Results of Proficiency Test
mixed-Xylenes
September 2013

Organised by: Institute for Interlaboratory Studies (iis)
Spijkenisse, the Netherlands

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1 INTRODUCTION

Since 1995, the Institute for Interlaboratory Studies organized once every two years proficiency test for Mixed-Xylenes. During the annual proficiency testing program 2013/2014, it was decided to organize again a round robin for the analysis of Mixed-Xylenes. In this interlaboratory study, 37 laboratories from 21 different countries have participated. See appendix 2 for the number of participants per country. In this report, the results of the 2013 Mixed-Xylenes proficiency test are presented and discussed. This report is also electronically available through the iis internet site www.iisnl.com.

2 SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, The Netherlands, was the organiser of this proficiency test. Sample analyses for fit-for-use and homogeneity testing were subcontracted. It was decided to send 2 samples of different composition (labelled #13172 and #13173). Participants were requested to report rounded and unrounded results. The unrounded results were preferably used for statistical evaluation.

2.1 QUALITY SYSTEM

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, has implemented a quality system based on ISO/IEC17043:2010. This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentially of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

2.2 PROTOCOL

The protocol followed in the organisation of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of January 2010 (iis-protocol, version 3.2). This protocol can be downloaded via the FAQ page of the iis website.

2.3 CONFIDENTIALITY STATEMENT

All data presented in this report must be regarded as confidential and for use by the participating companies only. Disclosure of the information in this report is only allowed by means of the entire report. Use of the contents of this report for third parties is only allowed by written permission of the Institute for Interlaboratory Studies. Disclosure of the identity of one or more of the participating companies will be done only after receipt of a written agreement of the companies involved.

2.4 SAMPLES

Two different mixtures of Xylenes were prepared: one without Ethylbenzene and one with Ethylbenzene. One batch was prepared in a pre-cleaned can from bulk material of high purity Xylenes by mixing appropriate amounts (see table 1) to get approximately 15 litres (13.2 kg) of bulk mixture.

	Ethylbenzene in kg	*p-Xylene in kg*	*m-Xylene in kg*	*o-Xylene in kg*
sample #13172	0.000	4.62	3.30	5.28

table 1: preparation table for subsamples #13172.

The second batch, also 15 liter was obtained from a local chemical supplier. Each batch was homogenised. Subsequently, each bulk sample was transferred to 41 (and 42) subsamples of 250 mL brown glass bottles and labelled respectively #13172 and #13173. The homogeneity of the subsamples #13172 and #13173 was checked by determination of p-Xylene in accordance with the (obsolete) test method ASTM D2306:00 on 8 stratified randomly selected samples.

	p-Xylene in %M/M		*p-Xylene in %M/M*
sample #13172-1	35.66	sample #13173-1	18.33
sample #13172-2	35.59	sample #13173-2	18.33
sample #13172-3	35.56	sample #13173-3	18.33
sample #13172-4	35.59	sample #13173-4	18.33
sample #13172-5	35.58	sample #13173-5	18.33
sample #13172-6	35.58	sample #13173-6	18.32
sample #13172-7	35.64	sample #13173-7	18.32
sample #13172-8	35.60	sample #13173-8	18.33

table 2: homogeneity tests results for subsamples #13172 and #13173

From the above test results, the repeatabilities were calculated and compared with 0.3 times the corresponding reproducibilities in agreement with the procedure of ISO 13528, Annex B2 in the next table:

	p-Xylene in %M/M	*p-Xylene in %M/M*
r (sample #13172)	0.09	--
r (sample #13173)	--	0.01
Reference method	ASTM D6563:12	ASTM D6563:12
0.3xReference	0.10	0.05

Table 3: repeatabilities of subsamples #13172 and #13173

Each calculated repeatability was equal or less than 0.3 times the corresponding reproducibility of the reference method. Therefore, homogeneity of the samples was assumed. To each of the participating laboratories 2 bottles were sent (one bottle of 250 mL, labelled #13172 and one bottle of 250 mL, labelled #13173), on September 4, 2013.

2.5 STABILITY OF THE SAMPLES

The stability of the materials, packed in the brown glass bottles, was checked. The materials were found sufficiently stable for the period of the proficiency test.

2.6 ANALYSES

The participants were asked to determine on both samples: Benzene, Toluene, p-Xylene, m-Xylene, o-Xylene, Ethylbenzene, Cumene, C9 and higher aromatics and Nonaromatics.

To get comparable results a detailed report form, on which the units and the reference methods were printed, was sent together with each set of samples. Also a letter of instructions and a SDS were added to the package.

3 RESULTS

During four weeks after sample despatch, the results of the individual laboratories were received. The original reported results are tabulated per determination in appendix 1 of this report. The laboratories are presented by their code numbers.
Directly after deadline, a reminder fax was sent to those laboratories that had not yet reported any results at that moment.
Shortly after the deadline the available results were screened for suspect data. A result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data were asked to check the results. Additional or corrected results are used for data analysis and original results are placed under 'Remarks' in the result tables in appendix 1.

3.1 STATISTICS

Statistical calculations were performed as described in the report ‘iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation’ of January 2010 (iis-protocol, version 3.2).

For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded results. Results reported as ‘<…’ or ‘>…’ were not used in the statistical evaluation.

First the normality of the distribution of the various data sets per determination was checked by means of the Lilliefors-test. After removal of outliers this check was repeated.
In case a data set does not have a normal distribution, the (results of the) statistical evaluation should be used with due care.
In accordance to ISO 5725 (1986 and 1994) the original results per determination were submitted subsequently to Dixon and Grubbs outlier tests. Outliers are marked by D(0.01) for the Dixon test and by G(0.01) or DG(0.01) for the Grubbs test. Stragglers are marked by D(0.05) for the Dixon test and by G(0.05) or DG(0.05) for the Grubbs test. Both outliers and stragglers were not included in the calculations of the averages and the standard deviations.

Finally, the reproducibilities were calculated from the standard deviations by multiplying these with a factor of 2.8.

For each assigned value the uncertainty was determined in accordance with ISO13528. Subsequently the calculated uncertainty was evaluated against the respective requirement based on the target reproducibility in accordance with ISO13528. When the uncertainty passed the evaluation no remarks are made in the report. However, when the uncertainty failed the evaluation it is mentioned in the report and it will have consequences for the evaluation of the test results.

3.2 GRAPHICS

In order to visualise the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported analysis results are plotted. The corresponding laboratory numbers are under the X-axis.
The straight horizontal line presents the consensus value (a trimmed mean). The four striped lines, parallel to the consensus value line, are the +3s, +2s, -2s and -3s target reproducibility limits of the selected standard. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle.
Furthermore, Kernel Density Graphs were made. This is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms (see appendix 3; nos.12 and 13).

3.3 Z-SCORES

To evaluate the performance of the participating laboratories the z-scores were calculated. As it was decided to evaluate the performance of the participants in this proficiency test (PT) against the literature requirements, the z-scores were calculated using a target standard deviation. This results in an evaluation independent of the spread of this interlaboratory study.

The target standard deviation was calculated from the target reproducibility (preferably taken from a standardized test method) by division with 2.8.
The z-scores were calculated in accordance with:

$$z_{(target)} = (\text{result} - \text{average of PT}) / \text{target standard deviation}$$

The $z_{(target)}$ scores are listed in the result tables in appendix 1.

When a laboratory did use a test method with a reproducibility that is significantly different from the reproducibility of the reference test method used in this report, it is strongly advised to recalculate the z-score, while using the reproducibility of the actual test method used, this in order to evaluate the fit-for-useness of the reported test result.

Absolute values for z<2 are very common and absolute values for z>3 are very rare. The usual interpretation of z-scores is as follows:

| z | < 1	good
1 < | z | < 2	satisfactory
2 < | z | < 3	questionable
3 < | z |	unsatisfactory

4 EVALUATION

In this proficiency test some serious problems were encountered with the dispatch of the samples to laboratories in Brazil and Saudi Arabia. Five participants reported results after the final reporting date and eight laboratories did not report any test results due to several reasons. Finally, 29 laboratories did report 519 numerical results. Observed were 57 outlying results, which is 11.0%. In proficiency studies outlier percentages of 3 - 7.5% are quite normal.

4.1 EVALUATION PER TEST

In this section the results are discussed per test. The methods, which are used by the various laboratories, are in the tables together with the original data. The abbreviations, used in these tables, are listed in appendix 3.
Regretfully, a standardized test method that covers all components evaluated in this study does not exist and a variety of test methods is required to have target reproducibilities of most components: ASTM D2360, ASTM D5917, ASTM D6563. The Horwitz equation was used for the components that were not mentioned in these standardized test methods.
Not all data sets proved to have a normal distribution. Non normal distributions were found with the following determinations on sample #13172: Benzene, Toluene, p-Xylene, m-Xylene, o-Xylene and Ethylbenzene. And on sample #13173: Toluene, p-Xylene, m-Xylene, o-Xylene and Cumene. For these components the results of the statistical evaluation should be used with due care.
For many components only reproducibilities at one defined concentration were given in the literature standards. In order to calculate the z-scores, estimated target reproducibilities derived from the literature standards were used.

Benzene: Regretfully, no standardized test method is available with precision data and therefore the Horwitz equation was used to estimate the target requirement. For sample #13172, the determination of this component was problematic. In total 5 statistical outliers were detected. The calculated reproducibility, after rejection of the statistical outliers, is not in agreement with the strict estimated reproducibility calculated using the Horwitz equation.
The benzene content of sample #13173 was near or below the limit of detection and too low to allow any significant conclusions.

