

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

Proficiency testing scheme Organic solvents

February 2018

Summary of laboratory test results

Sample 1

	Cyclohexane	Z score	Methylcyclohexane	Z score	n-Decane	Z score	n-Heptane	Z score
Unit	mg/m ³		mg/m ³		mg/m ³		mg/m ³	
10	57,70	-0,77	50,00	-1,11	26,70	-1,53	257,00	-1,40
27								
33	67,50	0,79	60,70	0,79	31,90	0,12	304,00	0,17
55	60,50	-0,32			33,50	0,63	296,00	-0,10
68	57,83	-0,75	53,08	-0,56	31,00	-0,17	279,42	-0,65
82	57,00	-0,88	50,00	-1,11	33,00	0,47	273,00	-0,87
83	61,30	-0,20	59,60	0,59	31,30	-0,07	294,50	-0,15
111	64,60	0,33	60,00	0,67	34,60	0,98	307,20	0,28
114	68,90	1,02	61,50	0,93	36,40	1,55	308,80	0,33
118	56,92	-0,90	51,77	-0,80	30,05	-0,47	271,61	-0,91
138	64,60	0,33	58,30	0,36	32,80	0,41	319,00	0,67
142							92,60	-6,90 BE
161	74,38	1,90	65,99	1,73	42,20	3,39 E	343,04	1,48
162	55,90	-1,06	50,10	-1,09	28,20	-1,05	308,90	0,33
167	62,00	-0,08	55,20	-0,19	32,40	0,28	285,00	-0,47
188	62,69	0,03	57,28	0,18	30,36	-0,37	311,01	0,41
195	62,95	0,07	56,72	0,08	29,92	-0,51	320,54	0,72
208	58,41	-0,66	54,52	-0,31	32,21	0,22	293,59	-0,18
242	63,00	0,08	57,50	0,22	35,70	1,33	304,00	0,17
243	63,40	0,14	56,60	0,06	28,20	-1,05	295,40	-0,12
256	65,00	0,40	50,00	-1,11	21,00	-3,34 E	301,00	0,07
272	66,00	0,56	60,00	0,67	29,00	-0,80	305,00	0,20
-	-	--	-	--	-	--	-	--
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	20		19		20		21	
Mean	62,53		56,26		31,52		298,90	
Reproducibility s.d.	4,63		4,58		4,25		19,39	

	Cyclohexane	Z score	Methylcyclohexane	Z score	n-Decane	Z score	n-Heptane	Z score
Rel. reproducibility s.d.	7,41 %		8,15 %		13,47 %		6,49 %	
Reference value	63,10		60,40		35,40		312,40	
Target s.d.	6,25		5,63		3,15		29,89	
Rel. target s.d.	10,00 %		10,00 %		10,00 %		10,00 %	
Lower limit of tolerance	50,02		45,00		25,22		239,12	
Upper limit of tolerance	75,04		67,51		37,83		358,68	
Type B outliers							1	
No. of laboratories after elimination of outliers type A-D and F (without laboratories that only gave states but no measured values)	20		19		20		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								

	n-Hexane	Z score	n-Octane	Z score
Unit	mg/m ³		mg/m ³	
10	24,70	-1,15	221,00	-1,43
27	46,10	6,51 BE		
33	28,80	0,31	235,00	-0,89
55	27,50	-0,15	244,00	-0,54
68	25,67	-0,81	244,08	-0,53
82	23,00	-1,76	247,00	-0,42
83	27,70	-0,08	252,20	-0,22
111	29,70	0,64	268,50	0,41
114	29,10	0,42	259,50	0,06
118	25,44	-0,89	237,37	-0,80

	n-Hexane	Z score	n-Octane	Z score
138	28,40	0,17	281,00	0,90
142	31,50	1,28		
161	31,94	1,44	304,85	1,82
162	22,90	-1,80	271,00	0,51
167	29,80	0,67	246,00	-0,46
188	27,90	-0,01	271,66	0,53
195	31,62	1,32	270,31	0,48
208	26,91	-0,36	266,13	0,32
242	29,10	0,42	264,00	0,24
243	27,80	-0,04	251,90	-0,23
256			250,00	-0,31
272	29,00	0,39	272,00	0,55
-	-	--	-	--
Method	ISO 5725-2		ISO 5725-2	
Assessment	Z <=2,00		Z <=2,00	
No. of laboratories that submitted results	21		20	
Mean	27,92		257,88	
Reproducibility s.d.	2,58		18,86	
Rel. reproducibility s.d.	9,24 %		7,31 %	
Reference value	30,80		272,60	
Target s.d.	2,79		25,79	
Rel. target s.d.	10,00 %		10,00 %	
Lower limit of tolerance	22,34		206,30	
Upper limit of tolerance	33,51		309,45	
Type B outliers	1			
No. of laboratories after elimination of outliers type A-D and F (without laboratories that only gave states but no measured values)	20		20	

Summary of laboratory test results

Sample 2

	Cumene	Z score	Ethyl acetate	Z score	Ethylbenzene	Z score	p-Xylene	Z score
Unit	mg/m ³		mg/m ³		mg/m ³		mg/m ³	
10	15,70	0,64	251,00	-0,13	34,40	0,20	103,00	0,71
27	62,91	32,62 BE					384,75	30,00 BE
33	16,10	0,91	312,00	2,27 E	34,50	0,23	89,50	-0,69
55	14,60	-0,11			33,00	-0,22	98,50	0,24
68	11,67	-2,10 E	215,25	-1,53	32,92	-0,24	79,25	-1,76
82			228,00	-1,03	31,00	-0,81	90,00	-0,64
83	16,20	0,98	236,10	-0,71	34,70	0,28	101,30	0,53
111	15,30	0,37	238,10	-0,63	33,50	-0,07	96,60	0,04
114	15,20	0,30	219,90	-1,35	34,80	0,31	103,50	0,76
118	12,76	-1,35	214,64	-1,56	29,16	-1,36	85,03	-1,16
133	19,70	3,35 E			39,20	1,62	110,00	1,44
138	23,00	5,58 BE	296,00	1,64	38,90	1,53	103,00	0,71
142			121,00	-5,24 BE	36,30	0,76	84,90	-1,17
161	16,79	1,38	294,41	1,58	36,28	0,75	100,07	0,40
162	11,60	-2,14 E	230,00	-0,95	29,60	-1,23	95,90	-0,03
167	15,00	0,16	314,00	2,35 E	35,70	0,58	101,00	0,50
188	14,96	0,13	276,56	0,88	33,60	-0,04	99,70	0,37
195	14,23	-0,36	280,44	1,03	33,56	-0,05	101,38	0,54
208	15,63	0,59	251,52	-0,11	33,26	-0,14	97,38	0,12
242	15,70	0,64	246,00	-0,32	32,50	-0,37	94,20	-0,21
243	12,30	-1,67	235,60	-0,73	28,40	-1,58	81,80	-1,50
252			259,95	0,23				
256	12,00	-1,87	213,00	-1,62	34,00	0,08	100,00	0,40
272	15,00	0,16	272,00	0,70	33,00	-0,22	100,00	0,40
-	-	--	-	--	-	--	-	--
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	21		21		22		23	

	Cumene	Z score	Ethyl acetate	Z score	Ethylbenzene	Z score	p-Xylene	Z score
Mean	14,76		254,22		33,74		96,18	
Reproducibility s.d.	2,01		32,50		2,71		7,90	
Rel. reproducibility s.d.	13,65 %		12,78 %		8,03 %		8,21 %	
Reference value	15,70		270,40		35,10		102,90	
Target s.d.	1,48		25,42		3,37		9,62	
Rel. target s.d.	10,00 %		10,00 %		10,00 %		10,00 %	
Lower limit of tolerance	11,81		203,38		26,99		76,95	
Upper limit of tolerance	17,71		305,07		40,49		115,42	
Type B outliers	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)	19		20		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

	Toluene	Z score
Unit	mg/m ³	
10	57,70	-0,15
27	186,48	21,82 BE
33	60,30	0,29
55	57,50	-0,19
68	50,50	-1,38
82	53,00	-0,96
83	60,20	0,27
111	59,40	0,14

	Toluene	Z score
114	60,80	0,38
118	50,36	-1,41
133	66,20	1,30
138	66,30	1,31
142	57,10	-0,26
161	60,40	0,31
162	53,90	-0,80
167	60,20	0,27
188	59,55	0,16
195	60,21	0,27
208	58,67	0,01
242	56,40	-0,38
243	53,90	-0,80
252	60,23	0,28
256	66,00	1,26
272	59,00	0,07
-	-	--
Method	ISO 5725-2	
Assessment	Z <=2,00	
No. of laboratories that submitted results	24	
Mean	58,60	
Reproducibility s.d.	4,33	
Rel. reproducibility s.d.	7,39 %	
Reference value	61,00	
Target s.d.	5,86	
Rel. target s.d.	10,00 %	
Lower limit of tolerance	46,88	
Upper limit of tolerance	70,32	
Type B outliers	1	
No. of laboratories after elimination of outliers type A-D and F (without laboratories that only gave states but no measured values)	23	

