,2217	9,4433
Conclusion (Висновок)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

Analytical variance test (тест аналітичної дисперсії)

S ² anal	0,0003	0,0006	0,0001	11,5000	0,0486	0,9593	0,0018	0,6114	0,0015	0,0002
S _{anal}	0,0168	0,0235	0,0097	3,3912	0,2204	0,9795	0,0428	0,7819	0,0385	0,0129
S ² sample	0,0026	0,0007	0,0001	22,8333	0,1857	0,0000	0,0001	0,0000	0,0000	0,0013
σ _p	0,1600	0,1700	0,0230	21,4250	3,6560	0,5310	0,5316	6,0000	0,2640	0,2694
σ _p source	Method Tr SD	Method Tr SD	Method Tr SD	Method Tr SD	Trial SD	Horwitz	Horwitz	Method Tr SD	Horwitz	Horwitz
σ ² all	0,0023	0,0026	0,0001	41,3128	1,2030	0,0254	0,0254	3,2400	0,0063	0,0065
Critical value	0,0081	0,0101	0,0005	172,9365	3,8115	4,1782	0,0840	12,3207	0,0251	0,0203
Conclusion (Висновок)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

	ISO 5529:2007/ ДСТУ ISO 5529:2014	Method based on ГОСТ 9404- 88	ДСТУ ISO 7302:2003	Method based on ГОСТ 27839-88	Method based on ГОСТ 27839-88	ДСТУ 4870:2007/ ДСТУ ГОСТ 26361:2019 (ГОСТ 26361-2013, IDT)	ISO 27971:2023	ISO 27971:2023	ISO 27971:2023	ISO 27971:2023	ISO 27971:2023
	Sedimentation index – Zeleni test, ml	Moisture content, %	Mass fraction of fat, % (expressed on dry matter)	Wet gluten content, %	Index of gluten deformation	Whiteness of flour, c.u.	Deformation energy, W	Maximum pressure parameter, P	Mean abscissa at rupture, L	Index of swelling, G	Curve configuration ratio, P/L

Homogeneity and stability (Гомогенність та стабільність)

Cohran's 'C' test (С-тест "Кохрана")

Critical value (5%,3pairs)=0,9669	0,5000	0,7619	0,3333	0,5266	N/A	0,4737	0,9091	0,6792	0,8820	0,8351	0,7353
Mean Result	37,0000	12,5500	1,3633	26,4350	64,6000	58,6167	302,0000	121,8333	69,1667	18,4500	1,7833
Conclusion (Висновок)	PASS	PASS	PASS	PASS	N/A	PASS	PASS	PASS	PASS	PASS	PASS

Analytical variance test (тест аналітичної дисперсії)

S^2_{anal}	0,3333	0,0014	0,0008	0,9693	0,0000	0,0317	73,3333	8,8333	7,7400	0,1617	0,0142
S_{anal}	0,5774	0,0374	0,0283	0,9845	0,0000	0,1780	8,5635	2,9721	2,7821	0,4021	0,1190
S^2_{sample}	0,0833	0,0054	0,0000	0,0000	1,2400	0,1975	44,3333	0,0000	8,4933	0,1167	0,0000
σ_p	2,5000	0,3430	0,0520	0,5141	5,0000	2,0000	18,2870	5,0820	6,1300	0,8000	0,1670
σ_p source	Method Tr SD	Horwitz	Horwitz	Horwitz	Method Tr SD	Method Tr SD	Method Tr SD	Method Tr SD	Method Tr SD	Method Tr SD	Method Tr SD
σ^2_{all}	0,5625	0,0106	0,0002	0,0238	2,2500	0,3600	30,0973	2,3244	3,3819	0,0576	0,0025
Critical value	3,1104	0,0377	0,0042	4,2158	6,7404	1,2139	403,7402	44,7350	43,2279	0,8638	0,0681
Conclusion (Висновок)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

5. DATA SUMMARY

Method	ISO 712-1:2024/ ДСТУ ISO 712:2015/ ДСТУ EN ISO 712:2022 (EN ISO 712:2009, IDT; ISO 712:2009, IDT)	ISO 20483:2013/ ДСТУ ISO 20483:2016/ ДСТУ EN ISO 20483:2022 (EN ISO 20483:2013, IDT; ISO 20483:2013, IDT)	ISO 2171:2023/ ДСТУ ISO 2171:2009	ISO 3093:2009/ ДСТУ ISO 3093:2019 (ISO 3093:2009, IDT)	ISO 7305:2019/ ДСТУ 4250:2003	ISO 21415- 1:2006/ ДСТУ ISO 21415- 1:2009	ISO 21415- 2:2015/ ДСТУ ISO 21415- 2:2009	ISO 21415- 2:2015/ ДСТУ ISO 21415- 2:2009	ISO 21415- 4:2006/ ДСТУ EN ISO 21415- 4:2022 (EN ISO 21415-4:2007, IDT; ISO 21415- 4:2006, IDT)	ISO 5529:2007/ ДСТУ ISO 5529:2014
Laboratory number	Moisture, %	Crude protein content, % (expressed on absolute dry matter, factor for converting nitrogen content to protein content – 5,7)	Ash yield, % (expressed on dry matter)	Falling number, s	Fat acidity, mg NaOH per 100g. of dry matter	Wet gluten content, %	Wet gluten content, %	Gluten index,%	Dry gluten content, %	Sedimentation index – Zeleni test, ml
No of Results	10	8	11	10	4	5	2	5	2	3
No of Results z >3	1	0	0	0	0	0	0	0	0	0
No of Results z >3, %	10,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Mean	12,536	11,529	0,523	425,700	35,418	28,702	27,900	87,200	9,310	35,333
Min	12,000	11,200	0,480	397,000	32,050	26,000	27,800	80,000	9,220	34,000
Max	12,790	11,900	0,570	466,000	40,620	31,800	28,000	90,000	9,400	38,000
SD	0,251	0,257	0,034	19,108	3,656	2,083	0,141	4,147	0,127	2,309
Median	12,620	11,510	0,510	426,500	34,500	28,600	27,900	88,000	9,310	34,000
Robust mean (assigned value)	12,612	11,422	0,525	424,250	35,418	28,702	27,900	88,287	9,310	35,333
Robust SD	0,145	0,190	0,038	13,511	3,656	2,083	0,141	1,882	0,127	2,309
SD from method (Tr.SD)	0,16	0,17	0,023	21,425	7,00	2,01	0,90	6,00	0,86	2,50
SD from Horwitz eq.	0,344	0,317	0,023	N/A	N/A	0,536	0,528	N/A	0,266	N/A
Target SD	0,160	0,170	0,023	21,425	3,656	2,010	0,528	6,000	0,266	2,500
Source of target SD of PT	Method Tr SD	Method Tr SD	Method Tr SD	Method Tr SD	Trial SD	Method Tr SD	Horwitz	Method Tr SD	Horwitz	Method Tr SD

Method	Method based on ГОСТ 9404-88	ДСТУ ISO 7302:2003	Method based on ГОСТ 27839-88	Method based on ГОСТ 27839-88	ДСТУ 4870:2007/ ДСТУ ГОСТ 26361:2019 (ГОСТ 26361–2013, IDT)	ISO 27971:2023	ISO 27971:2023	ISO 27971:2023	ISO 27971:2023	ISO 27971:2023
	Moisture content, %	Mass fraction of fat, % (expressed on dry matter)	Wet gluten content, %	Index of gluten deformation	Whiteness of flour, c.u.	Deformation energy, W	Maximum pressure parameter, P	Mean abscissa at rupture, L	Index of swelling, G	Curve configuration ratio, P/L
No of Results	10	3	10	11	13	5	5	5	5	5
No of Results z >3	0	0	0	0	0	0	0	0	0	0
No of Results z >3, %	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Mean	12,394	1,187	26,356	64,800	58,985	275,200	109,600	72,000	18,860	1,526
Min	12,100	1,000	25,000	55,000	56,400	249,000	100,000	68,000	18,300	1,380
Max	12,600	1,360	28,400	75,000	61,000	296,000	120,000	78,000	19,600	1,750
SD	0,182	0,180	1,161	5,412	1,216	17,627	7,668	4,416	0,568	0,175
Median	12,450	1,200	26,220	65,000	59,000	276,000	108,000	71,000	18,700	1,410
Robust mean (assigned value)	12,397	1,180	26,308	64,756	59,036	275,200	109,600	72,000	18,860	1,526
Robust SD	0,177	0,255	1,074	4,109	0,964	17,627	7,668	4,416	0,568	0,175
SD from method (Tr.SD)	N/A	0,11	2,00	5,00	2	18,287	5,082	6,130	0,800	0,167
SD from Horwitz eq.	0,339	0,046	0,513	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Target SD	0,339	0,110	1,074	5,000	2,000	18,287	5,082	6,130	0,800	0,167
Source of target SD of PT	Horwitz	Method Tr SD	Trial SD	Method Tr SD	Method Tr SD	Method Tr SD	Method Tr SD	Method Tr SD	SD	Method Tr SD

6. RAW DATA

Method	ISO 712-1:2024/ ДСТУ ISO 712:2015/ ДСТУ EN ISO 712:2022 (EN ISO 712:2009, IDT; ISO 712:2009, IDT)	ISO 20483:2013/ ДСТУ ISO 20483:2016/ ДСТУ EN ISO 20483:2022 (EN ISO 20483:2013, IDT; ISO 20483:2013, IDT)	ISO 2171:2023/ ДСТУ ISO 2171:2009	ISO 3093:2009/ ДСТУ ISO 3093:2019 (ISO 3093:2009, IDT)	ISO 7305:2019/ДСТ У 4250:2003	ISO 21415- 1:2006/ ДСТУ ISO 21415-1:2009	ISO 21415- 2:2015/ ДСТУ ISO 21415-2:2009	ISO 21415- 2:2015/ ДСТУ ISO 21415- 2:2009	ISO 21415- 3:2006 / ДСТУ EN ISO 21415- 3:2022 (EN ISO 21415-3:2007, IDT; ISO 21415- 3:2006, IDT)	ISO 21415- 4:2006/ ДСТУ EN ISO 21415- 4:2022 (EN ISO 21415-4:2007, IDT; ISO 21415- 4:2006, IDT)
Laboratory number	Moisture, %	Crude protein content, % (expressed on absolute dry matter, factor for converting nitrogen content to protein content – 5,7)	Ash yield, % (expressed on dry matter)	Falling number, s	Fat acidity, mg NaOH per 100g. of dry matter	Wet gluten content, %	Wet gluten content, %	Gluten index,%	Dry gluten content, %	Dry gluten content, %
1	12,60	11,65	0,57	429	32,05	28,11	27,80	80,00	9,45	9,22
2	12,74	11,3	0,50	430	34,5	-	-	90,0	-	-
3										
4	12,75	11,2	0,57	436	34,5	-	-	90	-	-
5	12,64			412,00		31,80				
6		11,8	0,50	424,00						
7	12,42		0,48	466						
8	12,00					26,00				
9			0,52	410,00						
10	-	-	-	-	-	-	-	-	-	-
11	12,79									
12	-	-	0,49	-	-	-	-	-	-	-
13	12,25	N/A	N/A	N/A	N/A	28,60	N/A	88,00	N/A	N/A
14	12,67	11,66	0,57							
15	12,50	11,37	0,51	438	40,62	29,0	28,0	88		9,4
16		11,35	0,54	397,00						
17		11,9	0,50	415,00						

Method	ISO 5529:2007/ ДСТУ ISO 5529:2014	Method based on ГОСТ 9404-88	ДСТУ ISO 7302:2003	Method based on ГОСТ 27839-88	Method based on ГОСТ 27839-88	ДСТУ 4870:2007/ ДСТУ ГОСТ 26361:2019 (ГОСТ 26361–2013, IDT)	ISO 27971:2023	ISO 27971:2023	ISO 27971:2023	ISO 27971:2023	ISO 27971:2023
Laboratory number	Sedimentation index – Zeleni test, ml	Moisture content, %	Mass fraction of fat, % (expressed on dry matter)	Wet gluten content, %	Index of gluten deformation	Whiteness of flour, c.u.	Deformation energy, W	Maximum pressure parameter, P	Mean abscissa at rupture, L	Index of swelling, G	Curve configuration ratio, P/L
1	38	12,51	1,36	26,44	64,00	58,60	296	120	68,0	18,4	1,75
2	34	12,53	-	-	-	58,20	270	106	75	19,3	1,41
3											
4	-	12,50	-	-	-	58,30	285	108	78	19,6	1,38
5				28,40	62,20	58,00					
6		12,60		25,60	60,80	59,20	276,00	114,00	68,00	18,30	1,68
7		12,20		25,00	55	56,4					
8					75,00						
9		12,2		26,00	65,0	61,0					
10	-	12,6	-	27	70	59	-	-	-	-	-
11				27,02	68,10	60,20					
12	-	12,30	-	25,00	65,00	59,00	-	-	-	-	-
13	N/A	N/A	N/A	N/A	N/A	58,50	N/A	N/A	N/A	N/A	N/A
14			1,00								
15	34						249	100	71	18,7	1,41
16		12,10	1,20	27,70	67,70	60,40					
17		12,40		25,40	60,00	60,00					

7. Z SCORES

Method	ISO 712-1:2024/ ДСТУ ISO 712:2015/ ДСТУ EN ISO 712:2022 (EN ISO 712:2009, IDT; ISO 712:2009, IDT)	ISO 20483:2013/ ДСТУ ISO 20483:2016/ ДСТУ EN ISO 20483:2022 (EN ISO 20483:2013, IDT; ISO 20483:2013, IDT)	ISO 2171:2023/ ДСТУ ISO 2171:2009	ISO 3093:2009/ ДСТУ ISO 3093:2019 (ISO 3093:2009, IDT)	ISO 7305:2019/ДСТУ 4250:2003	ISO 21415-1:2006/ ДСТУ ISO 21415-1:2009	ISO 21415-2:2015/ ДСТУ ISO 21415-2:2009	ISO 21415-2:2015/ ДСТУ ISO 21415-2:2009	ISO 21415-4:2006/ ДСТУ EN ISO 21415-4:2022 (EN ISO 21415-4:2007, IDT; ISO 21415-4:2006, IDT)	ISO 5529:2007/ ДСТУ ISO 5529:2014
Laboratory number	Moisture, %	Crude protein content, % (expressed on absolute dry matter, factor for converting nitrogen content to protein content – 5,7)	Ash yield, % (expressed on dry matter)	Falling number, s	Fat acidity, mg NaOH per 100g. of dry matter	Wet gluten content, %	Wet gluten content, %	Gluten index,%	Dry gluten content, %	Sedimentation index – Zeleni test, ml
1	-0,07	1,34	1,96	0,22	-0,92	-0,29	-0,19	-1,38	-0,34	1,07
2	0,80	-0,72	-1,09	0,27	-0,25			0,29		-0,53
3										
4	0,87	-1,30	1,96	0,55	-0,25			0,29		
5	0,18			-0,57		1,54				
6		2,23	-1,09	-0,01						
7	-1,20		-1,96	1,95						
8	-3,82					-1,34				
9			-0,22	-0,67						
10										
11	1,12									
12			-1,52							
13	-2,26					-0,05		-0,05		
14	0,37	1,40	1,96							
15	-0,70	-0,30	-0,65	0,64	1,42	0,15	0,19	-0,05	0,34	-0,53
16		-0,42	0,65	-1,27						
17		2,81	-1,09	-0,43						