Toluene: The determination of this component may be problematic for a number of laboratories. In total three statistical outliers were detected. The calculated reproducibility for both samples, after rejection of the statistical outliers, is in good agreement with the requirements of ASTM D2360:11.

p-Xylene: Some analytical problems were observed for this component. In total ten (!) statistical outliers (from 5 laboratories) were detected. The calculated reproducibility for both samples, after rejection of the statistical outliers, is not in agreement with the requirements of ASTM D6563:12, which appear to be identical to the requirements of the obsolete ASTM D2306:00.

m-Xylene: Some analytical problems were observed for this component. In total six statistical outliers (from 3 laboratories) were detected. The calculated reproducibility of sample #13172, after rejection of the statistical outliers, is not at all in agreement with the requirements of ASTM D6563:12. However, the calculated reproducibility of sample #13173 is almost in agreement.

o-Xylene: Some analytical problems were observed for this component. In total six statistical outliers (from 3 laboratories) were detected and one result was excluded. The calculated reproducibility for both samples, after rejection of the statistical outliers, is not in agreement with the requirements of ASTM D6563:12.

Sum m+p-Xylene: Some analytical problems were observed for this component. In total seven statistical outliers (from 4 laboratories) were detected and four test results were excluded. The calculated reproducibility of sample #13172, after rejection of the suspect data, is not at all in agreement with the requirements of ASTM D6563:12. However, the calculated reproducibility of sample #13173 is in full agreement.

Ethylbenzene: The determination of this component may be problematic for a number of laboratories. Five statistical outliers (only for sample #13173) were detected. The calculated reproducibility for both samples, after rejection of the statistical outliers is in good agreement with the requirements of the test method ASTM D6563:12.

Cumene: Some analytical problems were observed for this component. In total seven statistical outliers were detected. The calculated reproducibility for sample #13172 after rejection of the statistical outliers is not in agreement with the requirements of ASTM D2360:11. However, the calculated reproducibility of sample #13173 is in good agreement.

Sum $C9^+$ arom.: Some analytical problems were observed. In total four statistical outliers were detected. The calculated reproducibility for sample #13172 after rejection of the statistical outlier is not at all in agreement with the

requirements of ASTM D6563:12. However, the calculated reproducibility of sample #13173 is in good agreement.

Nonaromatics: Major analytical problems were observed. In total five statistical outliers were detected. The calculated reproducibility of each of the samples after rejection of the statistical outliers is not in agreement with the requirements of ASTM D2360:11.

General: In this round robin many different GC methods were used to determine the major components of the mixtures as well as the impurities. This was also the case in the previous rounds. Meanwhile method ASTM D6563:12 was issued, in which the reproducibilities for mixed-Xylenes are identical to the reproducibilities in the obsolete test method ASTM D2306. This is remarkable as the methods are not technically equivalent. Below is an overview of the test methods used and its quantification principles in order to enable judgement of the applicability:

D2306:00 - This obsolete test method determines the relative distribution of the individual C8 aromatic hydrocarbon isomers by normalization (major components only)

D2360:11 - This test method covers the determination of the total nonaromatic hydrocarbons, and trace monocyclic aromatic hydrocarbons (upto 1 %M/M)

D3797:05 - This test method covers the analysis of o-xylene

D4492:10 - This test method covers the determination of finished benzene

D5917:09 - This test method covers the determination of the total nonaromatic hydrocarbons and trace monocyclic aromatic hydrocarbons (upto 2.5 %M/M)

D6563:12 - This test method covers the determination of the total nonaromatic hydrocarbons, benzene, toluene, ethylbenzene, xylenes, and total C9 + aromatic hydrocarbons, …….. and the relative distribution of the individual C8 aromatic hydrocarbon isomers (both impurities and major components)

D7504:09 - This test method covers the determination of the total nonaromatic hydrocarbons and trace monocyclic aromatic hydrocarbons (upto 2.5 %M/M)

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the relevant standard and the reproducibility as found for the group of participating laboratories. The average results per sample, calculated reproducibilities and reproducibilities derived from literature standards (in casu ASTM standards), are compared in the next tables.

	unit	n	average	2.8 *sd_r	R(lit)
Benzene	%M/M	19	0.004	0.002	0.001
Toluene	%M/M	27	0.038	0.009	0.009
p-Xylene	%M/M	23	35.45	0.38	0.34
m-Xylene	%M/M	25	25.20	0.38	0.21
o-Xylene	%M/M	25	38.95	0.78	0.42
Sum m+p-Xylene	%M/M	22	60.66	0.57	0.40
Ethylbenzene	%M/M	28	0.065	0.019	0.024
Cumene	%M/M	24	0.045	0.008	0.006
Sum $C9^+$ aromatics	%M/M	25	0.121	0.059	0.029
Nonaromatics	%M/M	25	0.108	0.052	0.034

Table 4: reproducibilities of sample #13172

	unit	n	average	2.8 *sd_R	R (lit)
Benzene	%M/M	25	<0.001	n.a.	n.a.
Toluene	%M/M	26	0.059	0.009	0.014
p-Xylene	%M/M	23	18.38	0.21	0.18
m-Xylene	%M/M	25	42.22	0.39	0.35
o-Xylene	%M/M	26	21.45	0.55	0.23
Sum m+p-Xylene	%M/M	22	60.59	0.37	0.39
Ethylbenzene	%M/M	24	17.75	0.15	0.15
Cumene	%M/M	23	0.060	0.006	0.008
Sum $C9^+$ aromatics	%M/M	21	0.065	0.014	0.016
Nonaromatics	%M/M	19	0.005	0.006	0.002

Table 5: reproducibilities of sample #13173

Without further statistical calculations it can be concluded that for only some components there is a good compliance of the group of participating laboratories with the relevant standards. The components that are problematic have been discussed in paragraph 4.1.

4.3 COMPARISON OF THE SEPTEMBER 2013 PROFICIENCY TEST WITH PREVIOUS PTS

	September 2013	*September 2011*	*September 2009*	*November 2007*
Number of reporting labs	29	29	24	23
Number of results reported	519	519	430	434
Statistical outliers	57	36	26	30
Percentage outliers	11.0%	6.9%	6.1%	6.9%

table 6: comparison with previous proficiency tests.

In proficiency tests, outlier percentages of 3% - 7.5% are quite normal.

The performance of the determinations of the proficiency tests was compared against the requirements of the respective standards. The conclusions are given the following table:

	September 2013		*September 2011*		*September 2009*		*November 2007*	
Benzene	--	n.e.	(--)	--	n.e.	n.e.	n.e.	n.e.
Toluene	+/-	++	--	+/-	++	++	++	++
p-Xylene	-	-	++	++	++	++	++	++
m-Xylene	--	-	++	+/-	-	+/-	++	++
o-Xylene	--	--	+/-	--	+/-	--	++	+
Ethylbenzene	++	+/-	++	--	++	--	++	+
Cumene	-	+	--	--	+	-	--	+/-
$C9^+$ aromatics	--	+	--	--	--	--	n.e.	n.e.
Nonaromatics	--	--	--	--	-	-	+	++

table 7: comparison of performances against the standard requirements over the last PTs

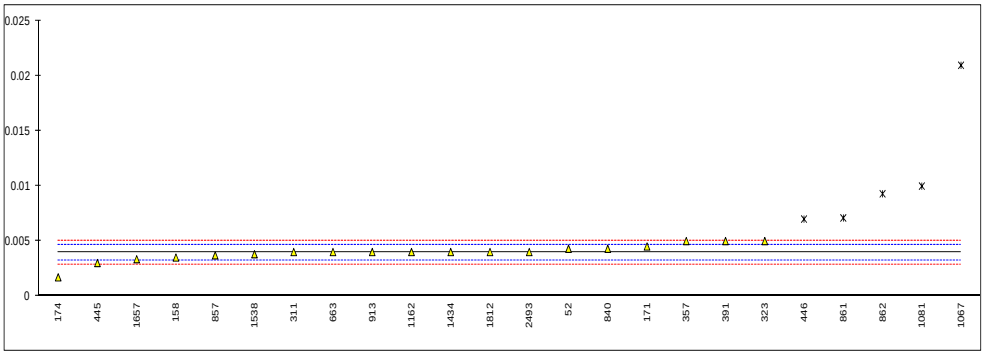
The performance of the determinations against the requirements of the respective standards is listed in the above table. The following performance categories were used:

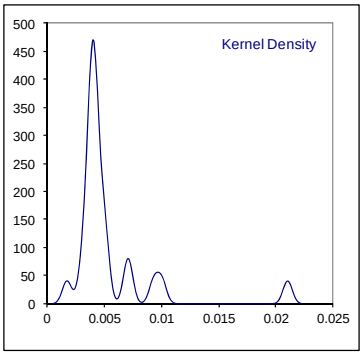
++: group performed much better than the standard
+ : group performed better than the standard
+/-: group performance equals the standard
- : group performed worse than the standard
-- : group performed much worse than the standard
n.e.: not evaluated

APPENDIX 1

Determination of Benzene on sample #13172; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	0.0043		0.95	
150	D2360	<0.001		-----	
158	D2360	0.0035		-1.25	
171	D6563	0.00451		1.52	
174	D2360	0.0017		-6.20	
311	D2360	0.004		0.12	
317	D6563	<0.01		-----	
323	D2360	0.005		2.87	
333		-----		-----	
357	D6563	0.005		2.87	
391	D2360	0.005		2.87	
445	INH-003	0.003		-2.63	
446	D6563	0.007	DG(0.05)	8.37	
497		-----		-----	
551		-----		-----	
555		-----		-----	
557		-----		-----	
663	D6563	0.004		0.12	
840	D2360	0.0043		0.95	
857	D2360	0.0037		-0.70	
861	D2360	0.0071	DG(0.05)	8.64	
862	D2360	0.0093	DG(0.01)	14.69	
902		-----		-----	
913	D2360	0.0040		0.12	
1011	D5917	<0.01		-----	
1041	in house	<0.01		-----	
1067	D6563	0.021	G(0.01)	46.84	
1081	D6563	0.010	DG(0.01)	16.61	
1162	in house	0.004	C	0.12	First reported 0.0048
1201		-----		-----	
1434	D2360	0.004	C	0.12	First reported 0
1538	D2360	0.0038		-0.43	
1657	D2360	0.00335		-1.66	
1750		-----		-----	
1812	D2360	0.004		0.12	
1866		-----		-----	
2493	D2360	0.004		0.12	
	normality	not OK			
	n	19			
	outliers	5			
	mean (n)	0.0040			
	st.dev. (n)	0.00076			
	R(calc.)	0.0021			
	R(Horwitz)	0.0010			