Summary of laboratory test results

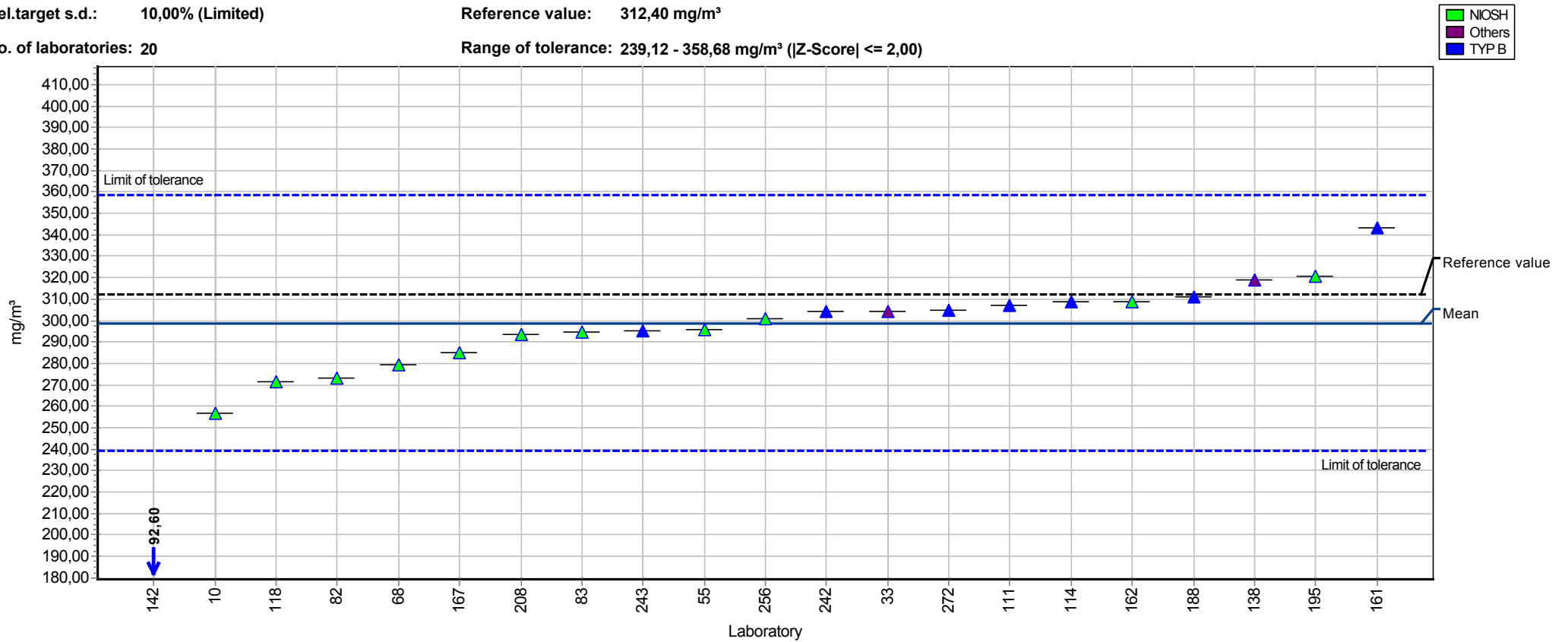
Sample 3

	1- Butanol	Z score	1-Propanol	Z score	2-Butanol	Z score	i-Butanol	Z score
Unit	mg/m ³		mg/m ³		mg/m ³		mg/m ³	
10	58,20	0,23	369,00	0,11	93,10	2,35 E	110,00	0,48
33	63,00	1,08	403,00	1,04	82,50	0,95	117,00	1,14
68	45,75	-1,96	290,58	-2,04 E	66,25	-1,21	93,75	-1,07
82	59,00	0,37			72,00	-0,45	106,00	0,10
83	50,70	-1,09	303,40	-1,69	68,30	-0,94	99,10	-0,56
111	58,60	0,30	369,40	0,12	70,60	-0,63	108,70	0,35
114	53,60	-0,58			70,20	-0,69	98,50	-0,62
118	49,85	-1,24	320,76	-1,21	66,69	-1,15	94,26	-1,02
138	59,20	0,41	409,00	1,21	78,10	0,36	116,00	1,05
142	68,70	2,08 E						
161	67,31	1,83	402,52	1,03	87,69	1,63	121,21	1,55
162	42,00	-2,62 E	262,80	-2,80 E	58,60	-2,23 E	84,30	-1,97
167	57,00	0,02	355,90	-0,25	75,50	0,02	105,30	0,03
188	63,27	1,12	407,63	1,17	78,65	0,43	106,41	0,14
195	48,66	-1,44			79,35	0,53	93,33	-1,11
208	55,04	-0,32	390,55	0,70	75,88	0,07	109,37	0,42
242	56,80	-0,01	374,00	0,25	78,30	0,39	110,00	0,48
243	60,80	0,69	404,70	1,09	78,40	0,40	108,50	0,33
256	56,00	-0,15	375,00	0,27	73,00	-0,31	104,00	-0,09
272	64,00	1,25	402,00	1,01	79,00	0,48	109,00	0,38
-	-	--	-	--	-	--	-	--
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	20		16		19		19	
Mean	56,87		365,01		75,37		104,99	
Reproducibility s.d.	6,97		46,36		7,95		9,21	
Rel. reproducibility s.d.	12,25 %		12,70 %		10,55 %		8,77 %	
Reference value	59,40		403,60		85,80		117,70	

	1- Butanol	Z score	1-Propanol	Z score	2-Butanol	Z score	i-Butanol	Z score
Target s.d.	5,69		36,50		7,54		10,50	
Rel. target s.d.	10,00 %		10,00 %		10,00 %		10,00 %	
Lower limit of tolerance	45,50		292,01		60,30		83,99	
Upper limit of tolerance	68,25		438,02		90,45		125,98	
No. of laboratories after elimination of outliers type A-D and F (without laboratories that only gave states but no measured values)	20		16		19		19	
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								

Summary results

Measurand:	n-Heptane	Mean:	298,90 mg/m ³
Sample:	1	Reprod. s.d.:	19,39 mg/m ³
Method:	ISO 5725-2	Rel.reprod. s.d.:	6,49%
Rel.target s.d.:	10,00% (Limited)	Reference value:	312,40 mg/m ³
No. of laboratories:	20	Range of tolerance:	239,12 - 358,68 mg/m ³ (Z-Score <= 2,00)



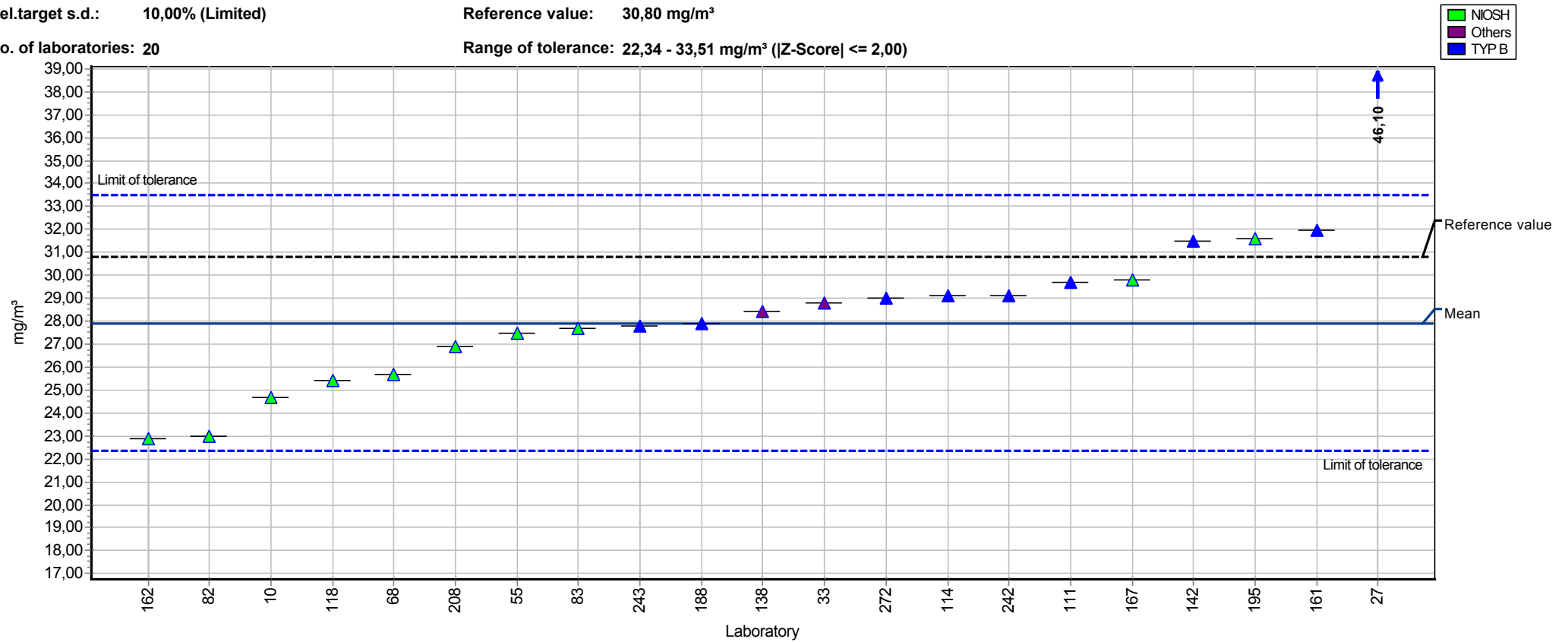
Summary results

Measurand: n-Hexane
Sample: 1
Method: ISO 5725-2
Rel.target s.d.: 10,00% (Limited)

Mean: 27,92 mg/m³
Reprod. s.d.: 2,58 mg/m³
Rel.reprod. s.d.: 9,24%
Reference value: 30,80 mg/m³

No. of laboratories: 20

Range of tolerance: 22,34 - 33,51 mg/m³ (|Z-Score| <= 2,00)

