Results of Proficiency Test
mixed-Xylenes
October 2021

Organized by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

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CONTENTS

1 INTRODUCTION

Since 1995 the Institute for Interlaboratory Studies (iis) organizes a proficiency scheme for the analysis of mixed-Xylenes once every two years. During the annual proficiency testing program 2021/2022 it was decided to continue the round robin for the analysis of mixed-Xylenes.

In this interlaboratory study 29 laboratories in 17 different countries registered for participation. See appendix 2 for the number of participants per country. In this report the results of the mixed-Xylenes proficiency test are presented and discussed. This report is also electronically available through the iis website www.iisnl.com.

2 SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organizer of this proficiency test (PT). Sample analyzes for fit-for-use and homogeneity testing were subcontracted to an ISO/IEC17025 accredited laboratory.
It was decided to send two different samples of 250 mL amber glass bottles respectively labelled #21181 and #21182.
The participants were requested to report rounded and unrounded test results. The unrounded test results were preferably used for statistical evaluation.

2.1 ACCREDITATION

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, is accredited in agreement with ISO/IEC17043:2010 (R007), since January 2000, by the Dutch Accreditation Council (Raad voor Accreditatie). This PT falls under the accredited scope. This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentiality 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 organization 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 June 2018 (iis-protocol, version 3.5). This protocol is electronically available through the iis website www.iisnl.com from the FAQ page.

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

A batch of approximately 17 liters of mixed Xylenes was prepared from of high purity Xylenes by iis. After homogenization 67 amber glass bottles of 250mL were filled and labelled #21181.
The homogeneity of the subsamples was checked by determination of p-Xylene in accordance with test method ASTM D7504 on 8 stratified randomly selected subsamples.

	p-Xylene in %M/M
sample #21181-1	34.86
sample #21181-2	34.86
sample #21181-3	34.86
sample #21181-4	34.86
sample #21181-5	34.85
sample #21181-6	34.85
sample #21181-7	34.84
sample #21181-8	34.86

Table 1: homogeneity tests results of subsamples #21181

From the above test results the repeatability was calculated and compared with 0.3 times the reproducibility of the reference test method in agreement with the procedure of ISO13528, Annex B2 in the next table.

	p-Xylene in %M/M
r (observed)	0.021
reference test method	ASTM D7504:21
0.3 x R (reference test method)	0.168

Table 2: evaluation of repeatability of subsamples #21181

The calculated repeatability is in agreement with 0.3 times the reproducibility of the reference test method. Therefore, homogeneity of the subsamples was assumed.

A batch of approximately 17 liters of mixed Xylenes was prepared from of high purity Xylenes by iis. The batch was spiked with Ethylbenzene. After homogenization 68 amber glass bottles of 250mL were filled and labelled #21182.
The homogeneity of the subsamples was checked by determination of p-Xylene in accordance with test method ASTM D7504 on 8 stratified randomly selected subsamples.

	p-Xylene in %M/M
sample #21182-1	30.02
sample #21182-2	30.03
sample #21182-3	30.03
sample #21182-4	30.03

	p-Xylene in %M/M
sample #21182-5	30.03
sample #21182-6	30.03
sample #21182-7	30.03
sample #21182-8	30.03

Table 3: homogeneity tests results of subsamples #21182

From the above test results the repeatability was calculated and compared with 0.3 times the reproducibility of the reference test method in agreement with the procedure of ISO13528, Annex B2 in the next table.

	p-Xylene in %M/M
r (observed)	0.010
reference test method	ASTM D7504:21
0.3 x R (reference test method)	0.144

Table 4: evaluation of repeatability of subsamples #21182

The calculated repeatability is in agreement with 0.3 times the reproducibility of the reference test method. Therefore, homogeneity of the subsamples was assumed.

To each of the participating laboratories one sample mixed-Xylenes labelled #21181 and one sample mixed-Xylenes labelled #21182 were sent on September 8, 2021. An SDS was added to the sample package.

2.5 STABILITY OF THE SAMPLES

The stability of mixed-Xylenes in amber glass bottles was checked. The material was found sufficiently stable for the period of the proficiency test.