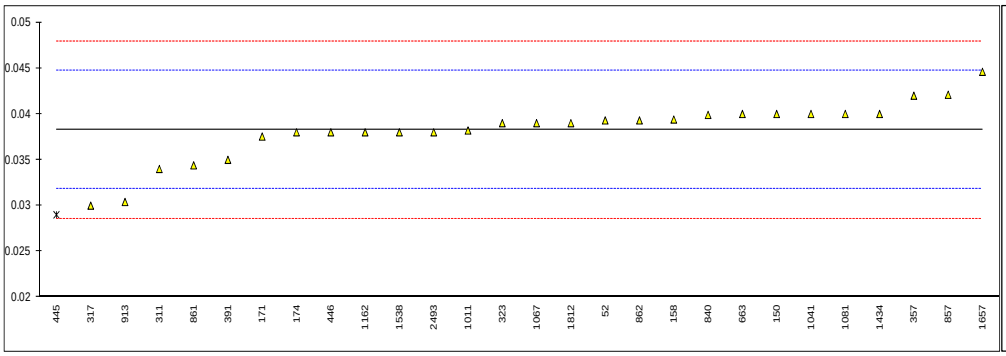


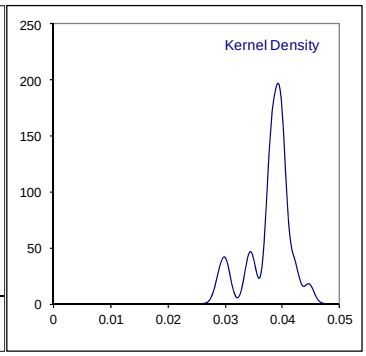


Determination of Toluene on sample #13172; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	0.0393		0.32	
150	D6563	0.040	C	0.54	First reported 0.045
158	D2360	0.0394		0.35	
171	D6563	0.03754		-0.22	
174	D2360	0.038		-0.08	
311	D2360	0.034		-1.32	
317	D6563	0.03		-2.57	
323	D2360	0.039		0.23	
333		-----		-----	
357	D6563	0.042		1.16	
391	D2360	0.035		-1.01	
445	INH-003	0.029	G(0.05)	-2.88	
446	D6563	0.038		-0.08	
497		-----		-----	
551		-----		-----	
555		-----		-----	
557		-----		-----	
663	D6563	0.040		0.54	
840	D2360	0.0399		0.51	
857	D2360	0.0421		1.19	
861	D2360	0.0344		-1.20	
862	D2360	0.0393		0.32	
902		-----		-----	
913	D2360	0.0304		-2.44	
1011	D5917	0.0382		-0.02	
1041	in house	0.040		0.54	
1067	D6563	0.039		0.23	
1081	D6563	0.040		0.54	
1162	in house	0.038	C	-0.08	First reported 0.0452
1201		-----		-----	
1434	D2360	0.04		0.54	
1538	D2360	0.038		-0.08	
1657	D2360	0.0446		1.97	
1750		-----		-----	
1812	D2360	0.039		0.23	
1866		-----		-----	
2493	D2360	0.038		-0.08	

normality	not OK
n	27
outliers	1
mean (n)	0.0383
st.dev. (n)	0.00320
R(calc.)	0.0090
R(D2360:11)	0.0090

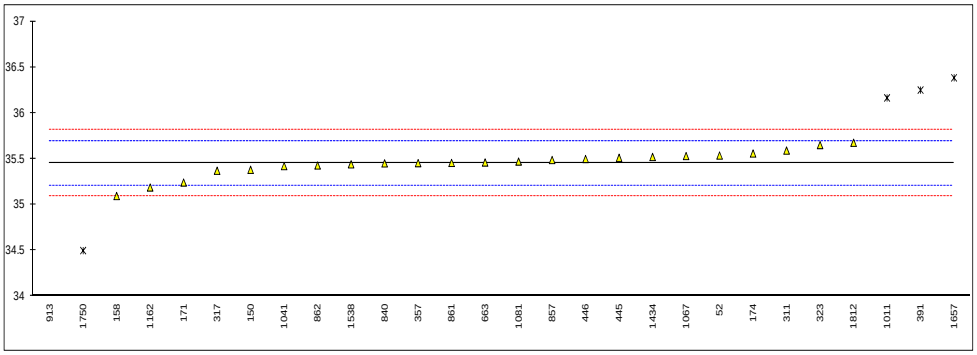


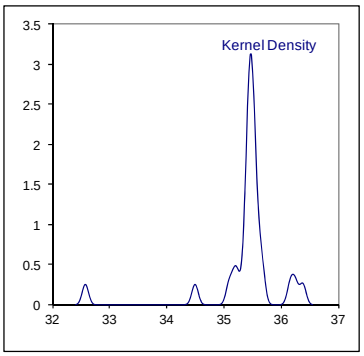


Determination of p-Xylene on sample #13172; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	35.5357		0.69	
150	D6563	35.38		-0.60	
158	D2360	35.094		-2.96	
171	D6563	35.24146		-1.74	
174	D2360	35.558		0.87	
311	D2306	35.59		1.14	
317	D6563	35.37	C	-0.68	First reported 35.50
323	D6563	35.65		1.63	
333		-----		-----	
357	D6563	35.453		0.01	
391	D6563	36.25	DG(0.01)	6.58	
445	INH-003	35.511		0.48	
446	D6563	35.498		0.38	
497		-----		-----	
551		-----		-----	
555		-----		-----	
557		-----		-----	
663	D6563	35.460		0.06	
840	D6563	35.450		-0.02	
857	D6563	35.487		0.29	
861	D2360	35.455	C	0.02	First reported 33.769
862	D6563	35.427		-0.21	
902		-----		-----	
913	D6563	32.580	G(0.01)	-23.70	
1011	D5917	36.1642	G(0.01)	5.87	
1041	in house	35.420		-0.27	
1067	D6563	35.530		0.64	
1081	D6563	35.470		0.15	
1162	in house	35.187	C	-2.19	First reported 35.3751
1201		-----		-----	
1434		35.52		0.56	
1538	D2360	35.44		-0.10	
1657		36.384	DG(0.01)	7.69	
1750	ISO8974	34.498	G(0.05)	-7.87	
1812		35.675		1.84	
1866		-----		-----	
2493		-----		-----	

normality	not OK
n	23
outliers	5
mean (n)	35.4523
st.dev. (n)	0.13494
R(calc.)	0.3778
R(D6563:12)	0.3394

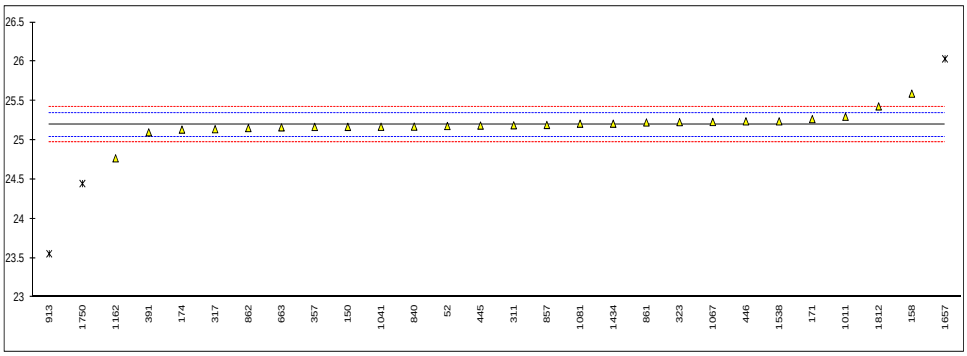


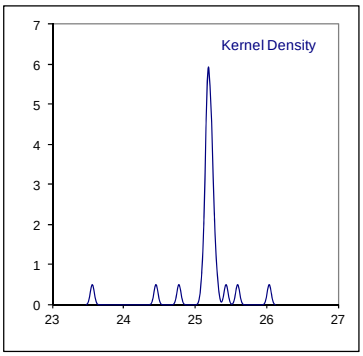


Determination of m-Xylene on sample #13172; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	25.1803		-0.30	
150	D6563	25.17		-0.44	
158	D2360	25.5928		5.18	
171	D6563	25.26860		0.87	
174	D2360	25.135		-0.90	
311	D2306	25.19		-0.17	
317	D6563	25.14		-0.83	
323	D6563	25.23		0.36	
333		-----		-----	
357	D6563	25.169		-0.45	
391	D6563	25.10		-1.37	
445	INH-003	25.186		-0.22	
446	D6563	25.24		0.49	
497		-----		-----	
551		-----		-----	
555		-----		-----	
557		-----		-----	
663	D6563	25.163		-0.53	
840	D6563	25.173		-0.40	
857	D6563	25.194		-0.12	
861	D2360	25.226	C	0.31	First reported 26.988
862	D6563	25.154		-0.65	
902		-----		-----	
913	D6563	23.554	G(0.01)	-21.89	
1011	D5917	25.2987		1.27	
1041	in house	25.171		-0.42	
1067	D6563	25.232		0.39	
1081	D6563	25.210		0.09	
1162	in house	24.769	C	-5.76	First reported 24.478
1201		-----		-----	
1434		25.21		0.09	
1538	D2360	25.24		0.49	
1657		26.035	G(0.01)	11.05	
1750	ISO8974	24.447	G(0.05)	-10.03	
1812		25.430		3.01	
1866		-----		-----	
2493		-----		-----	

normality	not OK
n	25
outliers	3
mean (n)	25.2029
st.dev. (n)	0.13519
R(calc.)	0.3785
R(D6563:12)	0.2109

