IFA
Institut für Arbeitsschutz der
Deutschen Gesetzlichen Unfallversicherung

Proficiency testing for in-house and external measuring stations - results and evaluation

Proficiency testing scheme

Volatile organic compounds (VOC) with thermal desorption

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Institute for Occupationial Safety and Health of the
German Social Accident Insurance (IFA)
K. Gusbeth, M. Hasenbeck, R. Schneck, F. Nürnberger, K. Pitzke
Alte Heerstraße 111, 53757 Sankt Augustin, Germany
Phone.: +49 30 13001 3299
Email: proficiency-testing@dguv.de

Summary of laboratory means

Sample 1

Laboratory	1,2,3-Trimethylbenzene	Z score	4-Methyl-2-pentanone	Z score	alpha-Pinene	Z score	Benzene	Z score	Cumene	Z score
Unit	µg/m³		µg/m³		µg/m³		µg/m³		µg/m³	
30	45,0	0,03	105,5	0,96	94,5	0,80	32,5	1,20	68,5	0,73
52	42,4	-0,54	92,0	-0,44	93,2	0,65	26,4	-0,89	59,8	-0,63
55	44,5	-0,08	100,0	0,39	83,0	-0,51	28,0	-0,35	69,0	0,81
60	47,0	0,48	99,0	0,29			28,9	-0,06		
68	67,6	5,07 FE	200,2	10,80 BE	99,1	1,33	59,0	10,33 FE	87,8	3,76 FE
104	46,5	0,38 C	104,0	0,80	115,5	3,20 CE	36,5	2,56 E	66,3	0,39 C
105							33,2	1,45		
117	47,0	0,48	103,5	0,75	103,0	1,78	30,0	0,33 C	69,5	0,89
124			85,1	-1,16	98,4	1,25	25,0	-1,40	56,6	-1,13
145			95,0	-0,13			30,0	0,33		
148	38,6	-1,40	81,9	-1,49	79,3	-0,93	22,9	-2,13 E	58,6	-0,82
151	43,5	-0,30	94,5	-0,18	94,5	0,80	24,8	-1,47	69,2	0,84
153	79,0	7,61 FE	113,0	1,74	108,5	2,40 E	30,5	0,51		
167	49,5	1,03	105,5	0,96	85,0	-0,28	34,0	1,71	68,5	0,73
182	39,5	-1,19	77,5	-1,95	74,0	-1,54	23,0	-2,08 E	63,5	-0,05
183							35,5	2,23 E		
186	37,8	-1,56	85,8	-1,09	67,4	-2,29 E	27,5	-0,53	53,8	-1,56
192	48,3	0,76	103,4	0,74	85,1	-0,27	29,9	0,28		
199	41,5	-0,75	86,5	-1,01	75,0	-1,43	22,5	-2,25 E	58,0	-0,91
206	37,9	-1,55	83,7	-1,30	78,1	-1,07	30,4	0,46	58,2	-0,87
207	56,5	2,60 E	119,5	2,42 E	94,5	0,80	34,5	1,89	80,0	2,54 E
218	40,0	-1,08	77,0	-2,00	66,5	-2,40 E	23,0	-2,08 E	63,5	-0,05
223	20,7	-5,38 FE	84,3	-1,24 C	111,9	2,79 E	55,4	9,09 FE	32,4	-4,93 FE
238	42,7	-0,49	100,2	0,41	166,7	9,05 BE	30,7	0,57	68,6	0,76
256	39,4	-1,23	105,9	1,01	104,8	1,98	25,8	-1,13	66,0	0,35
258	42,3	-0,57	91,4	-0,50	83,7	-0,43	25,6	-1,16	57,5	-1,00
259	58,0	2,93 E	89,8	-0,67	81,5	-0,68	26,0	-1,04	58,2	-0,87
261	46,8	0,44	96,2	0,00	81,2	-0,72	25,0	-1,39	66,9	0,49

Laboratory	1,2,3-Trimethylbenzene	Z score	4-Methyl-2-pentanone	Z score	alpha-Pinene	Z score	Benzene	Z score	Cumene	Z score
267	43,9	-0,22			82,5	-0,56	28,8	-0,10	65,5	0,26
269	47,1	0,50	92,1	-0,43	84,4	-0,35	25,4	-1,26	59,6	-0,66
303	52,5	1,71	100,7	0,46			37,4	2,88 E		
306	126,0	18,09 BE	96,0	-0,03	68,0	-2,23 E	53,0	8,26 FE	121,0	8,96 BE
503							30,0	0,32	64,7	0,14
510			110,0	1,43			37,5	2,92 E		
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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	
No. of laboratories that submitted results	28		30		27		34		26	
Mean	44,9		96,2		87,5		29,0		63,8	
Reproducibility s.d.	5,5		10,8		12,6		4,6		6,2	
Rel. reproducibility s.d.	12,37 %		11,25 %		14,45 %		15,90 %		9,66 %	
Reference value	46,3		98,6		87,4		26,5		66,9	
Target s.d.	4,5		9,6		8,7		2,9		6,4	
Rel. target s.d.	10,00 %		10,00 %		10,00 %		10,00 %		10,00 %	
Lower limit of tolerance	35,9		77,0		70,0		23,2		51,0	
Upper limit of tolerance	53,8		115,5		105,0		34,8		76,6	
Type B outliers	1		1		1				1	
Type C outliers	1		1		1		1		1	
Type E outliers	11		4		15		22		7	
Type F outliers	3						3		2	
No. of laboratories after elimination of outliers type A-D and F (without laboratories that only gave states but no measured values)	23		28		25		30		22	

Explanation of outlier types	
A: Single outlier	Grubbs
B: Differing laboratory mean	Grubbs
C: Excessive laboratory s.d.	Cochran
D: Excluded manually	

Laboratory	1,2,3-Trimethylbenzene	Z score	4-Methyl-2-pentanone	Z score	alpha-Pinene	Z score	Benzene	Z score	Cumene	Z score

E: mean outside tolerance limits

F: |Z-Score|>3,50

Volatile Organic Compounds -VOC- with thermal desorption 2025

Sample 1

Laboratory	Ethyl acetate	Z score	n-Heptane	Z score	o-Xylene	Z score	Toluene	Z score
Unit	µg/m³		µg/m³		µg/m³		µg/m³	
30	140	2,01 E	88,5	1,15	44,5	0,57	60,5	0,99
52	118	0,06	75,5	-0,49	45,1	0,71	51,2	-0,69
55					44,5	0,57	56,0	0,18
60			86,8	0,93	44,9	0,66	58,6	0,65
68	144	2,35 E	128,1	6,14 CE	58,2	3,82 FE	80,8	4,68 FE
104	134	1,45 C	111,0	3,98 FE	43,4	0,31	55,6	0,11
105					47,2	1,22	61,9	1,25
117	126	0,77	82,5	0,39	45,0	0,69	59,0	0,72
124	110	-0,61	74,8	-0,58	38,1	-0,94	48,1	-1,26
145							50,0	-0,91
148	101	-1,33	74,1	-0,67	36,2	-1,39	48,2	-1,23
151	109	-0,67	69,8	-1,21	39,9	-0,52	51,8	-0,59
153	118	0,13					65,5	1,90
167	137	1,71	85,5	0,77	45,0	0,69	59,5	0,81
182	93	-2,05 E	76,5	-0,36	35,5	-1,57	43,5	-2,10 E
183					39,5	-0,62	44,0	-2,00 E
186	122	0,41	64,0	-1,94	37,3	-1,14	46,7	-1,51
192	119	0,18	96,6	2,16 E	47,2	1,20	59,5	0,80
199	106	-0,94	69,5	-1,25	36,0	-1,45	49,5	-1,01
206	117	0,03	75,3	-0,52	35,9	-1,47	50,5	-0,82
207	130	1,11 C	79,5	0,01	52,0	2,35 E	62,5	1,36
218	96	-1,84	95,5	2,03 E	39,0	-0,74	49,0	-1,10
223	31	-7,33 FE	43,5	-4,52 FE	50,2	1,92	60,2	0,93
238	54	-5,41 FE	104,5	3,17 E	43,2	0,27	63,3	1,50
256	158	3,50 FE	77,9	-0,18	37,3	-1,15	54,7	-0,06
258	110	-0,57	75,9	-0,44	36,9	-1,23	49,5	-1,00
259	114	-0,26	77,8	-0,21	37,8	-1,03	49,2	-1,05
261	118	0,08	75,7	-0,47	43,2	0,25	53,5	-0,28
267			78,3	-0,14	42,6	0,13	56,3	0,23
269	113	-0,36	70,4	-1,13	39,4	-0,64	51,0	-0,73
303					51,2	2,17 E	72,1	3,09 E

Laboratory	Ethyl acetate	Z score	n-Heptane	Z score	o-Xylene	Z score	Toluene	Z score
306	138	1,80	63,0	-2,06 E	81,0	9,24 BE	92,0	6,72 BE
503					42,8	0,17	55,0	0,00
510							65,0	1,81
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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	
No. of laboratories that submitted results	25		26		31		34	
Mean	117		79,4		42,1		55,0	
Reproducibility s.d.	14		10,0		4,8		7,0	
Rel. reproducibility s.d.	12,04 %		12,66 %		11,51 %		12,78 %	
Reference value	125		79,4		43,3		55,0	
Target s.d.	12		7,9		4,2		5,5	
Rel. target s.d.	10,00 %		10,00 %		10,00 %		10,00 %	
Lower limit of tolerance	94		63,5		33,7		44,0	
Upper limit of tolerance	140		95,3		50,5		66,0	
Type B outliers					1		1	
Type C outliers	2		1					
Type E outliers	11		13		8		9	
Type F outliers	3		2		1		1	
No. of laboratories after elimination of outliers type A-D and F (without laboratories that only gave states but no measured values)	20		23		29		32	

Summary of laboratory means

Sample 2

Laboratory	1,2,3-Trimethylbenzene	Z score	4-Methyl-2-pentanone	Z score	alpha-Pinene	Z score	Benzene	Z score	Cumene	Z score
Unit	µg/m³		µg/m³		µg/m³		µg/m³		µg/m³	
30	32,0	0,54	56,0	1,02	131	1,09	82,5	1,67	34,0	0,75
52	29,7	-0,21	53,0	0,44	130	0,96	66,2	-0,64	29,9	-0,55
55	30,5	0,05	54,0	0,63	115	-0,26	69,5	-0,17	34,0	0,75
60	31,4	0,33	50,4	-0,09			69,7	-0,14		
68	50,7	6,70 FE	107,8	11,21 CE	129	0,90	101,8	4,40 CE	41,6	3,17 CE
104	29,6	-0,25	54,0	0,63	146	2,40 E	79,0	1,18	30,4	-0,39
105							73,7	0,43		
117	31,0	0,21	55,5	0,92	141	1,94	72,5	0,26	32,5	0,28
124			46,9	-0,76	135	1,43	63,1	-1,08	32,4	0,24
145			50,0	-0,16			70,0	-0,10		
148	27,1	-1,09	43,1	-1,51	110	-0,67	59,0	-1,65	29,1	-0,78
151	30,2	-0,05	50,8	-0,01	134	1,32	63,1	-1,07	34,5	0,92
153	54,0	7,79 FE	59,5	1,71	150	2,70 E	75,0	0,61		
167	33,0	0,87	56,5	1,12	120	0,16	80,5	1,39	34,0	0,75
182	28,0	-0,78	41,5	-1,83	104	-1,24	60,5	-1,44	32,0	0,12
183							79,0	1,18 C		
186	24,9	-1,80	40,5	-2,03 E	82	-3,05 E	55,5	-2,15 E	28,5	-0,99
192	33,2	0,93	55,9	0,99	119	0,05	73,5	0,41		
199	26,5	-1,27	45,5	-1,04	96	-1,91	59,0	-1,65	25,0	-2,10 E
206	25,6	-1,57	47,5	-0,64	103	-1,29	69,1	-0,23	29,0	-0,83
207	39,5	3,01 E	66,0	2,99 E	128	0,84	88,0	2,45 E	41,0	2,96 E
218	26,0	-1,43	37,5	-2,62 E	87	-2,63 E	54,0	-2,36 E	29,0	-0,83
223	24,3	-1,99	65,5	2,90 CE	189	6,03 FE	87,5	2,37 E	25,9	-1,81
238	26,1	-1,39	46,2	-0,91	212	7,92 FE	74,0	0,47	31,3	-0,09
256	27,3	-1,01	56,4	1,10	145	2,24 E	68,9	-0,25	38,2	2,07 E
258	27,9	-0,81	47,4	-0,67	116	-0,16	63,1	-1,07	27,1	-1,43
259	43,0	4,17 E	47,8	-0,60	116	-0,22	65,0	-0,80	31,5	-0,04
261	32,8	0,80	52,5	0,32	107	-0,94	66,2	-0,64	33,5	0,58

Laboratory	1,2,3-Trimethylbenzene	Z score	4-Methyl-2-pentanone	Z score	alpha-Pinene	Z score	Benzene	Z score	Cumene	Z score
267	30,0	-0,10			104	-1,18	71,1	0,06	32,5	0,28
269	32,8	0,80	49,5	-0,26	115	-0,25	63,9	-0,95	29,3	-0,75
303	36,5	2,02 E	57,1	1,24			89,0	2,59 E		
306	80,5	16,52 CE	47,0	-0,75 C	92	-2,21 E	119,5	6,91 CE	63,5	10,08 CE
503							76,5	0,82	34,4	0,89
510			70,0	3,78 CE			82,5	1,67		
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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	
No. of laboratories that submitted results	28		30		27		34		26	
Mean	30,4		50,8		118		70,7		31,6	
Reproducibility s.d.	4,6		6,5		19		9,5		3,7	
Rel. reproducibility s.d.	15,08 %		12,76 %		16,00 %		13,39 %		11,69 %	
Reference value	32,8		52,2		123		69,5		33,7	
Target s.d.	3,0		5,1		12		7,1		3,2	
Rel. target s.d.	10,00 %		10,00 %		10,00 %		10,00 %		10,00 %	
Lower limit of tolerance	24,3		40,6		94		56,5		25,3	
Upper limit of tolerance	36,4		61,0		142		84,8		38,0	
Type B outliers										
Type C outliers	1		4				3		2	
Type E outliers	13		10		18		17		9	
Type F outliers	2				2					
No. of laboratories after elimination of outliers type A-D and F (without laboratories that only gave states but no measured values)	25		26		25		31		24	

Explanation of outlier types	
A: Single outlier	Grubbs
B: Differing laboratory mean	Grubbs
C: Excessive laboratory s.d.	Cochran
D: Excluded manually	

Laboratory	1,2,3-Trimethylbenzene	Z score	4-Methyl-2-pentanone	Z score	alpha-Pinene	Z score	Benzene	Z score	Cumene	Z score