2.6 ANALYZES

The participants were requested to determine on samples #21181 and #21182: Benzene, Toluene, Ethylbenzene p-Diethylbenzene, o-Xylene, m-Xylene, p-Xylene, sum of m- and p-Xylene, Total mixed-Xylenes, iso-Propyl Benzene (Cumene), sum of C9 and heavier aromatics and Non-aromatics.

It was explicitly requested to treat the samples as if they were routine samples and to report the test results using the indicated units on the report form and not to round the test results but report as much significant figures as possible. It was also requested not to report ‘less than’ test results, which are above the detection limit, because such test results cannot be used for meaningful statistical evaluations.

To get comparable test results, a detailed report form and a letter of instructions are prepared. On the report form the reporting units are given as well as the reference test methods (when applicable) that will be used during the evaluation. The detailed report form and the letter of instructions are both made available on the data entry portal www.kpmd.co.uk/sgs-iis/. The participating laboratories are also requested to confirm the sample receipt on this data entry portal. The letter of instructions can also be downloaded from the iis website www.iisnl.com.

3 RESULTS

During five weeks after sample dispatch, the test results of the individual laboratories were gathered via the data entry portal www.kpmd.co.uk/sgs-iis/. The reported test results are tabulated per determination in appendix 1 of this report. The laboratories are presented by their code numbers.

Directly after the deadline, a reminder was sent to those laboratories that had not reported test results at that moment. Shortly after the deadline, the available test results were screened for suspect data. A test 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 reported test results (no reanalyzes). Additional or corrected test results are used for data analysis and original test results are placed under 'Remarks' in the test result tables in appendix 1. Test results that came in after the deadline were not taken into account in this screening for suspect data and thus these participants were not requested for checks.

3.1 STATISTICS

The protocol followed in the organization 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 June 2018 (iis-protocol, version 3.5).

For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded test results. Test 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, a variant of the Kolmogorov-Smirnov test and by the calculation of skewness and kurtosis. Evaluation of the three normality indicators in combination with the visual evaluation of the graphic Kernel density plot, lead to judgement of the normality being either ‘unknown’, ‘OK’, ‘suspect’ or ‘not OK’. After removal of outliers, this check was repeated. If a data set does not have a normal distribution, the (results of the) statistical evaluation should be used with due care.

The assigned value is determined by consensus based on the test results of the group of participants after rejection of the statistical outliers and/or suspect data.

According to ISO13528 all (original received or corrected) results per determination were submitted to outlier tests. In the iis procedure for proficiency tests, outliers are detected prior to calculation of the mean, standard deviation and reproducibility. For small data sets, Dixon (up to 20 test results) or Grubbs (up to 40 test results) outlier tests can be used. For larger data sets (above 20 test results) Rosner's outlier test can be used. Outliers are marked by D(0.01) for the Dixon's test, by G(0.01) or DG(0.01) for the Grubbs' test and by R(0.01) for the Rosner's test. Stragglers are marked by D(0.05) for the Dixon's test, by G(0.05) or DG(0.05) for the Grubbs' test and by R(0.05) for the Rosner's test. Both outliers and stragglers were not included in the calculations of averages and standard deviations.

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. In this PT, the criterion of ISO13528, paragraph 9.2.1. was met for all evaluated tests, therefore, the uncertainty of all assigned values may be negligible and need not be included in the PT report.

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

3.2 GRAPHICS

In order to visualize 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 test results are plotted. The corresponding laboratory numbers are on 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 reference test method. 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. Also, a normal Gauss curve (dotted line) was projected over the Kernel Density Graph (smooth line) for reference. The Gauss curve is calculated from the consensus value and the corresponding standard deviation.

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 (derived from e.g. ISO or ASTM test methods), the z-scores were calculated using a target standard deviation. This results in an evaluation independent of the variation in this interlaboratory study.

The target standard deviation was calculated from the literature reproducibility by division with 2.8. In case no literature reproducibility was available, other target values were used, like Horwitz or an estimated reproducibility based on former iis proficiency tests.

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 whether the reported test result is fit-for-use.

The z-scores were calculated according to:

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

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

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

Some problems were encountered with the dispatch of the samples due to COVID-19 pandemic. Therefore, the reporting time on the data entry portal was extended with two weeks. Two participants reported test results after the extended reporting date and five other participants did not report any test results. Not all laboratories were able to report all tests requested.