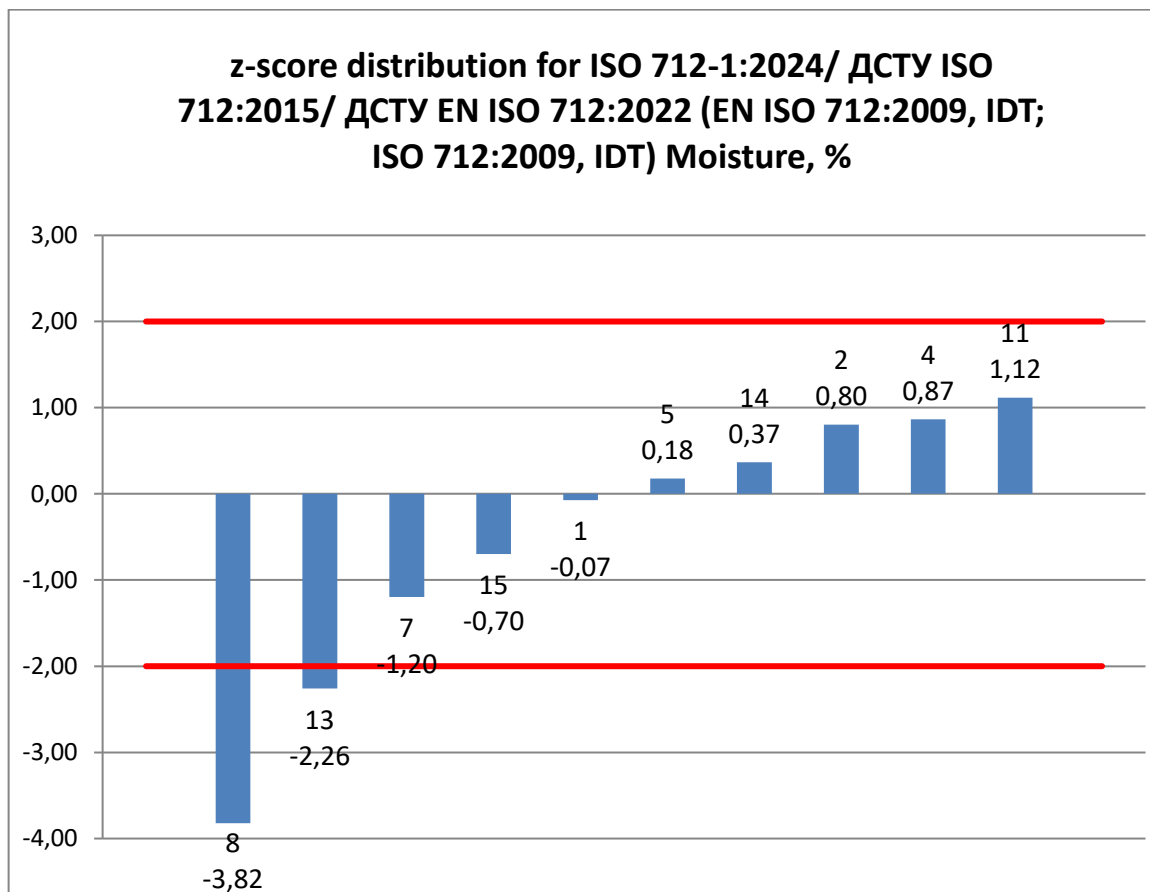
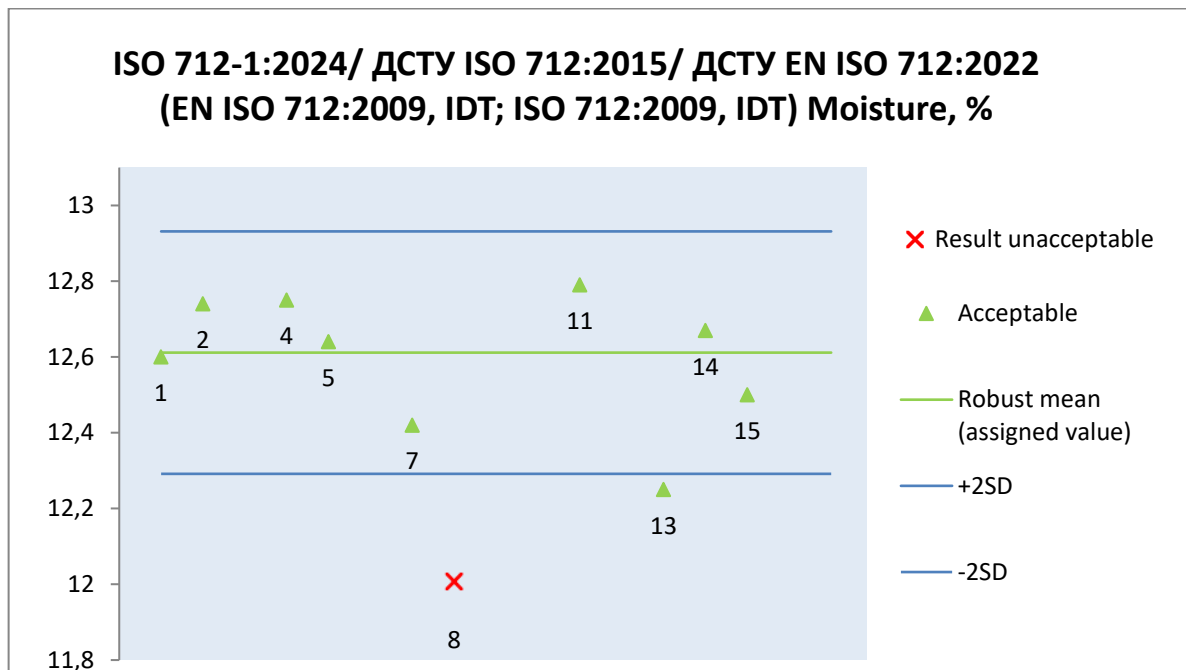
Method	Method based on ГОСТ 9404-88	ДСТУ ISO 7302:2003	Method based on ГОСТ 27839-88	Method based on ГОСТ 27839-88	ДСТУ 4870:2007/ ДСТУ ГОСТ 26361:2019 (ГОСТ 26361–2013, IDT)	ISO 27971:2023	ISO 27971:2023	ISO 27971:2023	ISO 27971:2023	ISO 27971:2023
Laboratory number	Moisture content, %	Mass fraction of fat, % (expressed on dry matter)	Wet gluten content, %	Index of gluten deformation	Whiteness of flour, c.u.	Deformation energy, W	Maximum pressure parameter, P	Mean abscissa at rupture, L	Index of swelling, G	Curve configuration ratio, P/L
1	0,33	1,64	0,12	-0,15	-0,22	1,14	2,05	-0,65	-0,58	1,34
2	0,39				-0,42	-0,28	-0,71	0,49	0,55	-0,70
3										
4	0,30				-0,37	0,54	-0,31	0,98	0,92	-0,88
5			1,95	-0,51	-0,52					
6	0,60		-0,66	-0,79	0,08	0,04	0,87	-0,65	-0,70	0,92
7	-0,58		-1,22	-1,95	-1,32					
8				2,05						
9	-0,58		-0,29	0,05	0,98					
10	0,60		0,64	1,05	-0,02					
11			0,66	0,67	0,58					
12	-0,29		-1,22	0,05	-0,02					
13					-0,27					
14		-1,64								
15						-1,43	-1,89	-0,16	-0,20	-0,70
16	-0,88	0,18	1,30	0,59	0,68					
17	0,01		-0,85	-0,95	0,48					

Remarks

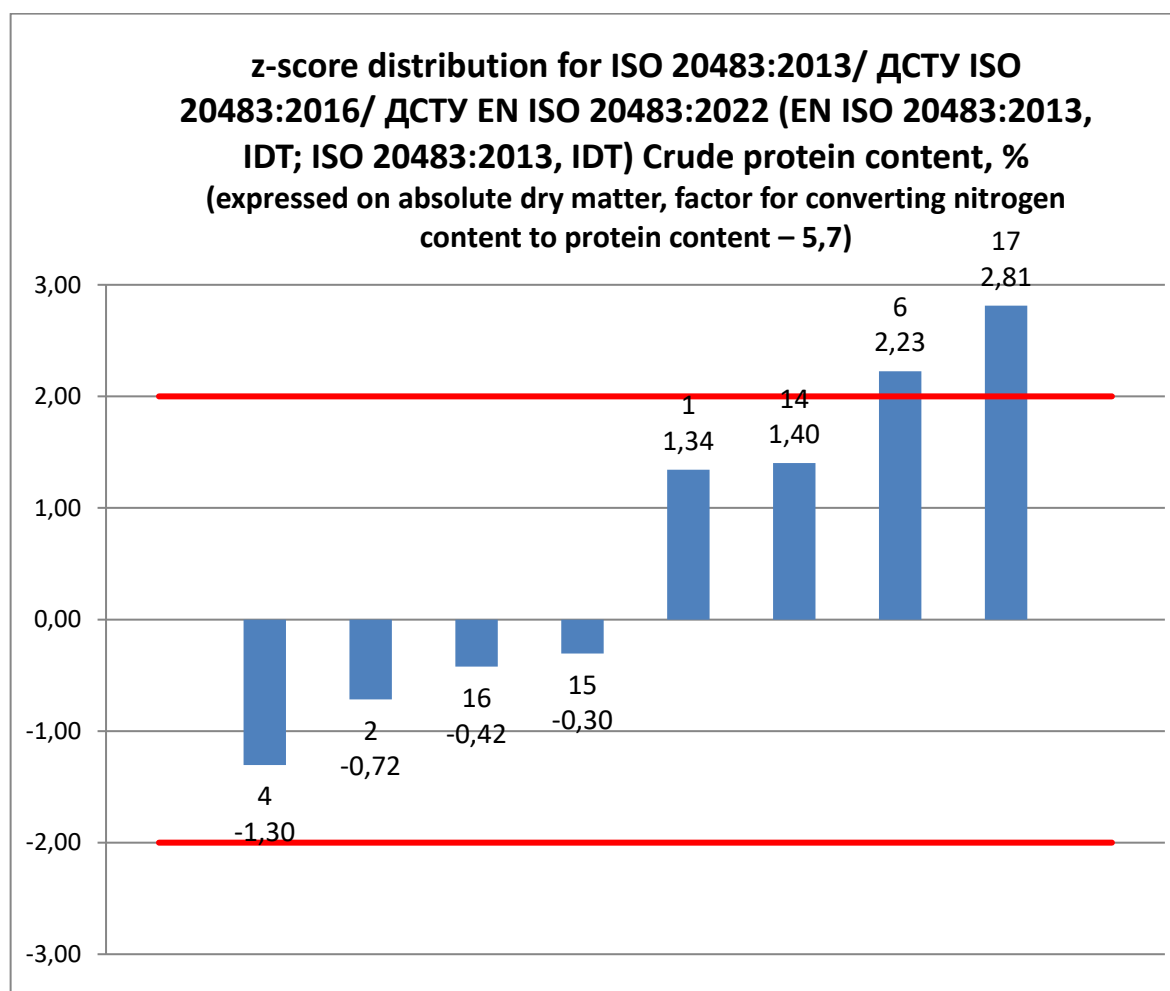
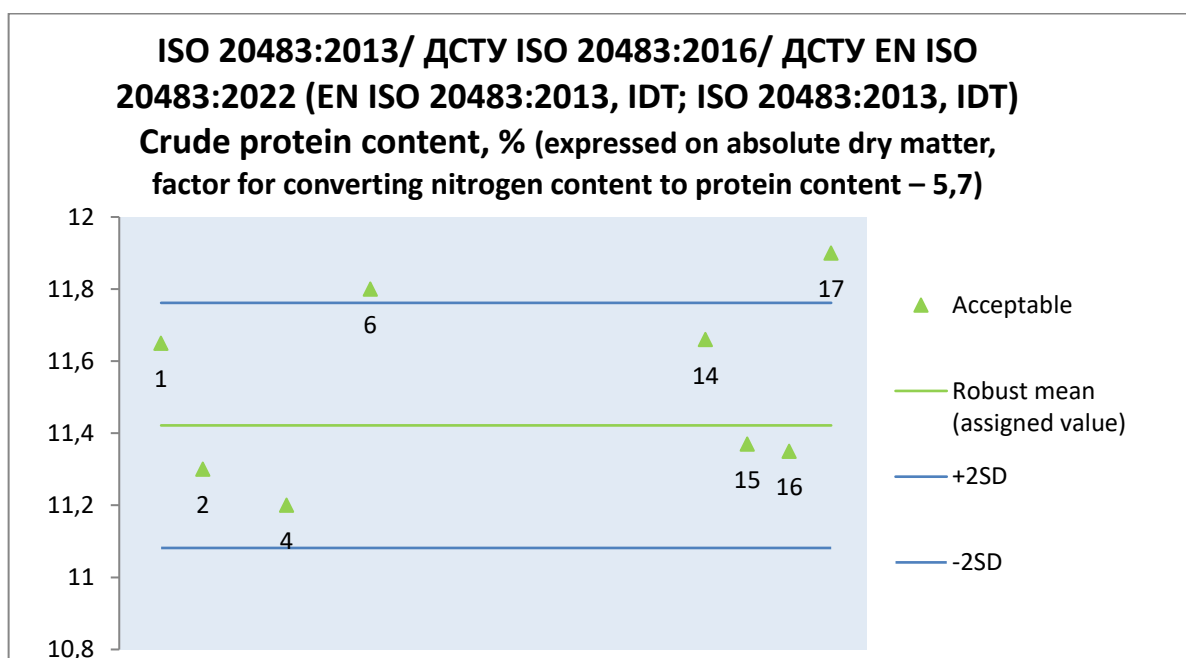
1. Green colored cells contain results that are considered to be satisfactory.
2. Results that are considered to be questionable are marked by yellow colored cell.
3. Blank cell – results were not reported by the Participant.
4. Red colored cells contain results that are considered to be not satisfactory.

