IFA
Institut für Arbeitsschutz der
Deutschen Gesetzlichen Unfallversicherung

Round-robin tests for in-house and external measuring stations - results and evaluation

Round-robin test Organic solvents

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Summary of laboratory test results

Sample 1

	Ethylbenzene	Z score	1-Methoxy-2-propanol	Z score	2-Butoxyethanol	Z score	Cumene	Z score	1-Methoxy-2-propyl acetate	Z score
Unit	mg/m³		mg/m³		mg/m³		mg/m³		mg/m³	
10	96,20	1,03	74,10	1,08	28,50	2,29 E	44,10	1,96	67,70	0,94
55	84,70	-0,29					36,70	-0,05		
68	102,31	1,73	61,35	-0,82	25,29	0,91	36,35	-0,14	64,79	0,47
79	90,30	0,35								
80	88,90	0,19	69,90	0,46	24,90	0,74	35,60	-0,34	62,60	0,12
82	82,90	-0,49			18,70	-1,93				
86	89,60	0,27	55,30	-1,73	19,90	-1,42	37,00	0,04	64,40	0,41
90	82,60	-0,53	62,40	-0,67	22,40	-0,34	34,40	-0,67	58,40	-0,56
93	94,80	0,87	70,00	0,47	24,40	0,52	40,70	1,04	64,10	0,36
99	88,42	0,14					33,38	-0,95		
100			78,70	1,77	26,10	1,26			61,40	-0,08
114	89,30	0,24	43,50	-3,49 E	15,90	-3,14 E	35,20	-0,45	54,70	-1,16
118	88,80	0,18					35,93	-0,26	79,62	2,87 BE
131	87,56	0,04	74,63	1,16	30,81	3,29 E	34,75	-0,58	60,56	-0,21
144			66,50	-0,05	23,90	0,31			59,80	-0,33
147	86,43	-0,09	56,78	-1,51	18,56	-1,99	35,62	-0,34	59,80	-0,33
162	92,80	0,64			21,00	-0,94	37,40	0,14		
167	88,68	0,17					34,78	-0,57	72,43	1,71
168			66,20	-0,10	25,00	0,78			59,40	-0,40
190	76,10	-1,27	67,46	0,09	23,39	0,09	39,81	0,80	71,58	1,57
195	86,11	-0,13	57,95	-1,33	20,13	-1,32	30,51	-1,73	32,37	-4,77 BE
199	78,00	-1,06	67,00	0,02	22,00	-0,51	33,00	-1,05	51,00	-1,76
208	84,00	-0,37	68,49	0,25	23,96	0,33	36,85	-0,01	59,23	-0,43
220	85,00	-0,25	130,00	9,45 BE	20,00	-1,37	39,00	0,58	65,00	0,51
223	81,40	-0,67	77,90	1,65	33,50	4,45 FE	54,30	4,73 BE	62,70	0,13
224	90,00	0,32	63,00	-0,58	53,00	12,86 BE	44,00	1,93	58,00	-0,63
264			70,30	0,52	24,80	0,70			63,40	0,25
283	81,30	-0,68	83,34	2,47 E	27,40	1,82	42,07	1,41	61,15	-0,12

	Ethylbenzene	Z score	1-Methoxy-2-propanol	Z score	2-Butoxyethanol	Z score	Cumene	Z score	1-Methoxy-2-propyl acetate	Z score
–	–	– –	–	– –	–	– –	–	– –	–	– –
Method	ISO 5725-2		ISO 5725-2		ISO 5725-2		ISO 5725-2		ISO 5725-2	
Assessment	|Z|<=2,00		|Z|<=2,00		|Z|<=2,00		|Z|<=2,00		|Z|<=2,00	
Mean	87,21		66,85		23,18		36,87		61,87	
Reproducibility s.d.	5,72		8,97		3,52		3,49		4,89	
Rel. reproducibility s.d.	6,56 %		13,43 %		15,19 %		9,47 %		7,90 %	
Reference value	89,20		68,10		25,10		34,70		57,70	
Target s.d.	8,72		6,68		2,32		3,69		6,19	
Rel. target s.d.	10,00 %		10,00 %		10,00 %		10,00 %		10,00 %	
Lower limit of tolerance	69,77		53,48		18,55		29,50		49,50	
Upper limit of tolerance	104,65		80,22		27,82		44,24		74,24	
No. of laboratories that submitted results	25		22		24		23		24	
Type F outliers					1					
No. of laboratories after elimination of outliers type A-D and F (without laboratories that only gave states but no measured values)	25		21		22		22		22	
Explanation of outlier types										
A: Single outlier	Grubbs									
B: Differing laboratory mean	Grubbs									
C: Excessive laboratory s.d.	Cochran									
D: Excluded manually										
E: mean outside tolerance limits										
F: |Z-Score|>3,5										
L: Differing laboratory mean (Grubbs II)	Grubbs für 2									

Summary of laboratory test results

Sample 2

	n-Heptane	Z score		m-Xylene	Z score		2-Butanol	Z score		2-Propanol	Z score	
Unit	mg/m³			mg/m³			mg/m³			mg/m³		
10	185,00	0,96		36,50	1,60		79,10	1,34		46,00	0,92	
27				32,65	0,38							
55	169,00	0,01		34,00	0,80							
68	177,33	0,51		32,60	0,36		67,75	-0,28		40,69	-0,34	
79	176,00	0,43		35,10	1,15							
80	167,10	-0,10		31,90	0,14		75,10	0,77		39,90	-0,53	
82	176,00	0,43		30,60	-0,28		56,80	-1,85		30,10	-2,85	E
86	178,80	0,59		31,70	0,07		65,10	-0,66		38,80	-0,79	
90	156,60	-0,72		28,90	-0,82		61,80	-1,14		36,90	-1,24	
93	173,80	0,30		33,50	0,65		75,40	0,81		47,50	1,28	
99	157,10	-0,69		30,70	-0,24							
100							67,90	-0,26		45,60	0,83	
114	163,60	-0,31		29,50	-0,63		31,30	-5,51	BE	48,90	1,61	
118	165,55	-0,19		31,75	0,09		81,62	1,71		52,48	2,46	E
131	175,19	0,38		32,13	0,21		74,19	0,64		45,88	0,89	
144	166,60	-0,13		31,70	0,07							
147	165,17	-0,21		32,98	0,48		132,01	8,93	BE	42,86	0,18	
162	176,70	0,47		32,60	0,36		56,90	-1,84		30,20	-2,83	E
167	166,40	-0,14		32,07	0,19		75,42	0,82		55,86	3,26	E
168										45,30	0,76	
190	218,30	2,93	BE	28,89	-0,82		71,06	0,19		34,09	-1,91	
195	139,09	-1,76		30,84	-0,20		66,32	-0,49		39,72	-0,57	
199	191,00	1,32		30,00	-0,47		74,00	0,61				
208	163,44	-0,32		28,85	-0,83		69,73	0,00		43,53	0,34	
220	170,00	0,07		30,00	-0,47		74,00	0,61		42,00	-0,03	
223	163,00	-0,34		30,90	-0,18		75,80	0,87		73,20	7,38	BE
224	144,00	-1,47		27,00	-1,42		66,00	-0,53		38,00	-0,98	
264	162,00	-0,40		31,40	-0,02		60,60	-1,31		38,20	-0,93	

	n-Heptane	Z score	m-Xylene	Z score	2-Butanol	Z score	2-Propanol	Z score
283	196,60	1,65	30,38	-0,35	68,30	-0,20	40,16	-0,46
–	–	– –	–	– –	–	– –	–	– –
Method	ISO 5725-2		ISO 5725-2		ISO 5725-2		ISO 5725-2	
Assessment	|Z|<=2,00		|Z|<=2,00		|Z|<=2,00		|Z|<=2,00	
Mean	168,77		31,47		69,72		42,12	
Reproducibility s.d.	12,53		2,00		6,74		6,32	
Rel. reproducibility s.d.	7,42 %		6,36 %		9,66 %		15,00 %	
Reference value	167,30		31,40		78,70		45,20	
Target s.d.	16,88		3,15		6,97		4,21	
Rel. target s.d.	10,00 %		10,00 %		10,00 %		10,00 %	
Lower limit of tolerance	135,02		25,18		55,78		33,69	
Upper limit of tolerance	202,53		37,76		83,67		50,54	
No. of laboratories that submitted results	27		28		24		24	
No. of laboratories after elimination of outliers type A-D and F (without laboratories that only gave states but no measured values)	26		28		22		23	
Explanation of outlier types								
A: Single outlier	Grubbs							
B: Differing laboratory mean	Grubbs							
C: Excessive laboratory s.d.	Cochran							
D: Excluded manually								
E: mean outside tolerance limits								
F: |Z-Score|>3,5								
L: Differing laboratory mean (Grubbs II)	Grubbs für 2							