In total 24 participants reported 506 numerical test results. Observed were 23 outlying test results, which is 4.5%. In proficiency studies outlier percentages of 3% - 7.5% are quite normal.

Not all data sets proved to have a normal Gaussian distribution. These are referred to as “not OK” or “suspect”. The statistical evaluation of these data sets should be used with due care, see also paragraph 3.1.

4.1 EVALUATION PER SAMPLE AND PER COMPONENT

In this section the reported test results are discussed per sample and per component. The test methods which were used by the various laboratories were taken into account for explaining the observed differences when possible and applicable. These test methods are also in the tables together with the original data. The abbreviations, used in these tables, are explained in appendix 3.

For the determination of mixed-Xylenes test method ASTM D7504 is considered to be the official test method as the previous test methods ASTM D2306, D2360 and D6563 are all withdrawn. Test method ASTM D7504 mentions a reproducibility at one defined concentration for all components. Regretfully, not for all components the estimated target reproducibility derived from ASTM D7504 could be used. The estimated target reproducibilities as obtained from ASTM D7504:21 are for some components unrealistic (for example Toluene or Non-aromatics). This is observed in both samples. This occurs when the concentrations of these components in the PT samples strongly deviates from the concentrations as mentioned in table 9 of ASTM D7504:21. For these components the estimated reproducibility based on the Horwitz equation is used.

sample #21181

Benzene: This determination was not problematic. The reporting participants agreed on test results near or below the application range. Therefore, no z-scores are calculated.

Toluene: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in full agreement with the estimated reproducibility using the Horwitz equation and the requirements of ASTM D7504:21.

Ethylbenzene: This determination may be problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the estimated reproducibility using the Horwitz equation and the requirements of ASTM D7504:21

p-Diethylbenzene: This determination was not problematic. The reporting participants agreed on test results near or below the application range. Therefore, no z-scores are calculated.

o-Xylene: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D7504:21.

m-Xylene: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D7504:21.

p-Xylene: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D7504:21.

sum of m- and p-Xylene: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements from ASTM D7504:21.

Total mixed-Xylenes: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements from ASTM D7504:21.

iso-Propylbenzene (Cumene): This determination was not problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements from ASTM D7504:21.

sum of C9 and heavier aromatics: This determination may be problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the estimated reproducibility using the Horwitz equation (based on 4 components) but it is in agreement with the large requirements from ASTM D7504:21.

Non-aromatics: This determination may be problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the estimated reproducibility using the Horwitz equation (based on 9 components) and not in agreement with the small requirements from ASTM D7504:21.

sample #21182

Benzene: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D7504:21.

Toluene: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the estimated reproducibility using the Horwitz equation and the requirements of ASTM D7504:21.

Ethylbenzene: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D7504:21.

p-Diethylbenzene: This determination was not problematic. The reporting participants agreed on test results near or below the application range. Therefore, no z-scores are calculated

o-Xylene: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with the requirements of ASTM D7504:21.

m-Xylene: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D7504:21.

p-Xylene: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D7504:21.

sum of m- and p-Xylene: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D7504:21.

Total mixed-Xylenes: This determination was problematic. Two groups of test results were observed. It is clear that one group includes Ethylbenzene in the calculation while the other group does not. Including Ethylbenzene into the total mixed-Xylenes depends on the test method used. It might also dependent on what the customers would like to receive as total mixed-Xylenes? Therefore, it is decided not to evaluate this parameter with the received results.
Test method ASTM D7502:21 includes Ethylbenzene (see chapter 15.1.2 from ASTM D7502). Based on this formula the total mixed-Xylenes is calculated by iis (see appendix 1 for more details). Three statistical outliers were observed in the iis calculated results.

iso-Propylbenzene (Cumene): This determination was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of ASTM D7504:21.

sum of C9 and heavier aromatics: This determination may be problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the estimated reproducibility using the Horwitz equation (based on 4 components) but it is in agreement with the large requirements from ASTM D7504:21.