E: mean outside tolerance limits

F: |Z-Score|>3,50

Laboratory	Ethyl acetate	Z score	n-Heptane	Z score	o-Xylene	Z score	Toluene	Z score
Unit	µg/m³		µg/m³		µg/m³		µg/m³	
30	69,0	1,61	177	1,47	66,5	0,69	95,5	1,27
52	58,7	-0,14	152	-0,17	64,1	0,30	81,1	-0,43
55					66,5	0,69	85,5	0,09
60			165	0,66	65,3	0,50	89,0	0,50
68	76,5	2,86 E	196	2,68 CE	87,1	4,00 FE	166,2	9,61 CE
104	75,8	2,75 E	178	1,53	60,6	-0,26	80,3	-0,53
105					69,1	1,11	90,7	0,70
117	62,5	0,51	168	0,88	70,5	1,33	93,0	0,97
124	54,8	-0,79	149	-0,36	57,2	-0,80	76,2	-1,02
145							77,5	-0,86
148	50,2	-1,55	138	-1,06	55,2	-1,12	76,8	-0,94
151	54,0	-0,91	141	-0,85	61,0	-0,20	82,6	-0,26
153	64,5	0,85					110,0	2,98 E
167	69,0	1,61	174	1,24	69,5	1,17	94,5	1,15
182	48,5	-1,84	154	-0,02	54,0	-1,32	69,0	-1,86
183					55,0	-1,16	76,0	-1,03 C
186	57,1	-0,40	121	-2,17 E	50,1	-1,95	74,2	-1,25 C
192	58,7	-0,12	192	2,45 E	71,4	1,47	94,4	1,14
199	53,5	-1,00	128	-1,71	55,5	-1,08	76,0	-1,03
206	66,0	1,11	145	-0,62	55,0	-1,15	79,4	-0,63
207	69,0	1,61	148	-0,41	76,5	2,30 E	98,5	1,62
218	45,5	-2,35 E	172	1,18	55,5	-1,08	70,5	-1,68
223	49,2	-1,73	37	-7,60 BE	99,6	6,01 CE	106,8	2,60 CE
238	25,4	-5,73 FE	215	3,93 FE	56,4	-0,93	83,7	-0,12
256	81,3	3,68 FE	158	0,26	55,9	-1,02	84,9	0,02
258	54,8	-0,78	151	-0,19	54,8	-1,19	77,0	-0,92
259	57,5	-0,33	154	-0,02	60,0	-0,35	82,2	-0,30
261	57,7	-0,29	158	0,24	65,1	0,46	83,6	-0,14
267			155	0,05	65,8	0,58	89,5	0,56
269	53,9	-0,93	145	-0,64	59,5	-0,43	80,0	-0,56
303					77,3	2,44 E	116,0	3,68 FE

Laboratory	Ethyl acetate	Z score	n-Heptane	Z score	o-Xylene	Z score	Toluene	Z score
306	61,0	0,26	128	-1,74	116,0	8,65 CE	143,0	6,87 CE
503					68,3	0,98	87,3	0,30
510							115,0	3,57 CE
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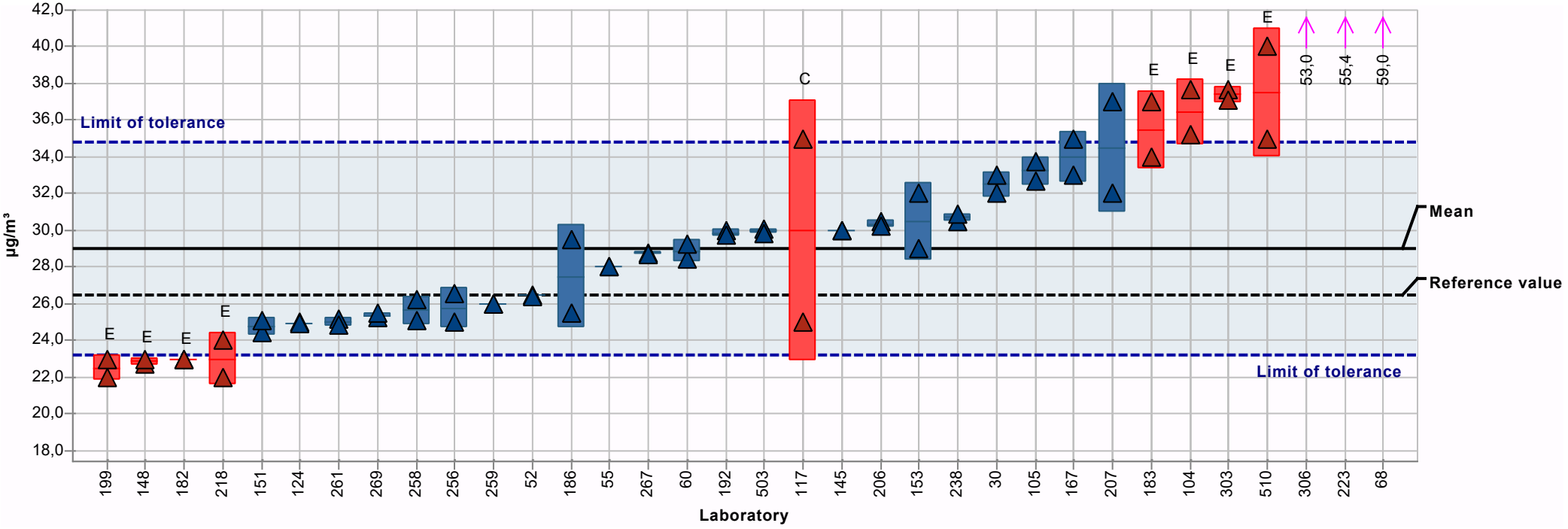
Method	ISO 5725-2		ISO 5725-2		ISO 5725-2		ISO 5725-2	
Assessment	|Z|<=2,00		|Z|<=2,00		|Z|<=2,00		|Z|<=2,00	
No. of laboratories that submitted results	25		26		31		34	
Mean	59,5		154		62,2		84,8	
Reproducibility s.d.	8,5		18		7,3		9,1	
Rel. reproducibility s.d.	14,33 %		11,40 %		11,79 %		10,79 %	
Reference value	60,8		160		65,2		87,2	
Target s.d.	5,9		15		6,2		8,5	
Rel. target s.d.	10,00 %		10,00 %		10,00 %		10,00 %	
Lower limit of tolerance	47,6		123		49,8		67,8	
Upper limit of tolerance	71,3		185		74,6		101,7	
Type B outliers			1					
Type C outliers			1		2		6	
Type E outliers	11		10		11		13	
Type F outliers	2		1		1		1	
No. of laboratories after elimination of outliers type A-D and F (without laboratories that only gave states but no measured values)	23		23		28		27	

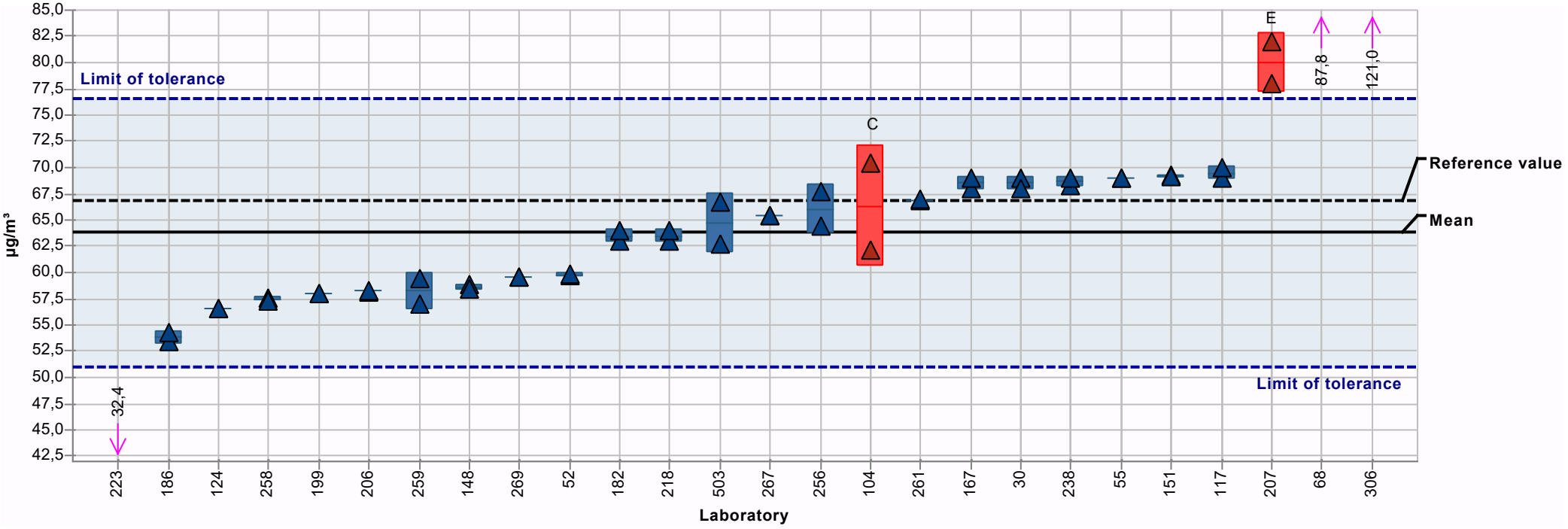
Summary results

Sample:	**1**	**Mean:**	**29,0 µg/m³**
Measurand:	**Benzene**	**Reproducibility s.d.:**	**4,6 µg/m³**
Method:	**ISO 5725-2**	**Rel. reproducibility s.d.:**	**15,90%**
Rel. target s.d.:	**10,00%**	**Reference value:**	**26,5 µg/m³**
Number of laboratories in calculation + outliers:	**34**	**Range of tolerance:**	**23,2 - 34,8 µg/m³ (|Z-Score| <= 2,00)**



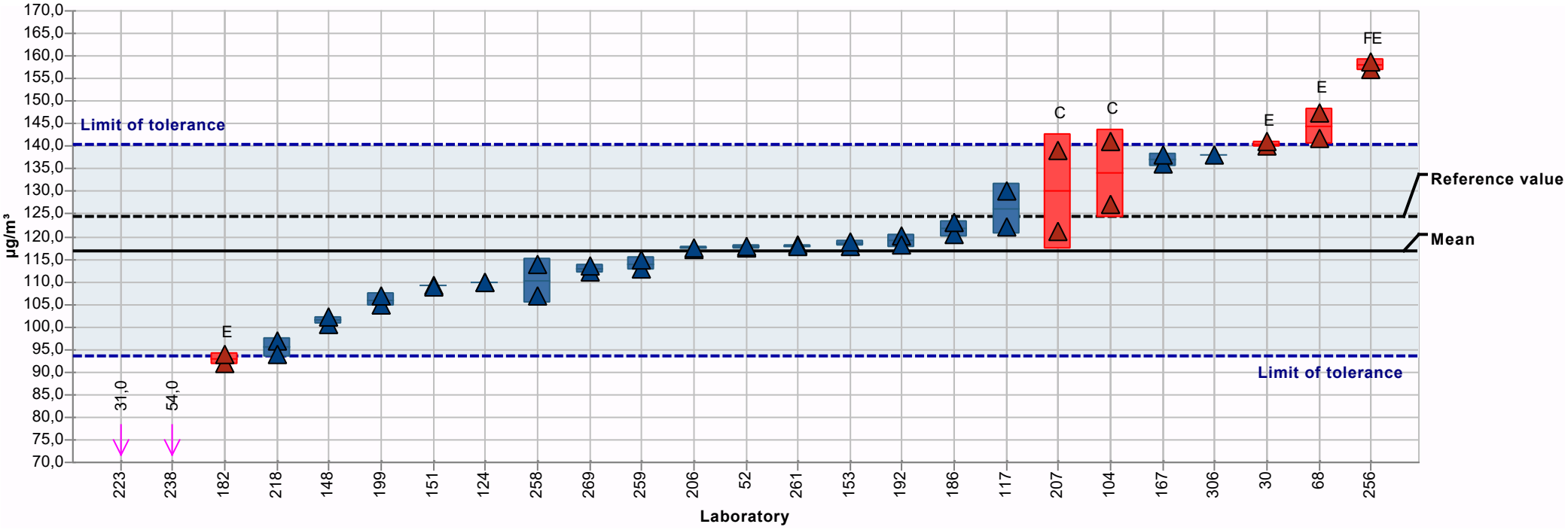
Summary results

Sample:	**1**	**Mean:**	**63,8 µg/m³**
Measurand:	**Cumene**	**Reproducibility s.d.:**	**6,2 µg/m³**
Method:	**ISO 5725-2**	**Rel. reproducibility s.d.:**	**9,66%**
Rel. target s.d.:	**10,00%**	**Reference value:**	**66,9 µg/m³**
Number of laboratories in calculation + outliers:	**26**	**Range of tolerance:**	**51,0 - 76,6 µg/m³ (|Z-Score| <= 2,00)**



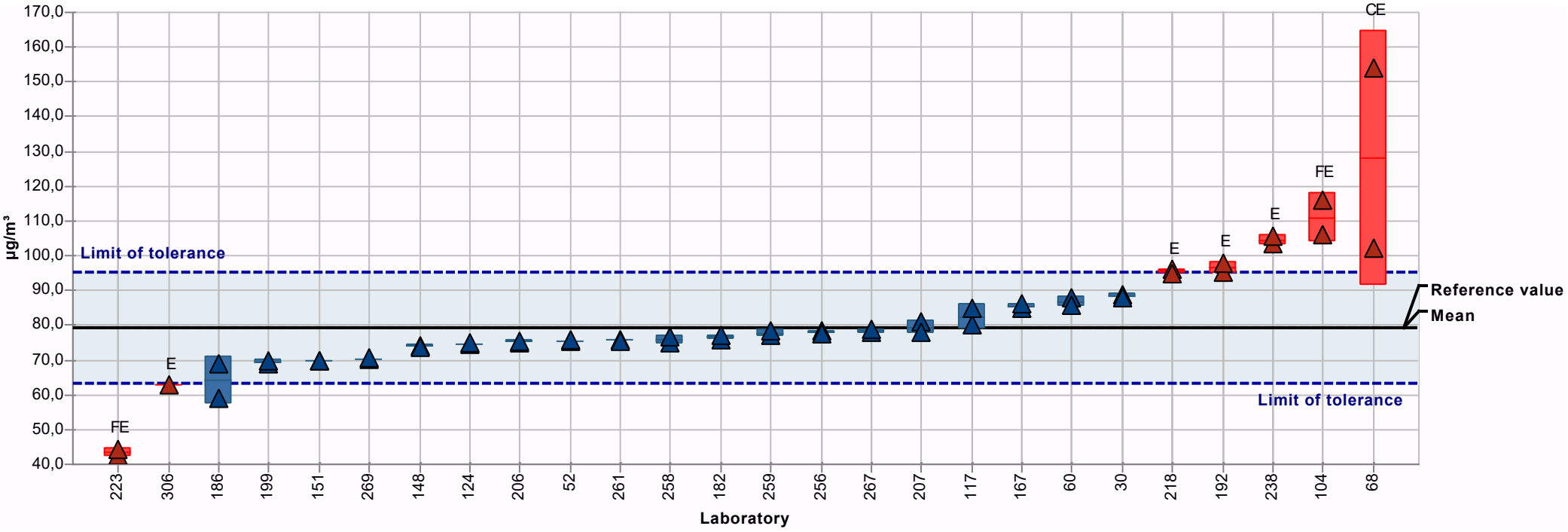
Summary results

Sample:	**1**	**Mean:**	**117 µg/m³**
Measurand:	**Ethyl acetate**	**Reproducibility s.d.:**	**14 µg/m³**
Method:	**ISO 5725-2**	**Rel. reproducibility s.d.:**	**12,04%**
Rel. target s.d.:	**10,00%**	**Reference value:**	**124,6 µg/m³**
Number of laboratories in calculation + outliers:	**25**	**Range of tolerance:**	**94 - 140 µg/m³ (|Z-Score| <= 2,00)**