Summary of laboratory test results

Sample 3

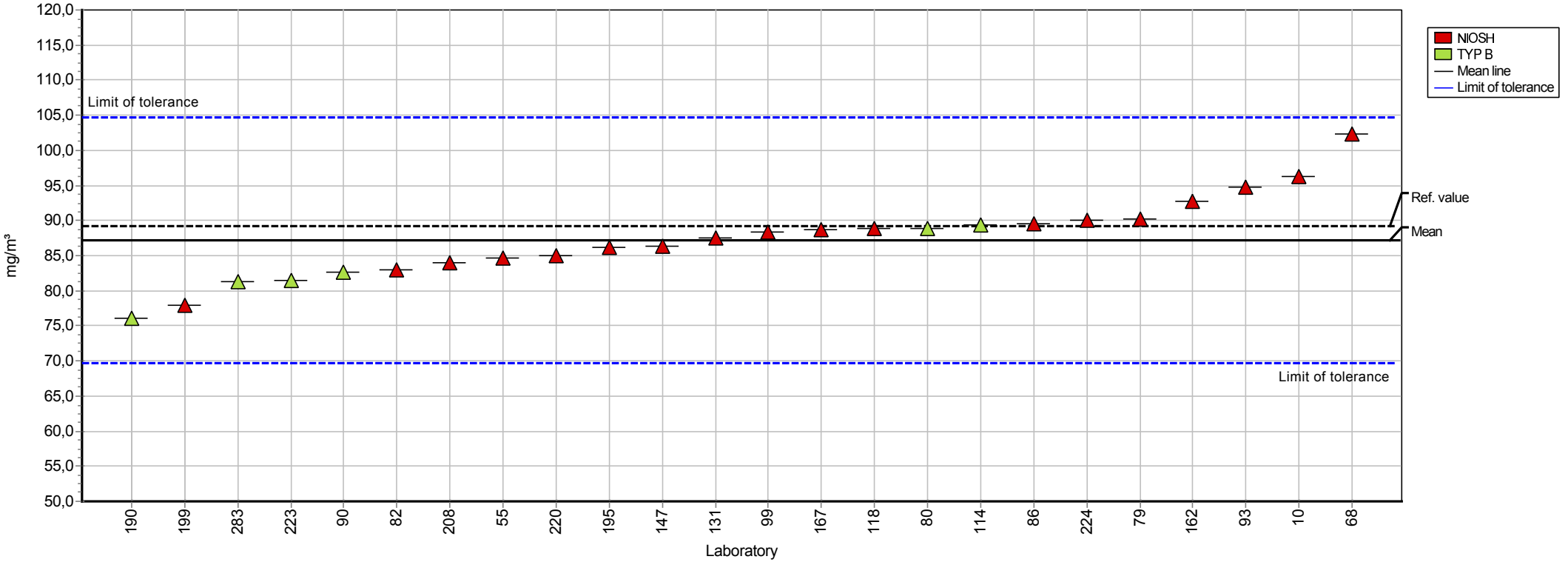
	1-Butylacetate	Z score		Toluene	Z score		n-Hexane	Z score		2-Butoxyethanol	Z score	
Unit	mg/m³			mg/m³			mg/m³			mg/m³		
10	135,00	0,90		72,20	0,06		49,20	0,34		31,70	2,39	E
55				73,70	0,27		49,30	0,37				
68	119,59	-0,35		72,19	0,06		49,34	0,37		24,27	-0,52	
79				83,80	1,68		53,40	1,23				
80	122,50	-0,11		71,70	-0,01		46,50	-0,22		29,00	1,33	
82				69,80	-0,27		45,70	-0,39		21,40	-1,64	
86	124,50	0,05		73,10	0,19		48,10	0,11		20,90	-1,83	
90	114,60	-0,75		62,10	-1,35		45,00	-0,54		22,00	-1,40	
93	120,90	-0,24		79,70	1,11		48,70	0,24		27,00	0,55	
99	114,50	-0,76		69,31	-0,34		46,06	-0,32				
100										28,00	0,94	
114	155,30	2,54	E	75,70	0,55		50,50	0,62		20,40	-2,03	E
118	132,53	0,70		73,93	0,30		47,55	0,00				
131	121,69	-0,18		71,88	0,02		48,63	0,22		33,94	3,26	E
144	124,30	0,03		70,40	-0,19		47,70	0,03				
147	116,95	-0,56		70,39	-0,19		34,13	-2,82	BE	19,41	-2,42	E
162	126,10	0,18		72,50	0,10		46,20	-0,29		22,90	-1,05	
167	134,30	0,84		73,56	0,25		53,06	1,16				
168	119,00	-0,39		71,90	0,02		47,80	0,05				
190	151,20	2,21	E	74,75	0,42		53,20	1,19		26,30	0,28	
195	129,13	0,42		72,99	0,17		43,55	-0,84		22,53	-1,20	
199	104,00	-1,60		55,00	-2,33	BE	46,00	-0,33		26,00	0,16	
208	113,39	-0,85		68,80	-0,41		43,12	-0,94		28,31	1,06	
220	140,00	1,30		70,00	-0,24		43,00	-0,96		26,00	0,16	
223	124,00	0,01		70,20	-0,22		44,80	-0,58		40,00	5,63	BE
224	108,00	-1,28		70,00	-0,24		40,00	-1,59		50,00	9,54	BE
264	100,00	-1,93		59,80	-1,67		47,40	-0,03		26,10	0,20	
283	126,20	0,19		71,95	0,03		55,41	1,65		27,68	0,82	

	1-Butylacetate	Z score	Toluene	Z score	n-Hexane	Z score	2-Butoxyethanol	Z score
–	–	– –	–	– –	–	– –	–	– –
Method	ISO 5725-2		ISO 5725-2		ISO 5725-2		ISO 5725-2	
Assessment	|Z|<=2,00		|Z|<=2,00		|Z|<=2,00		|Z|<=2,00	
Mean	123,87		71,75		47,56		25,59	
Reproducibility s.d.	12,86		4,46		3,53		3,85	
Rel. reproducibility s.d.	10,38 %		6,21 %		7,42 %		15,03 %	
Reference value	118,60		72,10		48,00		30,40	
Target s.d.	12,39		7,18		4,76		2,56	
Rel. target s.d.	10,00 %		10,00 %		10,00 %		10,00 %	
Lower limit of tolerance	99,09		57,40		38,05		20,47	
Upper limit of tolerance	148,64		86,10		57,08		30,71	
No. of laboratories that submitted results	25		28		28		22	
No. of laboratories after elimination of outliers type A-D and F (without laboratories that only gave states but no measured values)	25		27		27		20	

Explanation of outlier types	
A: Single outlier	Grubbs
B: Differing laboratory mean	Grubbs
C: Excessive laboratory s.d.	Cochran
D: Excluded manually	
E: mean outside tolerance limits	
F: |Z-Score|>3,5	
L: Differing laboratory mean (Grubbs II)	Grubbs für 2

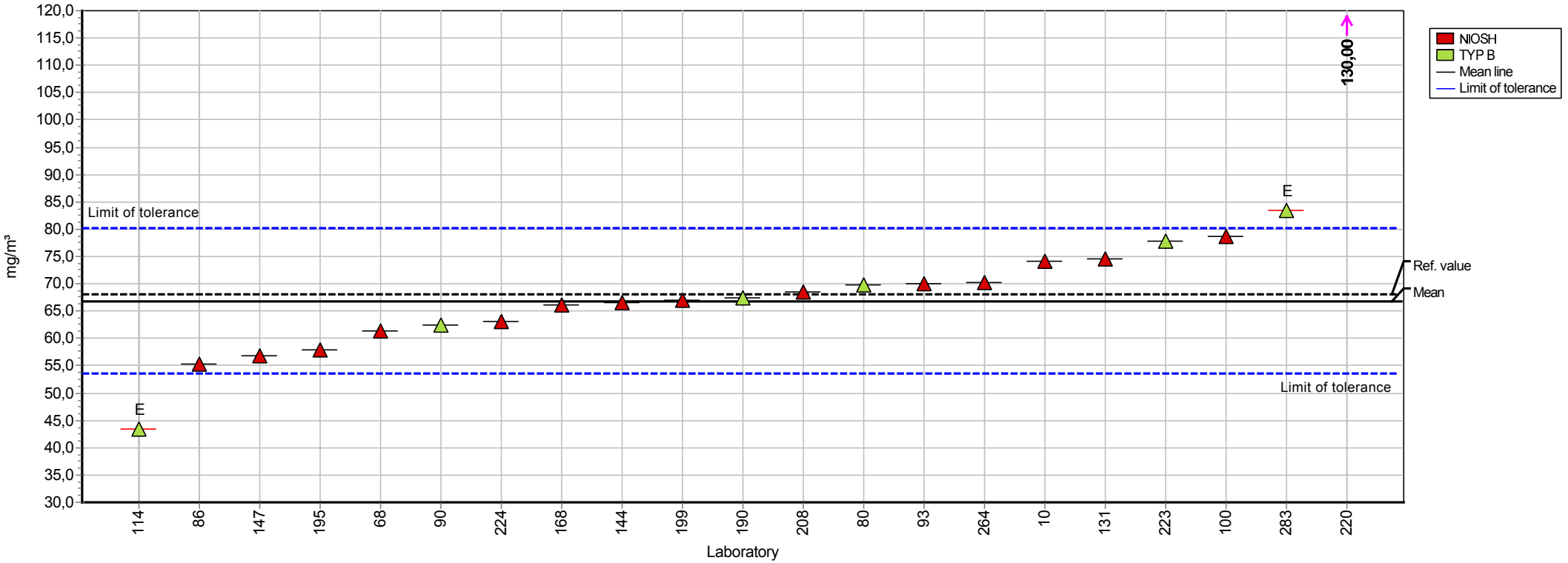
Summary results

Measurand:	**Ethylbenzene**	**Mean:**	**87,21 mg/m³**
Sample:	**1**	**Reproducibility s.d.:**	**5,72 mg/m³**
Method:	**ISO 5725-2**	**Relative reproducibility s.d.:**	**6,56%**
Relative target s.d.:	**10,00% (Limited)**	**Reference value:**	**89,20 mg/m³**
No. of laboratories:	**25**	**Range of tolerance:**	**69,77 - 104,65 mg/m³ (|Z-Score| <= 2,00)**