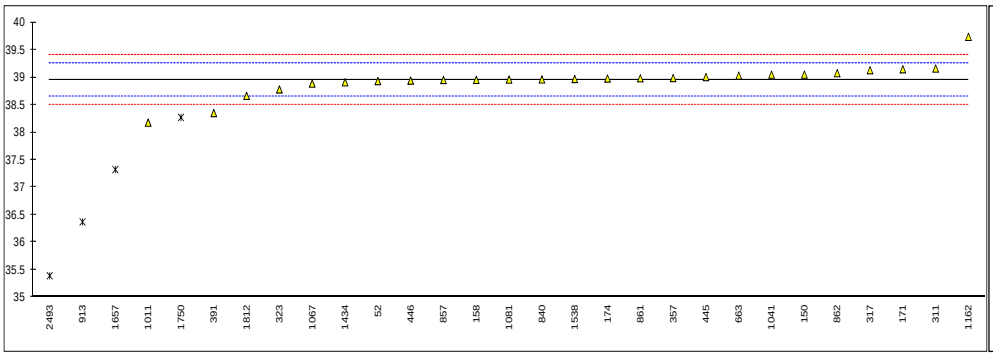


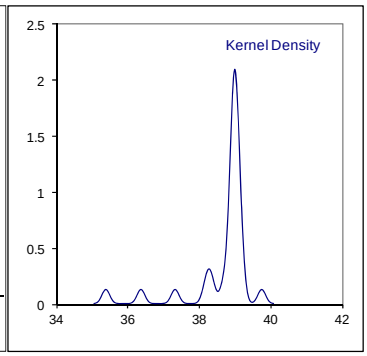


Determination of o-Xylene on sample #13172; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	38.9322		-0.12	
150	D6563	39.05		0.66	
158	D2360	38.954		0.02	
171	D6563	39.14688		1.30	
174	D2360	38.979		0.19	
311	D2306	39.16		1.39	
317	D6563	39.13		1.19	
323	D6563	38.78		-1.13	
333		-----		-----	
357	D6563	38.987		0.24	
391	D6563	38.35		-3.99	
445	INH-003	39.005		0.36	
446	D6563	38.94		-0.07	
497		-----		-----	
551		-----		-----	
555		-----		-----	
557		-----		-----	
663	D6563	39.031		0.53	
840	D6563	38.962		0.07	
857	D6563	38.952		0.01	
861	D2360	38.982		0.21	
862	D6563	39.076		0.83	
902		-----		-----	
913	D6563	36.371	G(0.01)	-17.13	
1011	D5917	38.1768		-5.14	
1041	in house	39.049		0.65	
1067	D6563	38.887		-0.42	
1081	D6563	38.960		0.06	
1162	in house	39.737	C	5.22	First reported 39.8300
1201		-----		-----	
1434		38.91		-0.27	
1538	D2360	38.97		0.13	
1657		37.322	G(0.01)	-10.82	
1750	ISO8974	38.270	ex	-4.52	See §4.1
1812		38.663		-1.91	
1866		-----		-----	
2493		35.391	C,G(0.01)	-23.64	First reported 34.506

normality	not OK
n	25
outliers	3
mean (n)	38.9508
st.dev. (n)	0.27830
R(calc.)	0.7793
R(D6563:12)	0.4216

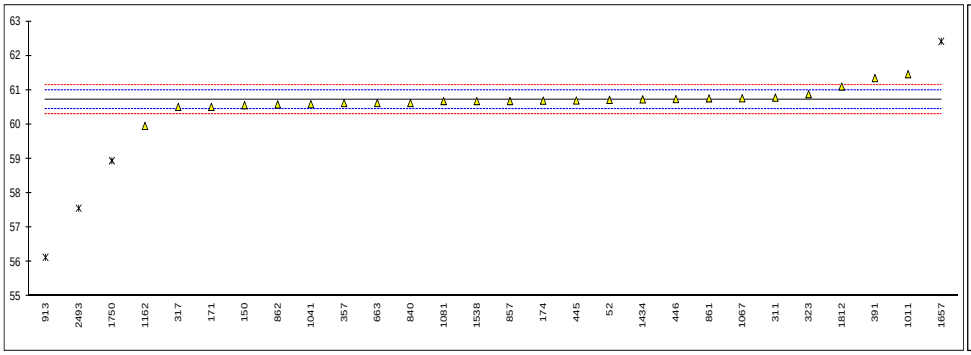


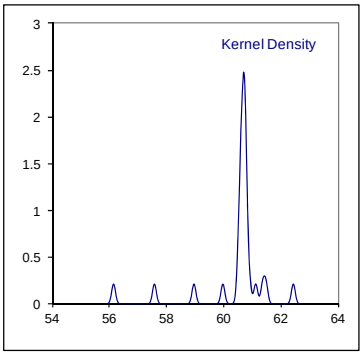


Determination of Sum m+p-Xylene on sample #13172; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	60.7160		0.41	
150	D6563	60.56		-0.69	
158		-----		-----	
171	D6563	60.51006		-1.04	
174	D2360	60.693		0.24	
311	D2306	60.78		0.85	
317	D6563	60.51	C	-1.04	First reported 60.64
323	D6563	60.88		1.55	
333		-----		-----	
357		60.622		-0.25	
391	D6563	61.35	ex	4.85	See §4.1
445	INH-003	60.697		0.27	
446	D6563	60.74		0.57	
497		-----		-----	
551		-----		-----	
555		-----		-----	
557		-----		-----	
663	D6563	60.623		-0.25	
840	D6563	60.623		-0.25	
857	D6563	60.681		0.16	
861	D2360	60.76		0.71	
862	D6563	60.582		-0.53	
902		-----		-----	
913	D6563	56.134	G(0.01)	-31.70	
1011	D5917	61.4629	ex	5.64	See §4.1
1041	in house	60.590		-0.48	
1067	D6563	60.762		0.73	
1081	D6563	60.680		0.15	
1162	in house	59.956	C	-4.92	First reported 59.8528
1201		-----		-----	
1434		60.73		0.50	
1538	D2360	60.68		0.15	
1657		62.419	G(0.05)	12.34	
1750	ISO8974	58.945	G(0.05)	-12.00	
1812		61.105		3.13	
1866		-----		-----	
2493		57.562	C,G(0.01)	-21.69	First reported 55.902

normality	OK
n	22
outliers	4
mean (n)	60.6582
st.dev. (n)	0.20296
R(calc.)	0.5683
R(D6563:12)	0.3996

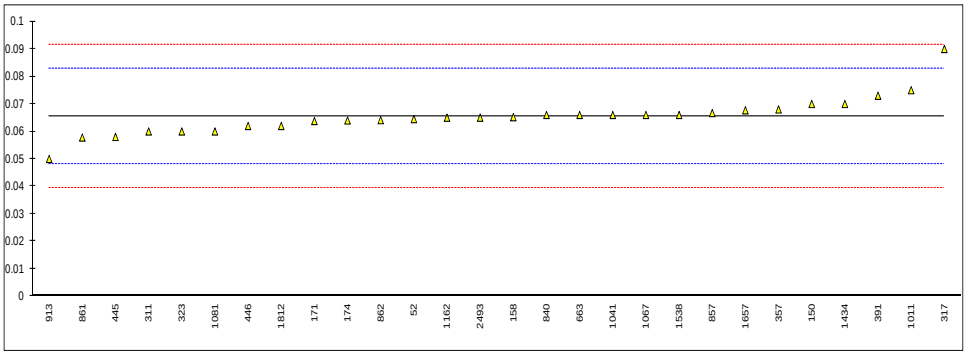


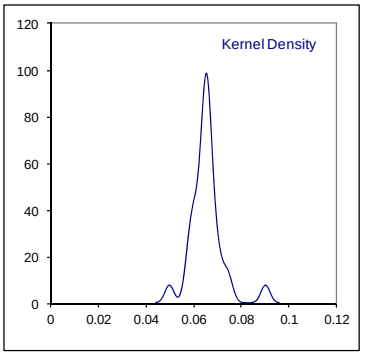


Determination of Ethylbenzene on sample #13172; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	0.0645		-0.11	
150	D6563	0.07		0.53	
158	D2360	0.0652		-0.03	
171	D6563	0.06378		-0.19	
174	D2360	0.064		-0.16	
311	D2306	0.06		-0.63	
317	D6563	0.09	C	2.84	First reported 0.06
323	D2360	0.06		-0.63	
333		-----		-----	
357	D6563	0.068		0.30	
391	D2360	0.073		0.88	
445	INH-003	0.058		-0.86	
446	D6563	0.062		-0.40	
497		-----		-----	
551		-----		-----	
555		-----		-----	
557		-----		-----	
663	D6563	0.066		0.07	
840	D2360	0.0660		0.07	
857	D2360	0.0667		0.15	
861	D2360	0.0578		-0.88	
862	D2360	0.0641		-0.15	
902		-----		-----	
913	D2360	0.0500		-1.78	
1011	D5917	0.0750		1.11	
1041	in house	0.066		0.07	
1067	D6563	0.066		0.07	
1081	D6563	0.060		-0.63	
1162	in house	0.065	C	-0.05	First reported 0.0682
1201		-----		-----	
1434	D2360	0.07		0.53	
1538	D2360	0.066		0.07	
1657	D2360	0.0677		0.26	
1750		-----		-----	
1812	D2360	0.062		-0.40	
1866		-----		-----	
2493	D2360	0.065		-0.05	

normality	not OK
n	28
outliers	0
mean (n)	0.0654
st.dev. (n)	0.00689
R(calc.)	0.0193
R(D2360:11)	0.0242