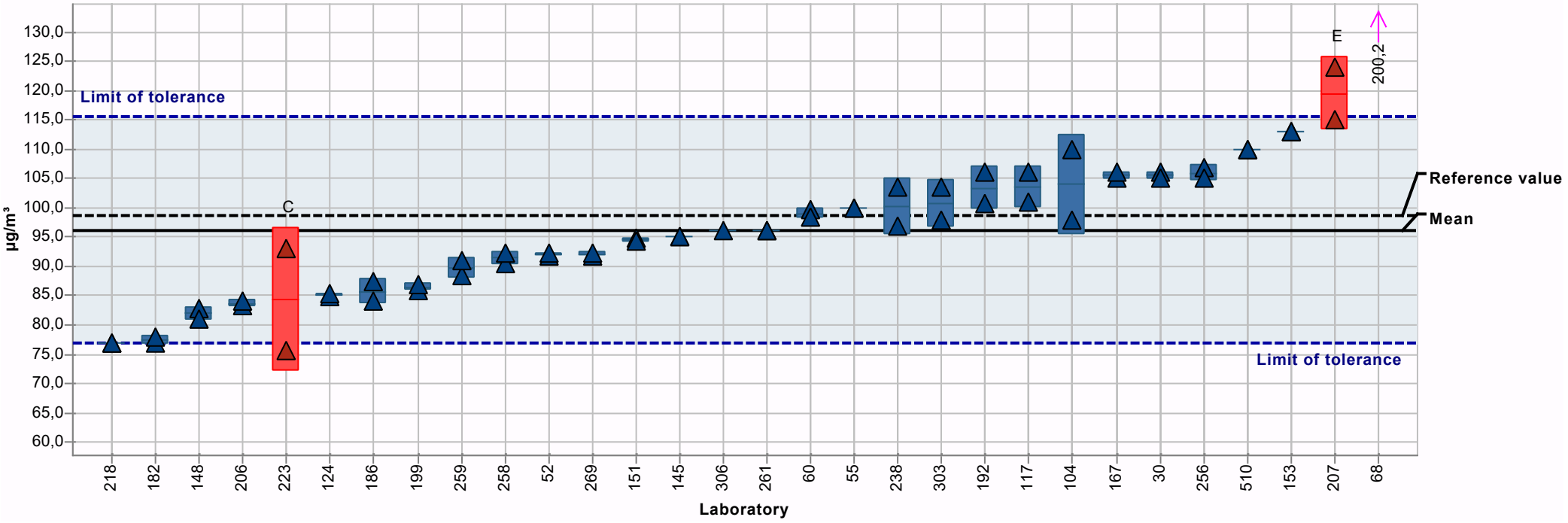
Summary results

Sample:	**1**	**Mean:**	**79,4 µg/m³**
Measurand:	**n-Heptane**	**Reproducibility s.d.:**	**10,0 µg/m³**
Method:	**ISO 5725-2**	**Rel. reproducibility s.d.:**	**12,66%**
Rel. target s.d.:	**10,00%**	**Reference value:**	**79,4 µg/m³**
Number of laboratories in calculation + outliers:	**26**	**Range of tolerance:**	**63,5 - 95,3 µg/m³ (|Z-Score| <= 2,00)**



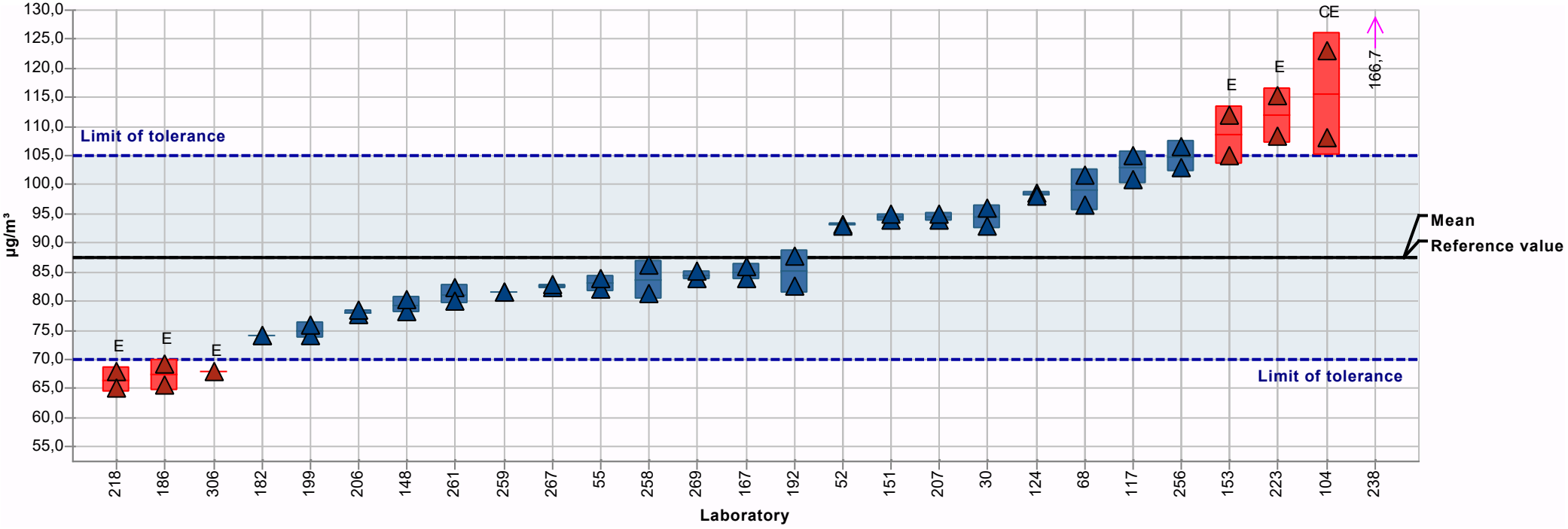
Summary results

Sample:	**1**	**Mean:**	**96,2 µg/m³**
Measurand:	**4-Methyl-2-pentanone**	**Reproducibility s.d.:**	**10,8 µg/m³**
Method:	**ISO 5725-2**	**Rel. reproducibility s.d.:**	**11,25%**
Rel. target s.d.:	**10,00%**	**Reference value:**	**98,6 µg/m³**
Number of laboratories in calculation + outliers:	**30**	**Range of tolerance:**	**77,0 - 115,5 µg/m³ (|Z-Score| <= 2,00)**



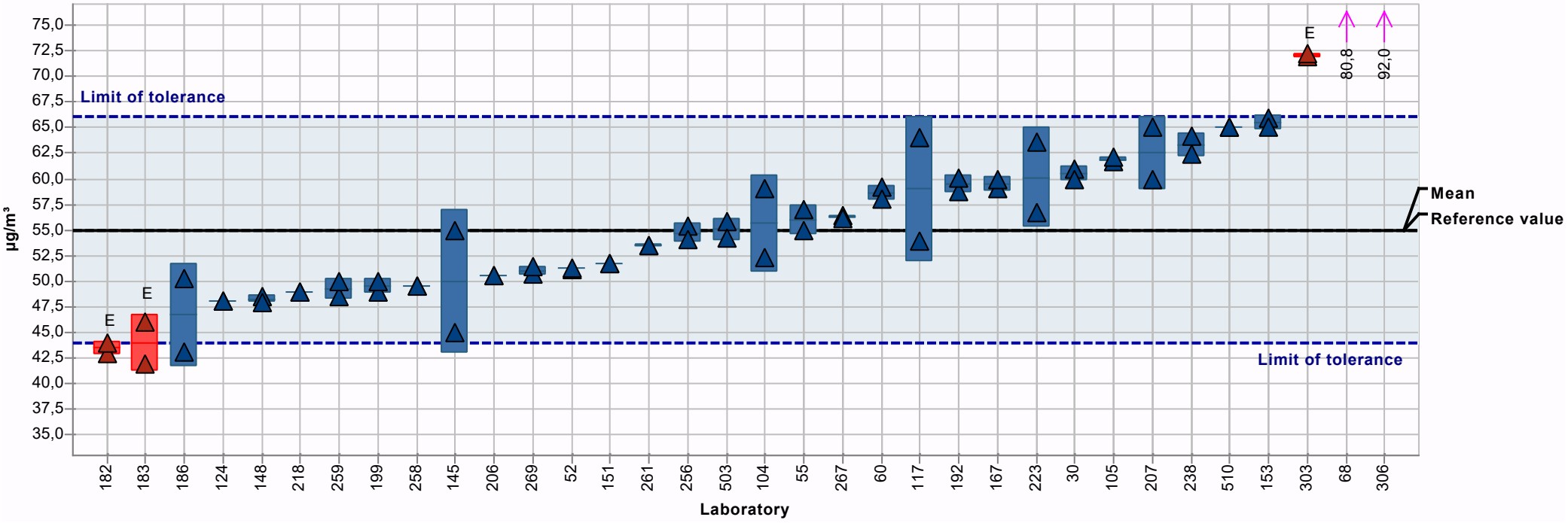
Summary results

Sample:	**1**	**Mean:**	**87,5 µg/m³**
Measurand:	**alpha-Pinene**	**Reproducibility s.d.:**	**12,6 µg/m³**
Method:	**ISO 5725-2**	**Rel. reproducibility s.d.:**	**14,45%**
Rel. target s.d.:	**10,00%**	**Reference value:**	**87,4 µg/m³**
Number of laboratories in calculation + outliers:	**27**	**Range of tolerance:**	**70,0 - 105,0 µg/m³ (|Z-Score| <= 2,00)**



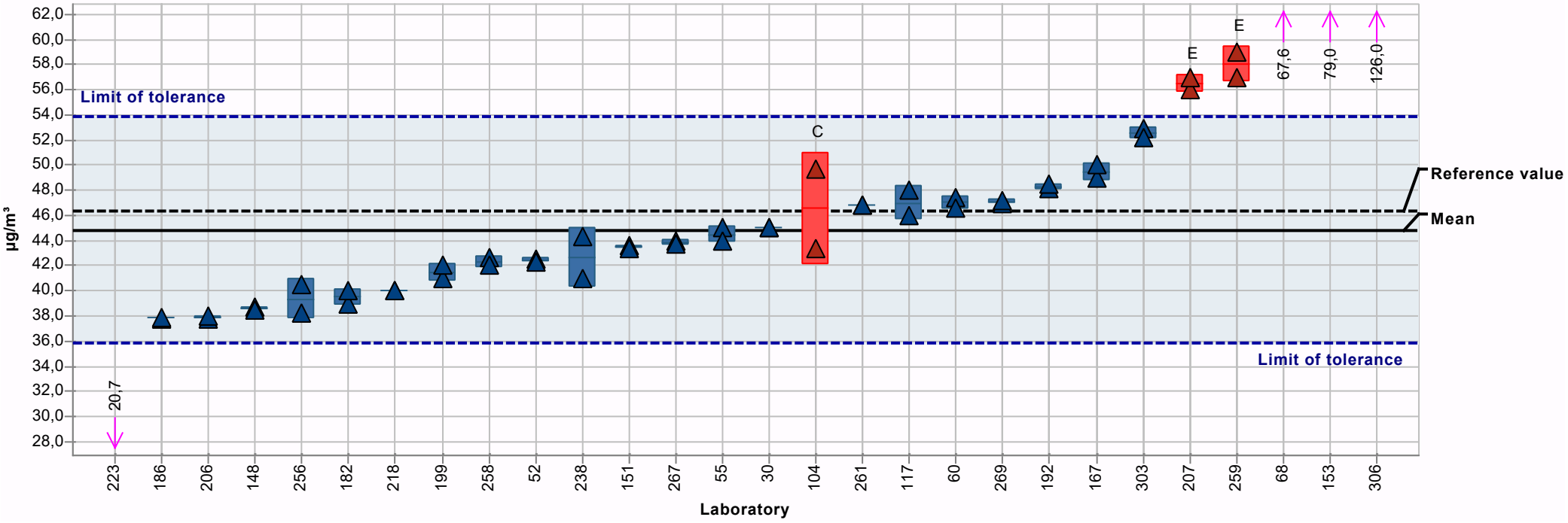
Summary results

Sample:	**1**	**Mean:**	**55,0 µg/m³**
Measurand:	**Toluene**	**Reproducibility s.d.:**	**7,0 µg/m³**
Method:	**ISO 5725-2**	**Rel. reproducibility s.d.:**	**12,78%**
Rel. target s.d.:	**10,00%**	**Reference value:**	**55,0 µg/m³**
Number of laboratories in calculation + outliers:	**34**	**Range of tolerance:**	**44,0 - 66,0 µg/m³ (|Z-Score| <= 2,00)**



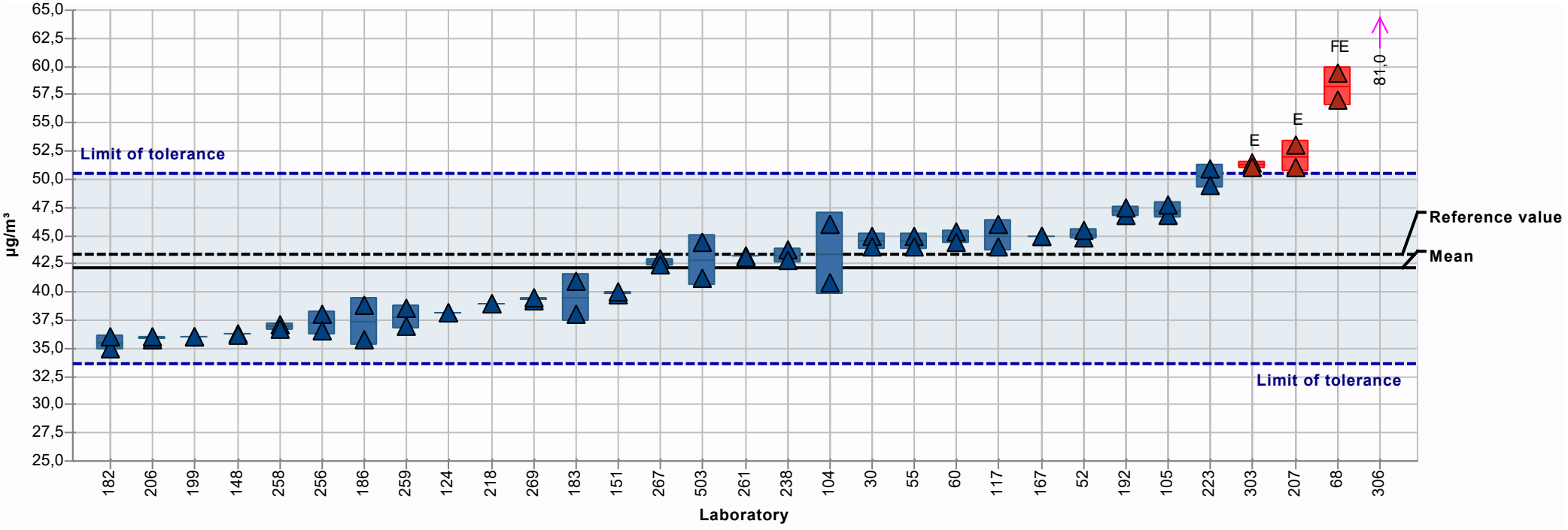
Summary results

Sample:	**1**	**Mean:**	**44,9 µg/m³**
Measurand:	**1,2,3-Trimethylbenzene**	**Reproducibility s.d.:**	**5,5 µg/m³**
Method:	**ISO 5725-2**	**Rel. reproducibility s.d.:**	**12,37%**
Rel. target s.d.:	**10,00%**	**Reference value:**	**46,3 µg/m³**
Number of laboratories in calculation + outliers:	**28**	**Range of tolerance:**	**35,9 - 53,8 µg/m³ (|Z-Score| <= 2,00)**