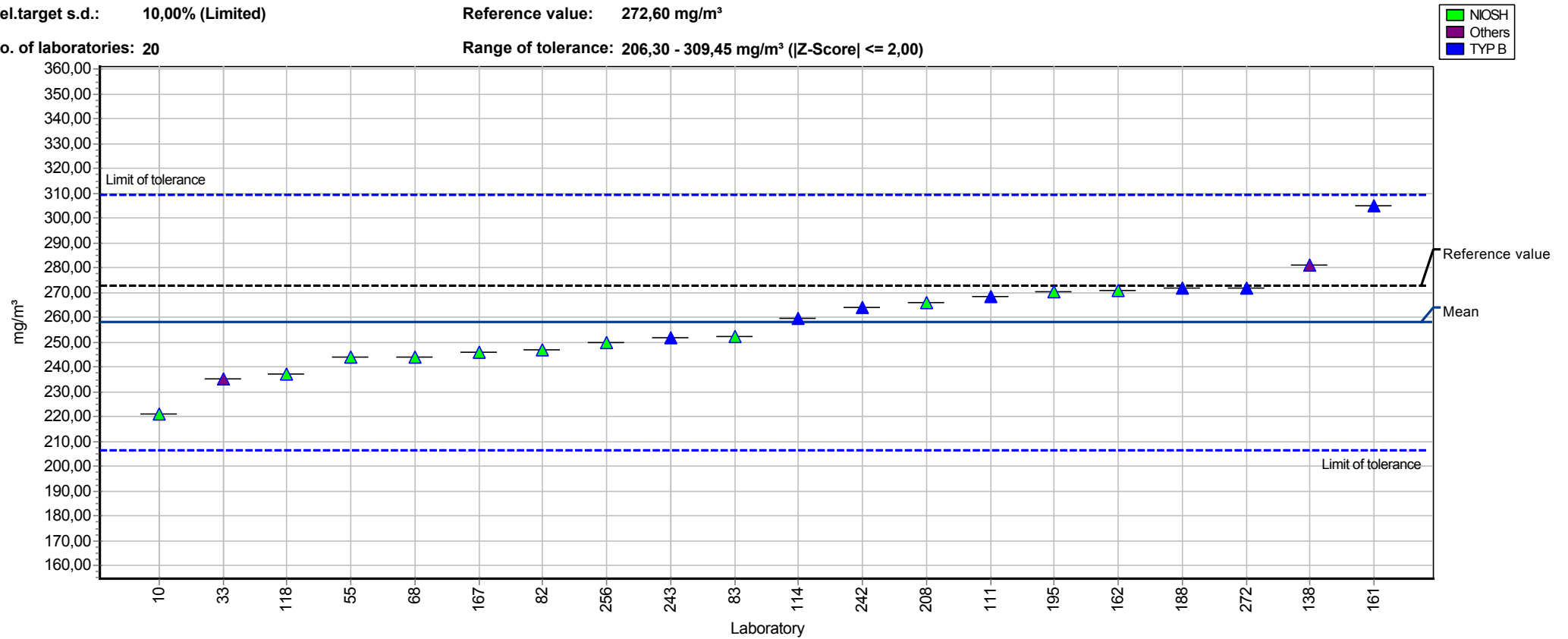


Summary results

Measurand: n-Octane **Mean:** 257,88 mg/m³
Sample: 1 **Reprod. s.d.:** 18,86 mg/m³
Method: ISO 5725-2 **Rel.reprod. s.d.:** 7,31%
Rel.target s.d.: 10,00% (Limited) **Reference value:** 272,60 mg/m³

No. of laboratories: 20

Range of tolerance: 206,30 - 309,45 mg/m³ ($|Z\text{-Score}| \leq 2,00$)

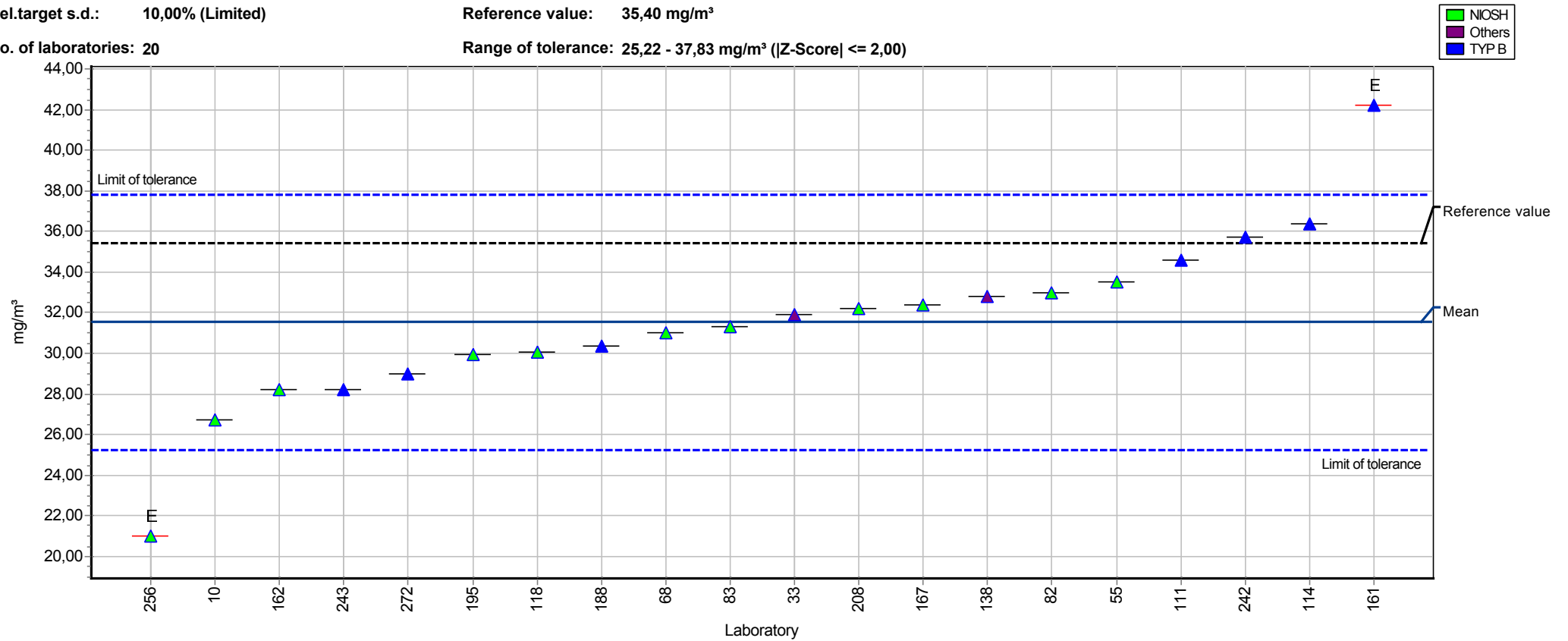


Summary results

Measurand: n-Decane
Sample: 1
Method: ISO 5725-2
Rel.target s.d.: 10,00% (Limited)

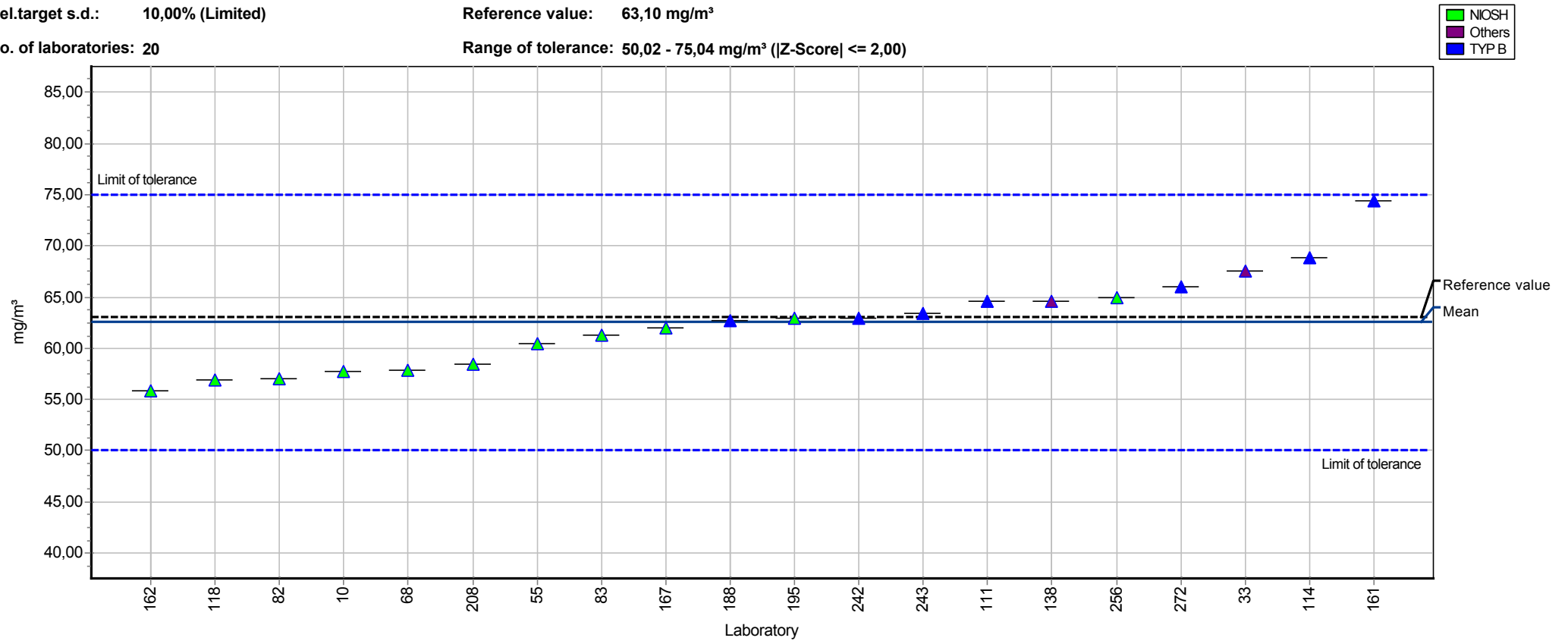
Mean: 31,52 mg/m³
Reprod. s.d.: 4,25 mg/m³
Rel.reprod. s.d.: 13,47%
Reference value: 35,40 mg/m³
Range of tolerance: 25,22 - 37,83 mg/m³ ($|Z\text{-Score}| \leq 2,00$)

No. of laboratories: 20



Summary results

Measurand: Cyclohexane **Mean:** 62,53 mg/m³
Sample: 1 **Reprod. s.d.:** 4,63 mg/m³
Method: ISO 5725-2 **Rel.reprod. s.d.:** 7,41%
Rel.target s.d.: 10,00% (Limited) **Reference value:** 63,10 mg/m³
No. of laboratories: 20 **Range of tolerance:** 50,02 - 75,04 mg/m³ (|Z-Score| <= 2,00)