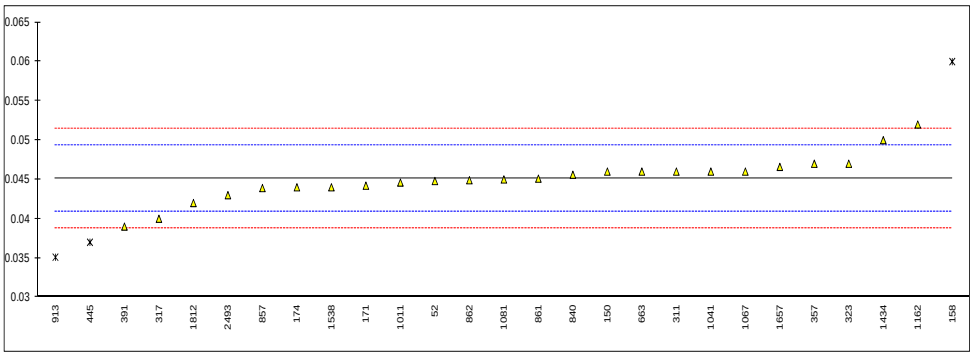


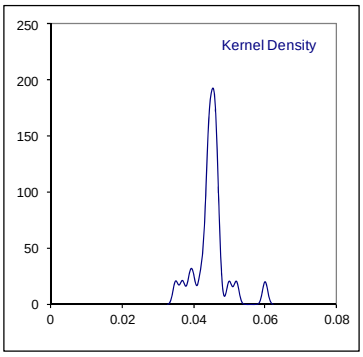


Determination of Cumene on sample #13172; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	0.0448		-0.15	
150	D2360	0.046		0.42	
158	D2360	0.060	G(0.01)	7.11	
171	D6563	0.04421		-0.43	
174	D2360	0.044		-0.53	
311	D2360	0.046		0.42	
317	D6563	0.04		-2.44	
323	D2360	0.047		0.90	
333		-----		-----	
357	D6563	0.047		0.90	
391	D2360	0.039		-2.92	
445	INH-003	0.037	DG(0.05)	-3.87	
446		-----		-----	
497		-----		-----	
551		-----		-----	
555		-----		-----	
557		-----		-----	
663	D6563	0.046		0.42	
840	D2360	0.0456		0.23	
857	D2360	0.0439		-0.58	
861	D2360	0.0451	C	-0.01	First reported 0.0374
862	D2360	0.0449		-0.10	
902		-----		-----	
913	D2360	0.0351	DG(0.05)	-4.78	
1011	D5917	0.0446		-0.24	
1041	in house	0.046		0.42	
1067	D6563	0.046		0.42	
1081	D6563	0.045		-0.05	
1162	in house	0.052		3.29	
1201		-----		-----	
1434	D2360	0.05		2.33	
1538	D2360	0.044		-0.53	
1657	D2360	0.0466		0.71	
1750		-----		-----	
1812	D2360	0.042		-1.49	
1866		-----		-----	
2493	D2360	0.043		-1.01	

normality	OK
n	24
outliers	3
mean (n)	0.0451
st.dev. (n)	0.00270
R(calc.)	0.0076
R(D2360:11)	0.0059

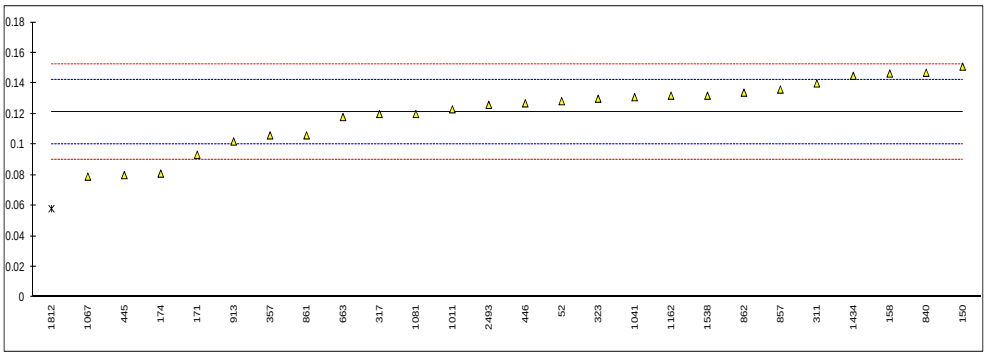


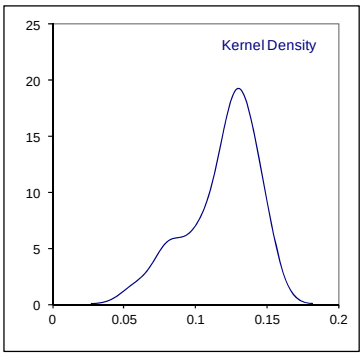


Determination of Sum of $C9^+$ aromatics on sample #13172; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	0.1284		0.67	
150	D2360	0.151		2.84	
158	D2360	0.1465		2.41	
171	D6563	0.0933		-2.69	
174	D2360	0.081		-3.87	
311	D2360	0.140		1.79	
317	D6563	0.12		-0.13	
323	D6563	0.13		0.83	
333		-----		-----	
357	D6563	0.106		-1.47	
391		-----		-----	
445	INH-003	0.080		-3.97	
446	D6563	0.127	C	0.54	First reported 0.08
497		-----		-----	
551		-----		-----	
555		-----		-----	
557		-----		-----	
663	D6563	0.118		-0.32	
840	D6563	0.147		2.46	
857	D6563	0.136		1.40	
861	D6563	0.106		-1.47	
862	D6563	0.134		1.21	
902		-----		-----	
913	D6563	0.102		-1.86	
1011	D5917	0.1231	C	0.17	First reported 0.112
1041	in house	0.131		0.92	
1067	D6563	0.079		-4.06	
1081	D6563	0.120		-0.13	
1162	in house	0.132	C	1.02	First reported 0.1282
1201		-----		-----	
1434	D6563	0.145		2.26	
1538	D2360	0.132		1.02	
1657		-----		-----	
1750		-----		-----	
1812	D6563	0.058	G(0.05)	-6.07	
1866		-----		-----	
2493	D6563	0.126		0.44	

normality	OK
n	25
outliers	1
mean (n)	0.1214
st.dev. (n)	0.02115
R(calc.)	0.0592
R(D6563:12)	0.0292

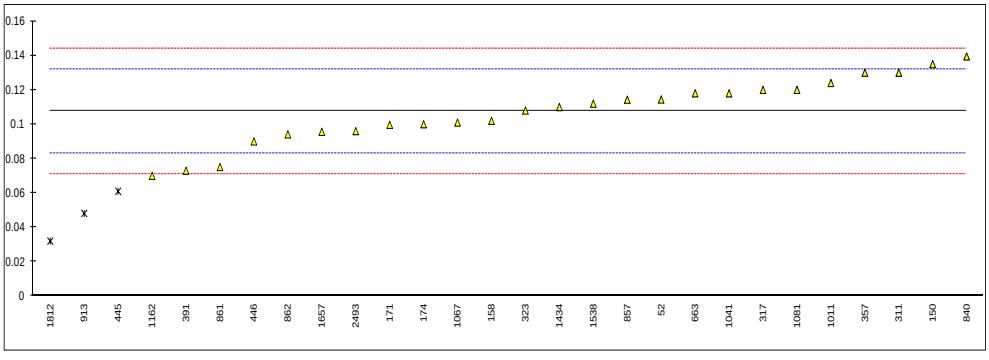


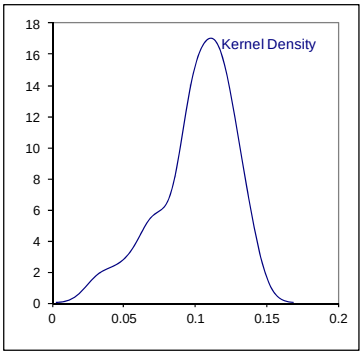


Determination of Nonaromatics on sample #13172; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	0.1144		0.56	
150	D2360	0.135		2.24	
158	D2360	0.102		-0.46	
171	D6563	0.0997		-0.64	
174	D2360	0.100		-0.62	
311	D2360	0.130		1.83	
317	D6563	0.12	C	1.01	First reported 0.01
323	D2360	0.108		0.03	
333		-----		-----	
357	D6563	0.130		1.83	
391	D2360	0.073		-2.83	
445	INH-003	0.061	G(0.05)	-3.81	
446	D6563	0.090	C	-1.44	First reported 0.14
497		-----		-----	
551		-----		-----	
555		-----		-----	
557		-----		-----	
663	D6563	0.118		0.85	
840	D2360	0.1395		2.61	
857	D2360	0.1143		0.55	
861	D2360	0.0751		-2.65	
862	D2360	0.0941		-1.10	
902		-----		-----	
913	D2360	0.0481	G(0.05)	-4.86	
1011	D5917	0.1240	C	1.34	First reported 0.108
1041	in house	0.118		0.85	
1067	D6563	0.101		-0.54	
1081	D6563	0.120		1.01	
1162	in house	0.070		-3.07	
1201		-----		-----	
1434	D2360	0.11		0.20	
1538	D2360	0.112		0.36	
1657	D2360	0.0956		-0.98	
1750		-----		-----	
1812	D2360	0.032	G(0.05)	-6.18	
1866		-----		-----	
2493	D2360	0.096		-0.95	

normality	OK
n	25
outliers	3
mean (n)	0.1076
st.dev. (n)	0.01861
R(calc.)	0.0521
R(D2360:11)	0.0343





Determination of Benzene on sample #13173; results in %M/M

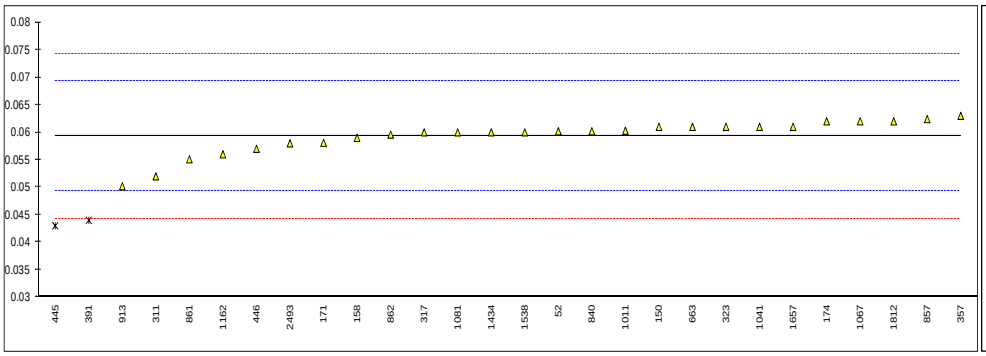
lab	method	value	mark	z(targ)	remarks
52	D7504	<0.0001		-----	
150	D2360	<0.0001		-----	
158	D2360	<0.01		-----	
171	D6563	<0.001		-----	
174	D2360	<0.001		-----	
311	D2360	<0.001		-----	
317	D6563	<0.01		-----	
323	D2360	<0.001		-----	
333		-----		-----	
357	D6563	<0.01		-----	
391	D2360	<0.001		-----	
445	INH-003	<0.001		-----	
446	D6563	<0.01		-----	
497		-----		-----	
551		-----		-----	
555		-----		-----	
557		-----		-----	
663	D6563	<0.01		-----	
840	D2360	<0.0003		-----	
857	D2360	<0.001		-----	
861	D2360	<0.001		-----	
862	D2360	<0.0001		-----	
902		-----		-----	
913	D2360	<0.0010		-----	
1011	D5917	0		-----	
1041	in house	<0.01		-----	
1067	D6563	<0.001		-----	
1081	D6563	0.000		-----	
1162	in house	<0.001		-----	
1201		-----		-----	
1434	D2360	0.00		-----	
1538		-----		-----	
1657	D2360	0.000		-----	
1750		-----		-----	
1812		-----		-----	
1866		-----		-----	
2493		-----		-----	