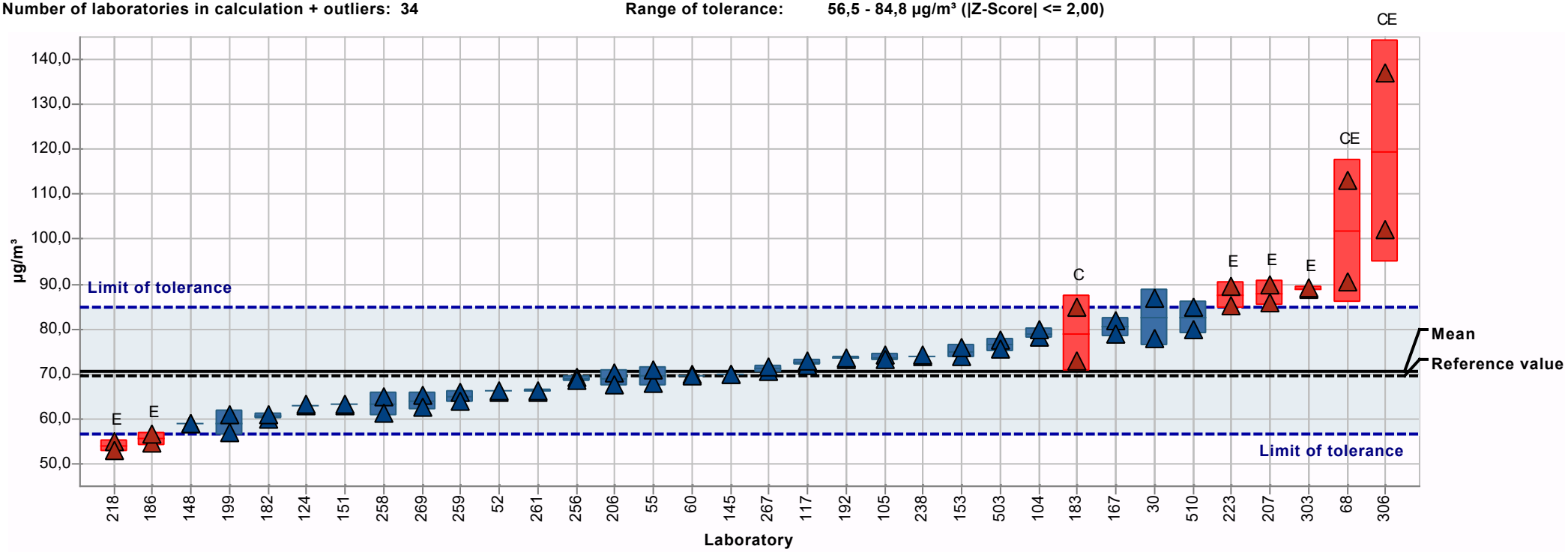
Summary results

Sample:	**1**	**Mean:**	**42,1 µg/m³**
Measurand:	**o-Xylene**	**Reproducibility s.d.:**	**4,8 µg/m³**
Method:	**ISO 5725-2**	**Rel. reproducibility s.d.:**	**11,51%**
Rel. target s.d.:	**10,00%**	**Reference value:**	**43,3 µg/m³**
Number of laboratories in calculation + outliers:	**31**	**Range of tolerance:**	**33,7 - 50,5 µg/m³ (|Z-Score| <= 2,00)**



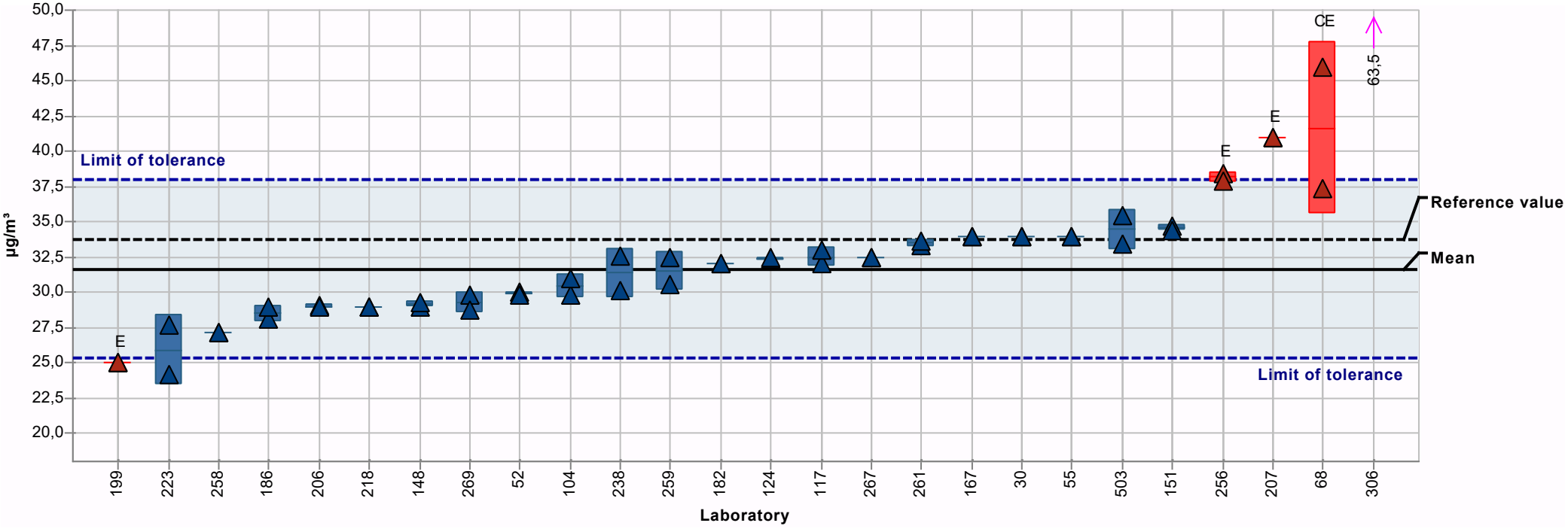
Summary results

Sample:	**2**	**Mean:**	**70,7 µg/m³**
Measurand:	**Benzene**	**Reproducibility s.d.:**	**9,5 µg/m³**
Method:	**ISO 5725-2**	**Rel. reproducibility s.d.:**	**13,39%**
Rel. target s.d.:	**10,00%**	**Reference value:**	**69,5 µg/m³**
Number of laboratories in calculation + outliers:	**34**	**Range of tolerance:**	**56,5 - 84,8 µg/m³ (|Z-Score| <= 2,00)**



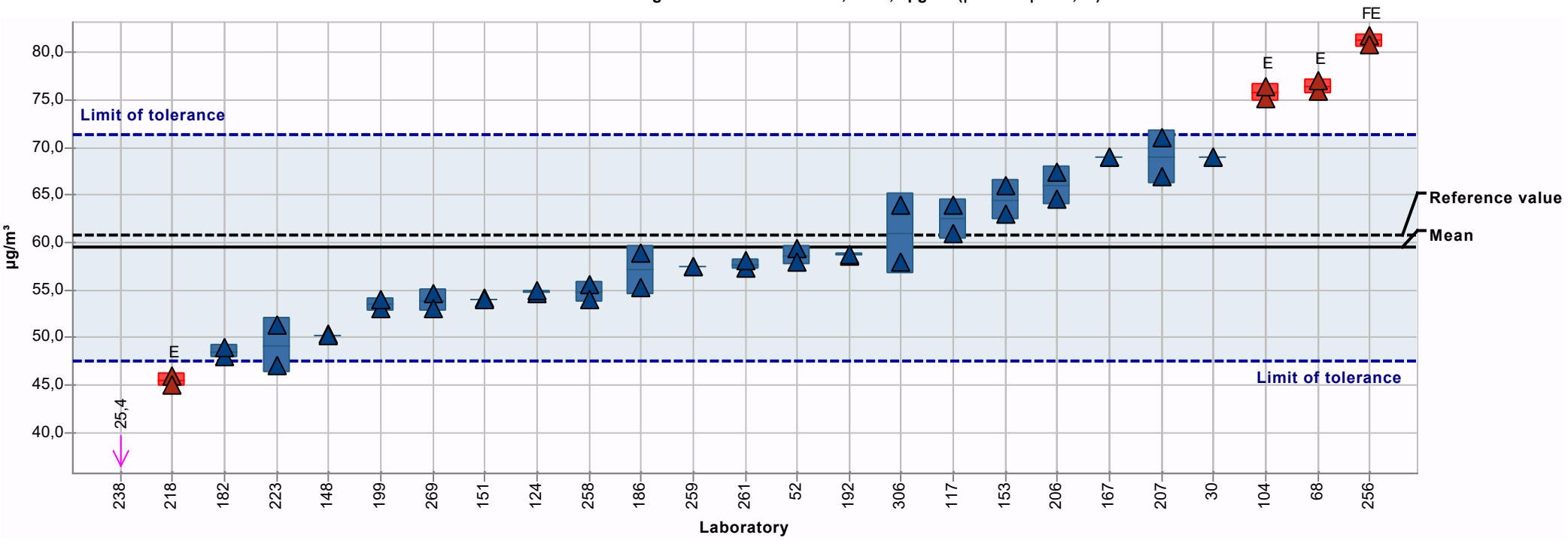
Summary results

Sample:	**2**	**Mean:**	**31,6 µg/m³**
Measurand:	**Cumene**	**Reproducibility s.d.:**	**3,7 µg/m³**
Method:	**ISO 5725-2**	**Rel. reproducibility s.d.:**	**11,69%**
Rel. target s.d.:	**10,00%**	**Reference value:**	**33,7 µg/m³**
Number of laboratories in calculation + outliers:	**26**	**Range of tolerance:**	**25,3 - 38,0 µg/m³ (|Z-Score| <= 2,00)**



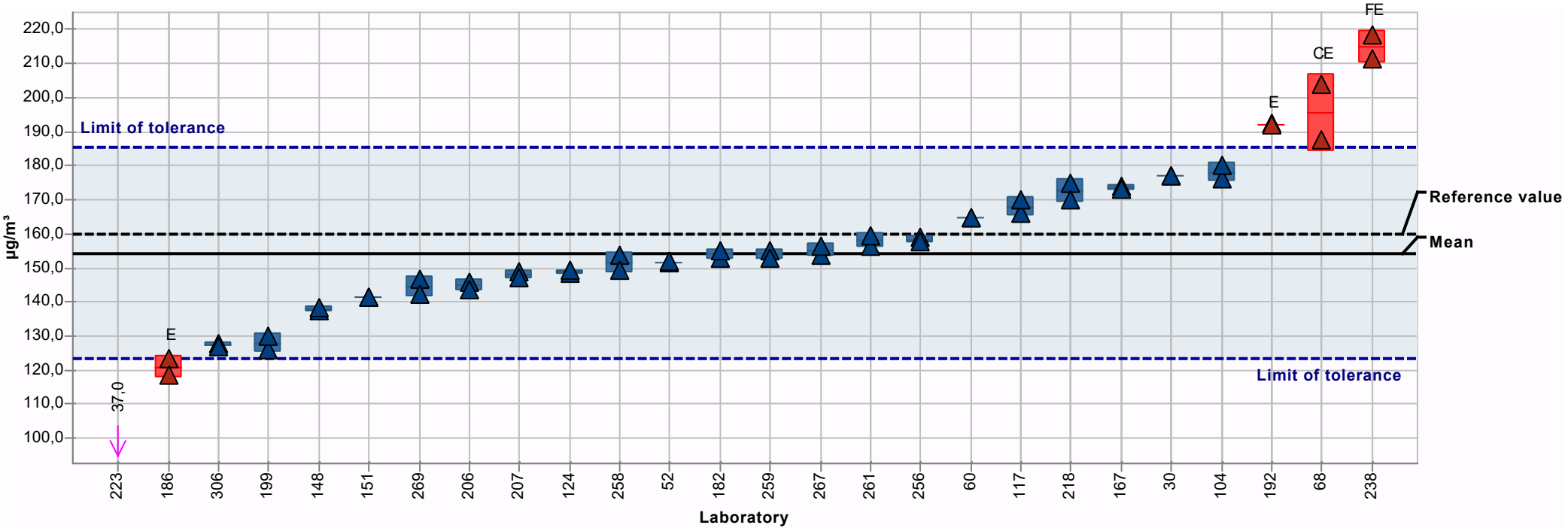
Summary results

Sample:	**2**	**Mean:**	**59,5 µg/m³**
Measurand:	**Ethyl acetate**	**Reproducibility s.d.:**	**8,5 µg/m³**
Method:	**ISO 5725-2**	**Rel. reproducibility s.d.:**	**14,33%**
Rel. target s.d.:	**10,00%**	**Reference value:**	**60,8 µg/m³**
Number of laboratories in calculation + outliers	**25**	**Range of tolerance:**	**47,6 - 71,3 µg/m³ (|Z-Score| <= 2,00)**



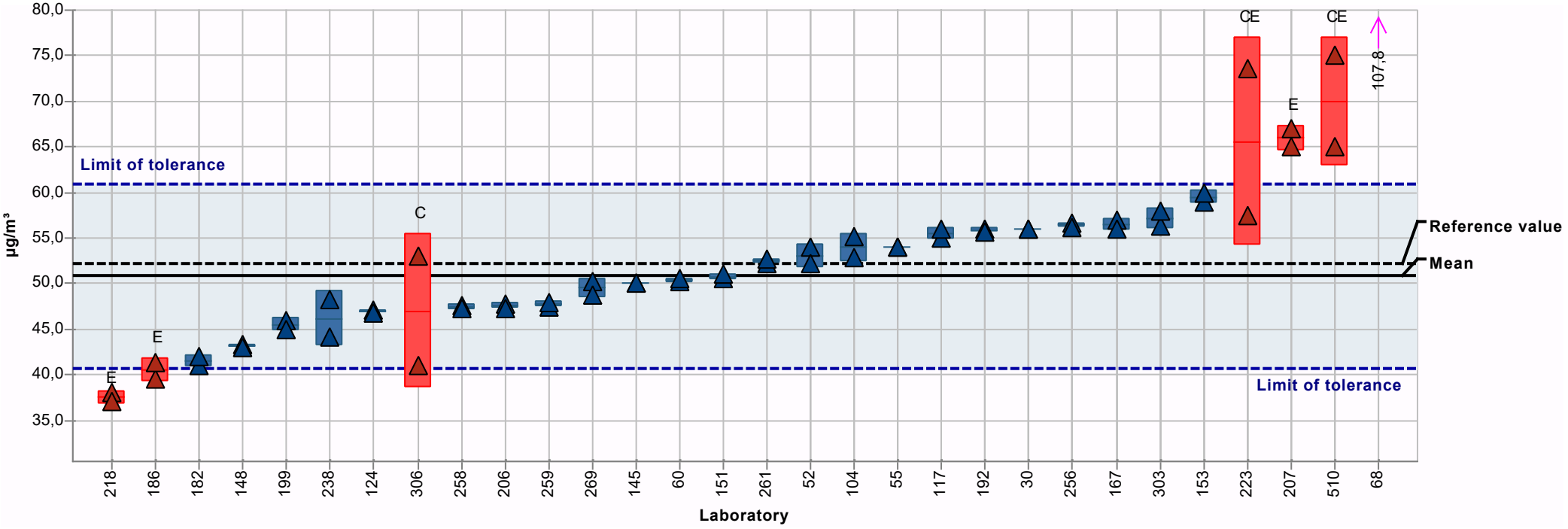
Summary results

Sample:	**2**	**Mean:**	**154 µg/m³**
Measurand:	**n-Heptane**	**Reproducibility s.d.:**	**18 µg/m³**
Method:	**ISO 5725-2**	**Rel. reproducibility s.d.:**	**11,40%**
Rel. target s.d.:	**10,00%**	**Reference value:**	**160 µg/m³**
Number of laboratories in calculation + outliers:	**26**	**Range of tolerance:**	**123 - 185 µg/m³ (|Z-Score| <= 2,00)**