Non-aromatics: This determination may be problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the estimated reproducibility using the Horwitz equation (based on 9 components) and is not in agreement with the small requirements from ASTM D7504:21.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the reference test method and the reproducibility as found for the group of participating laboratories. The number of significant test results, the average, the calculated reproducibility (2.8 * standard deviation) and the target reproducibility derived from literature reference test methods (in casu ASTM, EN and ISO test methods) or estimated using the Horwitz equation are presented in the next tables.

Component	unit	n	average	2.8 * sd	R(lit)
Benzene	%M/M	21	<0.01	n.e.	n.e.
Toluene	%M/M	22	0.007	0.002	0.002
Ethylbenzene	%M/M	23	0.013	0.004	0.003
p-Diethylbenzene	%M/M	9	<0.01	n.e.	n.e.
o-Xylene	%M/M	23	39.84	0.32	2.02
m-Xylene	%M/M	23	25.00	0.23	0.35
p-Xylene	%M/M	23	34.95	0.19	0.56
sum of m- and p-Xylene	%M/M	22	59.95	0.29	1.28
Total mixed Xylenes	%M/M	21	99.78	0.07	5.48
iso-Propylbenzene (Cumene)	%M/M	19	0.107	0.011	0.013
sum of C9 and heavier aromatics	%M/M	19	0.150	0.055	0.044
Non-aromatics	%M/M	23	0.044	0.033	0.024

Table 5: reproducibilities of tests on sample #21181.

Component	unit	n	average	2.8 * sd	R(lit)
Benzene	%M/M	19	0.005	0.003	0.011
Toluene	%M/M	24	0.010	0.002	0.002
Ethylbenzene	%M/M	22	9.76	0.15	0.32
p-Diethylbenzene	%M/M	9	<0.01	n.e.	n.e.
o-Xylene	%M/M	24	19.41	0.26	0.98
m-Xylene	%M/M	22	40.58	0.24	0.57
p-Xylene	%M/M	23	30.11	0.14	0.48
sum of m- and p-Xylene	%M/M	22	70.69	0.32	1.51
Total mixed Xylenes	%M/M	21	99.86*)	n.e.	n.e.
iso-Propylbenzene (Cumene)	%M/M	21	0.053	0.009	0.006
sum of C9 and heavier aromatics	%M/M	18	0.081	0.029	0.027
Non-aromatics	%M/M	23	0.049	0.037	0.026

Table 6: reproducibilities of tests on sample #21182.

*) average as Total mixed Xylenes calculated by iis

Without further statistical calculations, it can be concluded that for many tests there is a good compliance of the group of participants with the reference test methods. The problematic tests have been discussed in paragraph 4.1.

4.3 COMPARISON OF THE OCTOBER 2021 PROFICIENCY TEST WITH PREVIOUS PTS

	October 2021	October 2019	October 2017	October 2015	September 2013
Number of reporting laboratories	24	22	27	29	29
Number of test results	506	406	502	546	519
Number of statistical outliers	23	18	33	42	57
Percentage of statistical outliers	4.5%	4.4%	6.6%	7.7%	11.0%

Table 7: 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 reference test methods. The conclusions are given the following table.

Component	October 2021		October 2019		October 2017		October 2015 *)		September 2013 *)	
Benzene	n.e.	++	-	++	n.e.	++	n.e.	-	n.e.	(--)
Toluene	+/-	+/-	-	++	++	++	+	+/-	++	--
Ethylbenzene	-	++	+/-	+	+/-	++	++	--	+/-	++
o-Xylene	++	++	++	++	+/-	+	+	+	--	+/-
m-Xylene	+	++	+	+	++	++	-	+	-	++
p-Xylene	++	++	+	+	+	++	+	++	-	++
sum of m- and p-Xylenes	++	++	++	++	++	++	+	+	n.a.	n.a.
Total mixed-Xylenes	++	(--)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
iso-Propyl Benzene	+	-	-	-	+/-	--	-	-	+	--
sum of $C9^+$ aromatics	-	-/+	-	+/-	++	--	n.e.	n.e.	+	--
Non-aromatics	-	-	-	+/-	+	-	--	--	--	--

Table 8: comparison of performances against the reference test method requirements over the last PTs.

Results between brackets are outside application range of test method.