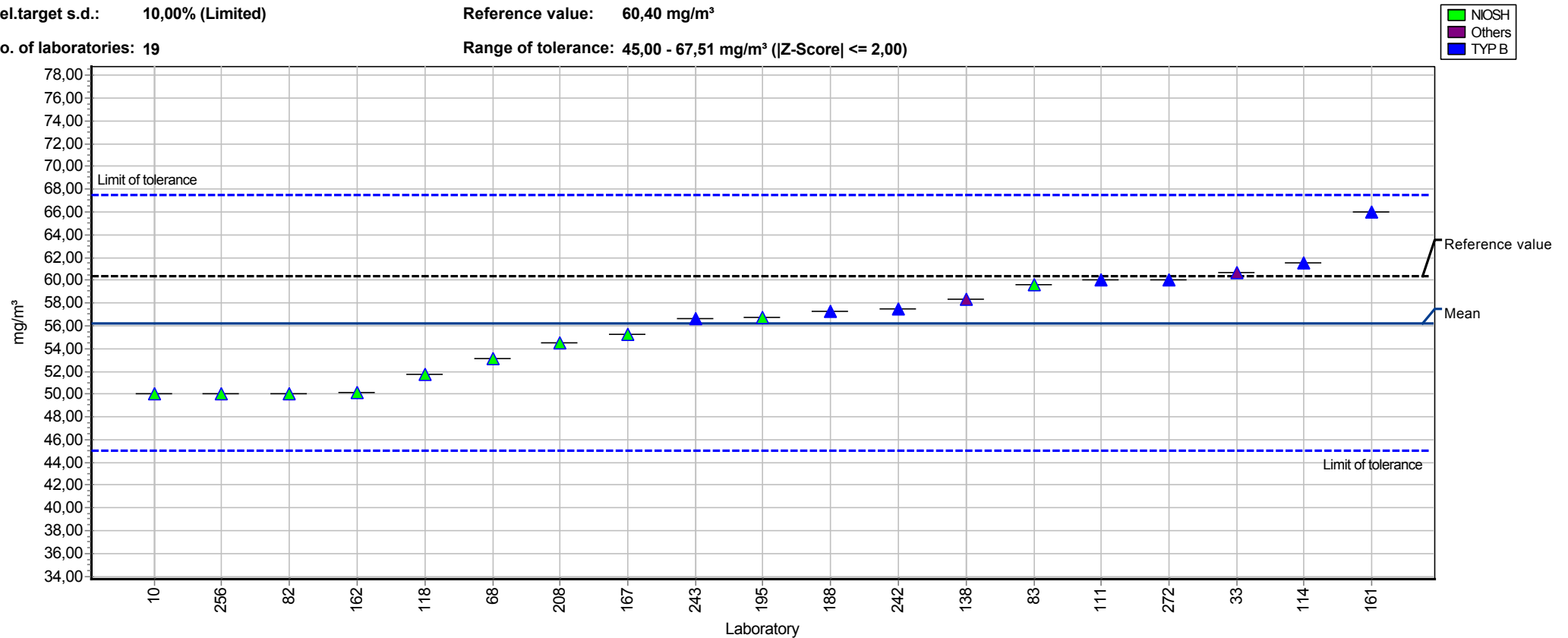


Summary results

Measurand: Methylcyclohexane
Sample: 1
Method: ISO 5725-2
Rel.target s.d.: 10,00% (Limited)

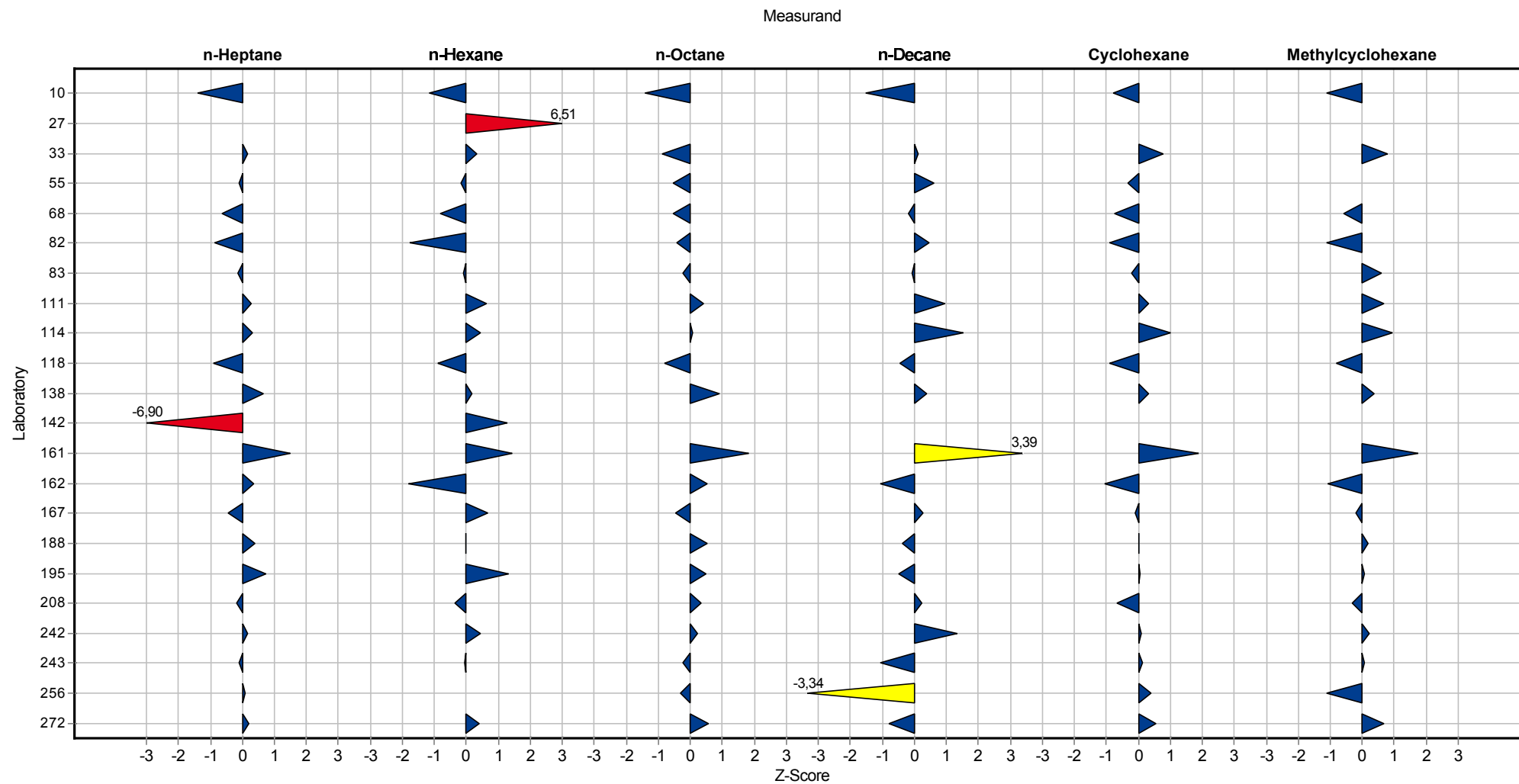
Mean: 56,26 mg/m³
Reprod. s.d.: 4,58 mg/m³
Rel.reprod. s.d.: 8,15%
Reference value: 60,40 mg/m³
Range of tolerance: 45,00 - 67,51 mg/m³ ($|Z\text{-Score}| \leq 2,00$)

No. of laboratories: 19



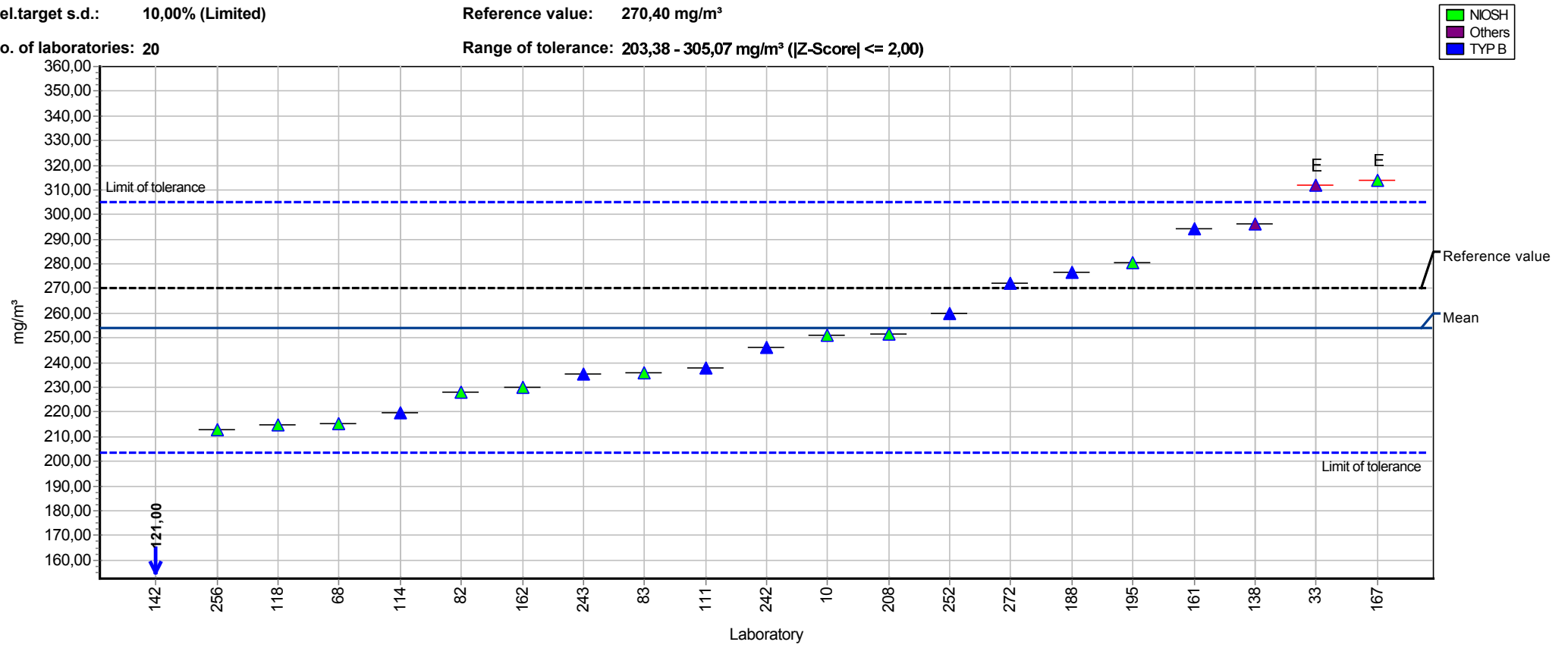
Sample chart of Z-scores

Sample 1



Summary results

Measurand:	Ethyl acetate	Mean:	254,22 mg/m ³
Sample:	2	Reprod. s.d.:	32,50 mg/m ³
Method:	ISO 5725-2	Rel.reprod. s.d.:	12,78%
Rel.target s.d.:	10,00% (Limited)	Reference value:	270,40 mg/m ³
No. of laboratories:	20	Range of tolerance:	203,38 - 305,07 mg/m ³ (Z-Score <= 2,00)