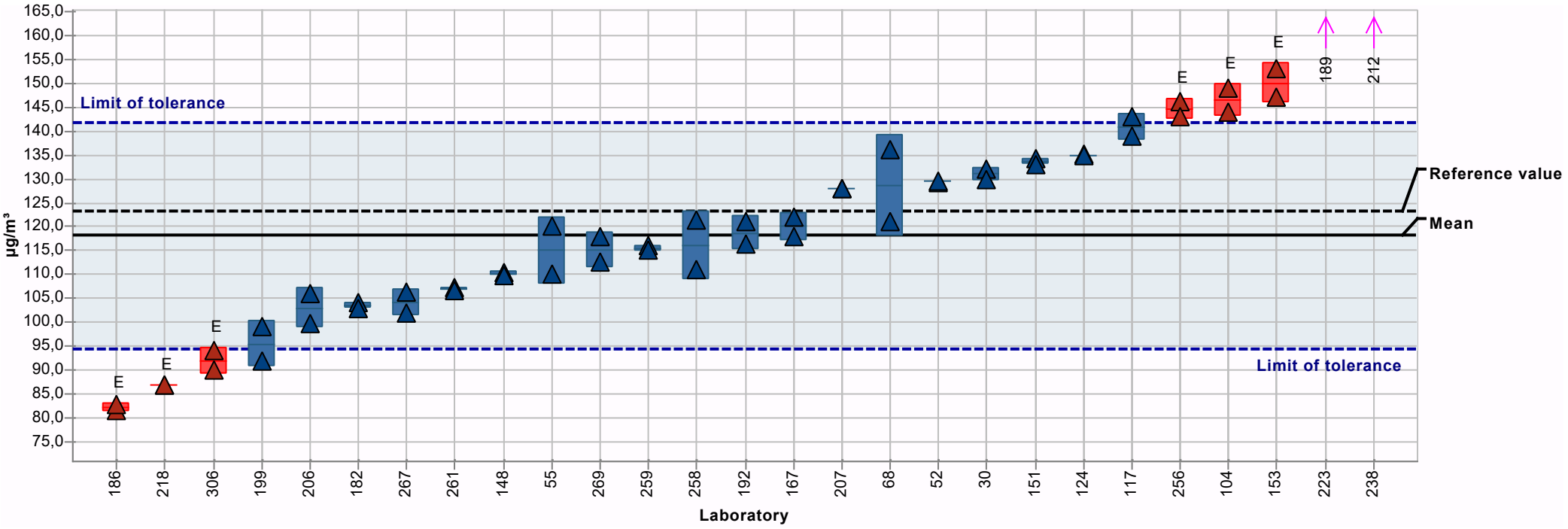
Summary results

Sample:	**2**	**Mean:**	**50,8 µg/m³**
Measurand:	**4-Methyl-2-pentanone**	**Reproducibility s.d.:**	**6,5 µg/m³**
Method:	**ISO 5725-2**	**Rel. reproducibility s.d.:**	**12,76%**
Rel. target s.d.:	**10,00%**	**Reference value:**	**52,2 µg/m³**
Number of laboratories in calculation + outliers:	**30**	**Range of tolerance:**	**40,6 - 61,0 µg/m³ (|Z-Score| <= 2,00)**



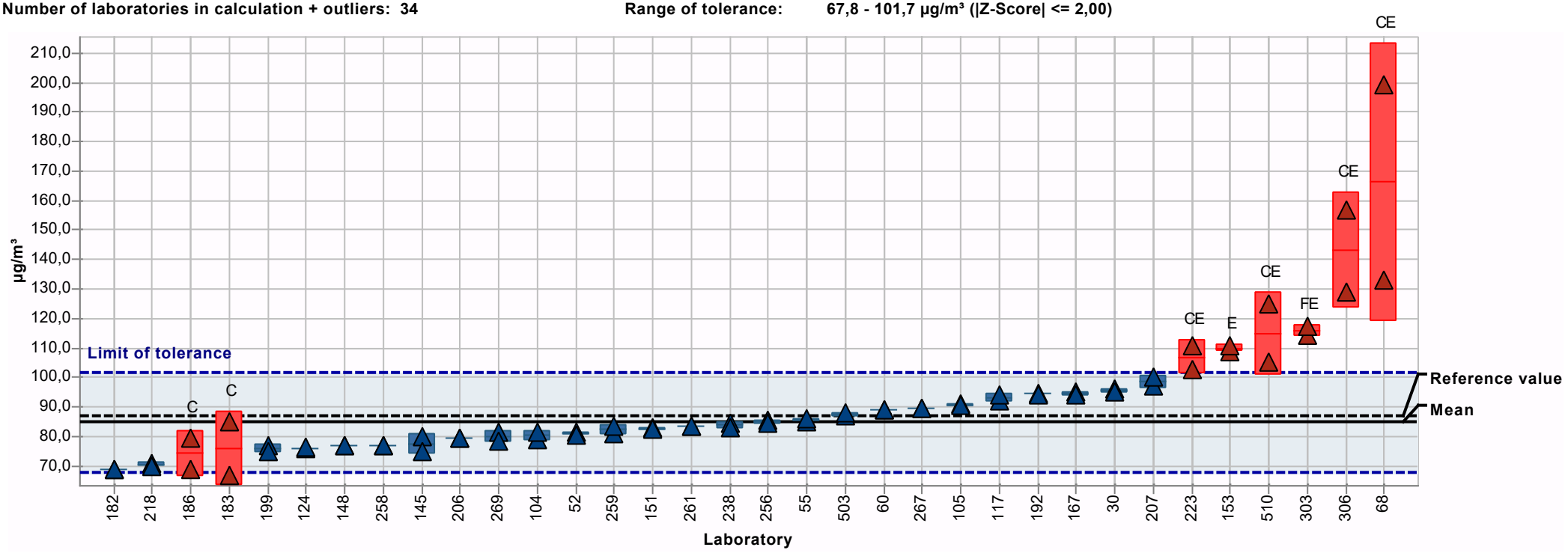
Summary results

Sample:	**2**	**Mean:**	**118 µg/m³**
Measurand:	**alpha-Pinene**	**Reproducibility s.d.:**	**19 µg/m³**
Method:	**ISO 5725-2**	**Rel. reproducibility s.d.:**	**16,00%**
Rel. target s.d.:	**10,00%**	**Reference value:**	**123 µg/m³**
Number of laboratories in calculation + outliers:	**27**	**Range of tolerance:**	**94 - 142 µg/m³ (|Z-Score| <= 2,00)**



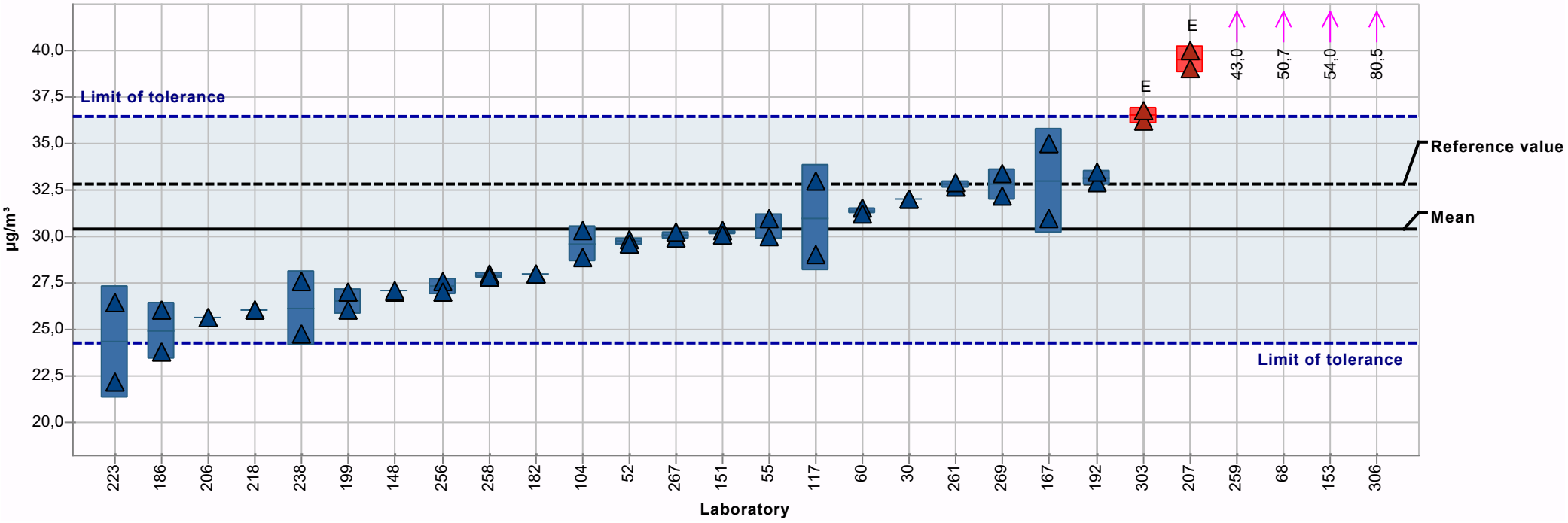
Summary results

Sample:	**2**	**Mean:**	**84,8 µg/m³**
Measurand:	**Toluene**	**Reproducibility s.d.:**	**9,1 µg/m³**
Method:	**ISO 5725-2**	**Rel. reproducibility s.d.:**	**10,79%**
Rel. target s.d.:	**10,00%**	**Reference value:**	**87,2 µg/m³**
Number of laboratories in calculation + outliers:	**34**	**Range of tolerance:**	**67,8 - 101,7 µg/m³ (|Z-Score| <= 2,00)**



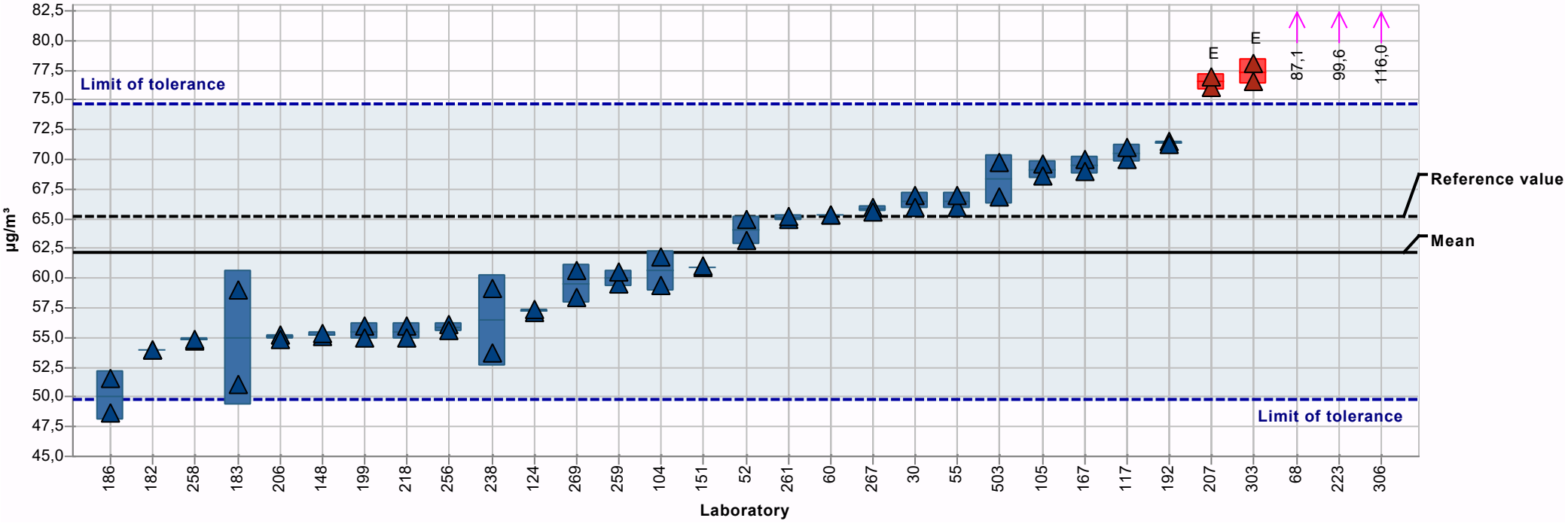
Summary results

Sample:	**2**	**Mean:**	**30,4 µg/m³**
Measurand:	**1,2,3-Trimethylbenzene**	**Reproducibility s.d.:**	**4,6 µg/m³**
Method:	**ISO 5725-2**	**Rel. reproducibility s.d.:**	**15,08%**
Rel. target s.d.:	**10,00%**	**Reference value:**	**32,8 µg/m³**
Number of laboratories in calculation + outliers:	**28**	**Range of tolerance:**	**24,3 - 36,4 µg/m³ (|Z-Score| <= 2,00)**



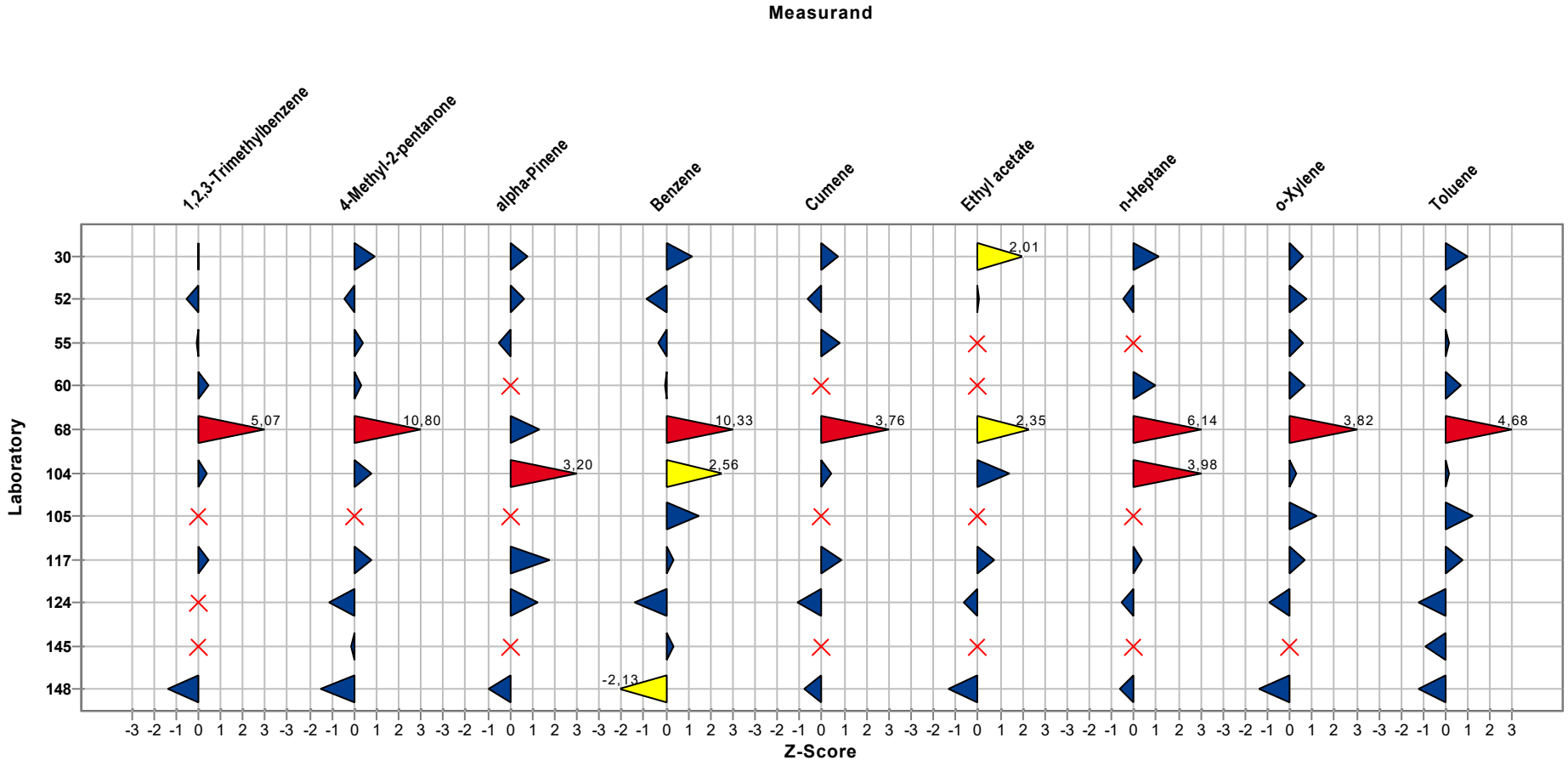
Summary results

Sample:	**2**	**Mean:**	**62,2 µg/m³**
Measurand:	**o-Xylene**	**Reproducibility s.d.:**	**7,3 µg/m³**
Method:	**ISO 5725-2**	**Rel. reproducibility s.d.:**	**11,79%**
Rel. target s.d.:	**10,00%**	**Reference value:**	**65,2 µg/m³**
Number of laboratories in calculation + outliers:	**31**	**Range of tolerance:**	**49,8 - 74,6 µg/m³ (|Z-Score| <= 2,00)**