8. Z SCORE PLOTS AND RESULTS CHARTS.

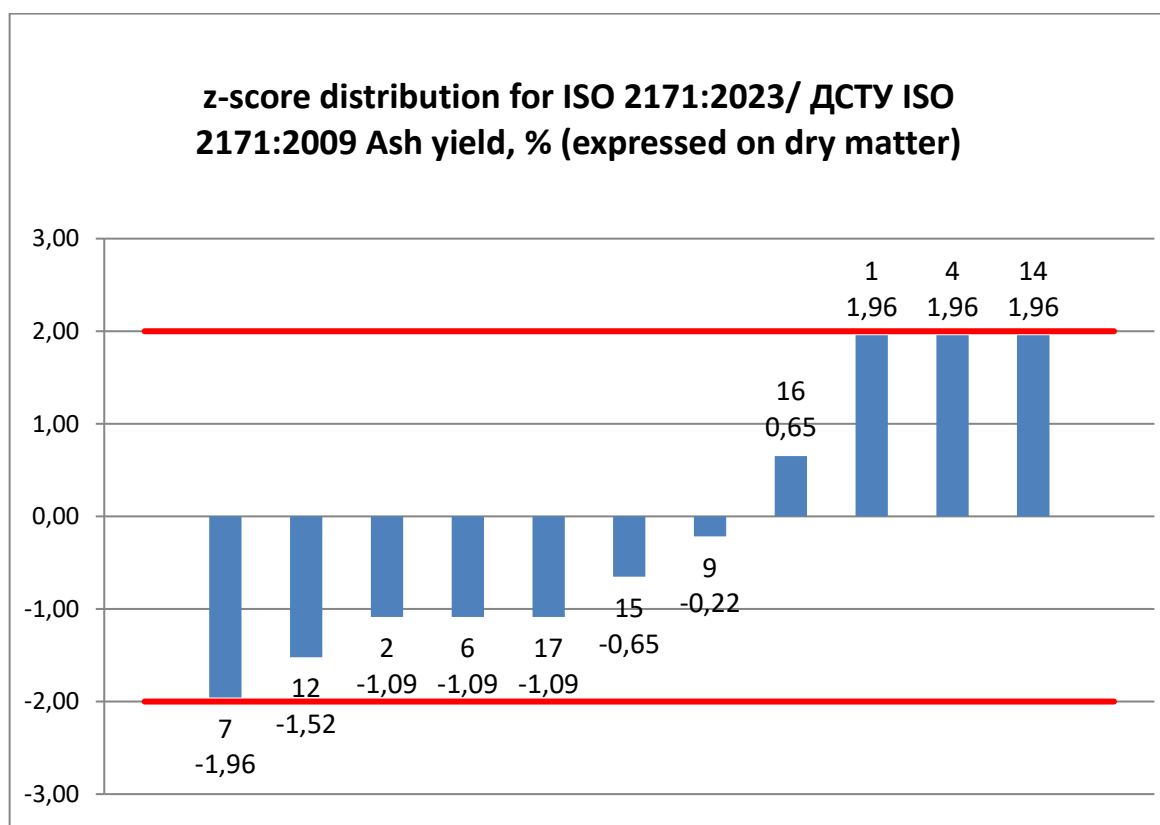
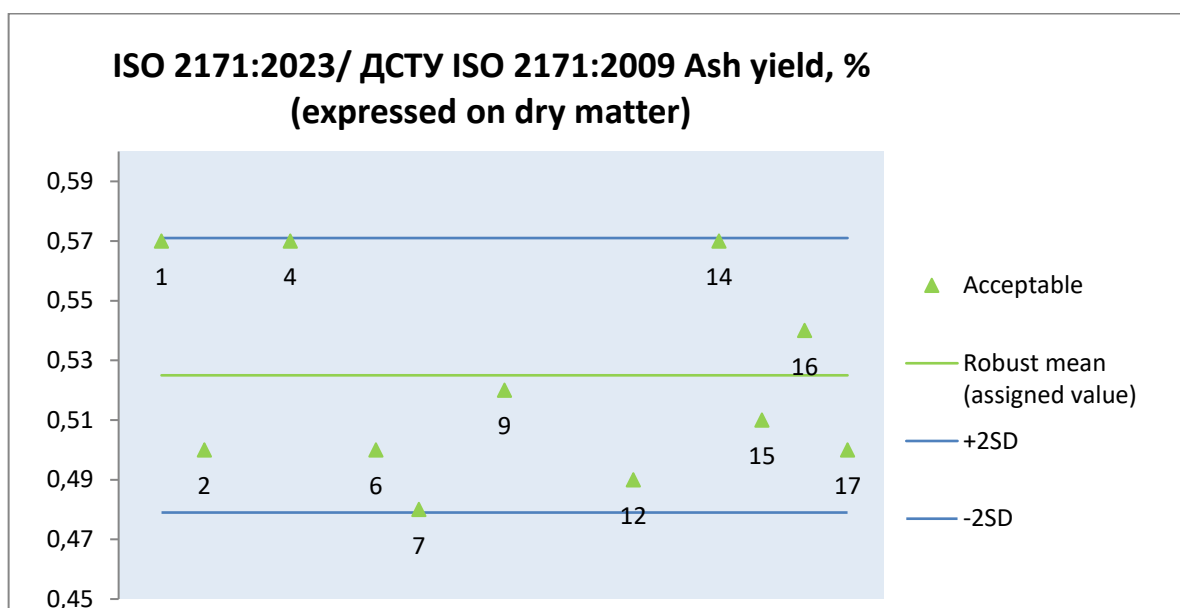
8.1. ISO 712-1:2024/ ДСТУ ISO 712:2015/ ДСТУ EN ISO 712:2022 (EN ISO 712:2009, IDT; ISO 712:2009, IDT) Moisture, %



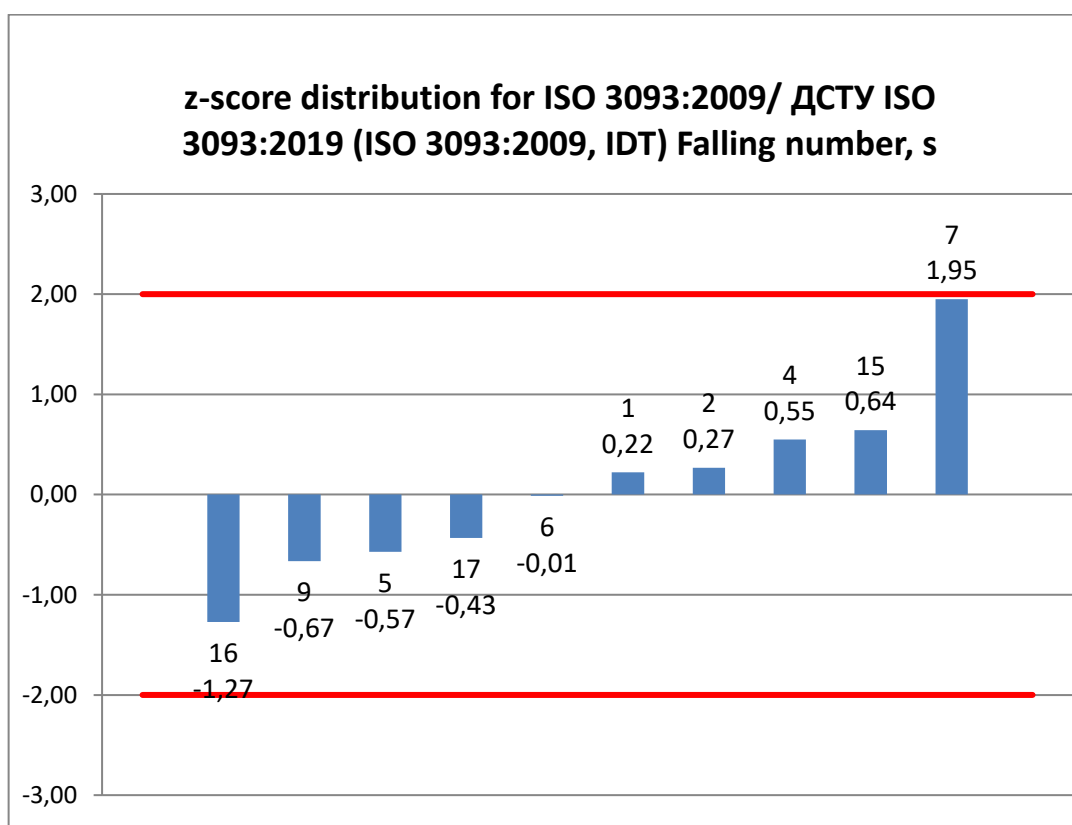
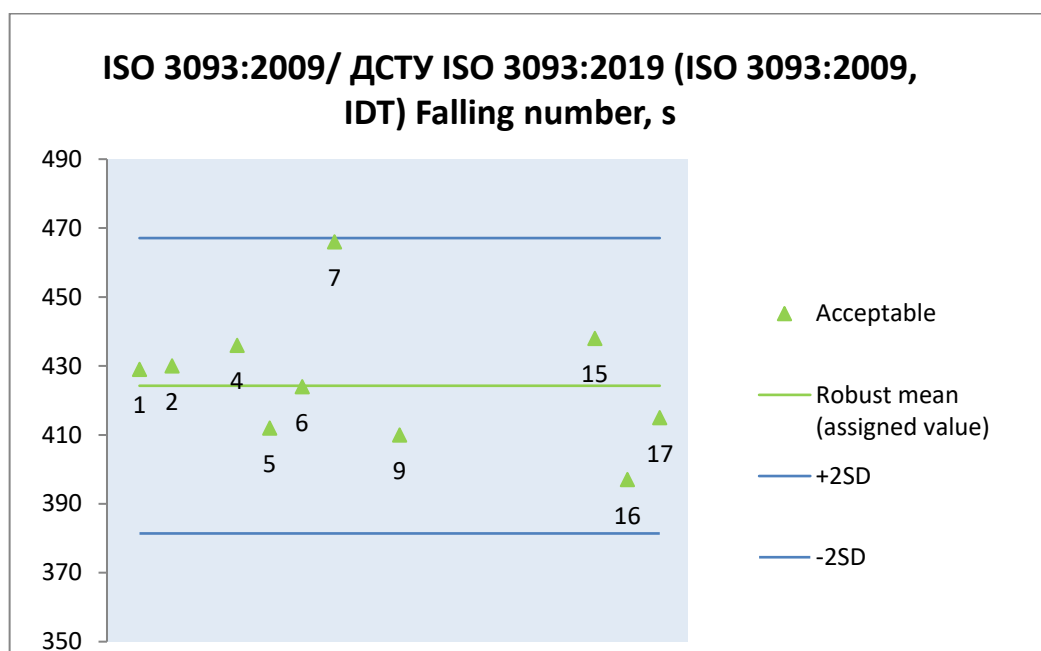
8.2. ISO 20483:2013/ ДСТУ ISO 20483:2016/ ДСТУ EN ISO 20483:2022 (EN ISO 20483:2013, IDT; ISO 20483:2013, IDT) Crude protein content, %



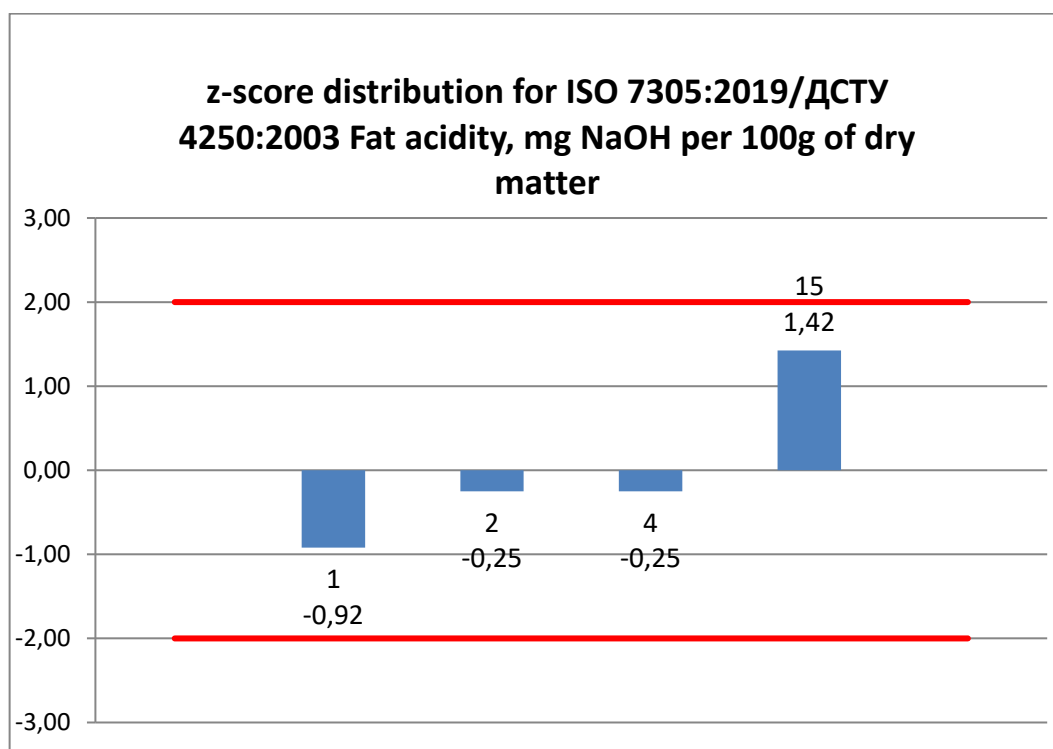
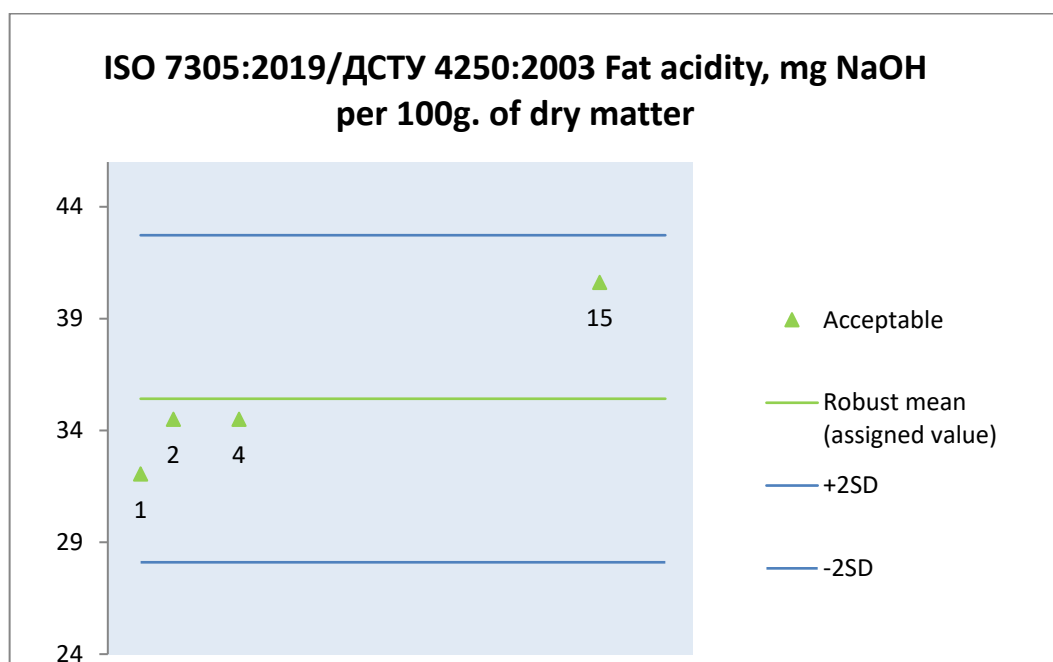
8.3. ISO 2171:2023/ ДСТУ ISO 2171:2009 Ash yield, % (expressed on dry matter)