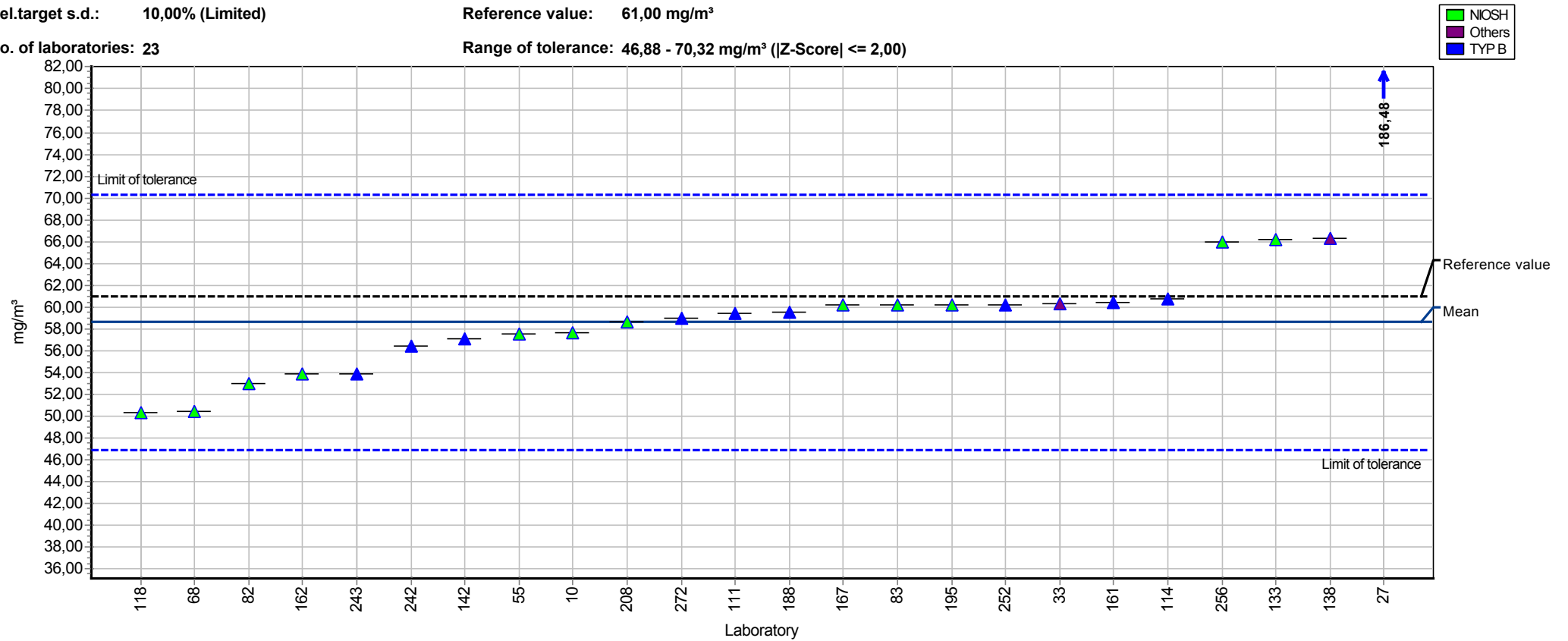


Summary results

Measurand: Toluene
Sample: 2
Method: ISO 5725-2
Rel.target s.d.: 10,00% (Limited)

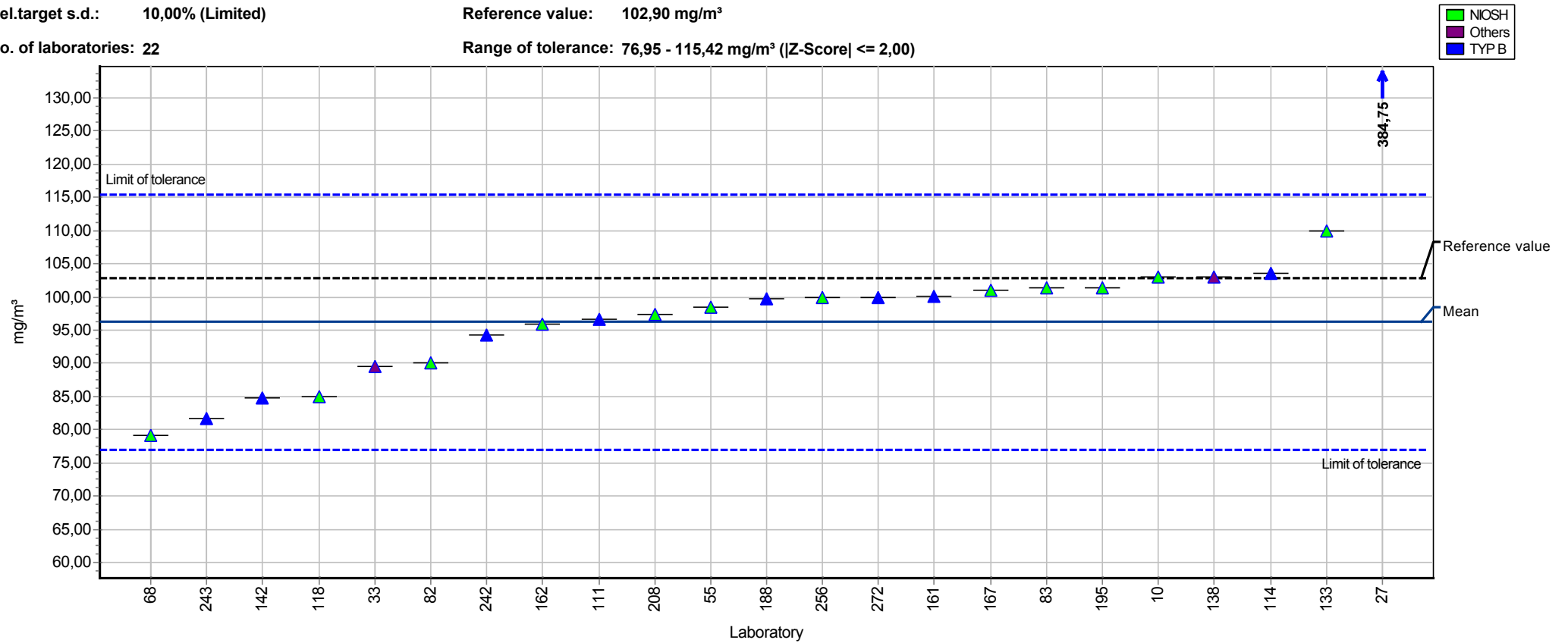
Mean: 58,60 mg/m³
Reprod. s.d.: 4,33 mg/m³
Rel.reprod. s.d.: 7,39%
Reference value: 61,00 mg/m³
Range of tolerance: 46,88 - 70,32 mg/m³ ($|Z\text{-Score}| \leq 2,00$)

No. of laboratories: 23



Summary results

Measurand: p-Xylene **Mean:** 96,18 mg/m³
Sample: 2 **Reprod. s.d.:** 7,90 mg/m³
Method: ISO 5725-2 **Rel.reprod. s.d.:** 8,21%
Rel.target s.d.: 10,00% (Limited) **Reference value:** 102,90 mg/m³
No. of laboratories: 22 **Range of tolerance:** 76,95 - 115,42 mg/m³ (|Z-Score| <= 2,00)

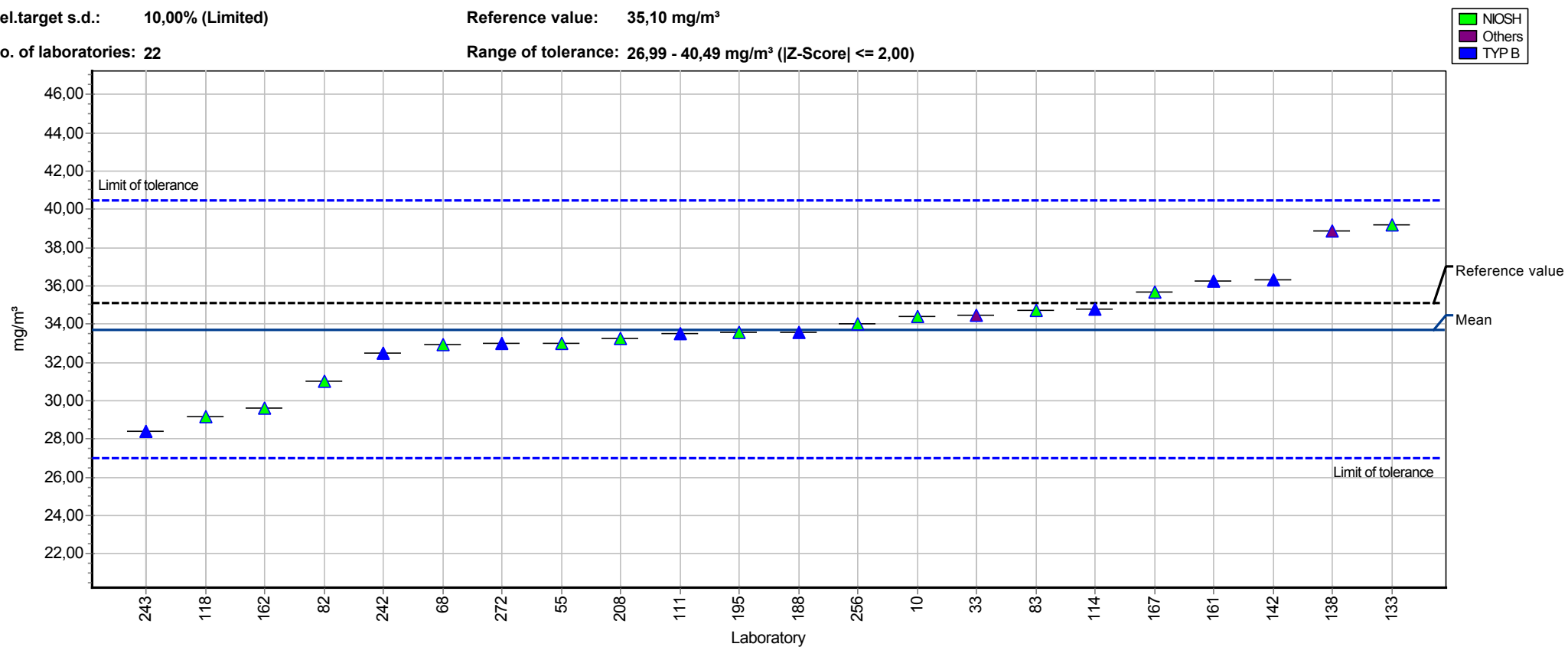


Summary results

Measurand: Ethylbenzene
Sample: 2
Method: ISO 5725-2
Rel.target s.d.: 10,00% (Limited)