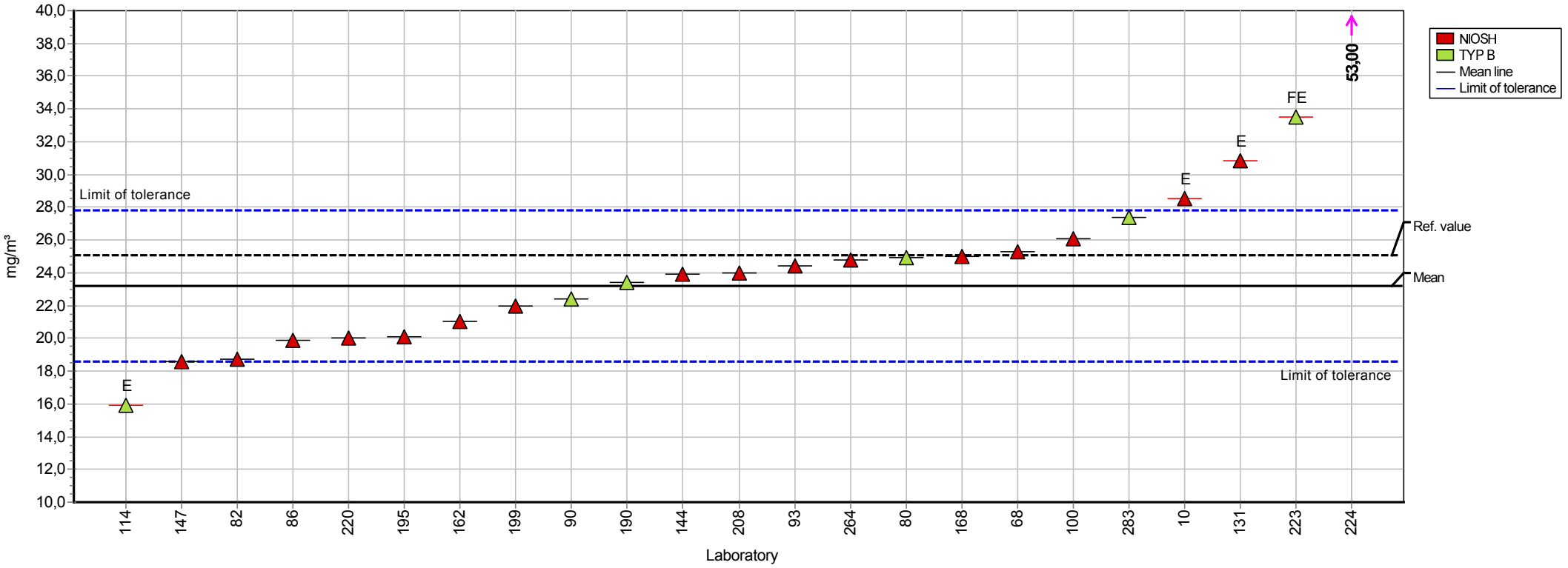
Summary results

Measurand:	**1-Methoxy-2-propanol**	**Mean:**	**66,85 mg/m³**
Sample:	**1**	**Reproducibility s.d.:**	**8,97 mg/m³**
Method:	**ISO 5725-2**	**Relative reproducibility s.d.:**	**13,43%**
Relative target s.d.:	**10,00% (Limited)**	**Reference value:**	**68,10 mg/m³**
No. of laboratories:	**21**	**Range of tolerance:**	**53,48 - 80,22 mg/m³ (|Z-Score| <= 2,00)**



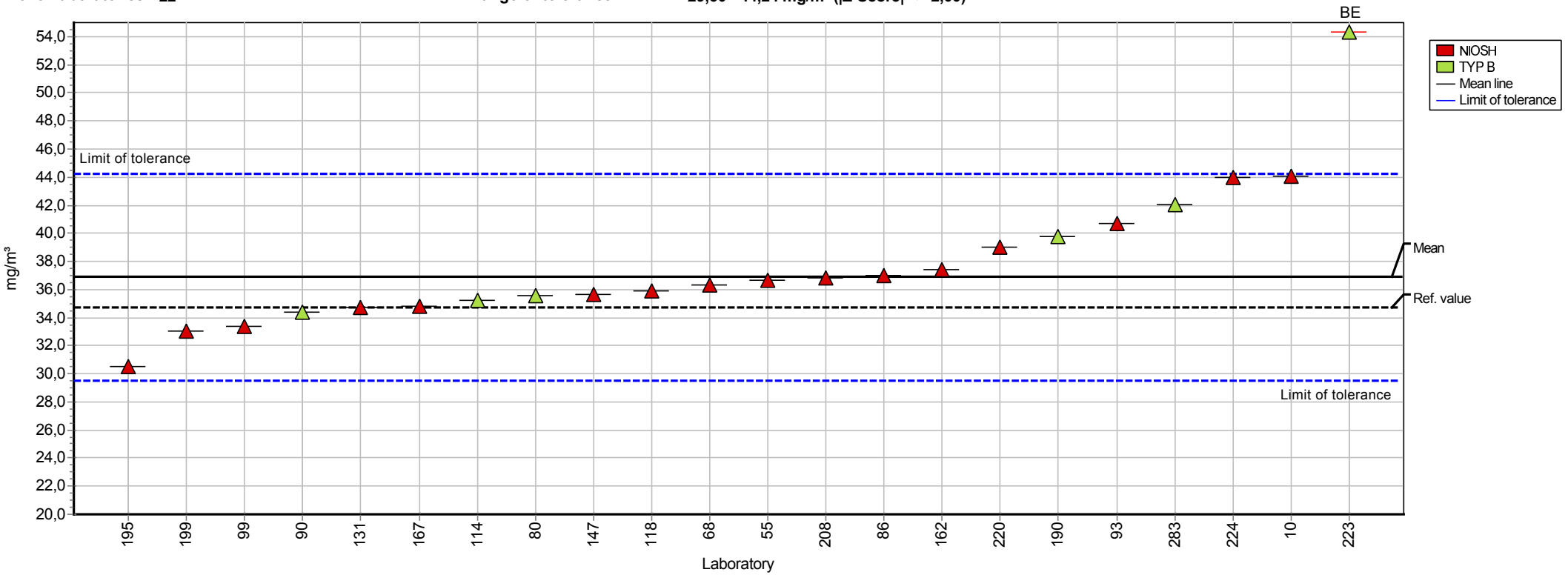
Summary results

Measurand:	**2-Butoxyethanol**	**Mean:**	**23,18 mg/m³**
Sample:	**1**	**Reproducibility s.d.:**	**3,52 mg/m³**
Method:	**ISO 5725-2**	**Relative reproducibility s.d.:**	**15,19%**
Relative target s.d.:	**10,00% (Limited)**	**Reference value:**	**25,10 mg/m³**
No. of laboratories:	**22**	**Range of tolerance:**	**18,55 - 27,82 mg/m³ (|Z-Score| <= 2,00)**



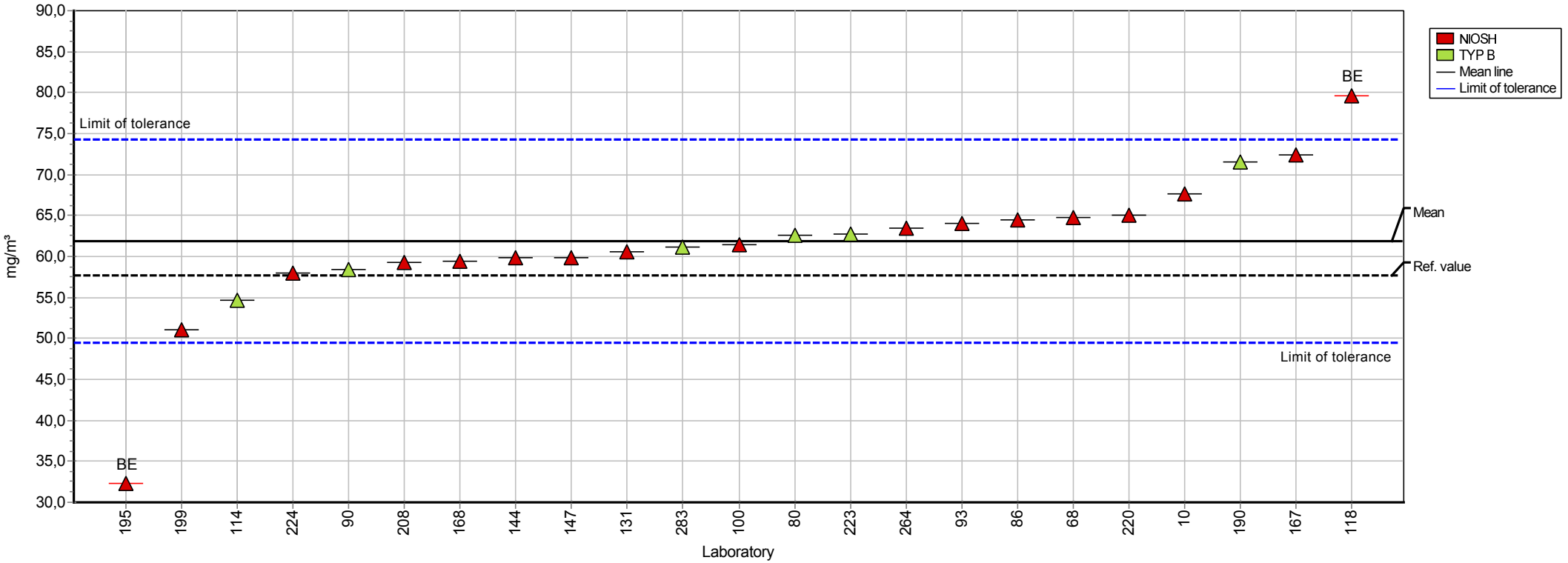
Summary results

Measurand:	**Cumene**	**Mean:**	**36,87 mg/m³**
Sample:	**1**	**Reproducibility s.d.:**	**3,49 mg/m³**
Method:	**ISO 5725-2**	**Relative reproducibility s.d.:**	**9,47%**
Relative target s.d.:	**10,00% (Limited)**	**Reference value:**	**34,70 mg/m³**
No. of laboratories:	**22**	**Range of tolerance:**	**29,50 - 44,24 mg/m³ (|Z-Score| <= 2,00)**