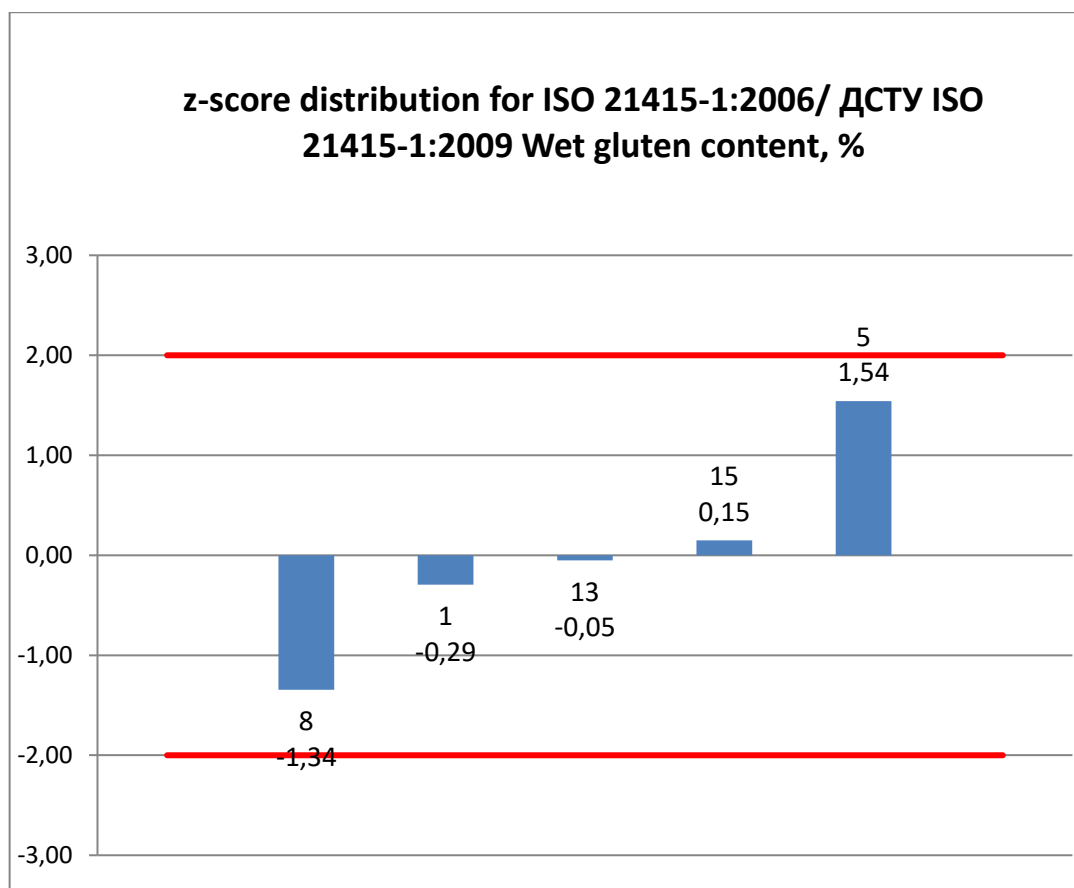
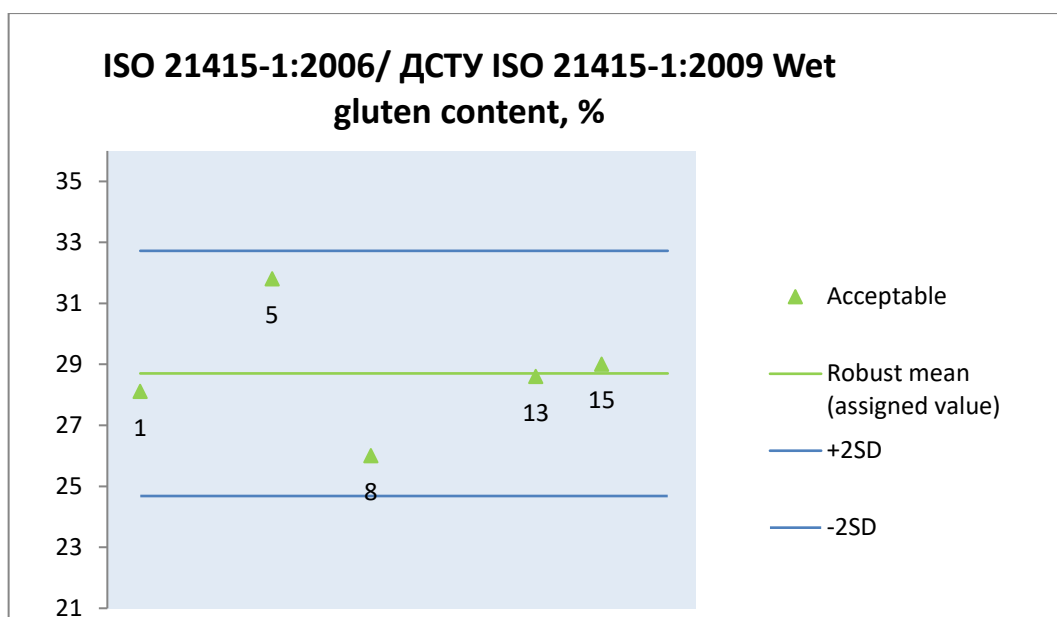
8.4. ISO 3093:2009/ ДСТУ ISO 3093:2019 (ISO 3093:2009, IDT) Falling number, s



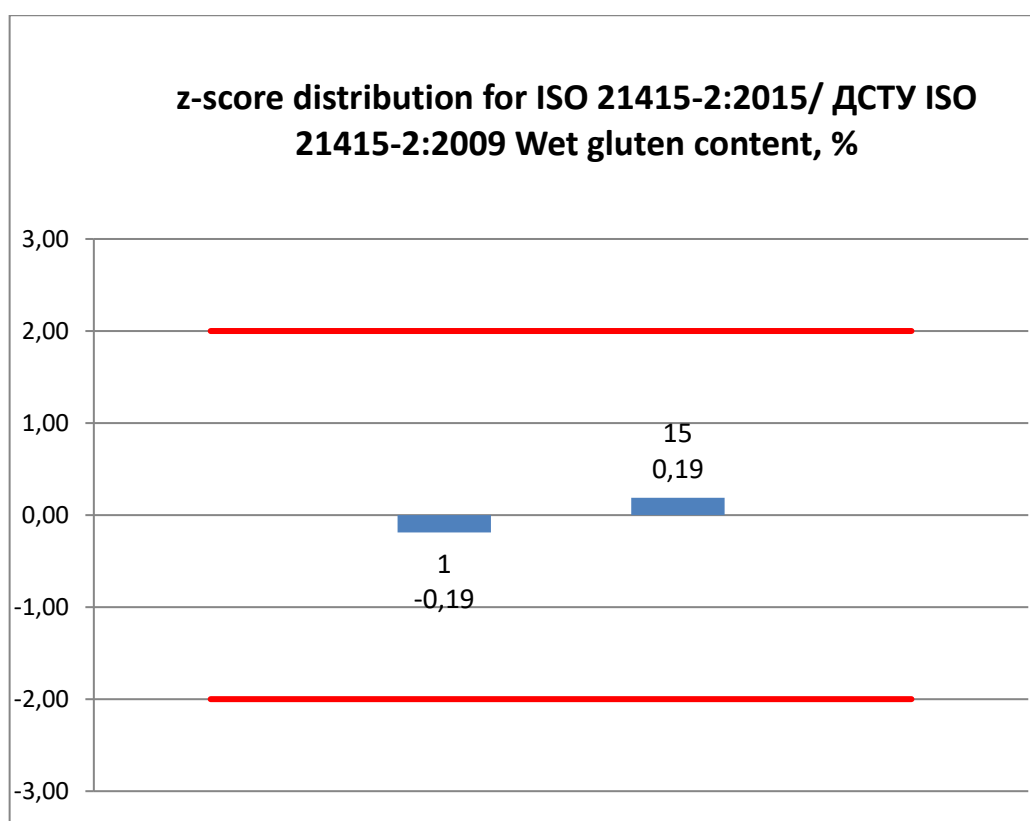
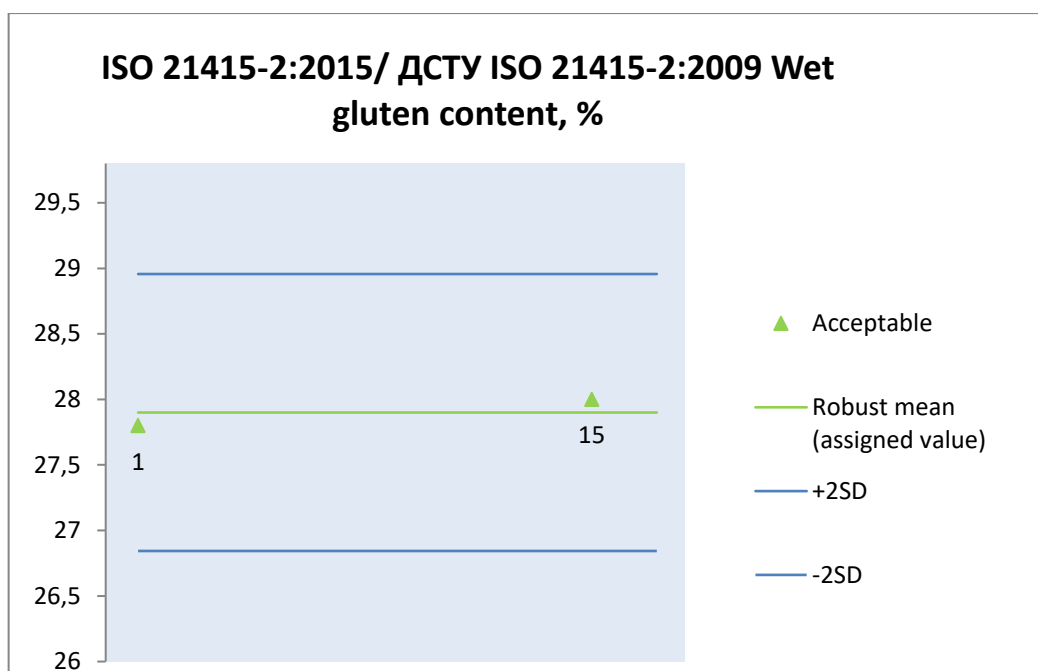
8.5. ISO 7305:2019/ ДСТУ 4250:2003 Fat acidity, mg NaOH per 100g. of dry matter



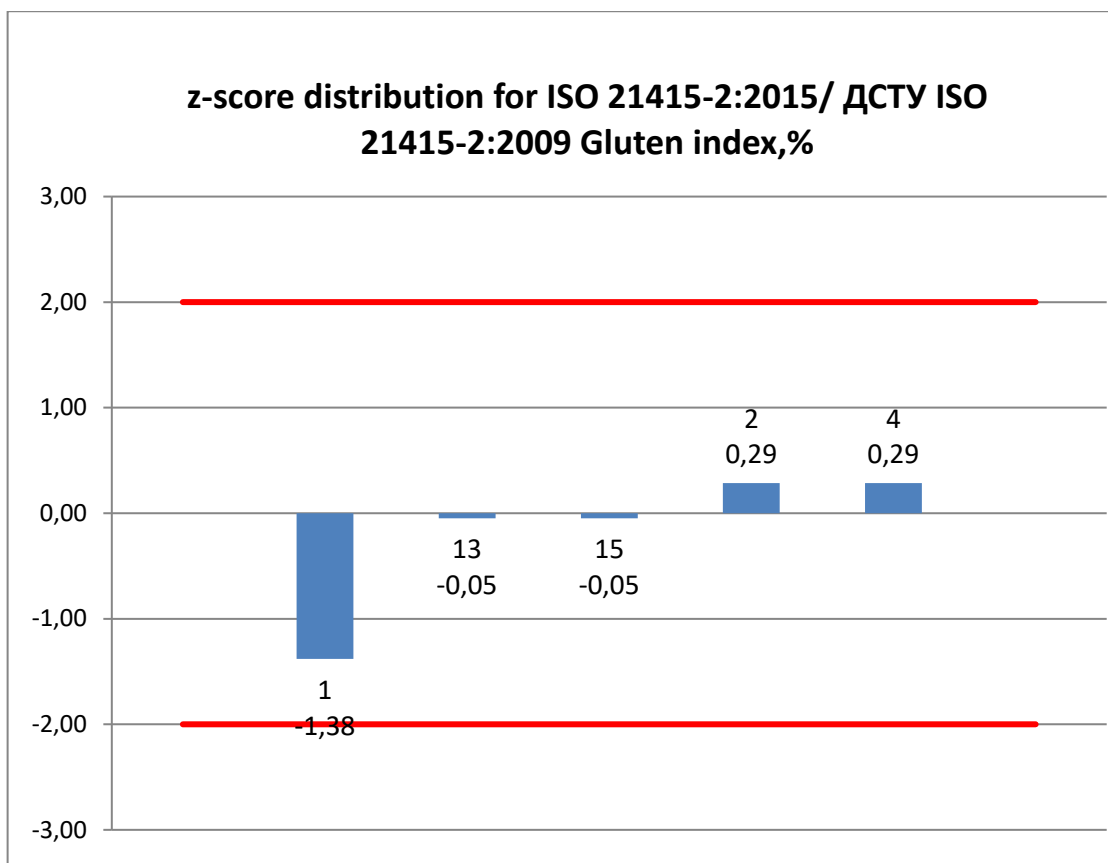
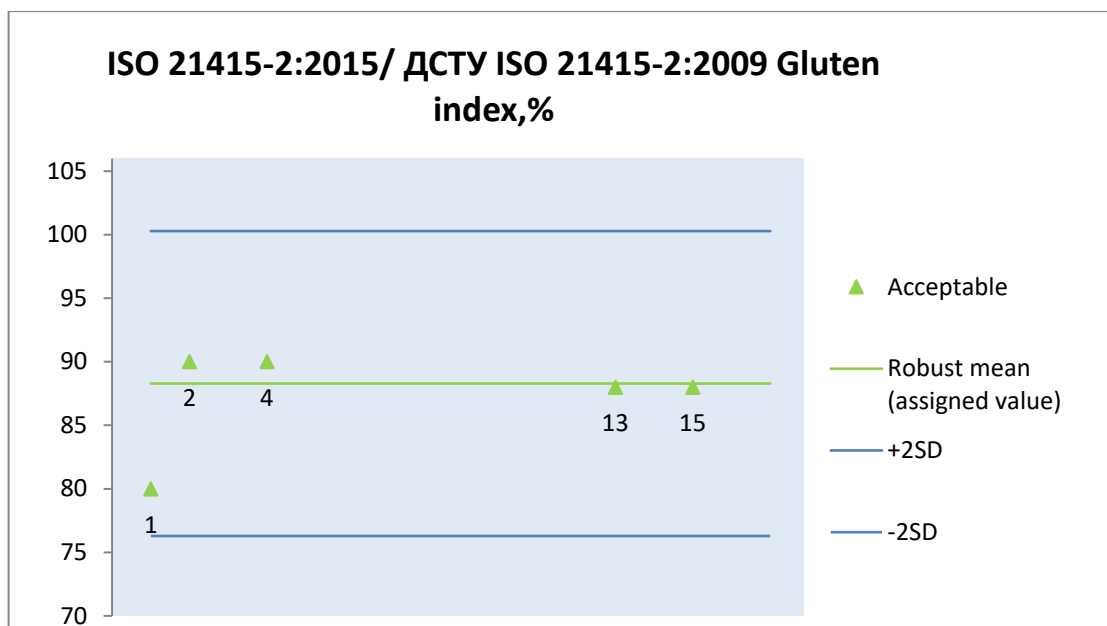
8.6. ISO 21415-1:2006/ ДСТУ ISO 21415-1:2009 Wet gluten content, %