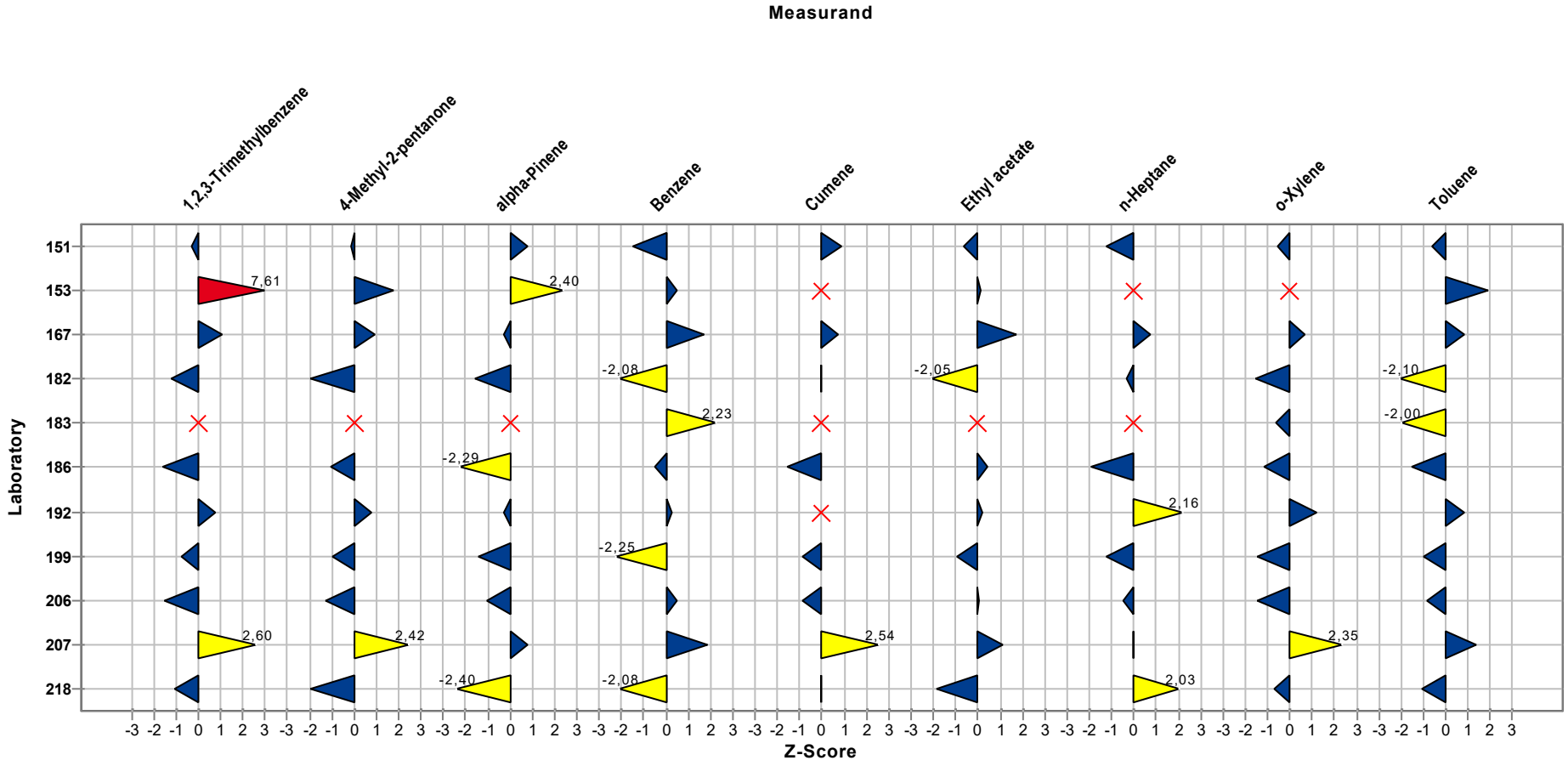
Sample chart of *Z-Scores*

Sample: 1



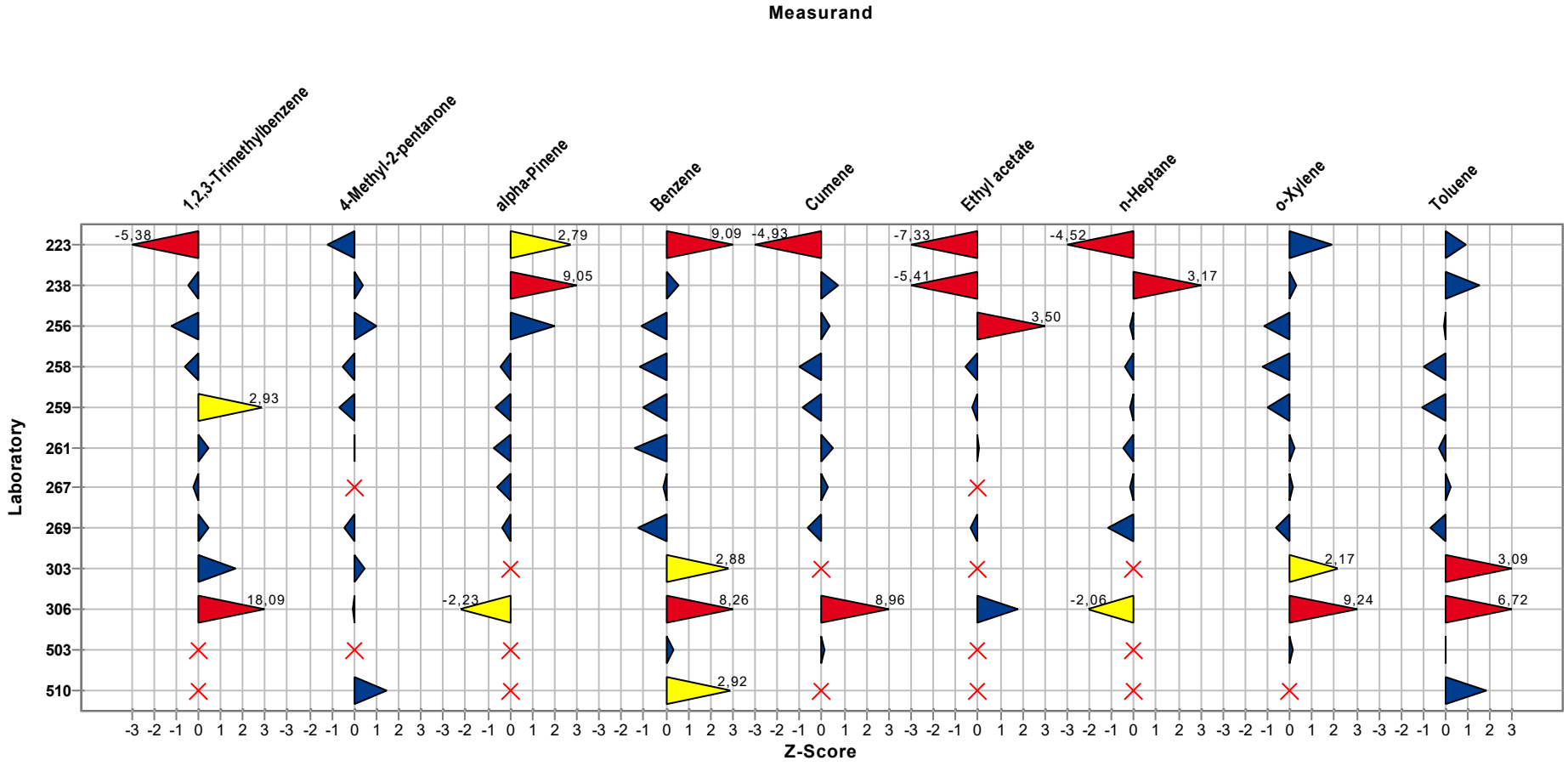
Sample chart of *Z-Scores*

Sample: 1



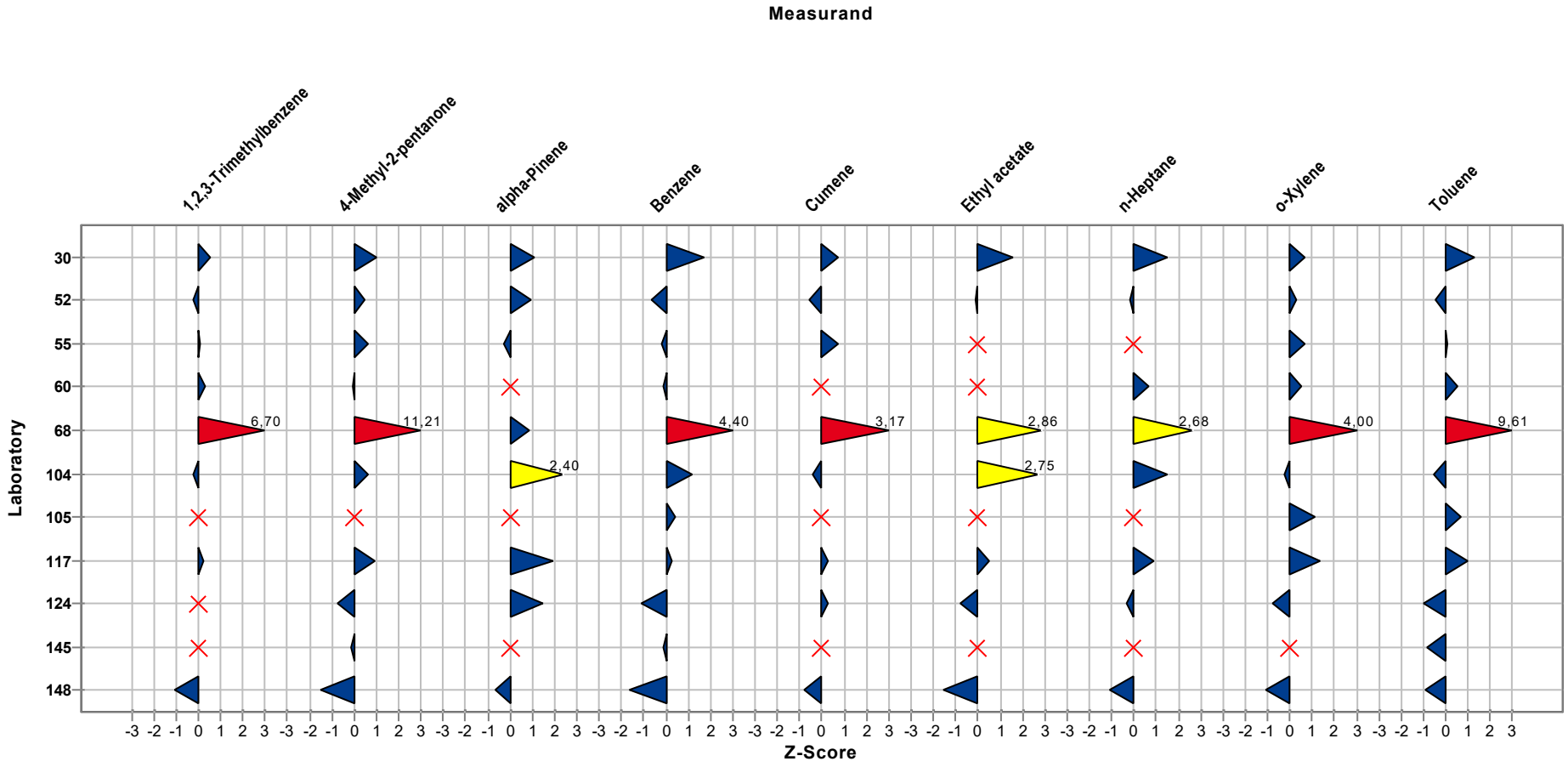
Sample chart of *Z-Scores*

Sample: 1



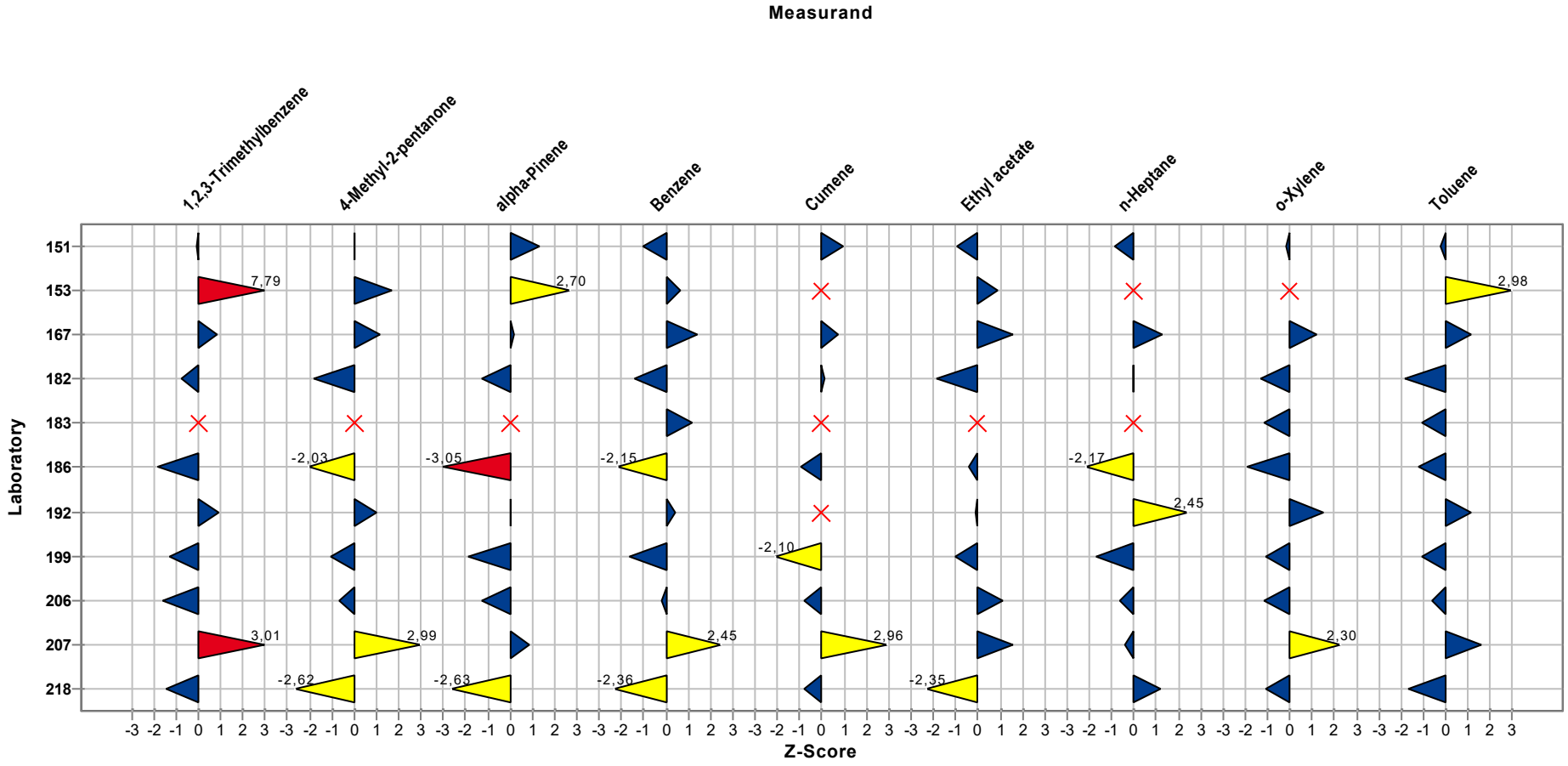
Sample chart of *Z-Scores*

Sample: 2



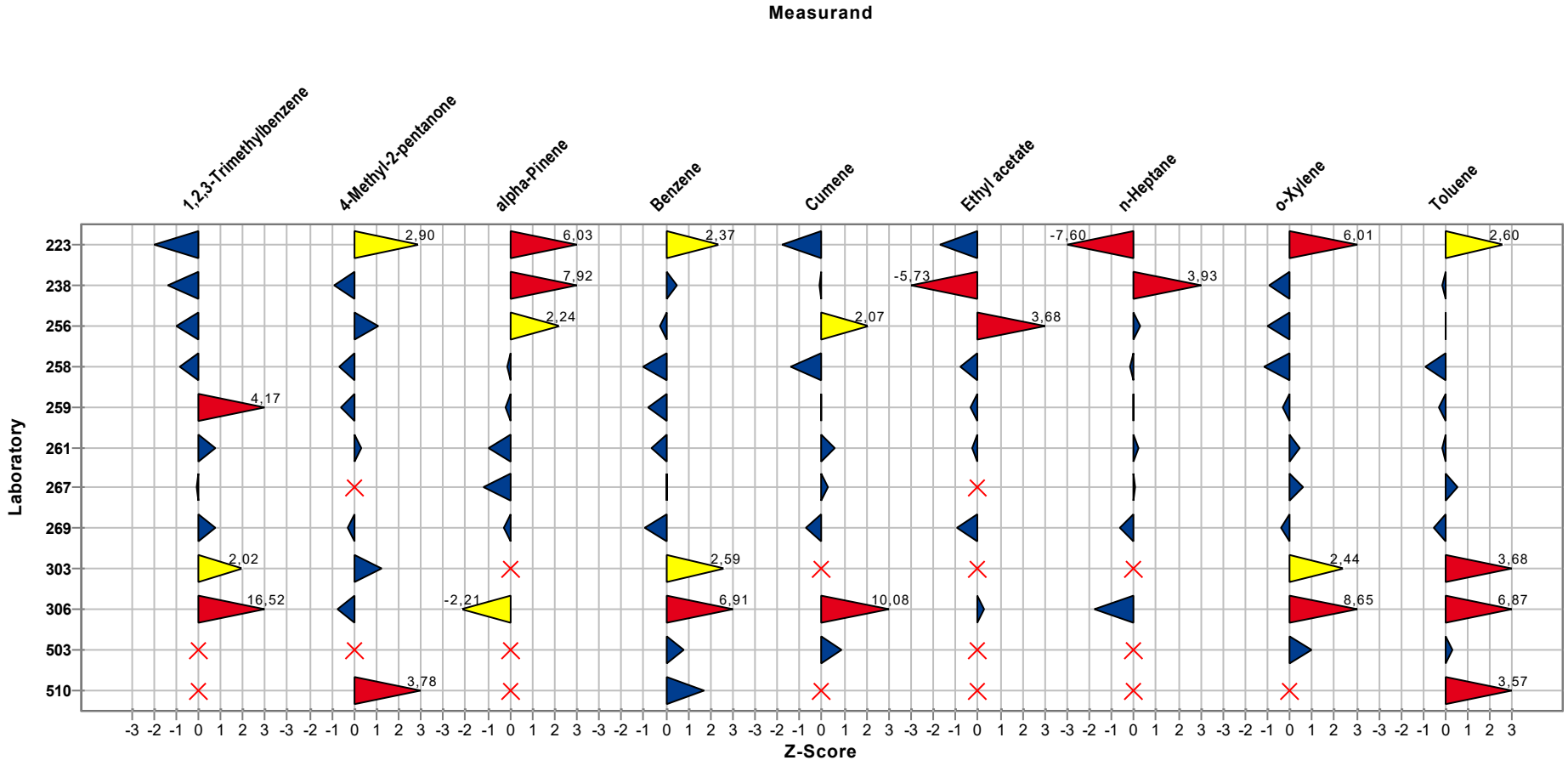
Sample chart of *Z-Scores*

Sample: 2



Sample chart of *Z-Scores*

Sample: 2



Summary of laboratory test results

Sample Blank Value 1

Laboratory	1,2,3-Trimethylbenzene	Score	4-Methyl-2-pentanone	Score	alpha-Pinene	Score	Benzene	Score	Cumene	Score	Ethyl acetate	Score	n-Heptane	Score
Unit	µg/m³		µg/m³		µg/m³		µg/m³		µg/m³		µg/m³		µg/m³	
30	< 2,000		< 2,00		< 2,00		< 2,00		< 2,00		< 2,00		< 2,00	
52							1,90						0,700	
55	< 12,000		< 12,0		< 12,0		< 2,00		< 12,0					
60	< 5,020		< 5,02				< 2,51						< 2,51	
68	< 0,009		< 0,00800		< 0,00900		22,30		< 0,00900		< 0,00900		< 0,00700	
104	< 5,000		< 5,00		< 5,00		< 5,00		< 5,00		< 5,00		< 5,00	
124	0,050		0,0700		0,230		0,40		0,0400		0		0,300	
148	0,100		0		0,100		0,20		0		0,300		0	
151	0,000		0,200		0		0,60		0		0		0	
153	< 1,000		< 1,00		< 1,00		< 1,00				< 1,00			
167	0,200						8,70							
182	< 1,000		< 1,00		< 1,00		< 1,00		< 1,00		< 1,00		< 1,00	
183							5,00							
186	0,000		0		0,200		4,80		0		0,300		0,300	
192	0,470		0,230		0,500		0,54				0,150		0,350	
199	0,100		0,100		0,100		0,50		0,0500		0,600		0,400	
206	0,179				0,0920		0,74		0,0285					
218							0,50				0,100			
238	< 5,000		< 5,00		< 5,00		< 5,00		< 5,00		< 5,00		< 5,00	
256	< 0,500		< 0,500		< 0,500		1,33		< 0,500		0,500		< 0,500	
258	< 5,000		< 5,00		< 5,00		< 5,00		< 5,00		< 5,00		< 5,00	
259	4,800		< 2,50		< 2,50		< 2,50		< 2,50		< 2,50		< 2,50	
261	0,170		0,270		0,220		1,42		0,220					
267	< 2,500				< 2,50		< 2,50		< 2,50				< 2,50	
303	0,100		0				6,20							
306	< 5,000		< 5,00		< 5,00		< 5,00		< 5,00		< 5,00		< 5,00	
503							< 2,50		< 2,50					
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Volatile Organic Compounds -VOC- with thermal desorption 2025 - Blank Values

Sample Blank Value 1

Laboratory	1,2,3-Trimethylbenzene	Score	4-Methyl-2-pentanone	Score	alpha-Pinene	Score	Benzene	Score	Cumene	Score	Ethyl acetate	Score	n-Heptane	Score
No. of laboratories that submitted results	23		20		20		27		19		17		18	

Laboratory	o-Xylene	Score	Toluene	Score
Unit	µg/m³		µg/m³	
30	< 2,000		< 2,00	
52			2,98	
55	< 12,000		< 12,00	
60	< 2,510		< 2,51	
68	< 0,009		4,80	
104	< 5,000		< 5,00	
124	0,240		0,90	
148	0,300		0,30	
151	0,000		0,30	
153			< 1,00	