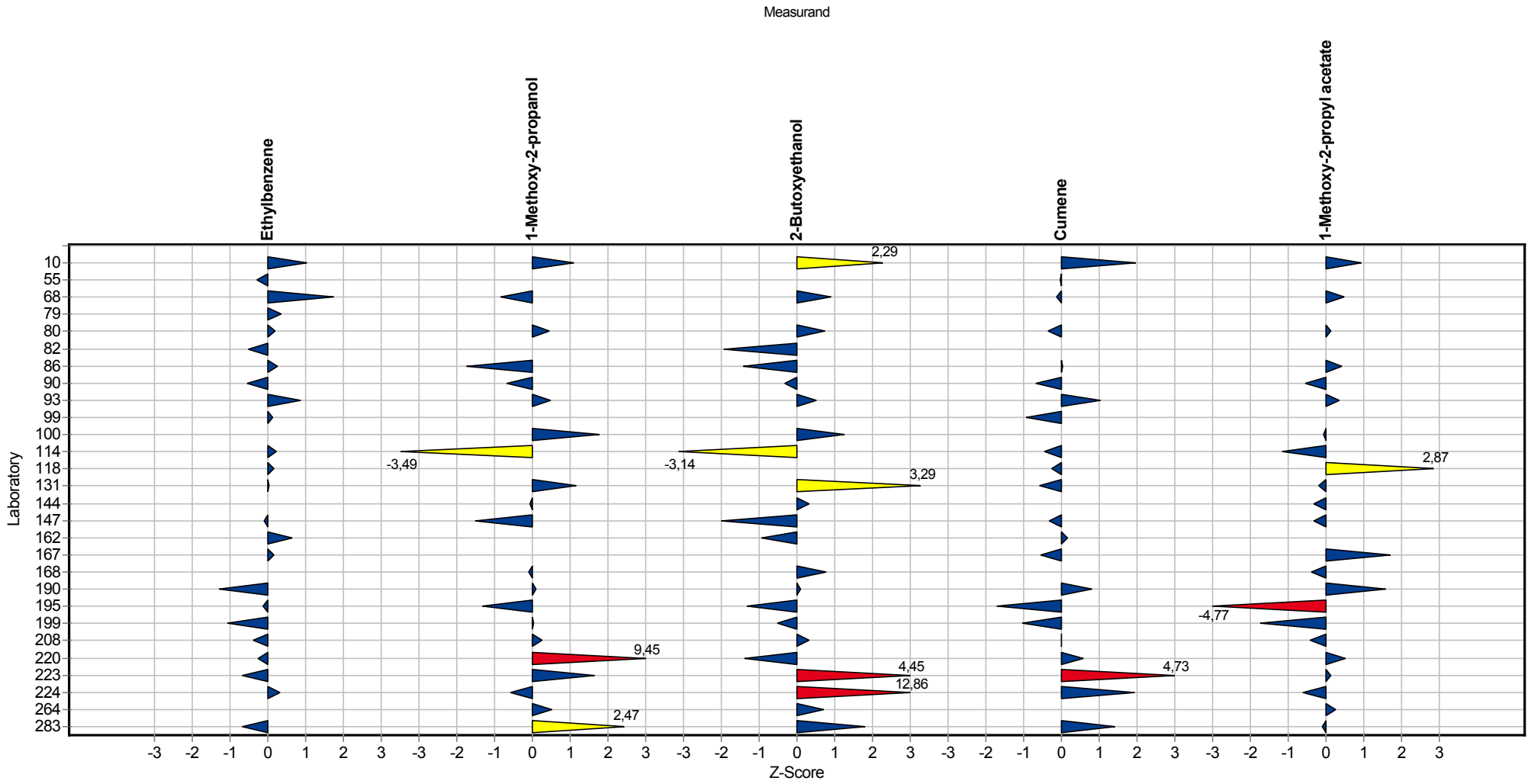
Summary results

Measurand:	**1-Methoxy-2-propyl acetate**	**Mean:**	**61,87 mg/m³**
Sample:	**1**	**Reproducibility s.d.:**	**4,89 mg/m³**
Method:	**ISO 5725-2**	**Relative reproducibility s.d.:**	**7,90%**
Relative target s.d.:	**10,00% (Limited)**	**Reference value:**	**57,70 mg/m³**
No. of laboratories:	**22**	**Range of tolerance:**	**49,50 - 74,24 mg/m³ (|Z-Score| <= 2,00)**