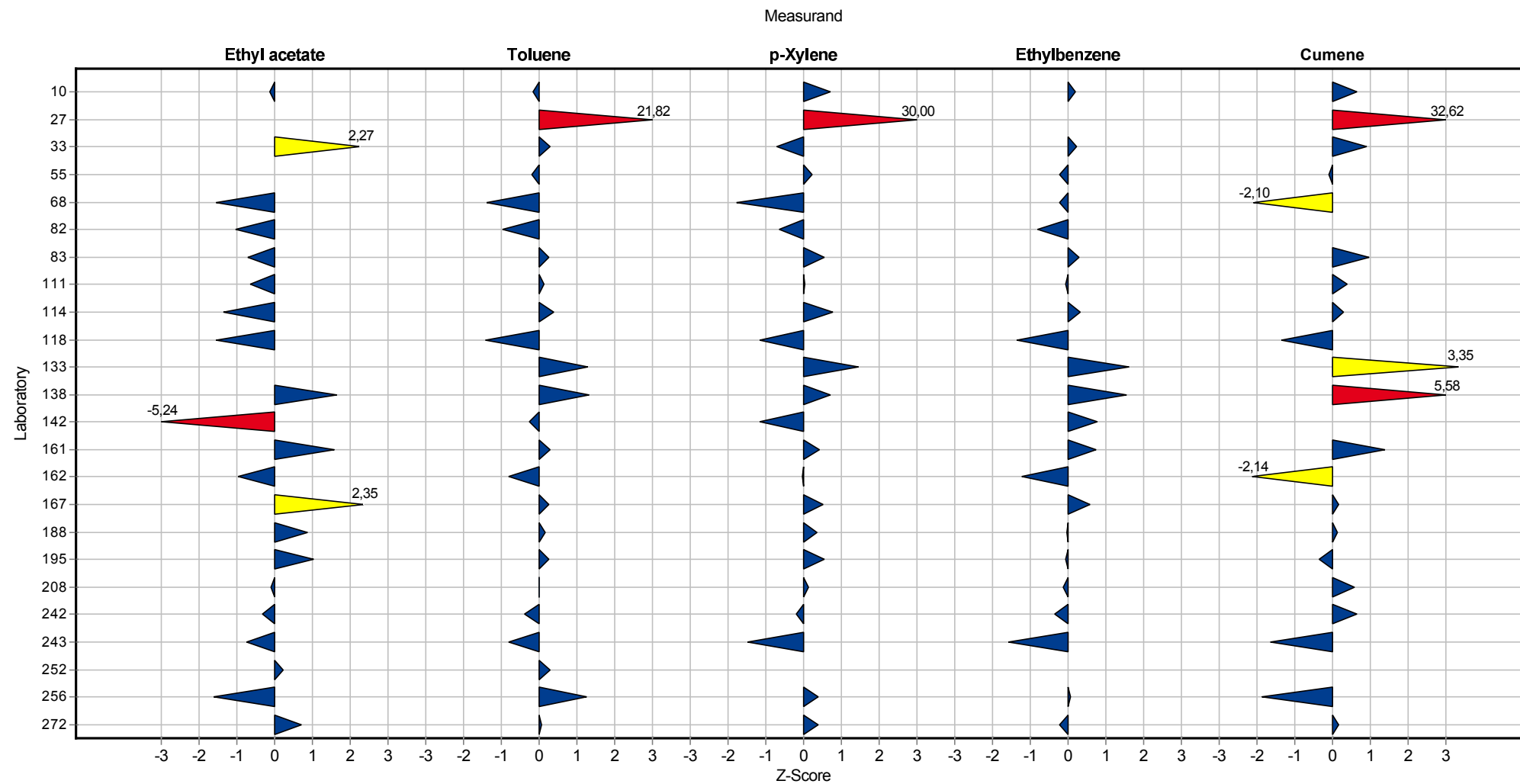
Mean: 33,74 mg/m³
Reprod. s.d.: 2,71 mg/m³
Rel.reprod. s.d.: 8,03%
Reference value: 35,10 mg/m³
Range of tolerance: 26,99 - 40,49 mg/m³ ($|Z\text{-Score}| \leq 2,00$)

No. of laboratories: 22



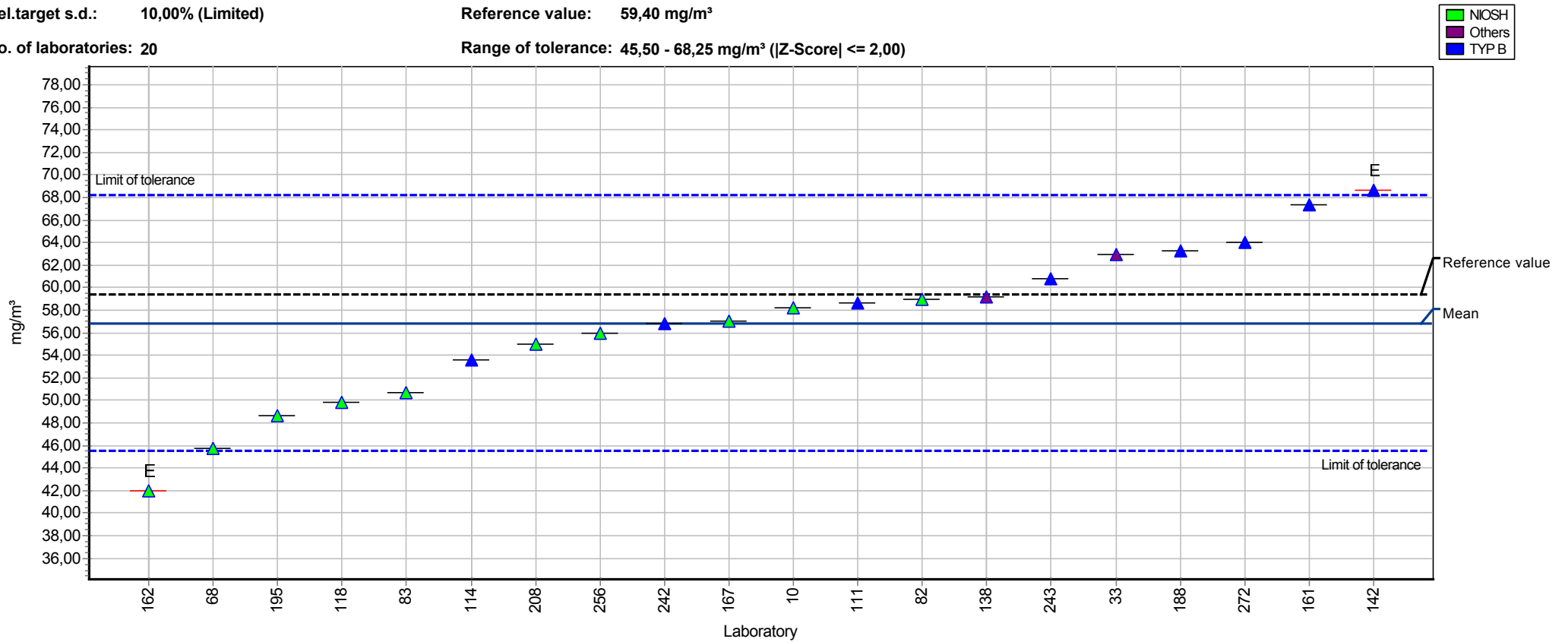
Sample chart of Z-scores

Sample 2



Summary results

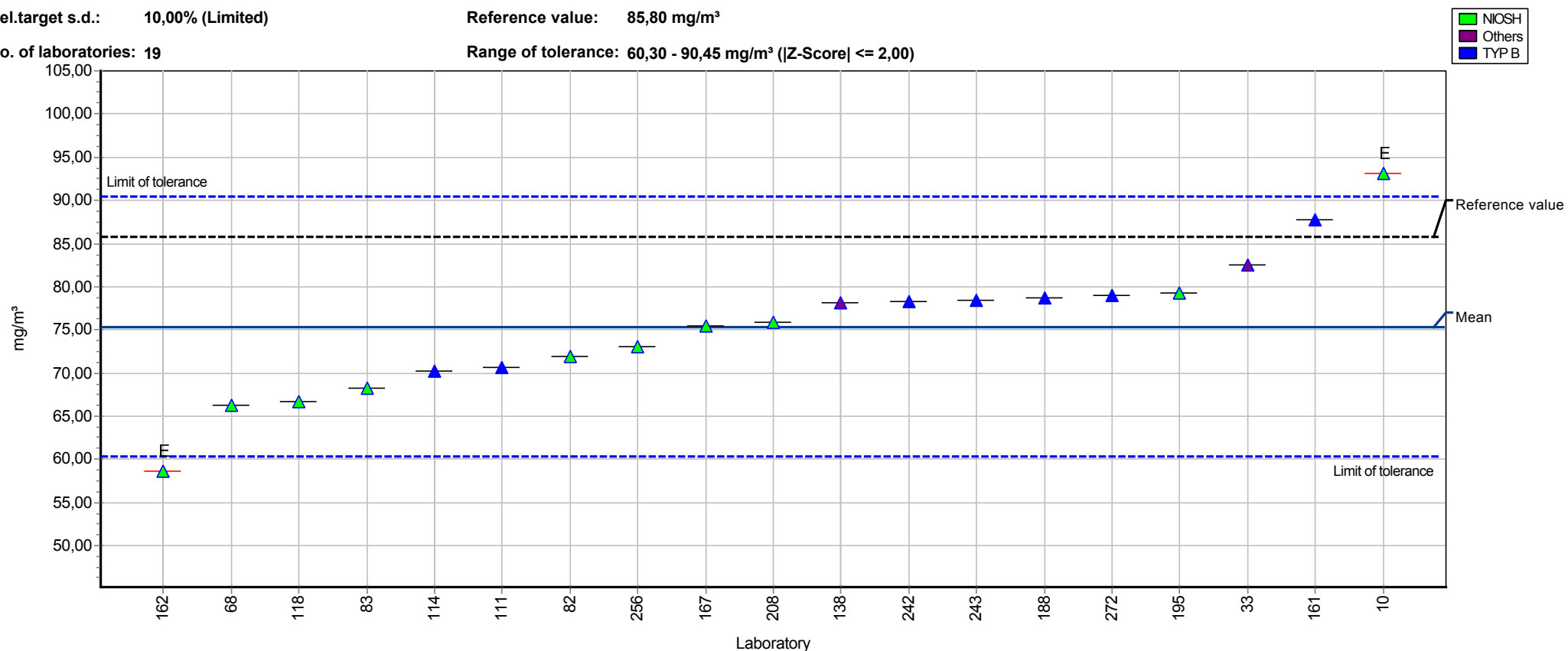
Measurand:	1- Butanol	Mean:	56,87 mg/m ³
Sample:	3	Reprod. s.d.:	6,97 mg/m ³
Method:	ISO 5725-2	Rel.reprod. s.d.:	12,25%
Rel.target s.d.:	10,00% (Limited)	Reference value:	59,40 mg/m ³
No. of laboratories:	20	Range of tolerance:	45,50 - 68,25 mg/m ³ (Z-Score <= 2,00)