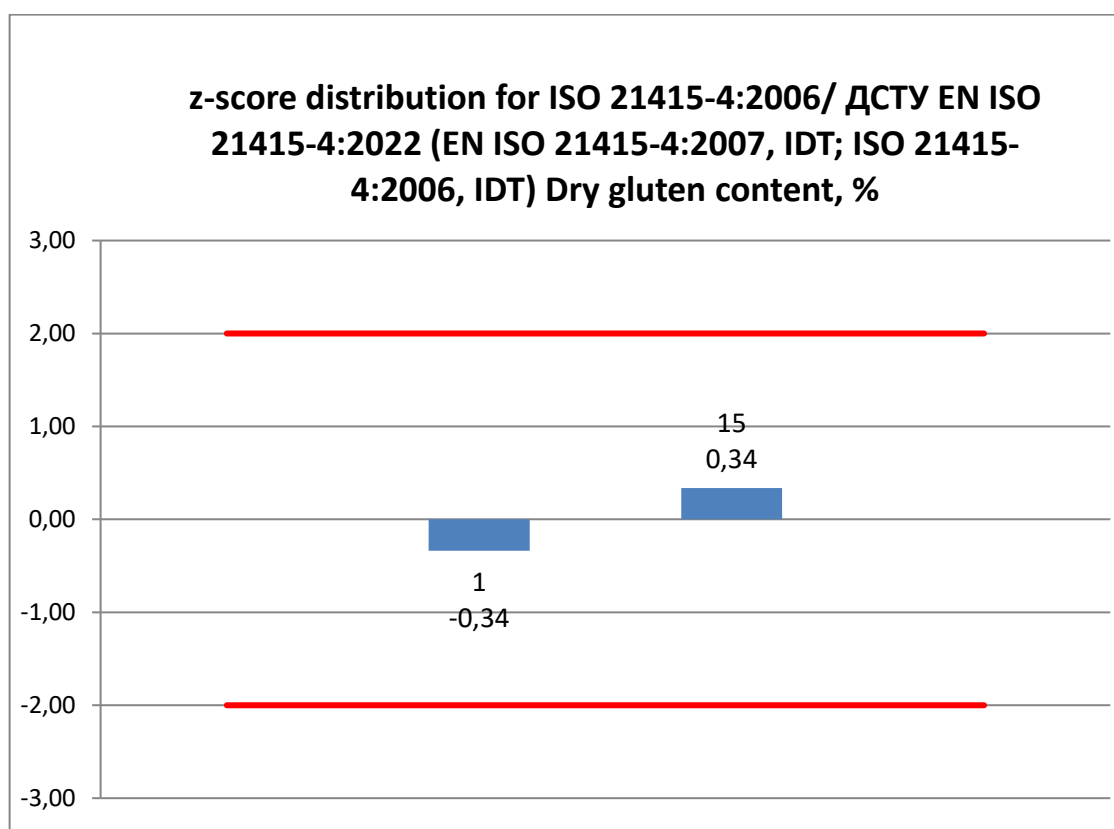
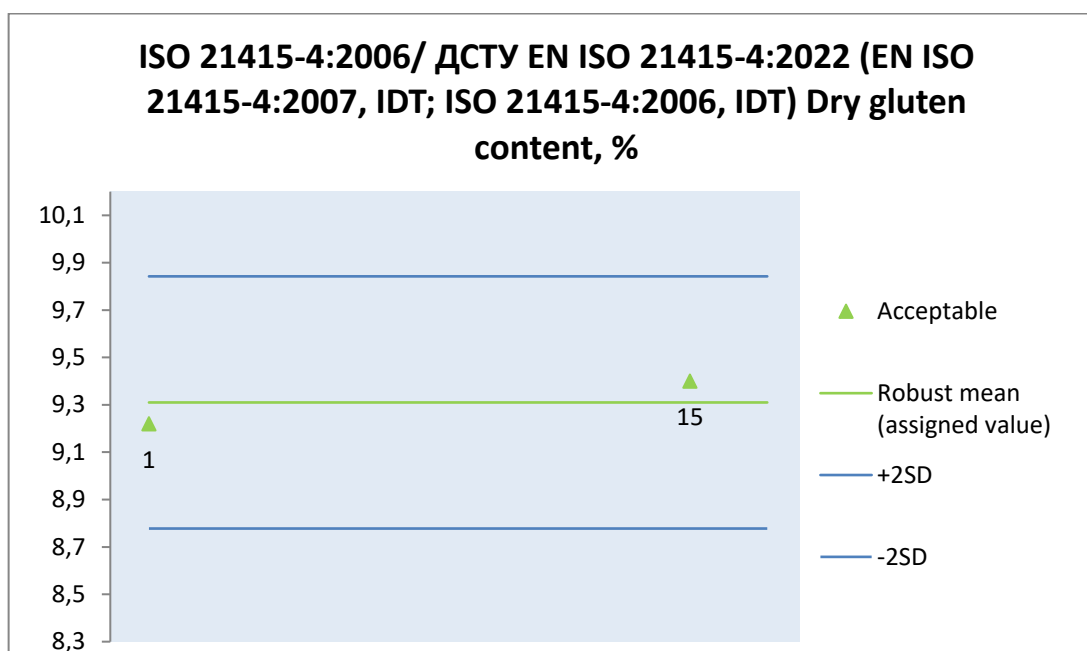
8.7. ISO 21415-2:2015/ ДСТУ ISO 21415-2:2009 Wet gluten content, %



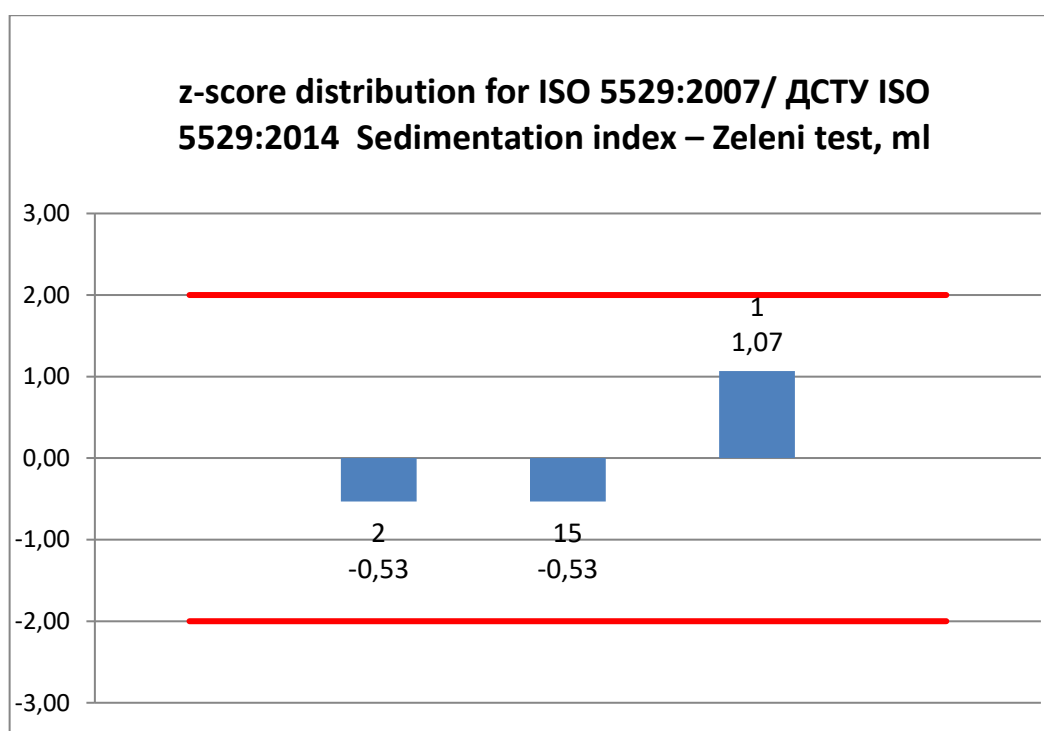
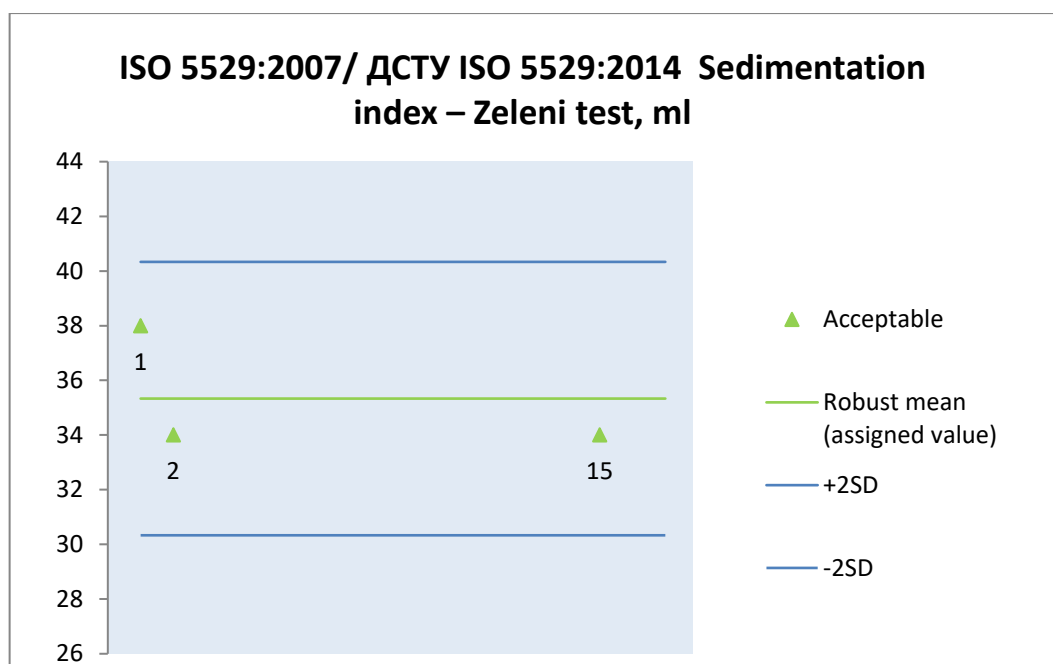
8.8. ISO 21415-2:2015/ ДСТУ ISO 21415-2:2009 Gluten index, %



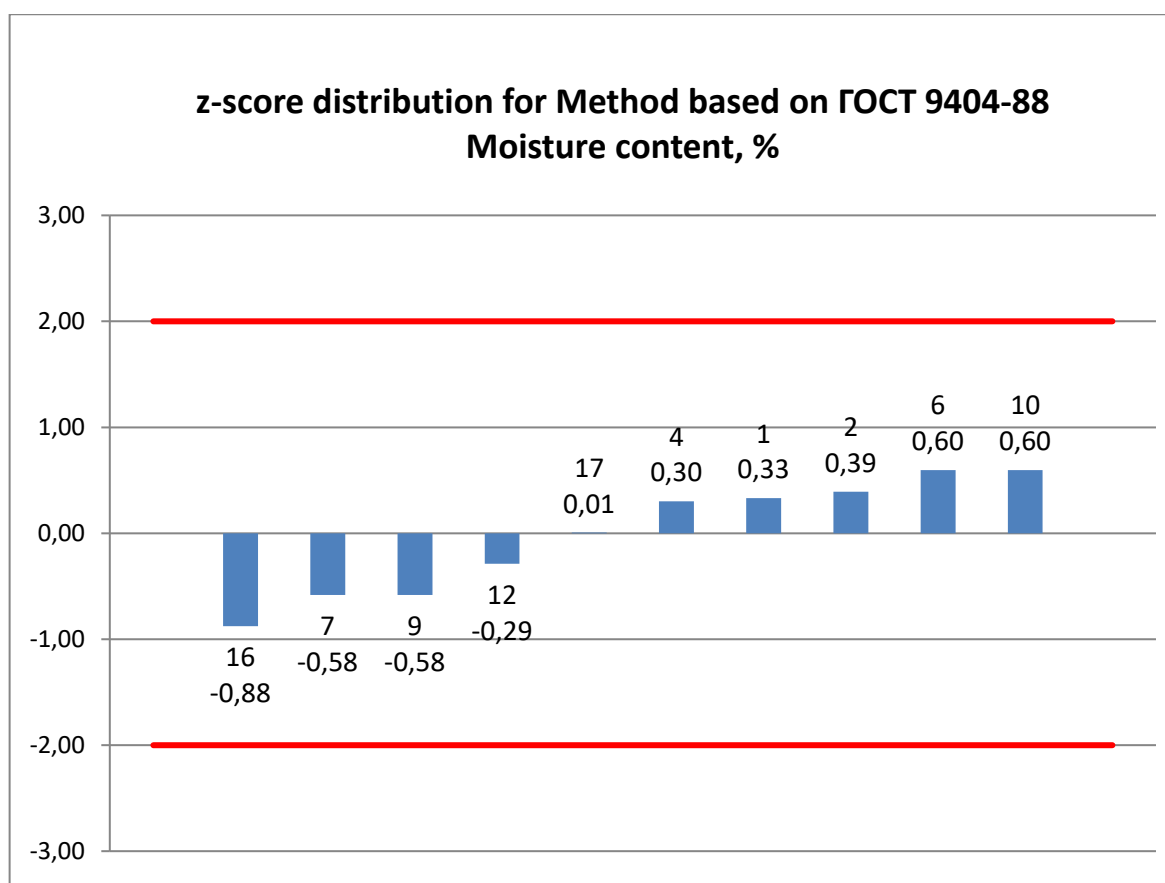
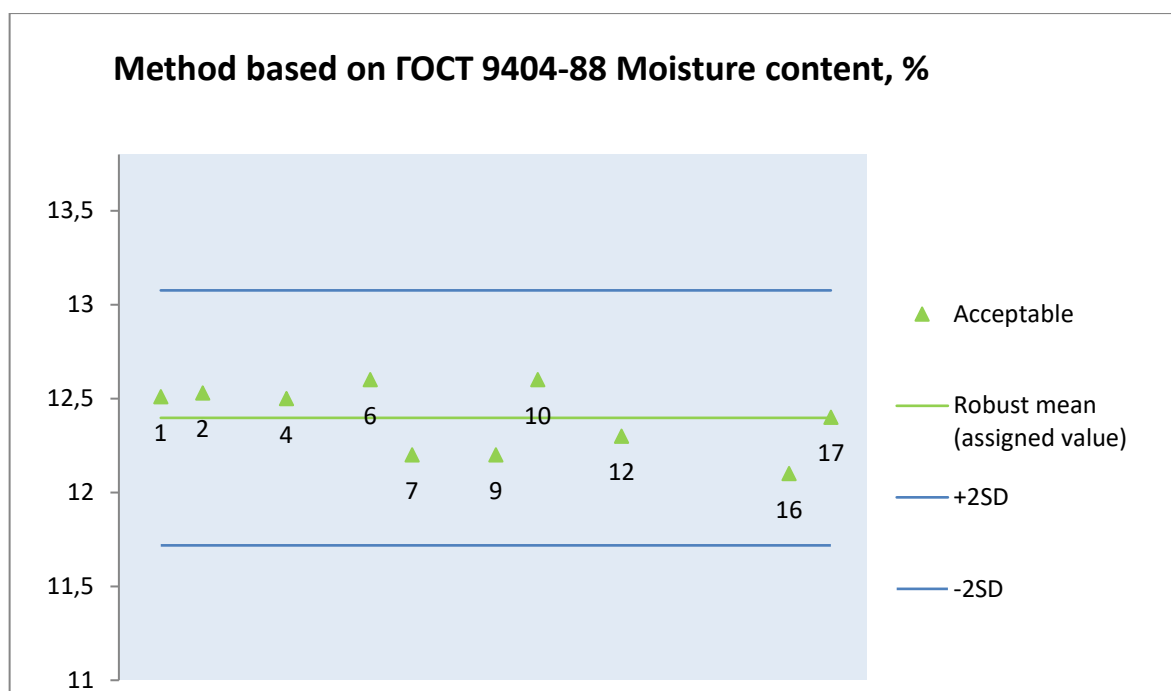
8.9. ISO 21415-4:2006/ ДСТУ EN ISO 21415-4:2022 (EN ISO 21415-4:2007, IDT; ISO 21415-4:2006, IDT) Dry gluten content, %