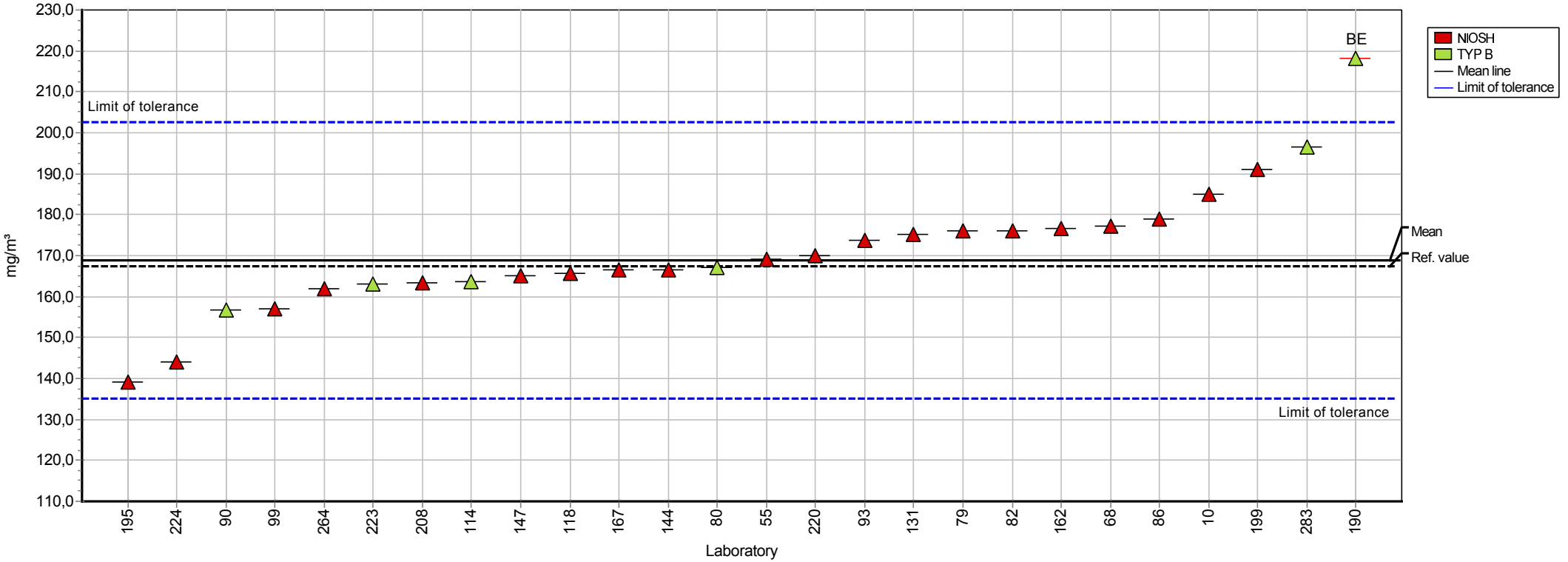
Sample chart of Z-scores

Sample 1



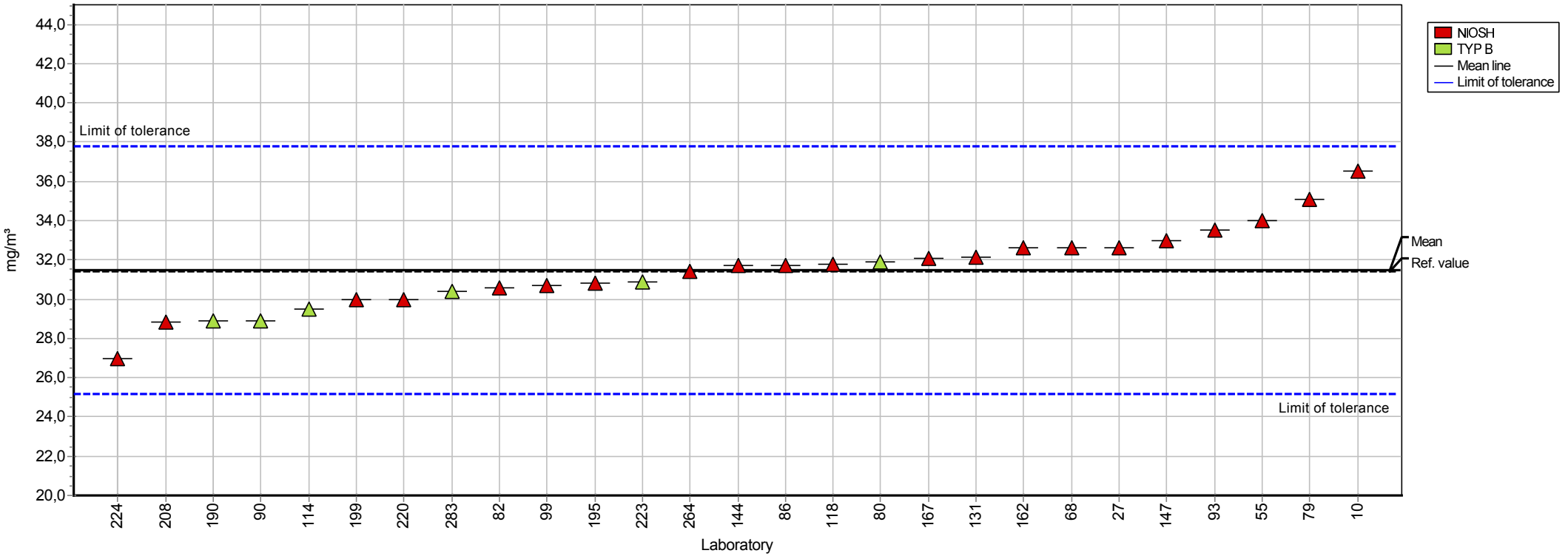
Summary results

Measurand:	**n-Heptane**	**Mean:**	**168,77 mg/m³**
Sample:	**2**	**Reproducibility s.d.:**	**12,53 mg/m³**
Method:	**ISO 5725-2**	**Relative reproducibility s.d.:**	**7,42%**
Relative target s.d.:	**10,00% (Limited)**	**Reference value:**	**167,30 mg/m³**
No. of laboratories:	**26**	**Range of tolerance:**	**135,02 - 202,53 mg/m³ (|Z-Score| <= 2,00)**



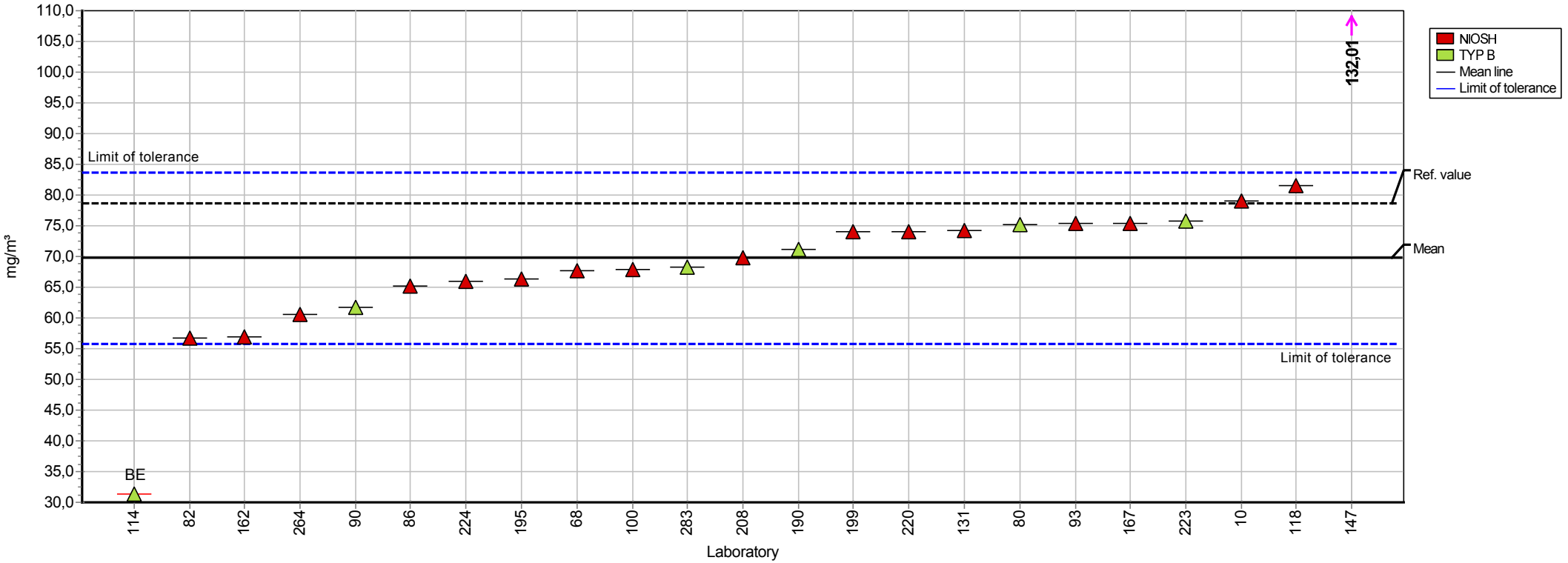
Summary results

Measurand:	**m-Xylene**	**Mean:**	**31,47 mg/m³**
Sample:	**2**	**Reproducibility s.d.:**	**2,00 mg/m³**
Method:	**ISO 5725-2**	**Relative reproducibility s.d.:**	**6,36%**
Relative target s.d.:	**10,00% (Limited)**	**Reference value:**	**31,40 mg/m³**
No. of laboratories:	**28**	**Range of tolerance:**	**25,18 - 37,76 mg/m³ (|Z-Score| <= 2,00)**



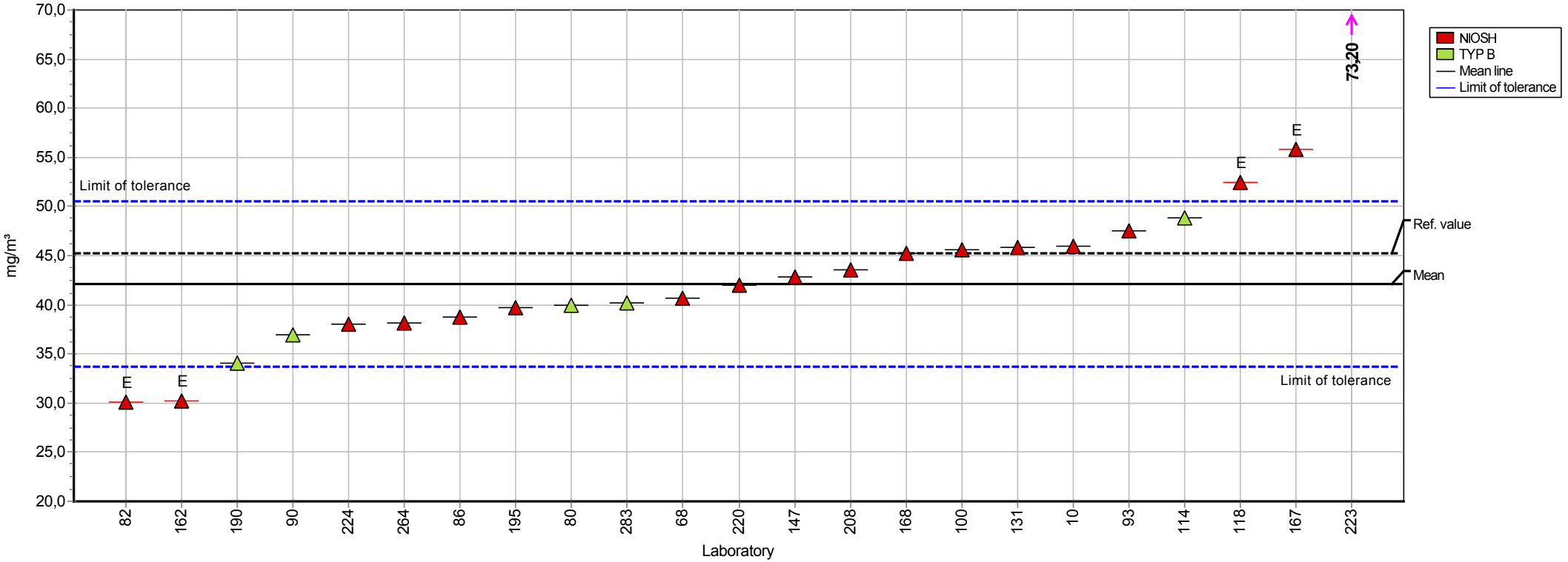
Summary results

Measurand:	**2-Butanol**	**Mean:**	**69,72 mg/m³**
Sample:	**2**	**Reproducibility s.d.:**	**6,74 mg/m³**
Method:	**ISO 5725-2**	**Relative reproducibility s.d.:**	**9,66%**
Relative target s.d.:	**10,00% (Limited)**	**Reference value:**	**78,70 mg/m³**
No. of laboratories:	**22**	**Range of tolerance:**	**55,78 - 83,67 mg/m³ (|Z-Score| <= 2,00)**