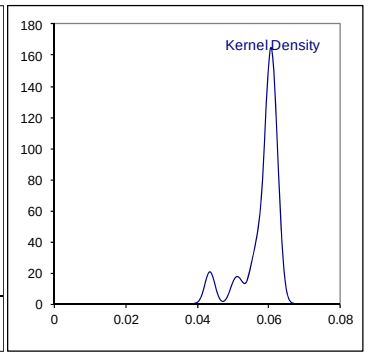
normality	n.a.
n	25
outliers	0
mean (n)	<0.001
st.dev. (n)	n.a.
R(calc.)	n.a.
R(lit)	n.a.

Determination of Toluene on sample #13173; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	0.0602		0.18	
150	D6563	0.061	C	0.34	First reported 0.069
158	D2360	0.059		-0.06	
171	D6563	0.0581		-0.24	
174	D2360	0.062		0.54	
311	D2360	0.052		-1.46	
317	D6563	0.06	C	0.14	First reported 0.05
323	D2360	0.061		0.34	
333		-----		-----	
357	D6563	0.063		0.74	
391	D2360	0.044	G(0.01)	-3.07	
445	INH-003	0.043	G(0.05)	-3.27	
446	D6563	0.057		-0.46	
497		-----		-----	
551		-----		-----	
555		-----		-----	
557		-----		-----	
663	D6563	0.061		0.34	
840	D2360	0.0602		0.18	
857	D2360	0.0624		0.62	
861	D2360	0.0551		-0.84	
862	D2360	0.0596		0.06	
902		-----		-----	
913	D2360	0.0502		-1.82	
1011	D5917	0.0603		0.20	
1041	in house	0.061		0.34	
1067	D6563	0.062		0.54	
1081	D6563	0.060		0.14	
1162	in house	0.056	C	-0.66	First reported 0.0625
1201		-----		-----	
1434	D2360	0.06		0.14	
1538	D6563	0.060		0.14	
1657	D2360	0.061		0.34	
1750		-----		-----	
1812	D2360	0.062		0.54	
1866		-----		-----	
2493	D2360	0.058		-0.26	

normality	not OK
n	26
outliers	2
mean (n)	0.0593
st.dev. (n)	0.00308
R(calc.)	0.0086
R(D2360:11)	0.0140

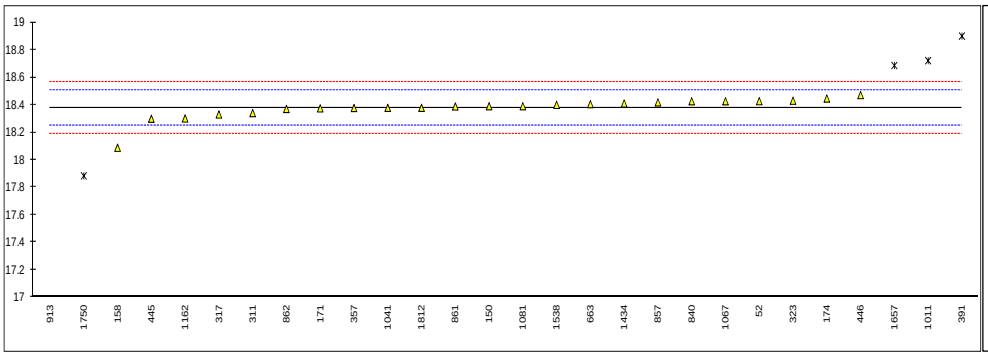


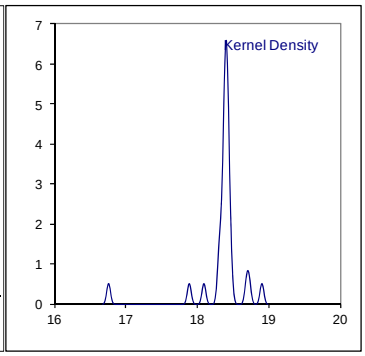


Determination of p-Xylene on sample #13173; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	18.4268		0.80	
150	D6563	18.39		0.21	
158	D2360	18.088		-4.59	
171	D6563	18.37445		-0.03	
174	D2360	18.446		1.10	
311	D2306	18.34		-0.58	
317	D6563	18.33	C	-0.74	First reported 18.26
323	D6563	18.43		0.85	
333		-----		-----	
357	D6563	18.377		0.01	
391	D6563	18.90	G(0.01)	8.33	
445	INH-003	18.299		-1.24	
446	D6563	18.471		1.50	
497		-----		-----	
551		-----		-----	
555		-----		-----	
557		-----		-----	
663	D6563	18.405		0.45	
840	D6563	18.426		0.79	
857	D6563	18.418		0.66	
861	D6563	18.388	C	0.18	First reported 18.004
862	D6563	18.370		-0.11	
902		-----		-----	
913	D6563	16.754	G(0.01)	-25.83	
1011	D5917	18.7211	DG(0.01)	5.48	
1041	in house	18.378		0.02	
1067	D6563	18.426		0.79	
1081	D6563	18.390		0.21	
1162	in house	18.301	C	-1.20	First reported 18.4191
1201		-----		-----	
1434		18.41		0.53	
1538	D6563	18.40		0.37	
1657		18.686	DG(0.01)	4.92	
1750	ISO8974	17.883	G(0.01)	-7.86	
1812		18.378		0.02	
1866		-----		-----	
2493		-----		-----	

normality	not OK
n	23
outliers	5
mean (n)	18.3766
st.dev. (n)	0.07605
R(calc.)	0.2129
R(D6563:12)	0.1759

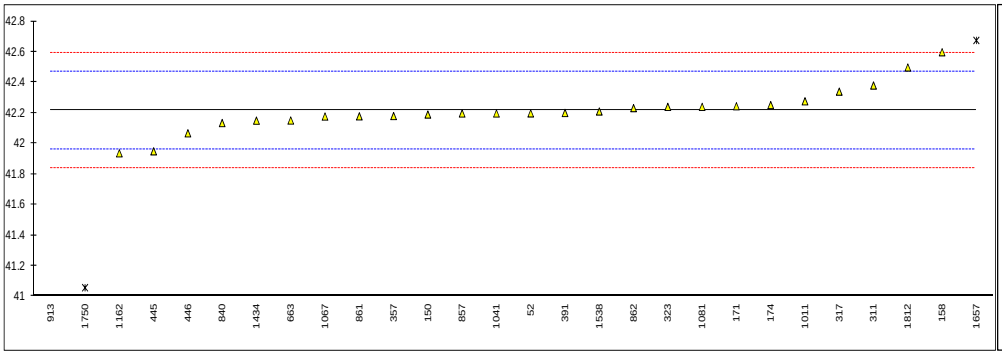


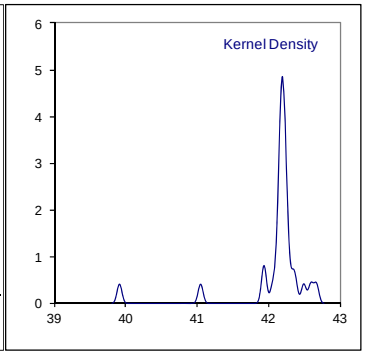


Determination of m-Xylene on sample #13173; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	42.1973		-0.15	
150	D6563	42.19		-0.21	
158	D2360	42.5979		3.02	
171	D6563	42.24418		0.22	
174	D2360	42.252		0.28	
311	D2306	42.38		1.30	
317	D6563	42.34	C	0.98	First reported 42.54
323	D6563	42.24		0.19	
333		-----		-----	
357	D6563	42.180		-0.29	
391	D6563	42.20		-0.13	
445	INH-003	41.949		-2.12	
446	D6563	42.067		-1.19	
497		-----		-----	
551		-----		-----	
555		-----		-----	
557		-----		-----	
663	D6563	42.151		-0.52	
840	D6563	42.134		-0.65	
857	D6563	42.197		-0.16	
861	D6563	42.178	C	-0.31	First reported 43.234
862	D6563	42.232		0.12	
902		-----		-----	
913	D6563	39.922	G(0.01)	-18.18	
1011	D5917	42.2767		0.48	
1041	in house	42.197		-0.16	
1067	D6563	42.177		-0.31	
1081	D6563	42.240		0.19	
1162	in house	41.936	C	-2.22	First reported 41.7336
1201		-----		-----	
1434		42.15		-0.53	
1538	D6563	42.21		-0.05	
1657		42.675	G(0.01)	3.63	
1750	ISO8974	41.056	G(0.01)	-9.20	
1812		42.498		2.23	
1866		-----		-----	
2493		-----		-----	

normality	not OK
n	25
outliers	3
mean (n)	42.2166
st.dev. (n)	0.13969
R(calc.)	0.3911
R(D6563:12)	0.3533