Summary results

Measurand: 2-Butanol **Mean:** 75,37 mg/m³
Sample: 3 **Reprod. s.d.:** 7,95 mg/m³
Method: ISO 5725-2 **Rel.reprod. s.d.:** 10,55%
Rel.target s.d.: 10,00% (Limited) **Reference value:** 85,80 mg/m³

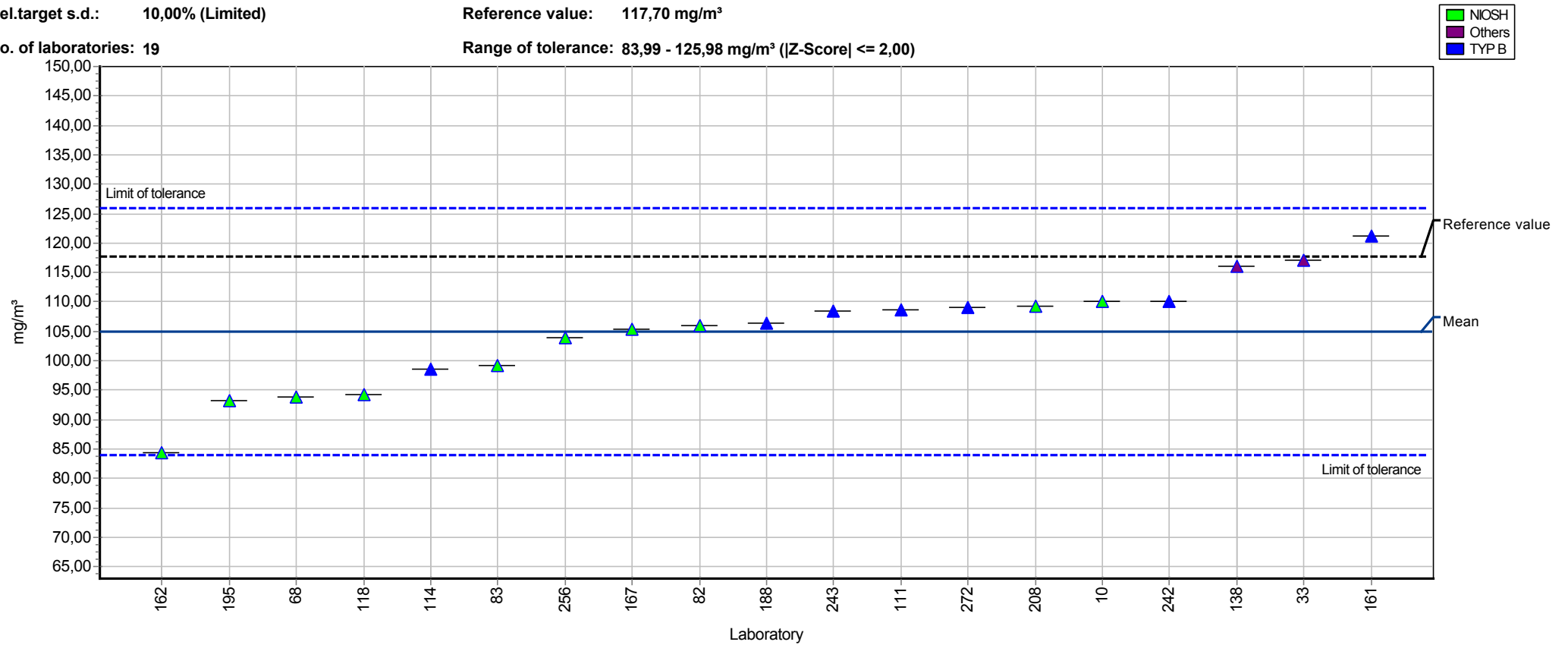
No. of laboratories: 19 **Range of tolerance:** 60,30 - 90,45 mg/m³ ($|Z\text{-Score}| \leq 2,00$)



Summary results

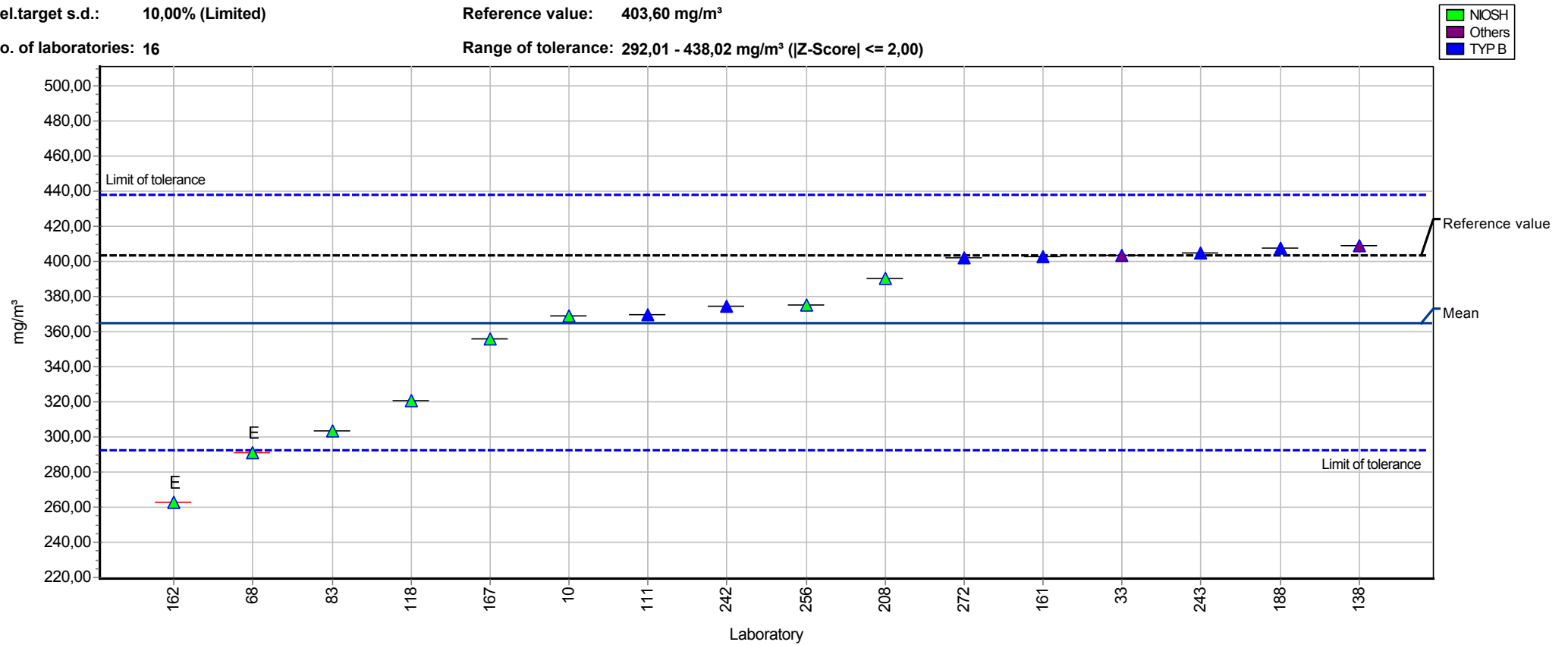
Measurand: i-Butanol **Mean:** 104,99 mg/m³
Sample: 3 **Reprod. s.d.:** 9,21 mg/m³
Method: ISO 5725-2 **Rel.reprod. s.d.:** 8,77%
Rel.target s.d.: 10,00% (Limited) **Reference value:** 117,70 mg/m³

No. of laboratories: 19 **Range of tolerance:** 83,99 - 125,98 mg/m³ ($|Z\text{-Score}| \leq 2,00$)