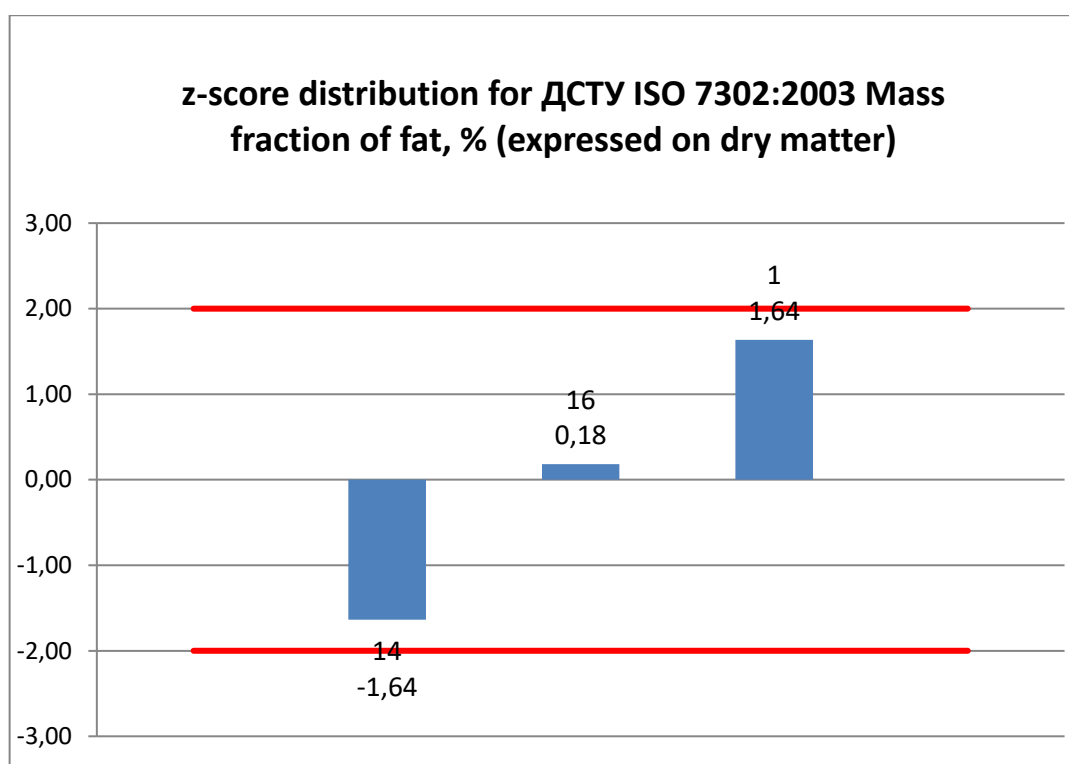
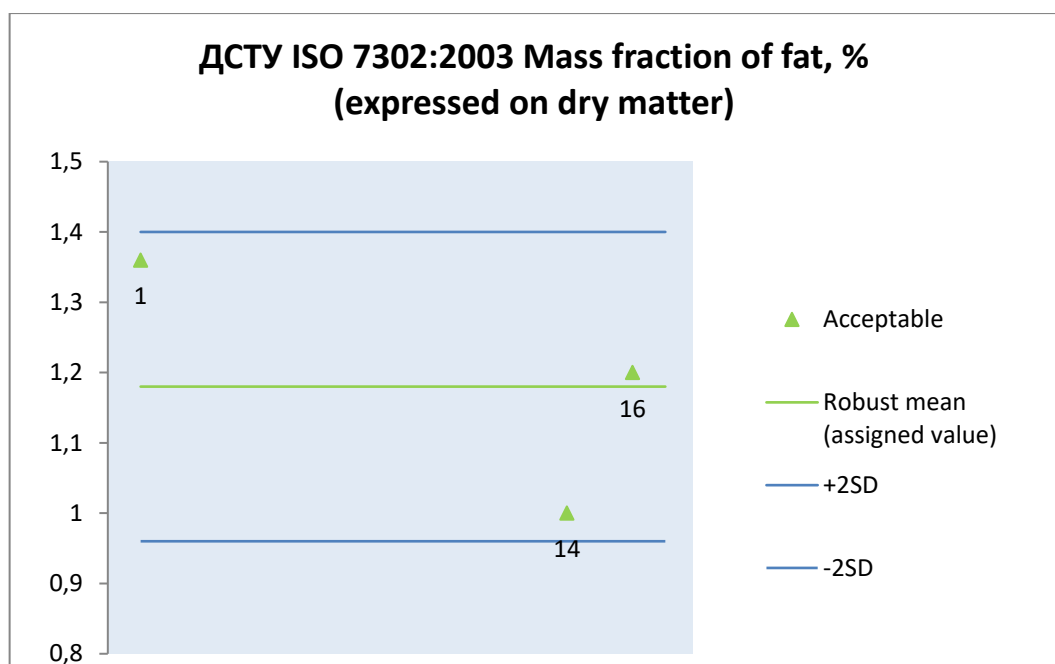
8.10. ISO 5529:2007/ДСТУ ISO 5529:2014 Sedimentation index – Zeleni test, ml



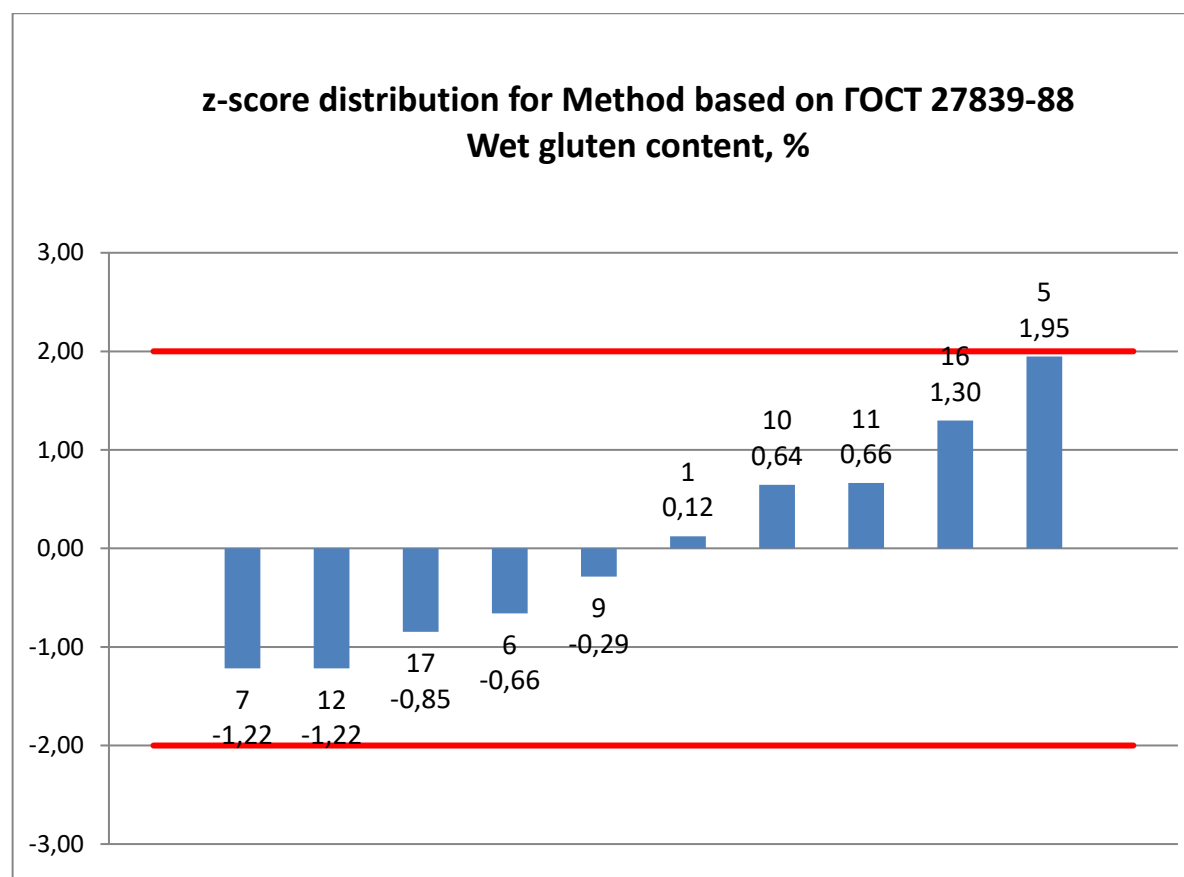
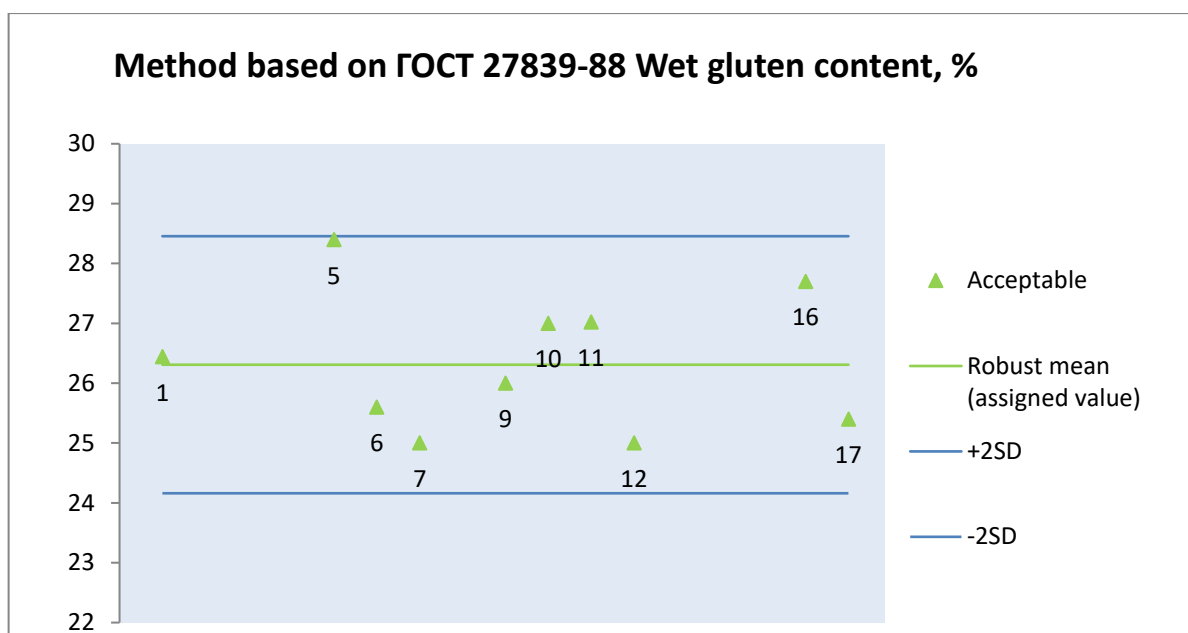
8.11. Method based on ГOCT 9404-88 Moisture content, %



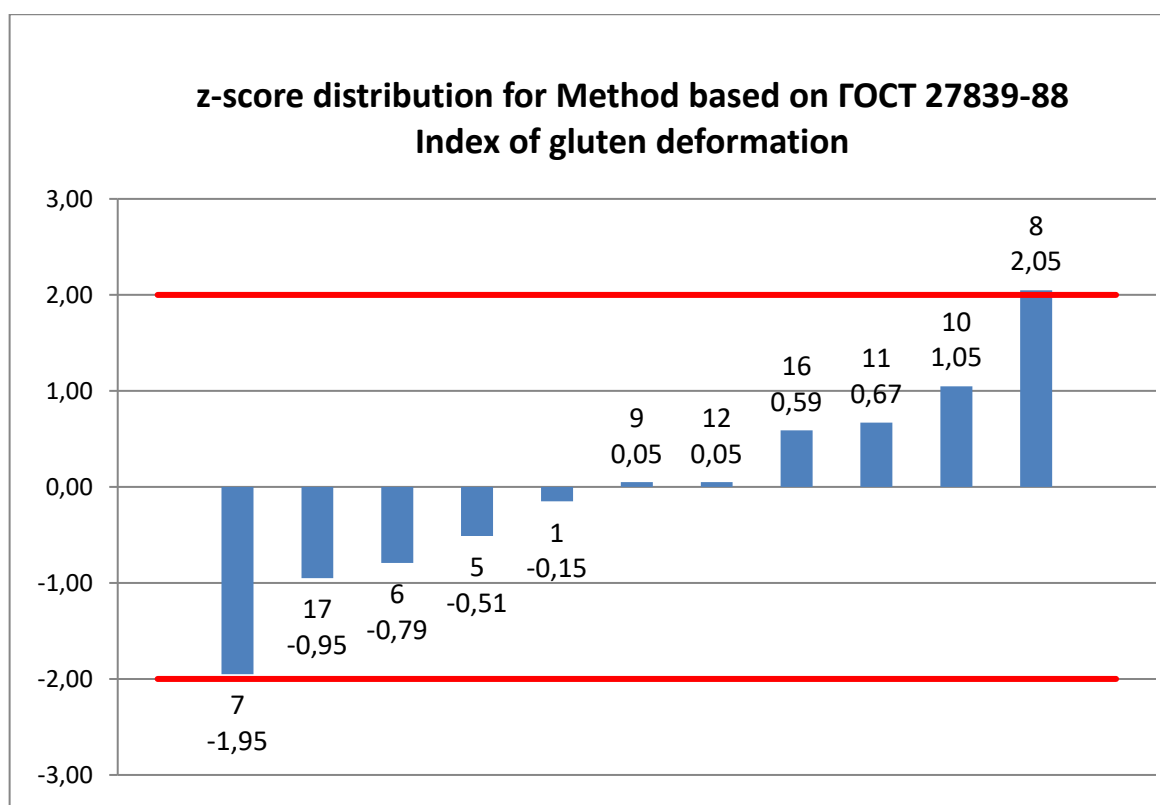
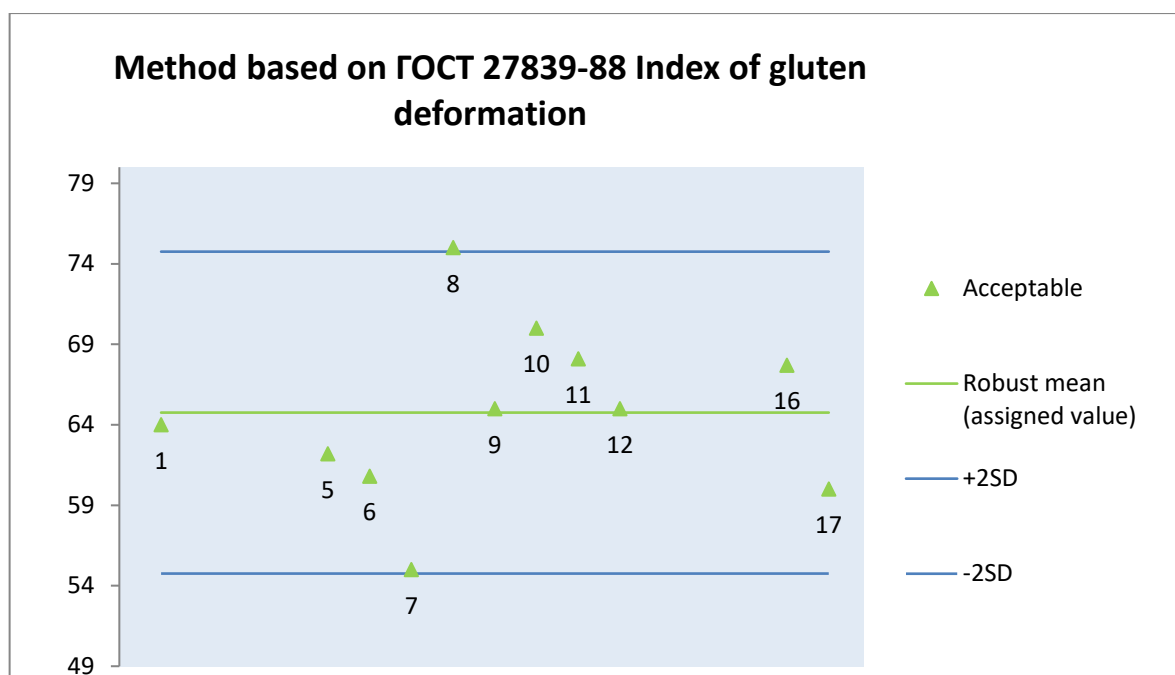
8.12. ДСТУ ISO 7302:2003 Mass fraction of fat, % (expressed on dry matter)