*) This year another target test method was used (ASTM D2360 or ASTM D6563)

The following performance categories were used:

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

APPENDIX 1

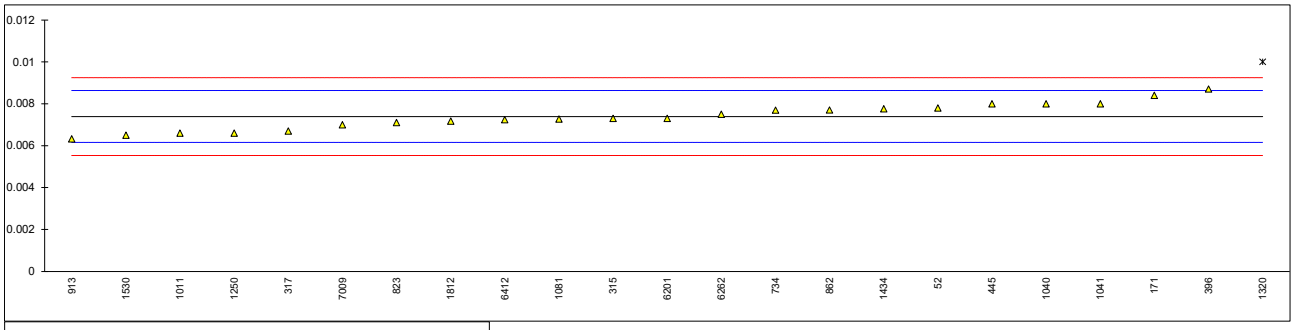
Determination of Benzene on sample #21181; results in %M/M

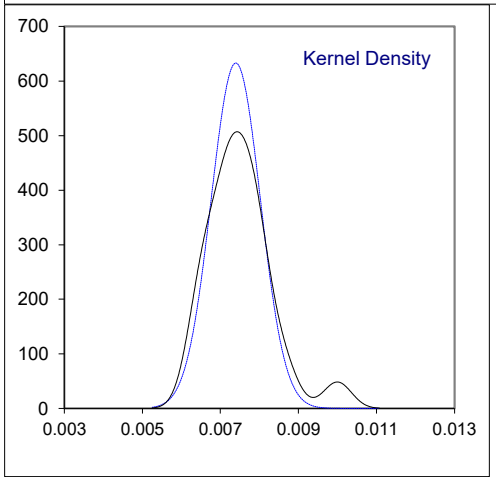
lab	method	value	mark	z(targ)	remarks
52	D7504	0.0013		-----	
150		-----		-----	
171	D7504	0.0016		-----	
315	D7504	<0.0002		-----	
317	D7504	0.0005		-----	
323	D6563	< 0.01		-----	
396	D7504	<0,01		-----	
445	D2360	0.001		-----	
446		-----		-----	
551		-----		-----	
555		-----		-----	
558		-----		-----	
734	D7504	0.000575		-----	
823	D7504	0.0004		-----	
862	D7504	0.0018		-----	
913	D7504	0.001425		-----	
1011	D5917	0.0001		-----	
1040	D7504	0.002		-----	
1041	D6563	<0,01		-----	
1081	D6563	0		-----	
1250		-----		-----	
1320	D7504	<0.01		-----	
1434	D7504	0.00171		-----	
1530	D7504	0.0064		-----	
1812		-----		-----	
6201		-----		-----	
6262	D7504	0.0005		-----	
6412	D5917	0.00000		-----	
7009	D2306	0.005		-----	
	n	21			
	mean (n)	<0.01			

Determination of Toluene on sample #21181; results in %M/M

Lab	method	value	mark	z(targ)	remarks
52	D7504	0.0078		0.66	
150		-----		-----	
171	D7504	0.0084		1.63	
315	D7504	0.0073		-0.15	
317	D7504	0.0067		-1.12	
323	D6563	<0.01	C	-----	first reported 0.01
396	D7504	0.0087		2.11	
445	D2360	0.008		0.98	
446		-----		-----	
551		-----		-----	
555		-----		-----	
558		-----		-----	
734	D7504	0.007695		0.49	
823	D7504	0.0071		-0.47	
862	D7504	0.0077		0.49	
913	D7504	0.006325		-1.73	
1011	D5917	0.0066		-1.28	
1040	D7504	0.008		0.98	
1041	D6563	0.008	C	0.98	first reported 0.01
1081	D6563	0.0072738		-0.19	
1250	D7504	0.0066		-1.28	
1320	D7504	0.01	R(0.05)	4.21	
1434	D7504	0.00776		0.59	
1530	D7504	0.0065		-1.44	
1812		0.00717		-0.36	
6201	D7504	0.0073		-0.15	
6262	D7504	0.0075		0.17	
6412	D5917	0.00724		-0.25	
7009	D2306	0.007		-0.64	