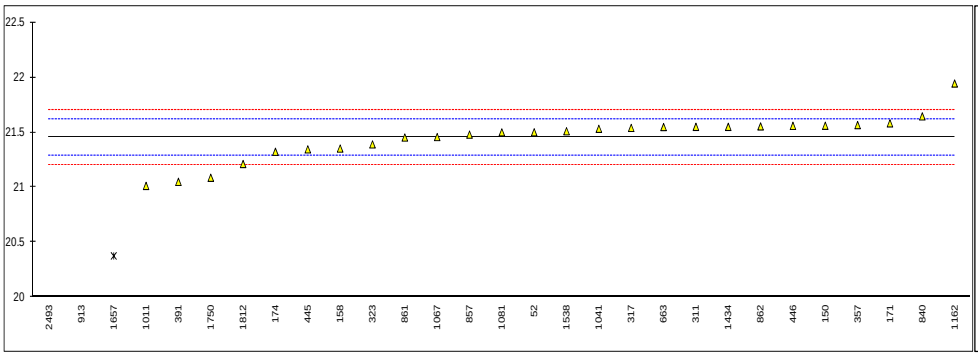


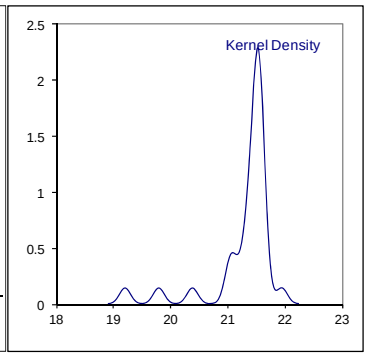


Determination of o-Xylene on sample #13173; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	21.5006		0.56	
150	D6563	21.56		1.28	
158	D2360	21.3527		-1.22	
171	D6563	21.58183		1.54	
174	D2360	21.323		-1.58	
311	D2306	21.55		1.16	
317	D6563	21.54		1.04	
323	D6563	21.39		-0.77	
333		-----		-----	
357	D6563	21.566		1.35	
391	D6563	21.05		-4.87	
445	INH-003	21.345		-1.31	
446	D6563	21.559		1.27	
497		-----		-----	
551		-----		-----	
555		-----		-----	
557		-----		-----	
663	D6563	21.548		1.13	
840	D6563	21.645		2.30	
857	D6563	21.479		0.30	
861	D6563	21.453		-0.01	
862	D6563	21.554		1.21	
902		-----		-----	
913	D6563	19.785	G(0.01)	-20.12	
1011	D5917	21.0130		-5.32	
1041	in house	21.532		0.94	
1067	D6563	21.457		0.04	
1081	D6563	21.500		0.56	
1162	in house	21.944	C	5.91	First reported 22.0693
1201		-----		-----	
1434		21.55		1.16	
1538	D6563	21.51		0.68	
1657		20.376	G(0.01)	-13.00	
1750	ISO8974	21.087		-4.42	
1812		21.212		-2.92	
1866		-----		-----	
2493		19.193	C,G(0.01)	-27.26	First reported 19.142

normality	not OK
n	26
outliers	3
mean (n)	21.4539
st.dev. (n)	0.19808
R(calc.)	0.5546
R(D6563:12)	0.2322

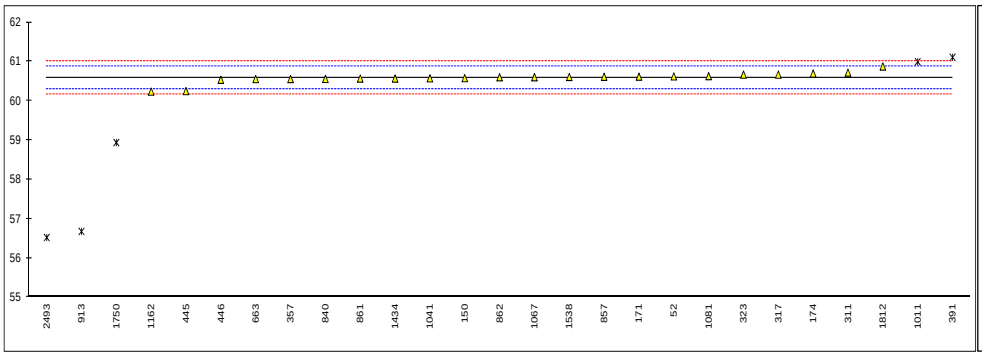


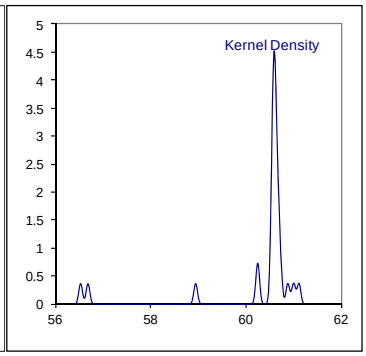


Determination of Sum m+p-Xylene on sample #13173; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	60.6241		0.26	
150	D6563	60.58		-0.05	
158		-----		-----	
171	D6563	60.6187		0.22	
174	D2360	60.698		0.78	
311	D2306	60.72		0.94	
317	D6563	60.67	C	0.58	First reported 60.80
323	D6563	60.67		0.58	
333		-----		-----	
357		60.557		-0.22	
391	D6563	61.11	ex	3.71	See §4.1
445	INH-003	60.249		-2.40	
446	D6563	60.538		-0.35	
497		-----		-----	
551		-----		-----	
555		-----		-----	
557		-----		-----	
663	D6563	60.556		-0.22	
840	D6563	60.560		-0.20	
857	D6563	60.615		0.19	
861	D6563	60.57	C	-0.13	First reported 61.23
862	D6563	60.602		0.10	
902		-----		-----	
913	D6563	56.676	G(0.01)	-27.75	
1011	D5917	60.9978	ex	2.91	See §4.1
1041	in house	60.575		-0.09	
1067	D6563	60.603		0.11	
1081	D6563	60.630		0.30	
1162	in house	60.237	C	-2.49	First reported 60.1527
1201		-----		-----	
1434		60.57		-0.13	
1538	D6563	60.61		0.16	
1657		-----		-----	
1750	ISO8974	58.939	G(0.01)	-11.70	
1812		60.876		2.05	
1866		-----		-----	
2493		56.521	C,G(0.01)	-28.85	First reported 56.447

normality	not OK
n	22
outliers	3
mean (n)	60.5877
st.dev. (n)	0.13378
R(calc.)	0.3746
R(D6563:12)	0.3947

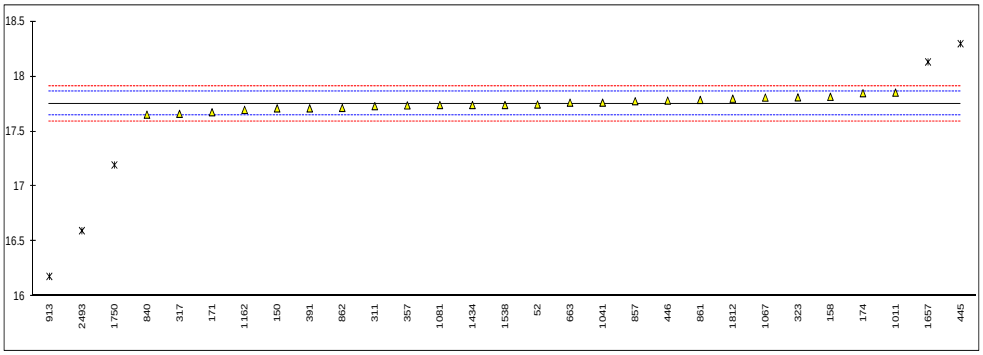


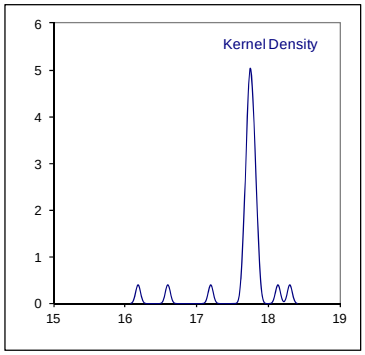


Determination of Ethylbenzene on sample #13173; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	17.7450		-0.13	
150	D6563	17.71		-0.78	
158	D2360	17.815		1.16	
171	D6563	17.67465		-1.43	
174	D2360	17.848		1.77	
311	D2306	17.73		-0.41	
317	D6563	17.66	C	-1.70	First reported 17.57
323	D2360	17.81		1.07	
333		-----		-----	
357	D6563	17.737		-0.28	
391	D6563	17.71		-0.78	
445	INH-003	18.298	G(0.05)	10.09	
446	D6563	17.781		0.54	
497		-----		-----	
551		-----		-----	
555		-----		-----	
557		-----		-----	
663	D6563	17.762		0.18	
840	D6563	17.653		-1.83	
857	D6563	17.775		0.42	
861	D6563	17.787	C	0.65	First reported 17.204
862	D6563	17.714		-0.70	
902		-----		-----	
913	D6563	16.182	G(0.01)	-29.02	
1011	D5917	17.8529		1.86	
1041	in house	17.762		0.18	
1067	D6563	17.808		1.03	
1081	D6563	17.740		-0.22	
1162	in house	17.696	C	-1.04	First reported 17.6450
1201		-----		-----	
1434		17.74		-0.22	
1538	D6563	17.74		-0.22	
1657		18.132	G(0.01)	7.02	
1750	ISO8974	17.195	G(0.01)	-10.30	
1812		17.798		0.85	
1866		-----		-----	
2493		16.597	C,G(0.01)	-21.35	

normality	OK
n	24
outliers	5
mean (n)	17.7520
st.dev. (n)	0.05450
R(calc.)	0.1526
R(D6563:12)	0.1515