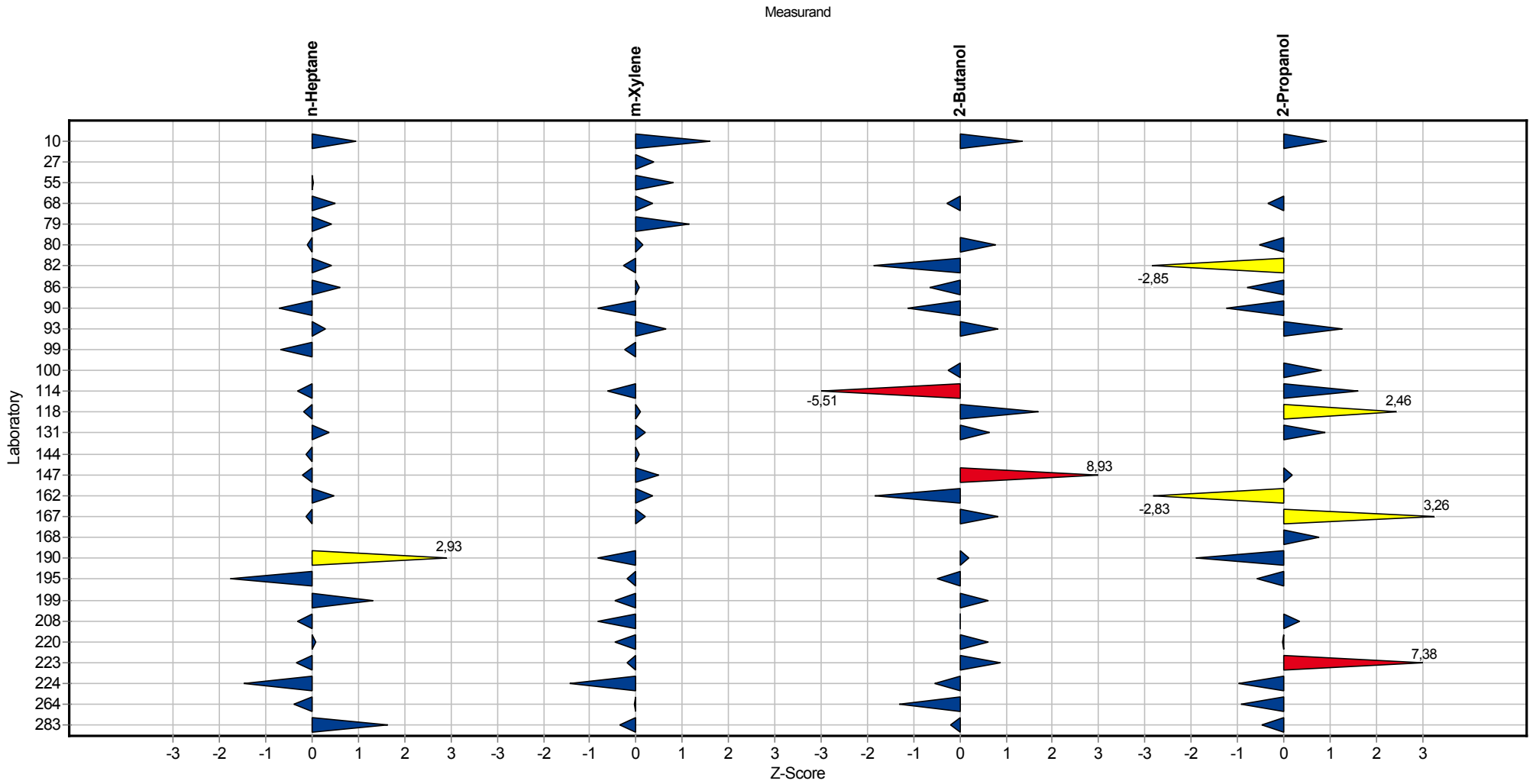
Summary results

Measurand:	**2-Propanol**	**Mean:**	**42,12 mg/m³**
Sample:	**2**	**Reproducibility s.d.:**	**6,32 mg/m³**
Method:	**ISO 5725-2**	**Relative reproducibility s.d.:**	**15,00%**
Relative target s.d.:	**10,00% (Limited)**	**Reference value:**	**45,20 mg/m³**
No. of laboratories:	**23**	**Range of tolerance:**	**33,69 - 50,54 mg/m³ (|Z-Score| <= 2,00)**



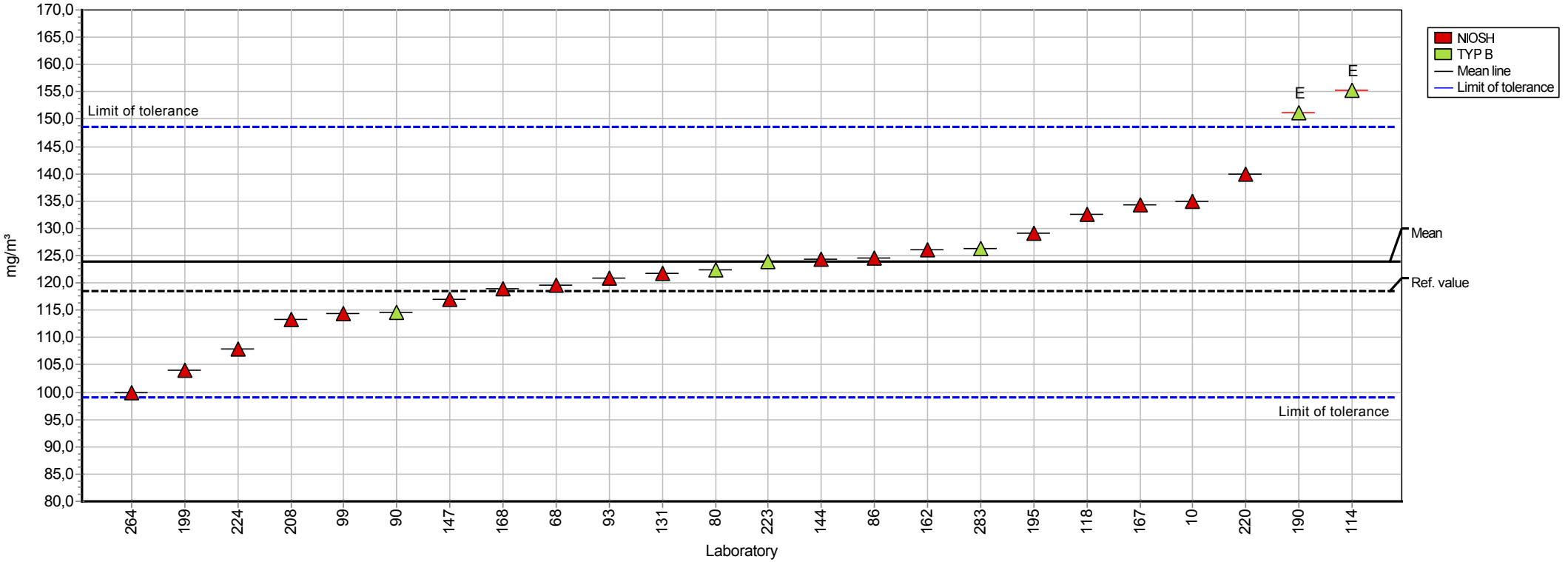
Sample chart of Z-scores

Sample 2



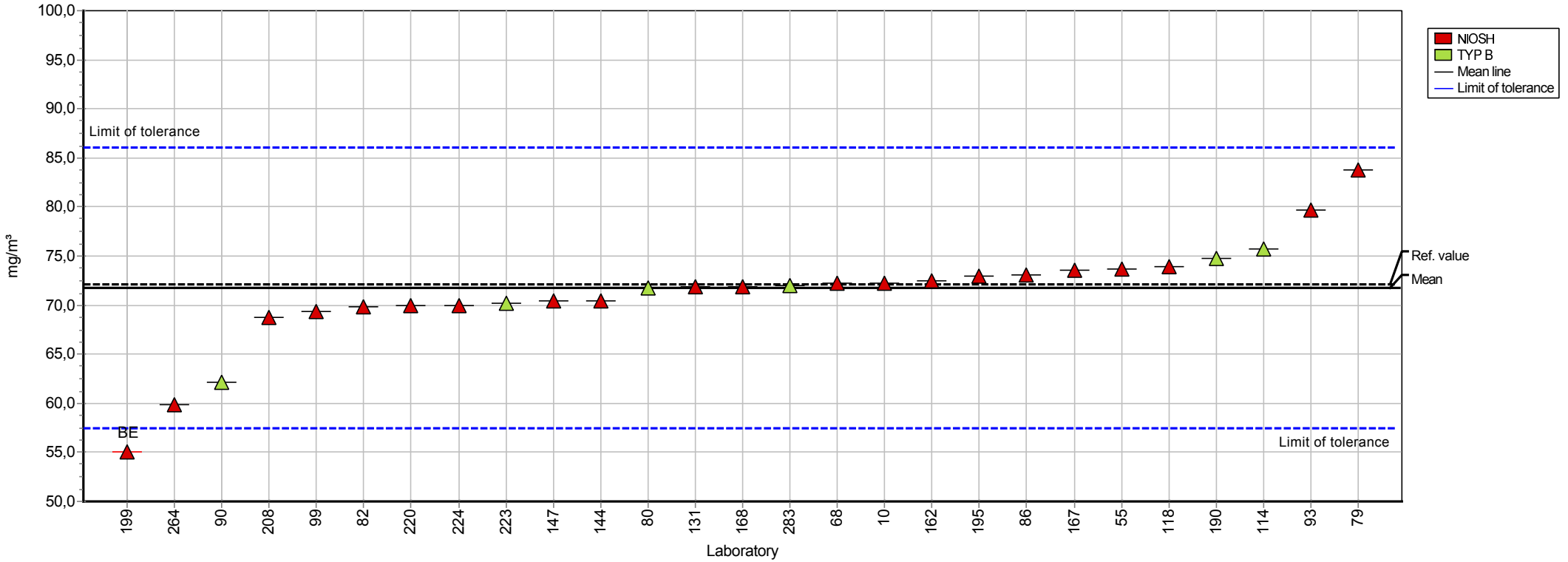
Summary results

Measurand:	**1-Butylacetate**	**Mean:**	**123,87 mg/m³**
Sample:	**3**	**Reproducibility s.d.:**	**12,86 mg/m³**
Method:	**ISO 5725-2**	**Relative reproducibility s.d.:**	**10,38%**
Relative target s.d.:	**10,00% (Limited)**	**Reference value:**	**118,60 mg/m³**
No. of laboratories:	**25**	**Range of tolerance:**	**99,09 - 148,64 mg/m³ (|Z-Score| <= 2,00)**