167	0,200		0,70	
182	< 1,000		< 1,00	
183	4,000			
186	0,000		0,40	
192	0,690		0,69	
199	0,200		0,50	
206	0,170		0,62	
218			0,40	
238	< 5,000		< 5,00	
256	< 0,500		1,57	
258	< 5,000		< 5,00	
259	< 2,500		< 2,50	
261	0,400		0,72	
267	< 2,500		< 2,50	
303	0,400		4,00	
306	< 5,000		< 5,00	
503	< 2,500		< 2,50	
–	–	–	–	–
No. of laboratories that submitted results	24		26	

Summary of laboratory test results

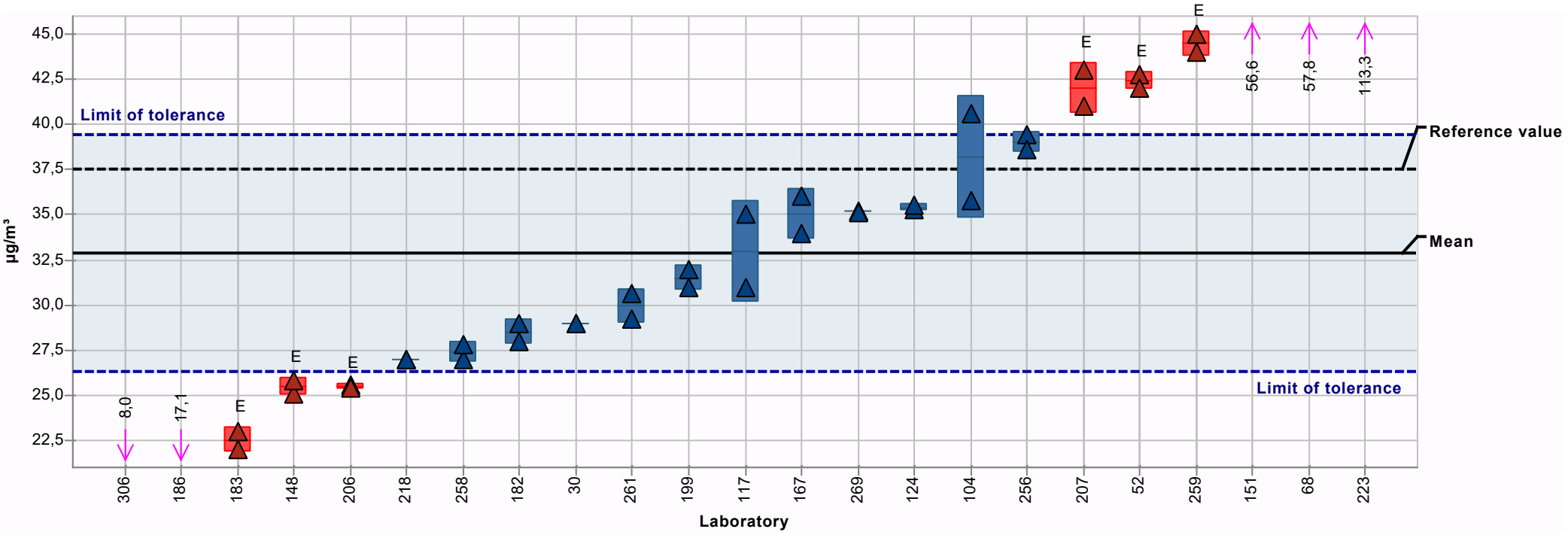
Sample Blank Value 2

Laboratory	1,2,3-Trimethylbenzene	Score	4-Methyl-2-pentanone	Score	alpha-Pinene	Score	Benzene	Score	Cumene	Score	Ethyl acetate	Score	n-Heptane	Score
Unit	µg/m³		µg/m³		µg/m³		µg/m³		µg/m³		µg/m³		µg/m³	
30	< 2,00		< 2,00		< 2,00		< 2,00		< 2,00		< 2,00		< 2,00	
52							2,25						1,70	
55	< 12,00		< 12,0		< 12,0		< 2,00		< 12,0					
60	< 5,02		< 5,02				< 2,51						< 2,51	
68	6,10		< 0,00800		< 0,00900		15,00		< 0,00900		< 0,00900		< 0,00700	
104	< 20,00		< 20,0		< 20,0		< 20,00		< 20,0		< 20,0		< 20,0	
124	0,06		0,100		0,240		0,43		0,0600		0		0,520	
148	0,10		0		0,100		0,20		0		0		0,100	
151	0,00		0,200		0		0,70		0		0		0	
153	< 1,00		< 1,00		< 1,00		< 1,00				< 1,00			
167							7,10							
182	< 1,00		< 1,00		< 1,00		< 1,00		< 1,00		< 1,00		< 1,00	
183							5,00							
186	0,00		0		0		2,50		0		0,300		0,500	
192	0,48		0,340		0,440		0,75				0,290		0,560	
199	0,08		0,100		0,100		0,60		0,0500		0,500		0,400	
218							0,60				0,100			
238	< 5,00		< 5,00		< 5,00		< 5,00		< 5,00		< 5,00		< 5,00	
256	< 0,50		< 0,500		< 0,500		1,74		< 0,500		0,520		0,560	
258	< 5,00		< 5,00		< 5,00		< 5,00		< 5,00		< 5,00		< 5,00	
259	4,90		< 2,50		< 2,50		< 2,50		< 2,50		< 2,50		< 2,50	
261	0,09		0,130		0,130		1,65		0,110					
267	< 2,50				< 2,50		< 2,50		< 2,50				< 2,50	
303	0,10		0,100				6,30							
306	< 5,00		< 5,00		< 5,00		< 5,00		< 5,00		< 5,00		< 5,00	
503							< 2,50		< 2,50					
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
No. of laboratories that submitted results	21		20		19		26		18		17		18	

Laboratory	o-Xylene	Score	Toluene	Score
Unit	µg/m³		µg/m³	
30	< 2,000		< 2,00	
52			17,95	
55	< 12,000		< 12,00	
60	< 2,510		< 2,51	
68	< 0,009		< 0,01	
104	< 20,000		< 20,00	
124	0,250		0,68	
148	0,300		0,30	
151	0,000		0,60	
153			< 1,00	
167	0,300		0,80	
182	< 1,000		< 1,00	
183	4,000			
186	0,200		0,30	
192	0,720		0,75	
199	0,200		1,40	
218			0,40	
238	< 5,000		< 5,00	
256	< 0,500		1,28	
258	< 5,000		< 5,00	
259	< 2,500		< 2,50	
261	0,300		0,70	
267	< 2,500		< 2,50	
303	0,300		1,10	
306	< 5,000		< 5,00	
503	< 2,500		< 2,50	
–	–	–	–	–
No. of laboratories that submitted results	23		25	