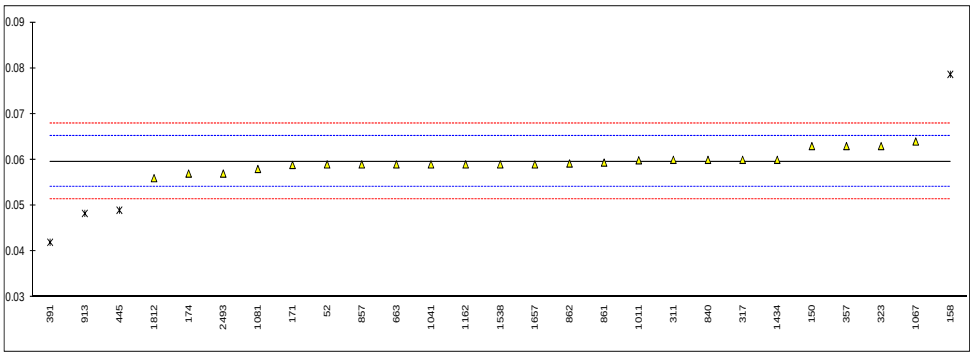


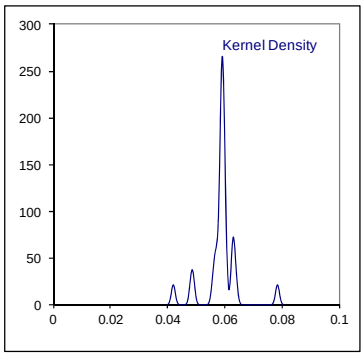


Determination of Cumene on sample #13173; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	0.0590		-0.23	
150	D2360	0.063		1.22	
158	D2360	0.07865	G(0.01)	6.87	
171	D6563	0.05888		-0.27	
174	D2360	0.057		-0.95	
311	D2360	0.060		0.14	
317	D6563	0.06	C	0.14	First reported 0.046
323	D2360	0.063		1.22	
333		-----		-----	
357	D6563	0.063		1.22	
391	D2360	0.042	G(0.01)	-6.37	
445	INH-003	0.049	G(0.01)	-3.84	
446		-----		-----	
497		-----		-----	
551		-----		-----	
555		-----		-----	
557		-----		-----	
663	D6563	0.059		-0.23	
840	D2360	0.0600		0.14	
857	D2360	0.0590		-0.23	
861	D2360	0.0594	C	-0.08	First reported 0.0517
862	D2360	0.0592		-0.15	
902		-----		-----	
913	D2360	0.0483	G(0.05)	-4.09	
1011	D5917	0.0599		0.10	
1041	in house	0.059		-0.23	
1067	D6563	0.064		1.58	
1081	D6563	0.058		-0.59	
1162	in house	0.059	C	-0.23	First reported 0.0626
1201		-----		-----	
1434	D2360	0.06		0.14	
1538	D6563	0.059		-0.23	
1657	D2360	0.059		-0.23	
1750		-----		-----	
1812	D2360	0.056		-1.31	
1866		-----		-----	
2493	D2360	0.057		-0.95	

normality	not OK
n	23
outliers	4
mean (n)	0.0596
st.dev. (n)	0.00199
R(calc.)	0.0057
R(D2360:11)	0.0078

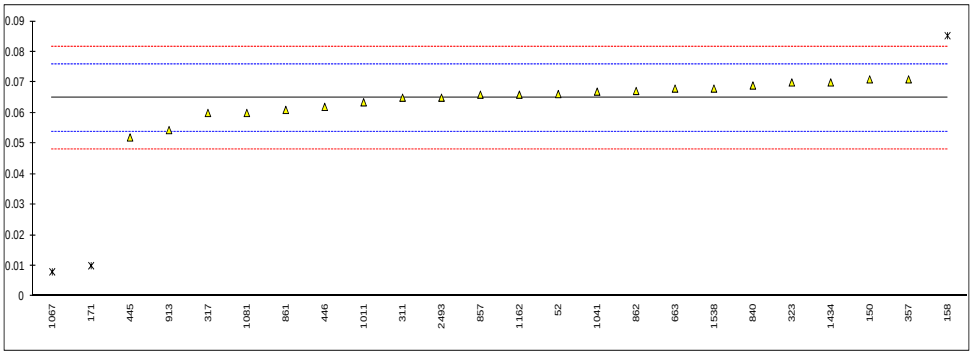


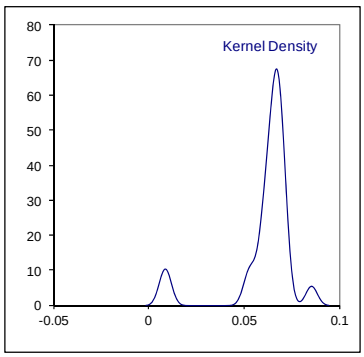


Determination of Sum of $C9^+$ aromatics on sample #13173; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	0.0662		0.24	
150	D2360	0.071		1.10	
158	D2360	0.0853	G(0.05)	3.66	
171	D6563	0.0100	G(0.01)	-9.84	
174	D2360	<0.001	C	<-11.47	First reported 0.0077, false negative?
311	D2360	0.065	C	0.02	First reported 0.080
317	D6563	0.06	C	-0.87	First reported 0.05
323	D6563	0.07		0.92	
333		-----		-----	
357	D6563	0.071		1.10	
391		-----		-----	
445	INH-003	0.052		-2.31	
446	D6563	0.062	C	-0.51	First reported <0.01
497		-----		-----	
551		-----		-----	
555		-----		-----	
557		-----		-----	
663	D6563	0.068		0.56	
840	D6563	0.069		0.74	
857	D6563	0.066		0.20	
861	D6563	0.061		-0.69	
862	D6563	0.0672		0.42	
902		-----		-----	
913	D6563	0.0544		-1.88	
1011	D5917	0.0635	C	-0.25	First reported 0
1041	in house	0.067		0.38	
1067	D6563	0.008	G(0.05)	-10.20	
1081	D6563	0.060		-0.87	
1162	in house	0.066	C	0.20	First reported 0.0705
1201		-----		-----	
1434	D6563	0.07		0.92	
1538	D6563	0.068		0.56	
1657		-----		-----	
1750		-----		-----	
1812		-----		-----	
1866		-----		-----	
2493	D6563	0.065		0.02	

normality	OK
n	21
outliers	3
mean (n)	0.0649
st.dev. (n)	0.00513
R(calc.)	0.0144
R(D6563:12)	0.0156

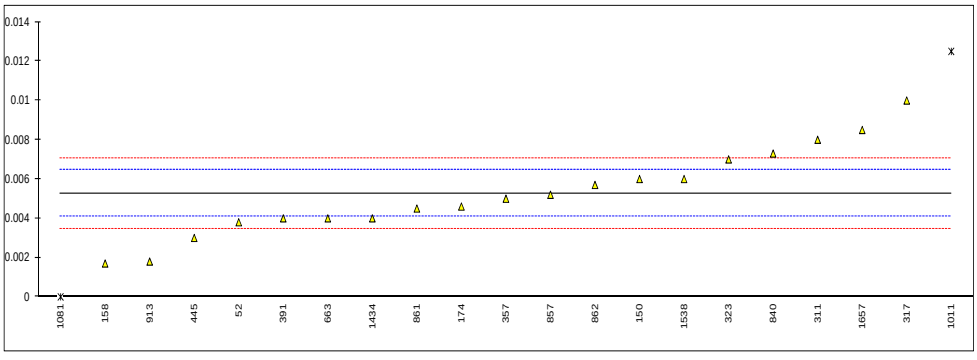


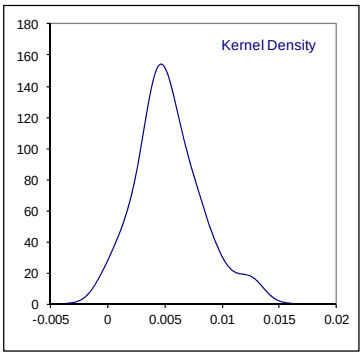


Determination of Nonaromatics on sample #13173; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	0.0038		-2.45	
150	D2360	0.006		1.22	
158	D2360	0.0017		-5.95	
171	D6563	<0.01		-----	
174	D2360	0.0046		-1.12	
311	D2360	0.008		4.56	
317	D6563	0.01		7.90	
323	D2360	0.007		2.89	
333		-----		-----	
357	D6563	0.005		-0.45	
391	D2360	0.004		-2.12	
445	INH-003	0.003		-3.79	
446	D6563	<0.01	C	-----	First reported 0.06
497		-----		-----	
551		-----		-----	
555		-----		-----	
557		-----		-----	
663	D6563	0.004		-2.12	
840	D2360	0.0073		3.39	
857	D2360	0.0052		-0.11	
861	D2360	0.0045		-1.28	
862	D2360	0.0057		0.72	
902		-----		-----	
913	D2360	0.0018		-5.79	
1011	D5917	0.0125	C,G(0.05)	12.07	First reported 0
1041	in house	<0.01		-----	
1067		-----		-----	
1081	D6563	0.000	G(0.05)	-8.79	
1162	in house	<0.001		-----	
1201		-----		-----	
1434	D2360	0.004		-2.12	
1538	D6563	0.006		1.22	
1657	D2360	0.0085		5.39	
1750		-----		-----	
1812		-----		-----	
1866		-----		-----	
2493	D2360	n.d.		-----	

normality	OK
n	19
outliers	2
mean (n)	0.0053
st.dev. (n)	0.00219
R(calc.)	0.0061
R(D2360:11)	0.0017





APPENDIX 2

Number of participants per country

1 lab in	BELGIUM
3 labs in	BRAZIL
1 lab in	CANADA
5 labs in	CHINA, People's Republic
1 lab in	FINLAND
1 lab in	FRANCE
3 labs in	GERMANY
1 lab in	HUNGARY
1 lab in	INDIA
1 lab in	ISRAEL
1 lab in	ITALY
1 lab in	MALAYSIA
1 lab in	POLAND
1 lab in	PORTUGAL
1 lab in	SAUDI ARABIA
1 lab in	THAILAND
5 labs in	THE NETHERLANDS
1 lab in	TURKEY
4 labs in	U.S.A.
2 labs in	UNITED KINGDOM
1 lab in	VIETNAM

APPENDIX 3

Abbreviations:

C = final result after checking of first reported suspect result
D(0.01) = outlier in Dixon's outlier test
D(0.05) = straggler in Dixon's outlier test
G(0.01) = outlier in Grubbs' outlier test
G(0.05) = straggler in Grubbs' outlier test
DG(0.01) = outlier in Double Grubbs' outlier test
DG(0.05) = straggler in Double Grubbs' outlier test
E = error in calculations
ex = excluded from calculations
n.a. = not applicable

Literature:

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