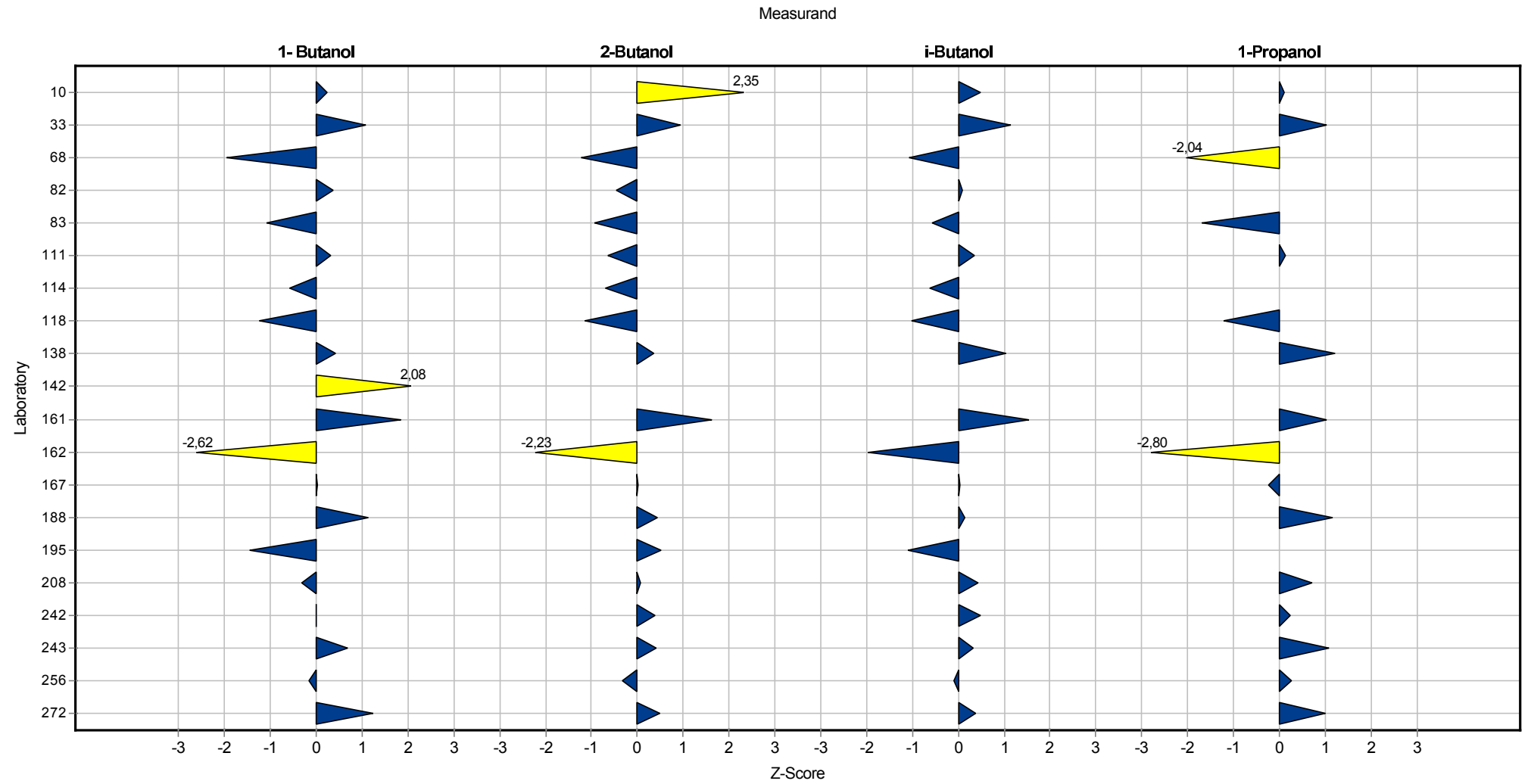
Summary results

Measurand:	1-Propanol	Mean:	365,01 mg/m ³
Sample:	3	Reprod. s.d.:	46,36 mg/m ³
Method:	ISO 5725-2	Rel.reprod. s.d.:	12,70%
Rel.target s.d.:	10,00% (Limited)	Reference value:	403,60 mg/m ³
No. of laboratories:	16	Range of tolerance:	292,01 - 438,02 mg/m ³ ($ Z\text{-Score} \leq 2,00$)



Sample chart of Z-scores

Sample 3



Questions and Answers

Participant	Analytical method
10	GC-FID
27	VHAHI
33	Hausmethode, SOP M 110, SOP M 100
55	GC-MS
68	Weder DFG noch IFA-Arbeitsmappe
82	Hauseigene Methode
83	NF X 43-267
111	7322, 7732, 7733
114	NF43-267
118	inhouse-Methode in Anlehnung an IFA-Arbeitsmappen 7732,7733,7322
133	internal method
138	IFA- Arbeitsmappe
142	eigene Analysenmethode (interner Code K-VOC-7)
161	IFA-Arbeitsmappe
162	Hausmethode (angelehnt an IFA-Arbeitsmappe)
167	Capillary Gas Chromatography, internal methods
188	IFA 7732, IFA 7733, IFA 7735, IFA 6600, DFG Nr. 2, NIOSH 1300, DFG Nr. 6, NIOSH 1450, NIOSH 1400
195	Internal
208	Own, based on NIOSH and OSHA -methods
242	IFA-Arbeitsmappe 48. Lfg. XI/11 (Kennzahl 7732, Kohlenwasserstoffe, aliphatisch)
243	Hausmethode, GC/FID
252	hausinterne Methode
256	nach VDI 2100 Blatt2
272	IFA 7732, IFA 7733, NIOSH 1450, DFG NR. 6

Participant	Desorption solution	Volume of desorption solution	Carrier gas
10	CS ₂ (and CS ₂ /2-propanol 99/1 for alcohol)	1,5/1	Helium
27	CS ₂	1	hydrogen
33	Benzylalkohol, Thermodesorption	1 ml	Helium

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Participant	Desorption solution	Volume of desorption solution	Carrier gas
55	carbendisulfide	2 ml	helium
68	CS2	1 ml	Helium
82	CS2 / Isopropanol 80/20	1 mL	Stickstoff
83	CS2	2 ml	He
111	ternäres Gemisch	2 ml	Helium
114	CS2	5ML	HELIUM
118	ternäres Gemisch (CH ₂ CL ₂ :CS ₂ :MeOH) = 60:35:5	10mL	Stickstoff
133	CS2	2 ml	Helium
138	Ternäres Gemisch	5 ml	Stickstoff
142	Benzylalkohol (aufschlämmen)	2 ml	Helium
161	Ternäres Gemisch	5 ml Lösungsmittel zum Extrahieren	Helium
162	Schwefelkohlenstoff	1,5 mL	Wasserstoff
167	Samples #1 & #2: Carbon disulphide, Sample #3: Carbon disulphide with 2 % methanol	1 mL	Helium
188	Schwefelkohlenstoff		
195	Carbon disulphide + n-propylbenzene as internal standard	1 ml	Helium
208	2% DMF in CS2	2,0 ml	Helium
242	Ternäres Gemisch (CH ₂ Cl ₂ : CS ₂ : MeOH) (60 : 35 : 5)	10 mL	Helium
243	ternäres Gemisch (Methanol/Dichlormethan/CS ₂ mit 3-Methylnonan als Standard)	2ml	Helium
252	DMF/CS ₂ (60:40)	5 ml	Helium
256	Diethylether und CS ₂	5ml und 5 ml	He
272	Schwefelkohlenstoff	10 mL	Stickstoff

Participant **Injection**

10	Split
27	split
33	Headspace (splitless), Thermodesorption (split)
55	split
68	split
82	split
83	split
111	split
114	SPLIT

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Participant	Injection
118	on column
133	split
138	splitless
142	Statischer Headspace (0.5 - 1 ml), gefolgt von Split-Injektion
161	split
162	split 1:20 und split 1:5
167	1,0 µL Splitless, 250 °C
195	Split
208	Split
242	split 1:10
243	split
252	split
256	split
272	splitless

Participant	Analytical column
10	WAX
33	DB-VRX
55	RTX 502.2
68	Vocol von Supelco
82	HP5 30m 0,32mm x 0,25µm
83	RTX-5 60mm*0.32*0.25
111	RTX 5
114	ELITE 5MS 60M
118	CP Sil 5 CB/CB-WAX 57 CB
133	624 30 m
138	CP sil - 8
142	DB-VRX 60 m x 0.25 mm, Filmdicke 1.4 µm
161	RTX VMS, ZB 5MS UI
162	Varian CP-Sil PONA CB 40m, 0,2µm, 0,1mmID und Restek RTX 502.2 60m, 1,4µm, 0,1mmID
167	Samples #1 & #2: Agilent Technologies DB-5MS + DG, 30 m x 0,25 mm, 0,25 µm film thickness, Sample #3: HP-INNOWAX, 30 m x 0,25 mm, 0,50 µm film thickness
188	polar (z. B. Wax) & unpolare (z. B. Optima 1)

Proficiency testing scheme Organic solvents 2018

Participant	Analytical column
195	Elite-5 20 m x 0.15 mm x 0.3 um
208	Agilent HP5, HP-Innow ax
242	Optima 624 LB, 50m x 0,32mm ID x 1,80µm FT
243	DB 624/ DB Wax
252	Rxi - 5Sil MS
256	RTx-624, 40m, 0.18mm ID, 1um Film
272	Optima 1 und Wax

Participant	Detector	Data evaluation	Recovery rate
10	FID	external	No
27	FID		
33	FID/MS	externer Standard	ja
55	MS	internal standard	yes
68	FID	interner Standard	Nein
82	FID	ISTD	ja
83	FID	ISTD	no
111	MS	Interner Standard	ja
114	FID	EXTERNAL	NON
118	FID	interner Standard	
133	MS	internal standard	no
138	FID	externer Standard	ja
142	MS im Fullscan-Modus	interner Standard: Toluol-d8	nein
161	MSD	interner Standard	ja
162	FID	interner Standard	ja
167	# 1 & #2: FID, 310 °C, #3: 250 °C	Internal standard, #1 & #2: Chlorobenzene, #3: 1,4-dioxane	
188	Flammenionisationsdetektor		
195	FID	Internal Standard	Yes
208	FID	External standard	No
242	FID	interner Standard (Undekan)	ja
243	FID	interner Standard	ja
252	FID	interner Standard	Nein
256	MS	Interner Standard	Ja

Proficiency testing scheme Organic solvents 2018

Participant	Detector	Data evaluation	Recovery rate
272	FID	externer Standard	ja

Participant	Date of analysis
10	05.03.2018
33	28.02.2018
55	01/03/2018
68	Probe 3: 27./28.2.18 und Probe 1+2: 12./13.3.18
82	2018-03-09
83	09/03/18
111	05. - 14.03.2018
114	01/03/2018
118	01.03.2018
133	22/02/2018
138	bis zum 16.03.2018
142	27.02. - 01.03.2018
161	28.02.2018
162	28.02.2018 und 02.03.2018
167	Week 11 - Week 12
195	28/02/2018
208	26.2.2018
242	Aufarbeitung 14.03.18-15.03.18 Messung am 15.03.18
243	19.-21.02.2018
252	08.03.2018 bzw . 13.03.2018
256	28.2.2018 + 6.3.2018
272	07.03.2018