	normality	OK
	n	22
	outliers	1
	mean (n)	0.00739
	st.dev. (n)	0.000630
	R(calc.)	0.00177
	st.dev.(Horwitz)	0.000619
	R(Horwitz)	0.00173
Compare		
	R(D7504:21)	0.01745

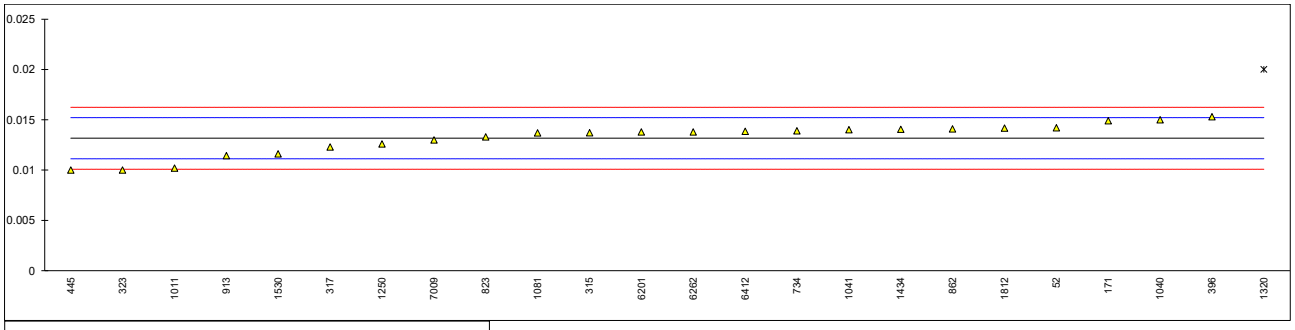


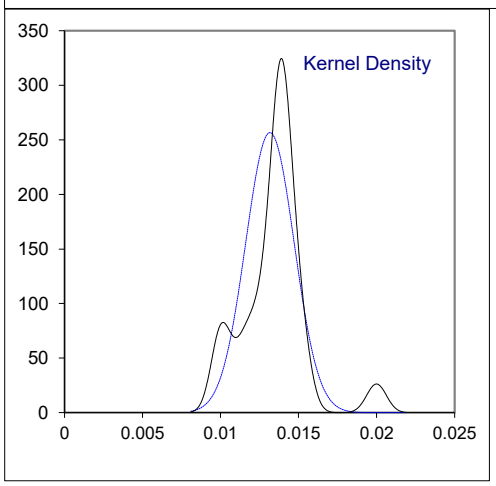


Determination of Ethylbenzene on sample #21181; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	0.0142		1.02	
150		-----		-----	
171	D7504	0.0149		1.71	
315	D7504	0.0137		0.53	
317	D7504	0.0123		-0.86	
323	D6563	0.01		-3.14	
396	D7504	0.0153		2.11	
445	D6563	0.010		-3.14	
446		-----		-----	
551		-----		-----	
555		-----		-----	
558		-----		-----	
734	D7504	0.013895		0.72	
823	D7504	0.0133		0.13	
862	D7504	0.0141		0.92	
913	D7504	0.011433		-1.72	
1011	D5917	0.0102		-2.94	
1040	D7504	0.015		1.81	
1041	D6563	0.014	C	0.82	first reported 0.01
1081	D6563	0.0136873		0.51	
1250	D7504	0.0126		-0.56	
1320	D7504	0.02	R(0.01)	6.76	
1434	D7504	0.01405		0.87	
1530	D7504	0.0116		-1.55	
1812		0.01417		0.99	
6201	D7504	0.0138		0.62	
6262	D7504	0.0138		0.62	
6412	D5917	0.01385		0.67	
7009	D2306	0.013		-0.17	

	normality	OK
	n	23
	outliers	1
	mean (n)	0.01317
	st.dev. (n)	0.001554
	R(calc.)	0.00435
	st.dev.(Horwitz)	0.001011
	R(Horwitz)	0.00283
Compare		
	R(D7504:21)	0.00043