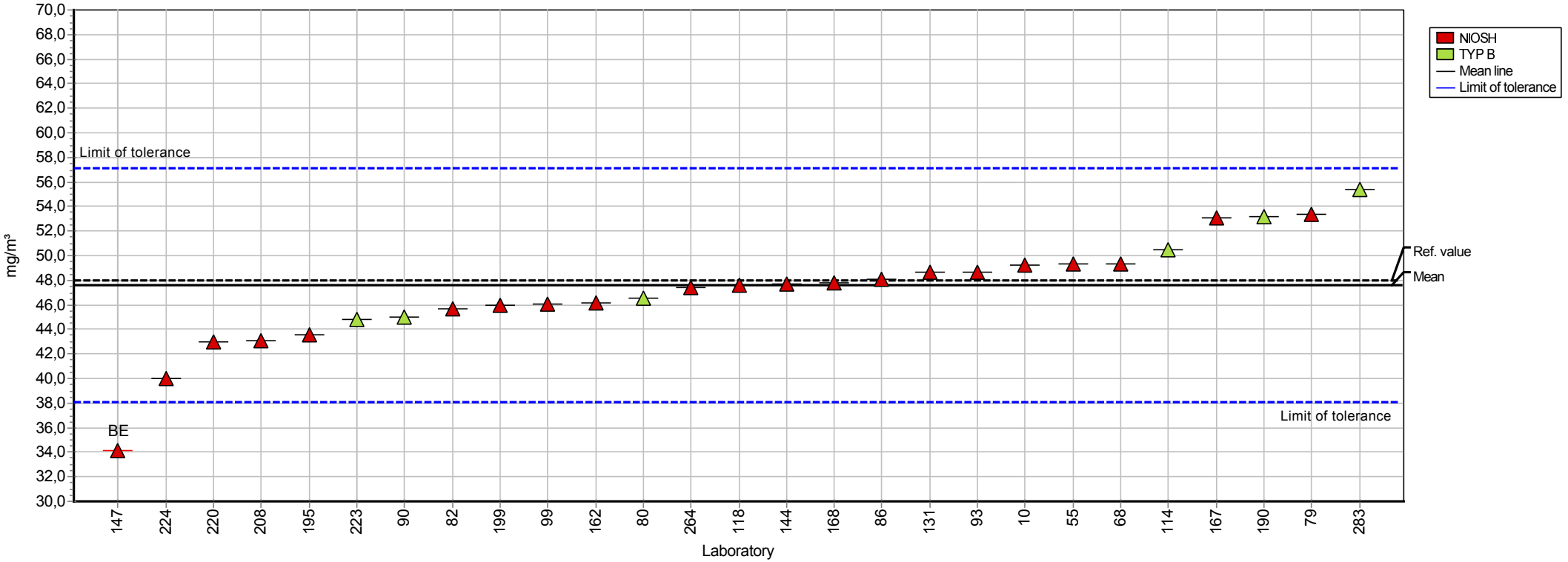
Summary results

Measurand:	**Toluene**	**Mean:**	**71,75 mg/m³**
Sample:	**3**	**Reproducibility s.d.:**	**4,46 mg/m³**
Method:	**ISO 5725-2**	**Relative reproducibility s.d.:**	**6,21%**
Relative target s.d.:	**10,00% (Limited)**	**Reference value:**	**72,10 mg/m³**
No. of laboratories:	**27**	**Range of tolerance:**	**57,40 - 86,10 mg/m³ (|Z-Score| <= 2,00)**



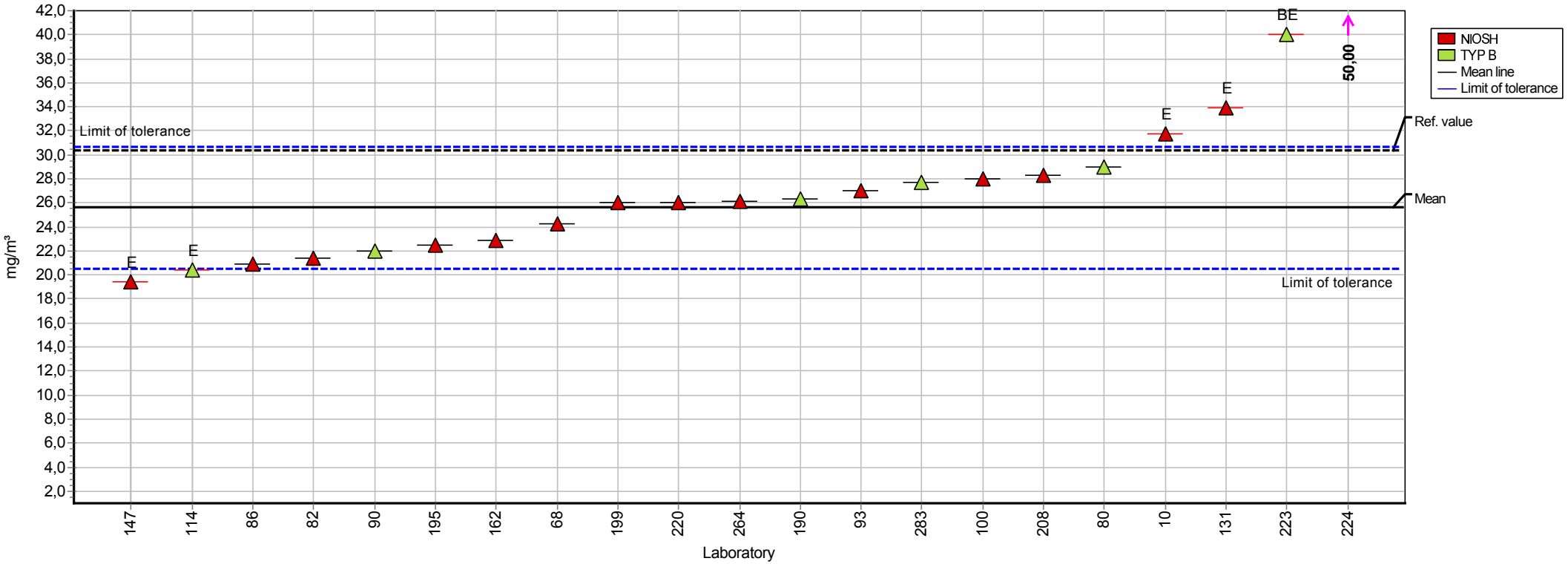
Summary results

Measurand:	**n-Hexane**	**Mean:**	**47,56 mg/m³**
Sample:	**3**	**Reproducibility s.d.:**	**3,53 mg/m³**
Method:	**ISO 5725-2**	**Relative reproducibility s.d.:**	**7,42%**
Relative target s.d.:	**10,00% (Limited)**	**Reference value:**	**48,00 mg/m³**
No. of laboratories:	**27**	**Range of tolerance:**	**38,05 - 57,08 mg/m³ (|Z-Score| <= 2,00)**