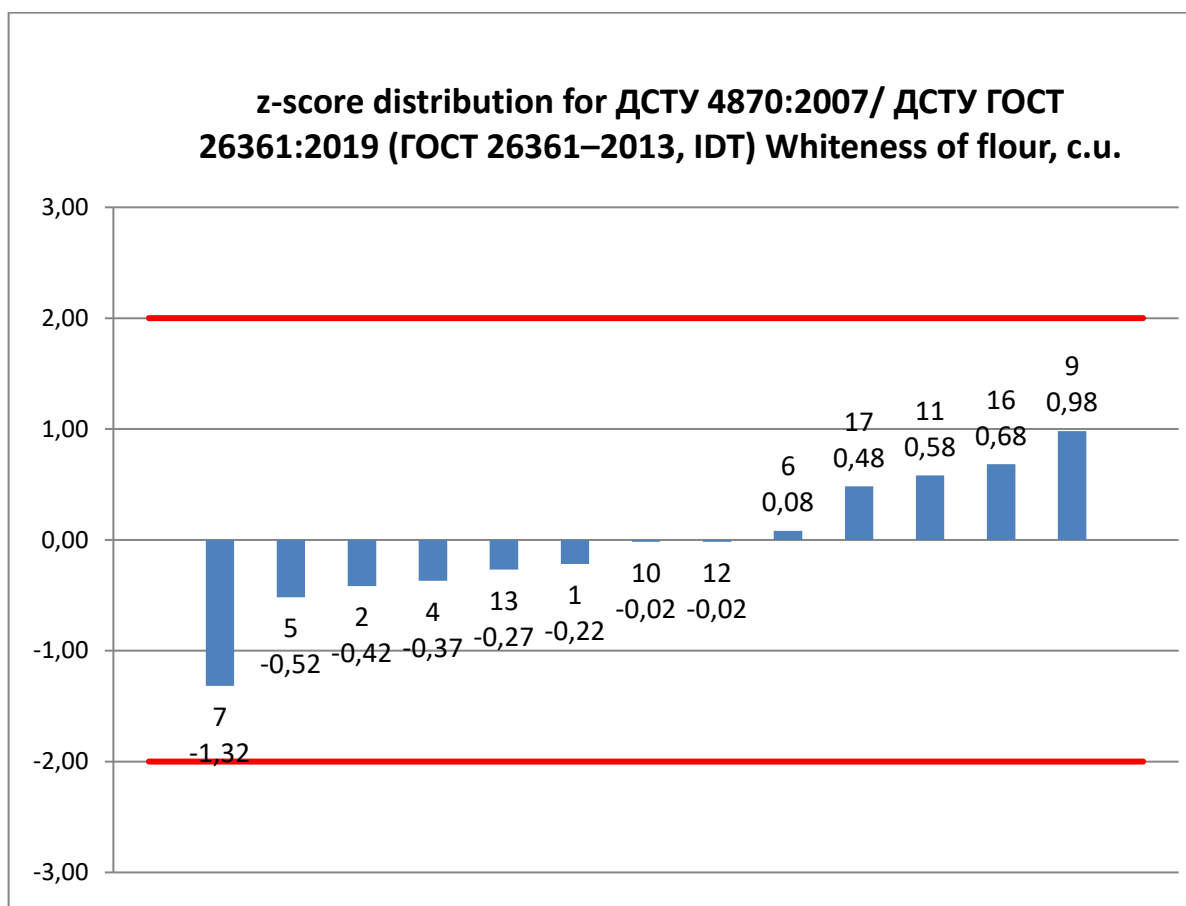
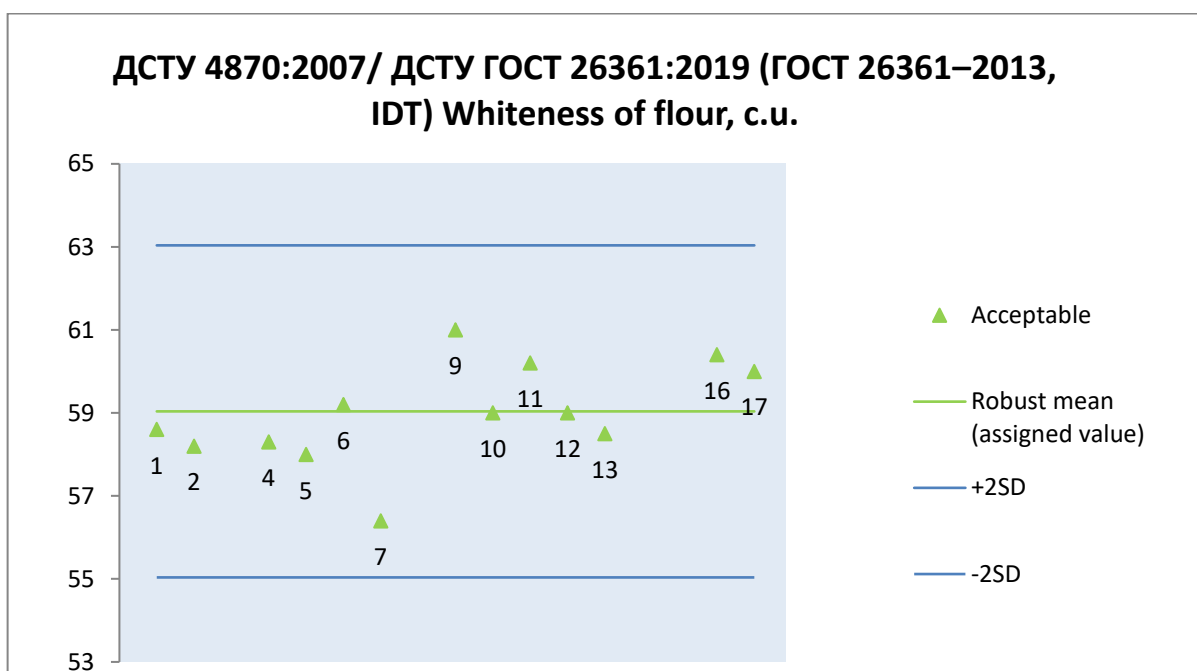
8.13. Method based on ГOCT 27839-88 Wet gluten content, %



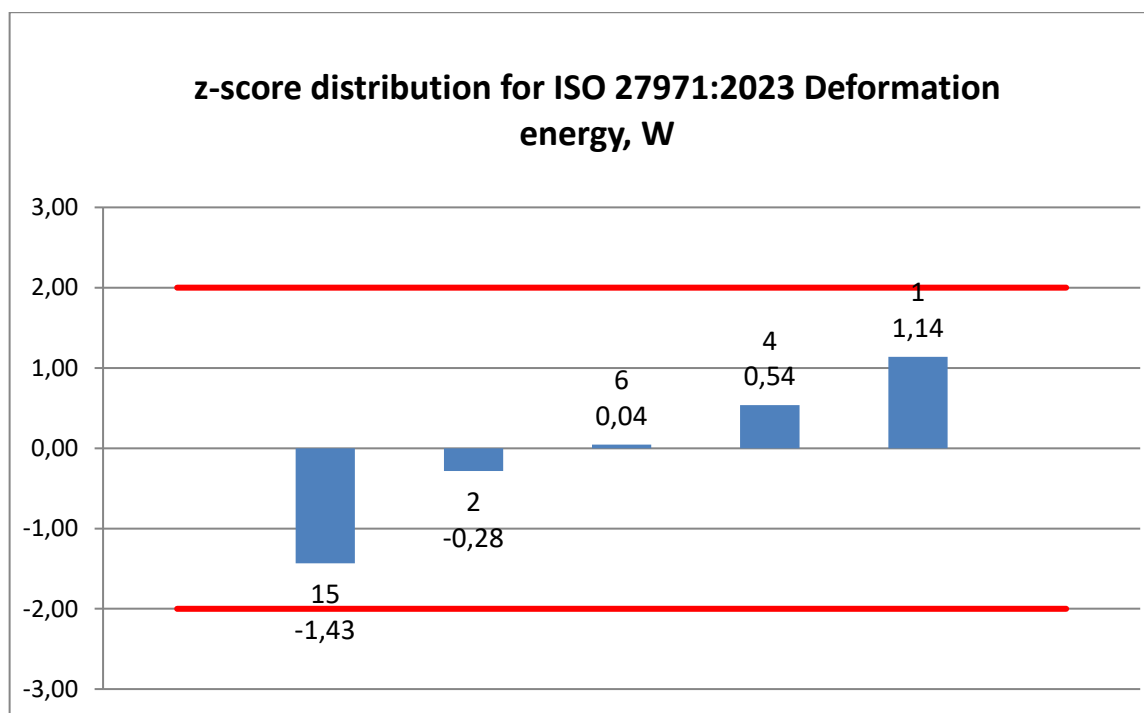
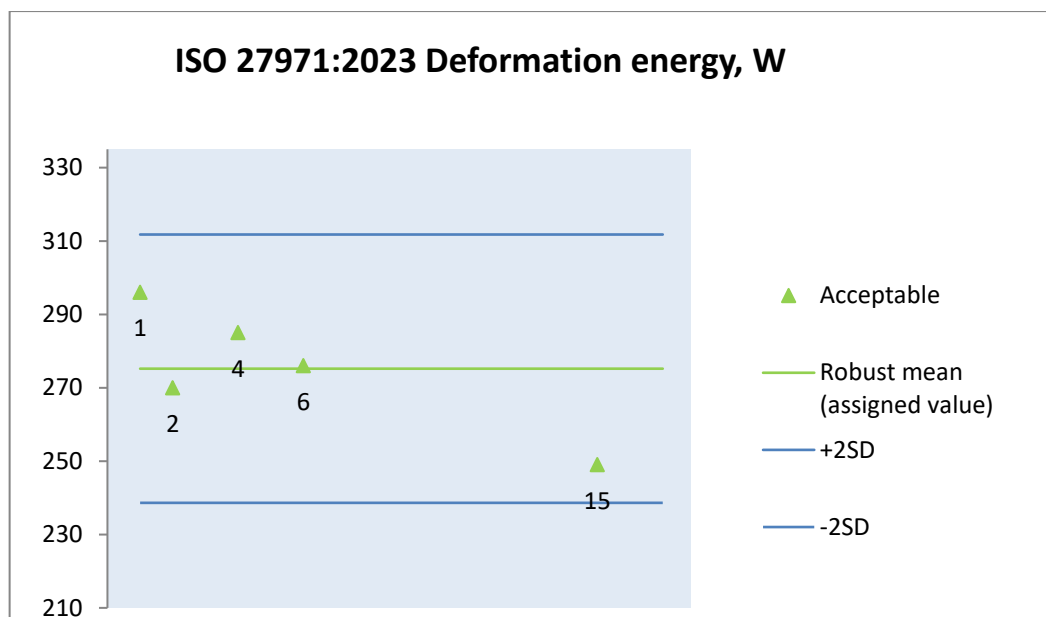
8.14. Method based on ГOCT 27839-88 Index of gluten deformation



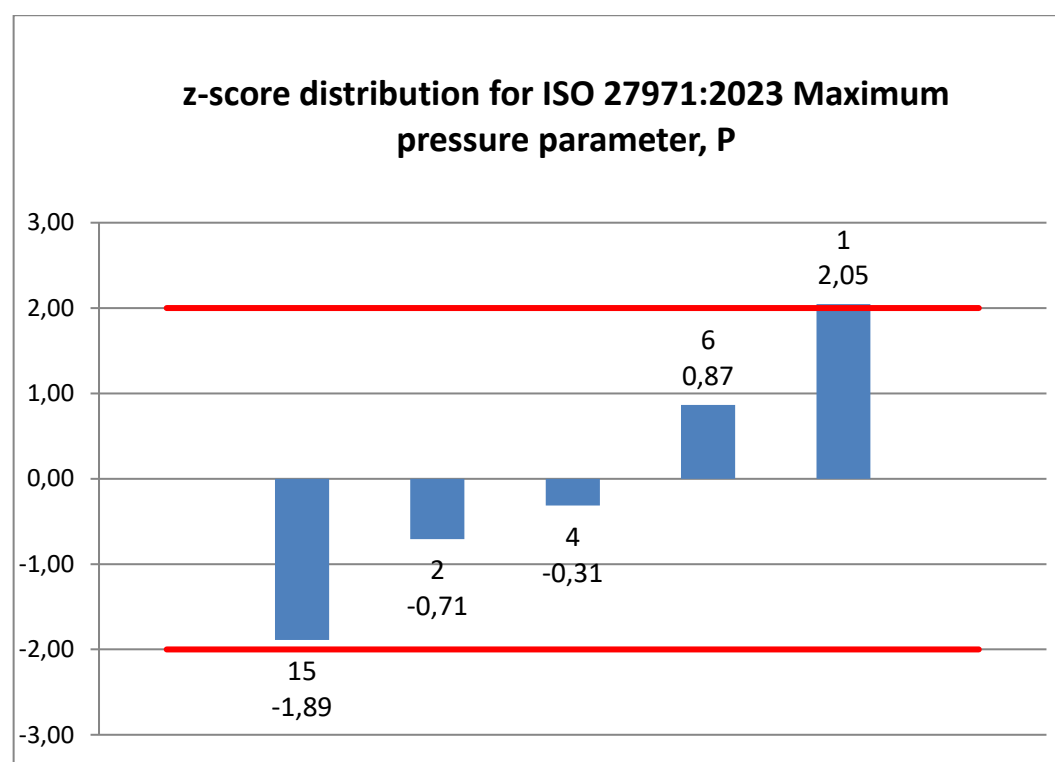
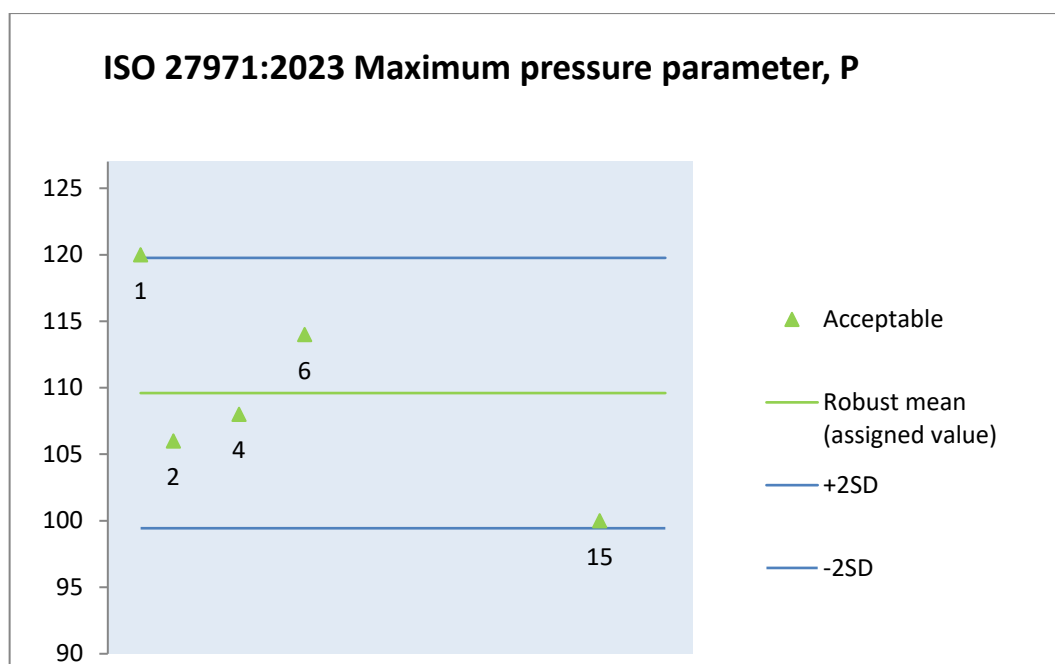
**8.15. ДСТУ 4870:2007/ ДСТУ ГОСТ 26361:2019 (ГОСТ 26361–2013, IDT)
Whiteness of flour, c.u.**