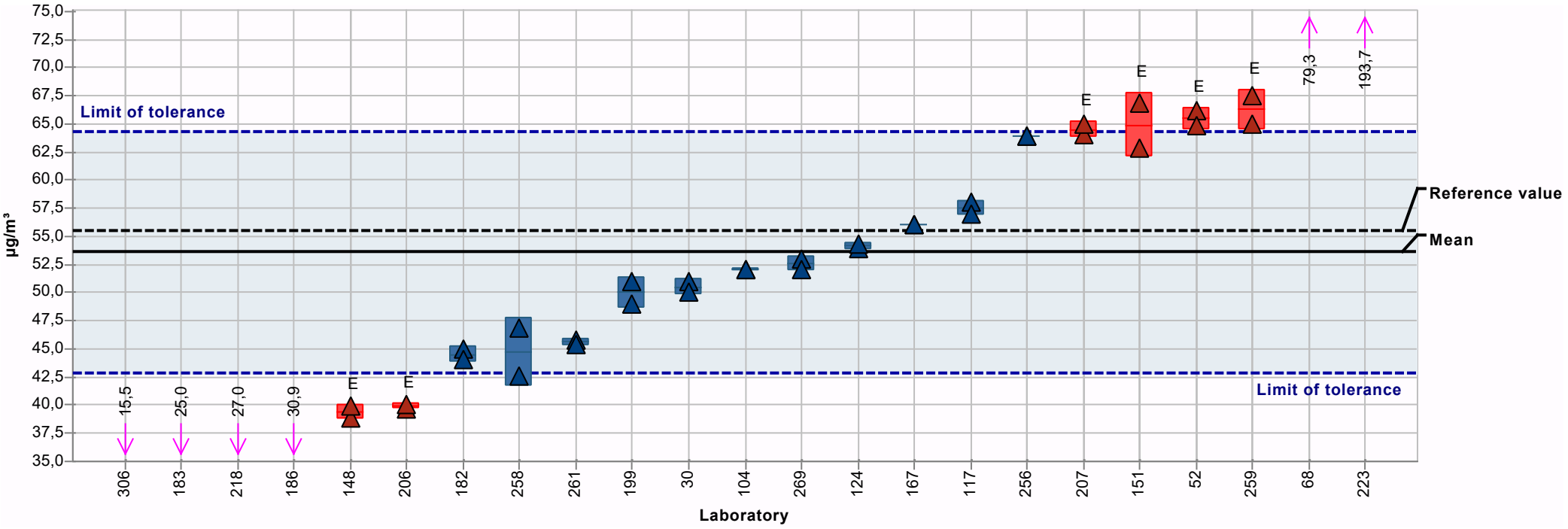
Summary results

Sample:	**1**	**Mean:**	**32,9 µg/m³**
Measurand:	**2-Ethoxyethanol**	**Reproducibility s.d.:**	**6,6 µg/m³**
Method:	**ISO 5725-2**	**Rel. reproducibility s.d.:**	**19,96%**
Rel. target s.d.:	**10,00%**	**Reference value:**	**37,5 µg/m³**
Number of laboratories in calculation + outliers:	**23**	**Range of tolerance:**	**26,3 - 39,4 µg/m³ (|Z-Score| <= 2,00)**



Summary results

Sample:	**2**	**Mean:**	**53,6 µg/m³**
Measurand:	**2-Ethoxyethanol**	**Reproducibility s.d.:**	**9,1 µg/m³**
Method:	**ISO 5725-2**	**Rel. reproducibility s.d.:**	**16,99%**
Rel. target s.d.:	**10,00%**	**Reference value:**	**55,5 µg/m³**
Number of laboratories in calculation + outliers:	**23**	**Range of tolerance:**	**42,9 - 64,4 µg/m³ (|Z-Score| <= 2,00)**



Questions and Answers

Participant	Sample carrier	Analytical method	Thermal desorber
30	Tenax TA tube Perkin Elmer	ISO 16000-6	Perkin Elmer TD 650
52	ATD Sample Tube 5mm Innendurchmesser, Perkin Elmer, Tenax TA 20/35 mesh, SKC	DIN ISO 16000-6	Perkin Elmer Turbo Matrix 650
55	Tenax TA, Markes	ISO 16000-6	Markes TD-100 xr
60	Tenax TA, Markes	ISO 16000-6	Markes
68	Tenax TA	DIN ISO 16000-6	Markes TD100-xr
104	PerkinElmer Thermal Desorption Tubes, Tenax TA, Stainless Steel	DIN ISO 16000-6	PerkinElmer Turbo Matrix 300
105	Tenax Ta/Carbosieve III - fertige Röhrchen von Gerstel	16017-1	TDS3C
117	Tenax TA	DIN ISO 16000-6	PerkinElmer TurboMatrix 650
124	Tenax TA 60/80	EPA TO-17	Shimadzu TD-30
145	Gerstel Tenax TA + Carbosieve S3	Hausmethode	Gerstel TDS3
148	Markes, Tenax, Edelstahlröhrchen	16000-6	Markes TD100-xr
151	Tenax, TA, Markes	ISO 16017-1	Perkin Elmer TD350
153	Supelco Brand Termal Desorption Glass Tube 6,35mm x 89mm Long , Tenax TA	ISO 16000-6	SHIMADZU TD-20
167	Markes Material Emission Tubes (Quartz Wool, Tenax TA, Carbograph 5TD)	EN 16516	Markes ATD 100XR
182	Tenax TA von Markes	DIN ISO 16000-6	Markes TD100-xr
183	Markes International Bio-monitoring stainless steel TD tubes filled with Tenax TA 35/60 and Carbograph 5TD 40/60	ISO 16000-6	Markes International UNITY-xr
186	Tenax TA	ISO 16000-6	Markes TD100-XR
192	TenaxTA	ISO 16000-6	Markes International TD-100
199	tenax TA; Markes	in Anlehnung an DIN ISO16000-6:2012-11	TD-100
206	Tenax TA, CAMSCO	16000-6	Perkin Elmer ATD
207	Tenax, Markes Röhrchen	DIN ISO 16000-6	Markes Unity TD 100
218	3,5" Edelstahlröhrchen, Tenax TA, Markes	DIN ISO 16000-6	TD-100 von Markes International
223	Tenax TA (2.6-diphenylene oxide)	reference method EPA TO-17	Gerstel TDS 3
238	Tubes Markes carbotrap (Cpky/CpkB/CbXn1003)	NF EN ISO 16017-1	TD 100 XR Markes
256	Tenax TA	DIN ISO 16000-6	Perkin Elmer TurboMatrix 650
258	Stainless steel tubes, Tenax TA, Markes	ISO 16000-6	Markes TD-100-xr
259	TENAX TA, 60 - 80 mesh, SUPELCO	DIN ISO 16000-6	Shimadzu TD30
261	Edelstahl Adsorptionsröhrchen gefüllt mit Tenax TA, Firma Camsco	DIN ISO 16000-6	Perkin Elmer ATD 650
267	Stainless Steel tubes filled with Tenax TA (ref. C1-AXXX-5003, Markes International)	ISO 16000-6	Markes Unity-xr

Volatile Organic Compounds -VOC- with Thermodesorption

Participant	Sample carrier	Analytical method	Thermal desorber
269			
303	??	DIN EN ISO 16017-1	Markes TD100-xr
306	Stainless steel, Thermal desorption tube by Markes with Tenax/Carbon	ISO 16000-6	Markes TD100-xr

Participant	Desorption temperature tubes	Desorption flow	Desorption time	Focussing temperature	Desorption temperature trap
30	260°C	50	30	-30°C	280°C
52	280°C	20 ml/min	20 min	-30°C	280°C
55	280°C	30	10	10°C	300°C
60	295	100	5	-10°C	300°C
68	300°C	50	20	-20°C	300°C
104	250 °C	--	7 min	- 30 °C	250 °C
105	260°C	32	20min	-150°C	300°C
117	280 °C	20	15	-30 °C	280 °C
124	250oC	60 mL/min	5	-20oC	250oC
145	260°C	50	21	-150°C	
148	280	50	10	-25 °C	315 °C
151	280	75	10	-30	300
153	250 C	60	5	-14 C	280 C
167	320 °C	40	10	5 °C	320 °C
183	280	50	7	20	300
186	280	50	10	-30°C	280°C
192	270°C	30mL/min	10min	5°C	280°C
199	250°C	50ml/min	5min		
206	260°C	50	5	-30	280
207	300	25	8	-25	
218	290 °C	12,6 ml/min	12 min	-5 °C	320 °C
223	200	60	10	-70 C	210 C
238	330°C	100mL/min	15 min	15°C	300°C
256	300°C	50 ml/min	5 min	2°C / 300°C	
258	280°C	42	15	-30°C	300°C
259	250 °C	60 ml/min	5 min	-15 °C	250 °C

Volatile Organic Compounds -VOC- with Thermodesorption

Participant	Desorption temperature tubes	Desorption flow	Desorption time	Focussing temperature	Desorption temperature trap
261	275 °C	30	15	-8 °C	278 °C
267	280°C	50 mL/min	15 min	-5°C	300°C
303	32	50	5	25	320
306	290°C	30 ml/min	5 min	-30 °C	300 °C

Participant	Gas chromatograph (GC)	Carrier gas	Carrier gas flow
30	Agilent GC	He	1.0
52	Autosystem XL GC, Perkin Elmer	Helium	160kPa von TD (0 ml/min am GC)
55	Agilent 8860	He	1.2
60	Agilent 7890A	Helium	2.5
68	Agilent 7890B Series GC Custom; Agilent 7000D Quadrupol MS/MS	Helium	1
104	agilent 7890 B	Helium	1 ml/min
105	Agilent 7890B & MSD 5977B	Helium	2
117	Agilent 7890 A	Helium	1
124	Shimadzu 2030	He	
145	Agilent 6890N	Helium	2
148	GC-MS-FID	Helium	0,5
151	Perkin Elmer Clarus 580	Hydrogen	1.0
153	SHIMADZU GC-2010 Plus	Helium	Total flow 7,8mL/min, column flow 0,71mL/min
167	Agilent 6890N	He	1,5
182	Shimadzu GC-2010 Plus	Helium	
183	Agilent 8890GC System	Helium	1.1
186	Agilent 8890 GC System	helium	1.2mL/min
192	Agilent technologies 7890A/5975C	Helium	1.3mL/min
199	Agilent 7890B	Helium	07ml/min
206	Agilent 8790	Helium	1,2mL/min
207	Agilent 7890	Helium	1,2
218	Agilent GC 7890	Helium	1,4 mL/min
223	Agilent GCMS 5977Turbo System	helium	51.5
238	GC 8890 / MSD 5977B	Helium	1 mL/min
256	Agilent 8890	Helium	1.2

Volatile Organic Compounds -VOC- with Thermodesorption

Participant	Gas chromatograph (GC)	Carrier gas	Carrier gas flow
258	Agilent 8890	Helium	1.3
259	Shimadzu GC2010 mit MS QP2010plus	He	1,18 ml/min
261	Perkin Elmer Clarus 680	Helium	1
267	Agilent 8890	Helium	1.77 mL/min
303	8890	He	1,2
306	Agilent 8890	Helium	1.2 ml/min

Participant	Analytical column	Detector
30	Rtxi5-MS	FID except benzene by MS
52	Optima 5 MS, 60m*0,32mm ID, Filmdicke 1,00µm	FID und MS
55	DB5 MS 60 m	Agilent MSD 5677B
60	HP-5MS	MS
68	Vocol von Supelco (L: 60 m, ID: 0.25 mm, Filmdicke: 1.5 µm)	MS
104	Resteck RXi-5ms	MSD
105	Agilent DB-624; 60m x 250µm x 1.4µm	FID&MSD
117	5 %-Phenyl- und 95 %-Methylpolysiloxan	MSD
124	Restek 624	MS
145	DB-624; 60x0,25x1,4	FID/MSD
148	Restek, Rxi-5Sil MS	MS
151	30M BP5	FID
153	Restek Rxi 5Sil MS 0,25um df 0,25mm ID 30 m lenght	Mass spectrometry MS
167	Agilent DB-5MS UI	Agilent 5975 MSD
182	Optima 5MS Accent	Shimadzu GC-MS QP 2010 Ultra
183	Agilent HP-5MS UI (30 m x 0.250 mm x 0.25um)	Agilent 5977B GC/MSD
186	DB-5MS UI 60m x 0.25mm x 1µm	Agilent 5977 GC/MSD
192	DB-5 (60m, 0.25mm id, 1.0µm df)	MSD
199	DB-5,625MS	Massendetektor (5977A MSD)
206	Restek Rtx-5	MS
207	DB5	MS Agilent 5977
218	DB-5 MS/UI	MS Agilent 5975C
223	Agilent 19095-433 (60m X 250µm X 0.200µm film thickness100% poly-dimethylsiloxane, nonpolar) analytical column.	Agilent 5975C XL Mass Selective Detector (MSD)

Volatile Organic Compounds -VOC- with Thermodesorption

Participant	Analytical column	Detector
238	RTX 624	GC/MS
256	60 m Rtx / 0.25 ID / 1.4 µm	Agilent MSD 5977B
258	HP-ULTRA 2, 50m x 0.32mm, 0.52µm (Agilent 19091B-115)	Agilent 5977C MSD
259	Agilent VF-624ms	MS
261	Rtx-VMS	Massenspektrometer Perkin Elmer Clarus SQ8
267	HP Innowax 60 m x 0.32 mm x 0.5 µm, Agilent Technologies (ref: 19091N-216)	Mass spectrometer (scan mode for acquisition)
303	HP5	5977B MSD
306	Restek Rxi 624Sil MS	MS

Participant	Data evaluation	Recovery rate	Date of analysis
30	external calibration	No	04/06/2025 and 06/06/2025
52	Quantifizierung FID, Identifizierung MS	nein	15.05.2025
55	9-points calibration with internal standard	yes	27/05/2025
60	Scan	No	21/05/2025
68	Scan, MS Spektrum	Nein	01.07.2025
104	Quantifizierung: 5 Punkt-Kalibrierung mit Einzelsubstanzen; Toluol D8 als interner Standard; Identifizierung: Spektrenbibliothek NIST 05	nein	21.05.2025
105	Quant: FID; Qual: MSD	Nein	26.05.2025
117	Quantifizierung über Kalibriergeraden, Identifizierung über MS- und Retentionszeiten-Vergleich		27.05.2025
124	SIM and retention time	no	6/9/2025
145	Quantifizierung: FID Qualifizierung:MSD	nein	20.05.2025 und 28.05.2025
148	Einkalibrierte Substanzen	Ja	17.05.2025
151	External standards, methanol solution	No	21/05/2025
153	Calibration Curve, NIST14 Mass Spectral Library	No	26-06-2025
167	4 Point calibration curve with internal standard, match against commercial libraries with qualifier ions	No	10.Jun.2025
182			06.06.2025
183	Scan mode acquisition, quantification with calibration curve, identification with NIST library	No	25/06/2025
186	Identification by MSD and quantification using specific response factor	no	27/05/2025
192	Absolute calibration curve	No	24.05.2025
199	Standards ecterne Kalibrierung, Korrektur über intere Standards	nein	23.05.2025
206	externe Standards	nein	20.02.2025
207	EIC Originalreferenzen, eigene und kommerzielle Bibliotheken	nein	28.05.2025

Volatile Organic Compounds -VOC- with Thermodesorption

Participant	Data evaluation	Recovery rate	Date of analysis
218	Externe Kalibrierung	Nein	30.05.2025
223	SIM and Scan Ion	No	7/1/25
238	internal calibration + sim&scan	No	20/05/2025
256	Substanzspezifische Kalibrierung, Retentionszeit, Massenspektren	nein	15.05.2025
258	External standards of specific substances for quantification, MS spectra and retention times of standards for identification	No	15.05.2025
259	Quantifizierung: 7-Pkt.-Kalibrierung auf Target-Ion, Identifizierung über Retentionszeit und Target/Referenz-Ion	nein	20./21.5.2025
261	Quantifiziert nach charakteristischer Ionenspur mit internem Standard und 8-Punkt Kalibrierung, Identifikation erfolgt nach Spektrum	Nein	17.06.2025
267	Acquisition in scan mode, quantificarion with one m/z quantifier and confirmation of identification with specific qualifiers and their ratio	No	20/05/2025
303	SIM	No	7/4/25 14:00
306	Four substances was quantified with their reference material and the other substances was semiquantified with toluene	No	16/05/2025