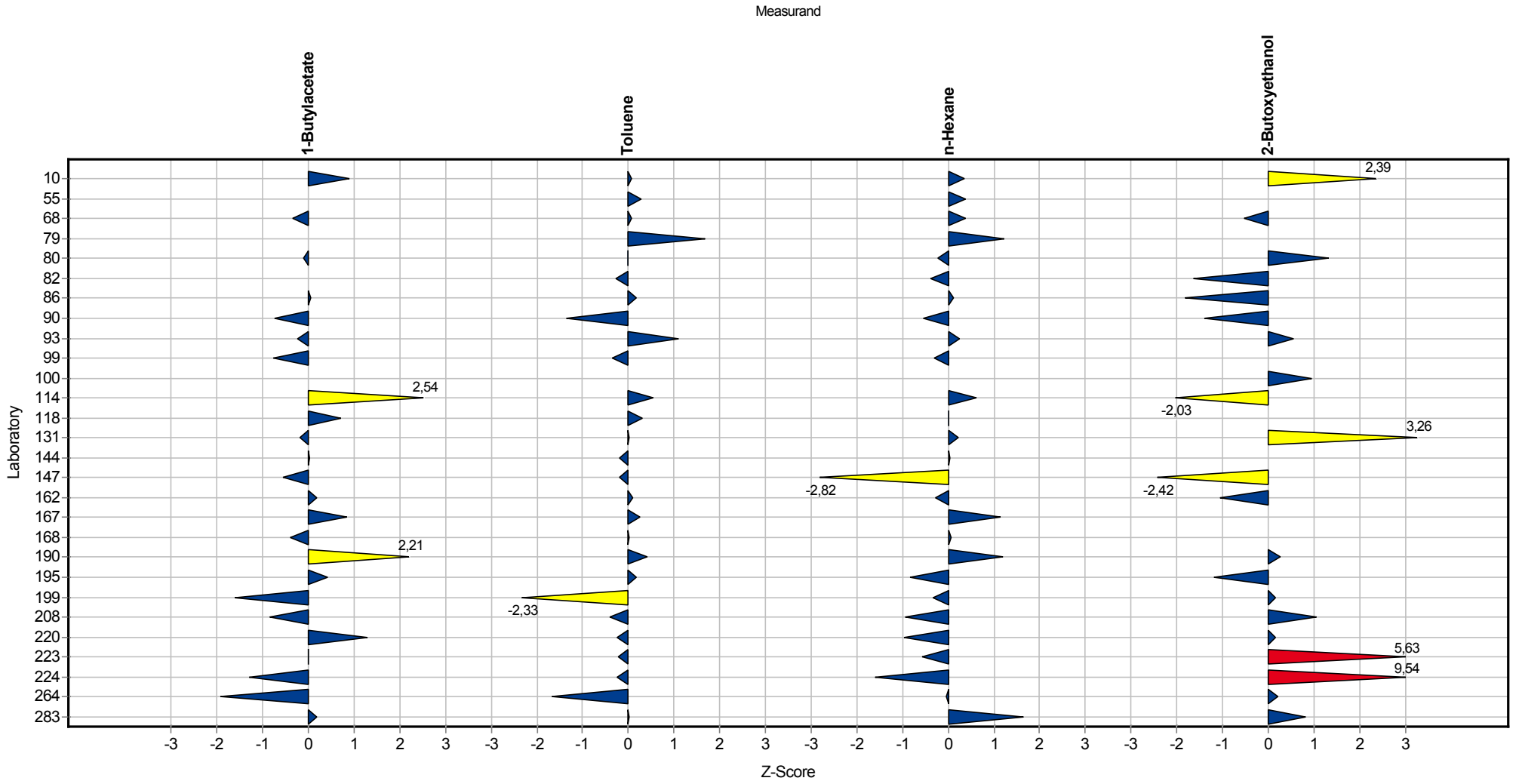
Summary results

Measurand:	**2-Butoxyethanol**	**Mean:**	**25,59 mg/m³**
Sample:	**3**	**Reproducibility s.d.:**	**3,85 mg/m³**
Method:	**ISO 5725-2**	**Relative reproducibility s.d.:**	**15,03%**
Relative target s.d.:	**10,00% (Limited)**	**Reference value:**	**30,40 mg/m³**
No. of laboratories:	**20**	**Range of tolerance:**	**20,47 - 30,71 mg/m³ (|Z-Score| <= 2,00)**



Sample chart of Z-scores

Sample 3



Questions and Answers

Participant	Analytical method	Desorption solution
10	Internal	CS2/DCM/MeOH 30/65/5
27	Metropol M.188	disulfone de carbone
55	accredited internal methode GC-MS	CS2
68	Weder DFG noch IFA-Arbeitsmappe	CS2
79	BIA 6265	CS2
80	BGIA 7733	tenäres Gemisch (60% Dichlormethan, 35% Schwefelkohlenstoff, 5% Methanol
82	Hauseigene Methode	Schwefelkohlenstoff (CS2)
86	Internal method - Métropol	CS2
90	METROPOL M-138 et M-24	CS2/CH2CL2: 50/50 for samples 1 et 3, 90/10 for sample 2
93	METROPOL M-81	dichloromethane
99	metropol M-285;M-265;M-267;M-188;M-351	carbon disulfide
100	Metropol INRS	Methylene Chloride / Methanol (95/5) for sample 1,3 _ Methylene Chloride/CS2 (50/50) for sample 2
114	NFX43-267	CS2
118	in Anlehnung an die VDI Blatt 2	CS2
131		50% CS2 / 50% CH2Cl2
144	INRS METROPOL M48/M135/M138/M118/M188/M41/M351/M285	
147	Metropol M-188	
162	Hausmethode	Schwefelkohlenstoff
167	Capillary Gas Chromatography	Carbon disulphide
168	Metropol (INRS)	CH2Cl2, CS2/CH2Cl2 90/10, CS2
190	IFA-Arbeitsmappe 7732, 7733, 7322, 7569	Ternäres Gemisch: Dichlormethan, Schwefelkohlenwasserstoff, Methanol
195	Internal	Carbon disulphide + npropylbenzene as internal standard
199	Hausmethode in Anlehnung an NIOSH-Mehode	DCM/CS2/Methanol
208	Own, based on NIOSH and OSHA -methods	2% DMF in carbon disulfide
220	Hausmethode, in Anlehnung an VDI 2100-Blatt2	Benzylalkohol
223	DFG Lösemittelgemische	CS2
224	inhouse	carbon disulfide
264	GC/FID - NF X 43-267 - INRS METROPOL	SAMPLE 1 Dichlorométhane/Méthanol 95/5%- SAMPLE 2 - SAMPLE 3 : CS2
283	7569	Dichlormethan:Schwefelkohlenstoff 60:40

Participant	Volume of desorption solution	Carrier gas	Injection	Analytical column
10	1/1 ml	Helium	Split	Polar and apolar
27	4 ml	nitrogen	split	Varian CP9206 VF-WAX ms
55	2 ml	helium	split	RTX 502.2
68	1 ml	Helium	split	Vocol von Supelco
79	0,5 ml	Wasserstoff	manuell	CP Sil 5CB
80	10 mL	Helium	Split	ZB-5 (60m*0,25mm*0,25µm), Optima-Wax plus (30m*0,25mm*0,25µm)
82	1 mL pro Kammer	Stickstoff	split	HP-5 30m 0,32mm X 0,25µm
86	2 ml	Helium	Split 80%	TG5MS 60m*0.25mm - 0.25µm
90	3 ml	helium	split	DB5MS L=50m - d=0.2 mm - film=0.33 µm
93	2ml	hydrogene	split 1/20	Agilent HP5 / AGILENT HP-FFAP
99	5 ml	helium	split	ZB1
100	6ml (sample 1,3) _ 4ml (sample 2)	helium	split	DB624
114	5ml	helium	splitless	ELITE 5MS 60m
118	2mL	Stickstoff	on column	CP Sil 5 CB / CB-WAX 57 CB
131	4 ml	Helium	split	EQUITY-1 60m*0.32mm*1µm
144	1.5ml	helium		Restek Rxi 5ms 60m x 0.32mm x 1µ
147	5 mL	nitrogen	split	Rtx-1 - 30m -0.32 mm ID- 1.5µm df
162	1 ml	Wasserstoff	Split 1:5	RESTEK Rtx-502.2 (60m x 0.25 mm ID x 1.4 µm Film)
167	1,5 mL	Helium	1,0 ìL spiltiess, 250 °C	Agilent Technologies, Inc., DB--5MS + DG, 30 m, 0,25 mm id,. 1,0 µm film for 2-propanol and 2-butanol
168	5 ml	helium	split	DB-Wax and AT-5
190	10 mL	Helium	splitless	Rxi-5ms (60m-0,25mmID-1µm
195	1 ml	Helium	Split	Elite-5 20 m x 0.15 mm x 0.3 um
199	5 ml	Helium	splittless	DB-5.625MS
208	2,0 ml	Helium	Split	Agilent HP-5, HP-InnoWax
220	5 mL	Helium	split	DB-5.625 MS
223	4 ml	N2	splitless	Supelcowax 100 m und Petrocol DH50.2
224	2 ml	He	split	BPX5 60m x 0.25mm x 1µm
264	2 ML	He	split	RTx1+RTxWAX
283	6 ml	Helium	split	VF-5-MS 60m*0,25mm*0,36µm

Participant	Detector	Data evaluation	Recovery rate	Date of analysis
10	FID	External	No	20/02/2017

Participant	Detector	Data evaluation	Recovery rate	Date of analysis
27	FID	internal		08/03/2017
55	MS	internal standard	yes	08/02/2017
68	FID	interner Standard	Nein	13./14.2.2017
79	FID	interner Standard		28.02.2017
80	FID	interner Standard	nein	23.02.2017
82	FID	ISTD	Ja	24.02.2017
86	FID	Internal standard	no	16/02/2017
90	FID	internal standard	no	17-22/02/2017
93	FID	External	No	8/03/2017
99	FID	internal standard	no	2017/02/28
100	MS	internal	yes	2/16/2017
114	FID	external standard	no	16/02/2017
118	FID	interner Standard		21.02..2017
131	FID	internal	oui	07/03/17
144	FID	External	No	13/02/2017
147	FID	internal standard	No	03/03/17
162	FID	Interner Standard	Ja	13.02.2017
167	FID, 310 °C	Internal standard, chloro	Yes	15.02.- 20.02.17
168	FID	External standard	No	21/02/2017
190	MS	mit internem Standard	ja	03.03.2017
195	FID	Internal standard	Yes	23/02/2017
199	Massendetektor	externe Standards mit Korrektur über interne Standards	nein	08.02.17
208	FID	External standard		15.2.2017
220	GC/MS	externe Standards mit Korrektur über interne Standards	Nein	02.03.2017
223	FID	interner Standard	ja	14.2.17
224	MS	internal standard	yes	13/02/2017
264	FID	External standard	yes	16/02/2017
283	Massenspektrometer	interner Standard	ja	08.02.2017