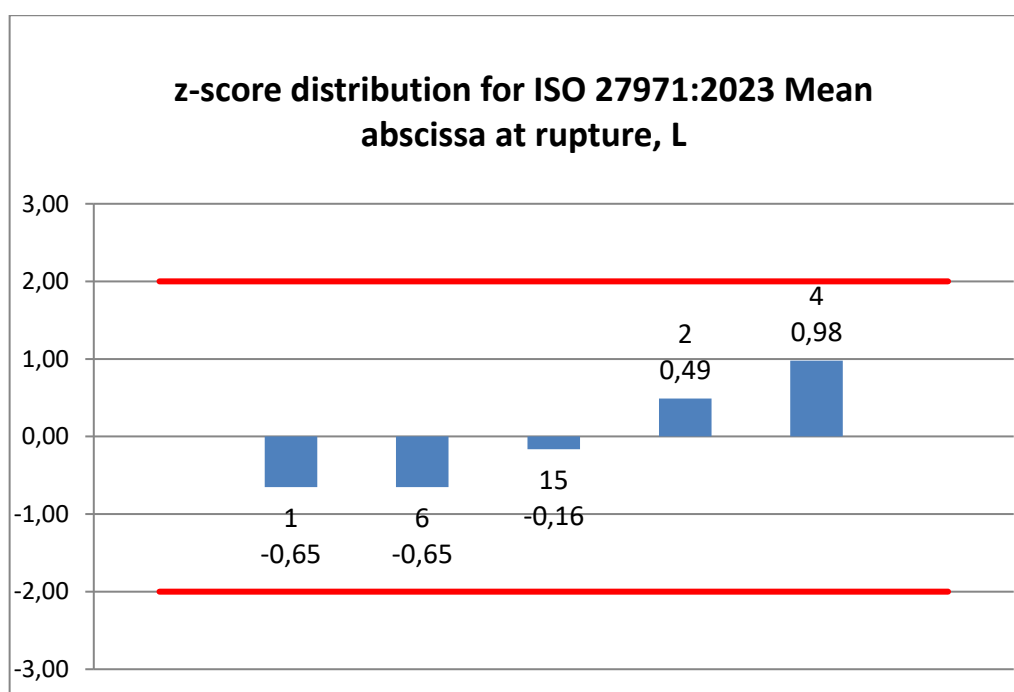
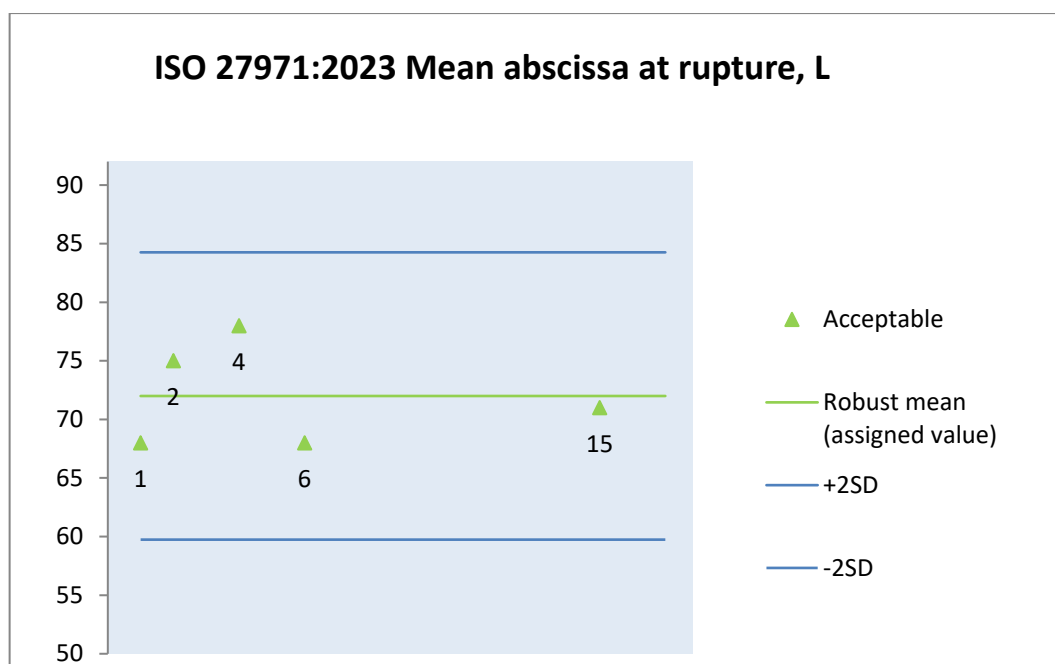
8.16. ISO 27971:2023 Deformation energy, W



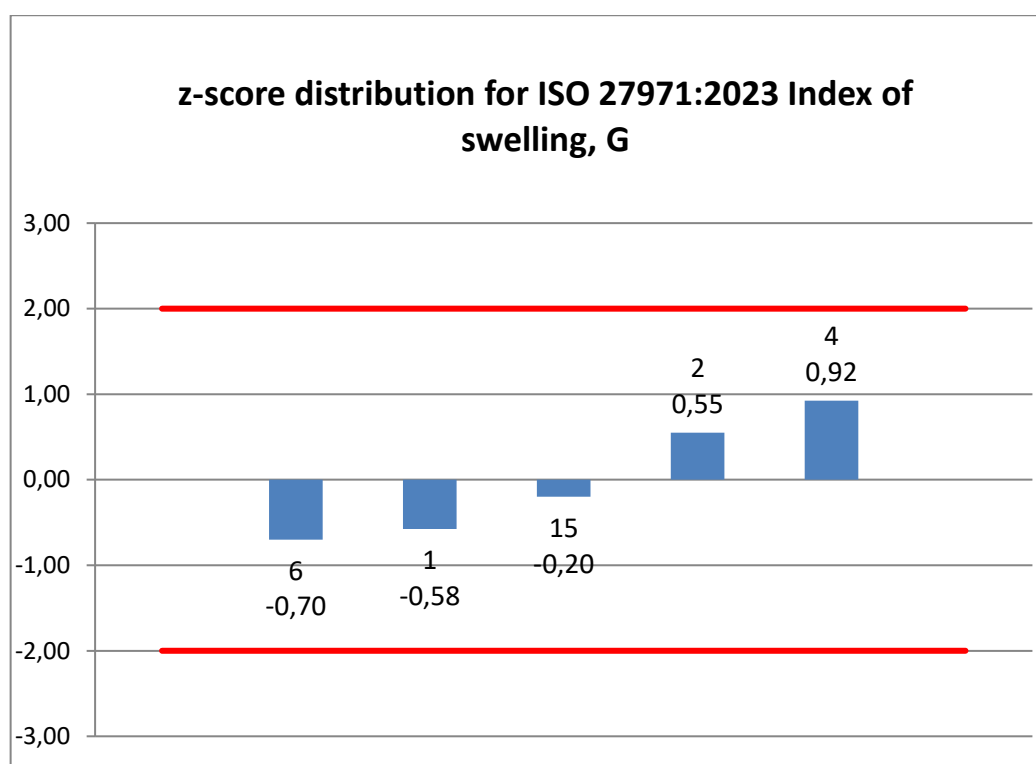
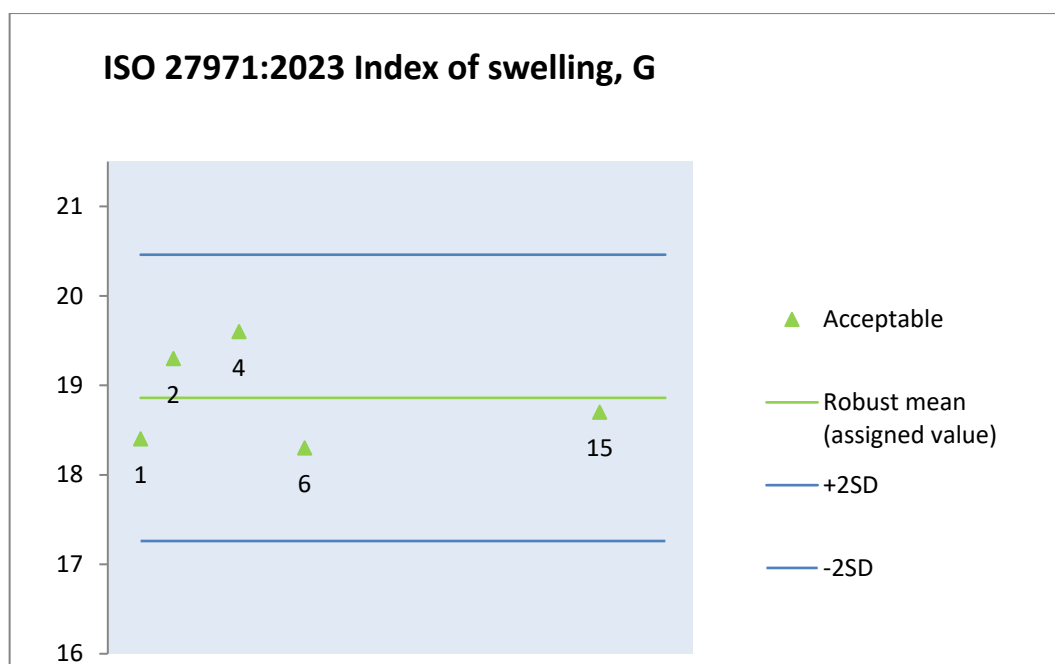
8.17 ISO 27971:2023 Maximum pressure parameter, P



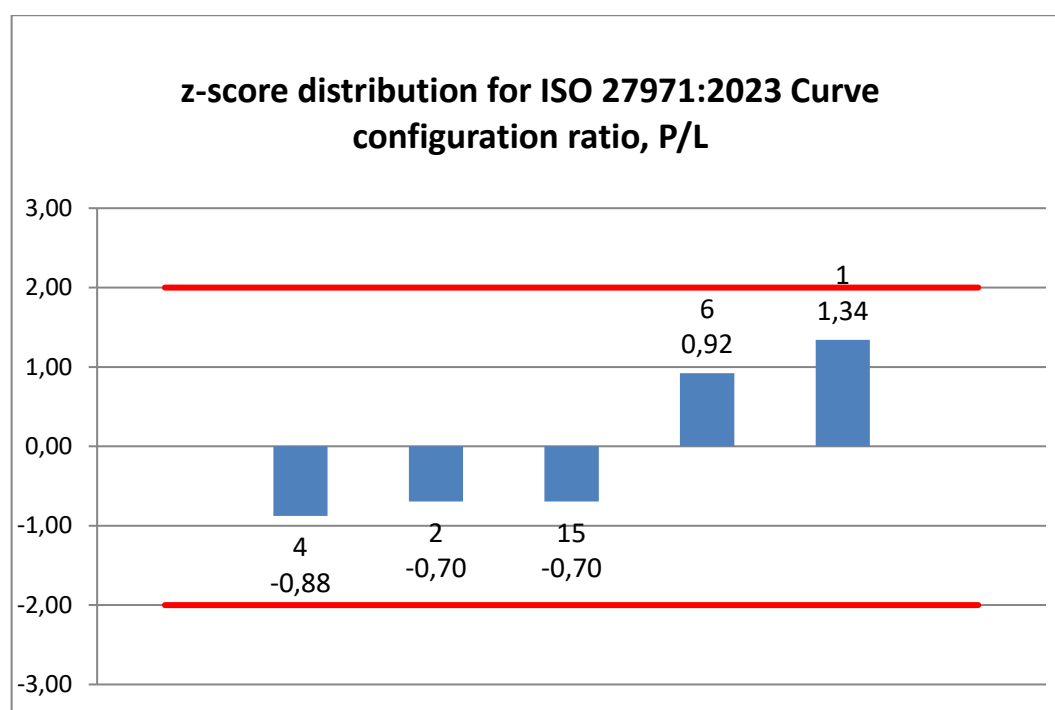
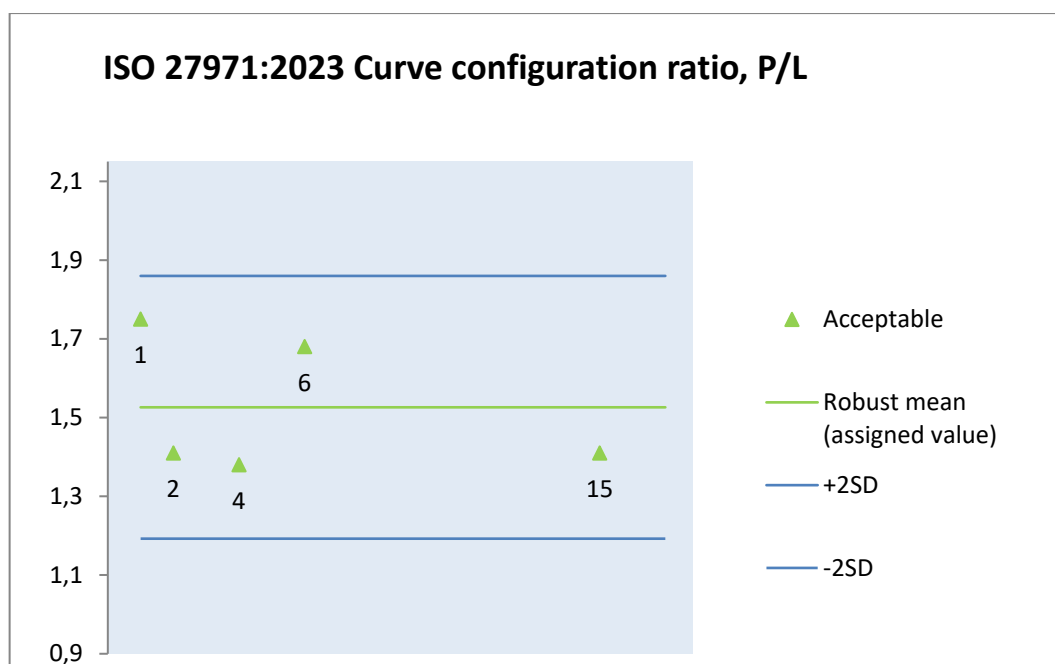
8.18. ISO 27971:2023 Mean abscissa at rupture, L



8.19. ISO 27971:2023 Index of swelling, G



8.20. ISO 27971:2023 Curve configuration ratio, P/L



9. 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.