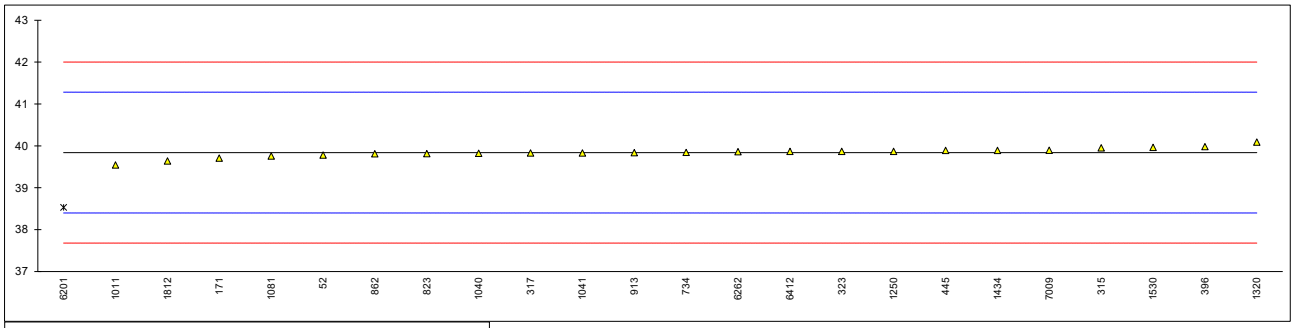
Determination of p-Diethylbenzene on sample #21181; results in %M/M

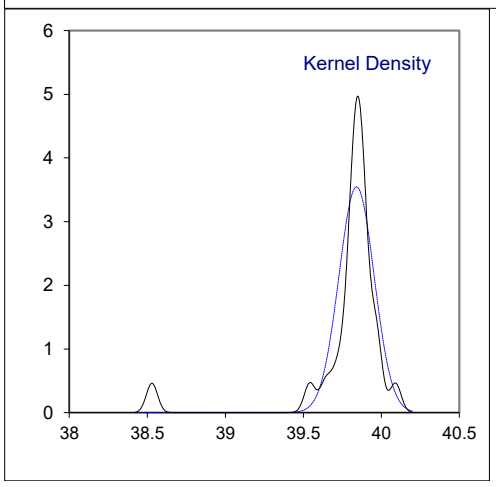
lab	method	value	mark	z(targ)	remarks
52		-----		-----	
150		-----		-----	
171		-----		-----	
315	D7504	<0.0002		-----	
317		-----		-----	
323		-----		-----	
396		-----		-----	
445		-----		-----	
446		-----		-----	
551		-----		-----	
555		-----		-----	
558		-----		-----	
734	D7504	0.0000		-----	
823	D7504	<0.0002		-----	
862	D7504	<0.0002		-----	
913		-----		-----	
1011		-----		-----	
1040		-----		-----	
1041	D6563	<0,01		-----	
1081	D6563	0.0043969		-----	
1250		-----		-----	
1320		-----		-----	
1434	D7504	0.00216		-----	
1530		-----		-----	
1812		-----		-----	
6201		-----		-----	
6262	D7504	<0.0005		-----	
6412		-----		-----	
7009	D2306	0.000		-----	
	n	9			
	mean (n)	<0.01			

Determination of o-Xylene on sample #21181; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	39.7825		-0.08	
150		-----		-----	
171	D7504	39.7075		-0.18	
315	D7504	39.95		0.15	
317	D7504	39.83		-0.01	
323	D6563	39.87		0.04	
396	D7504	39.98		0.19	
445	D6563	39.89		0.07	
446		-----		-----	
551		-----		-----	
555		-----		-----	
558		-----		-----	
734	D7504	39.84224		0.00	
823	D7504	39.8122		-0.04	
862	D7504	39.811		-0.04	
913	D7504	39.83577		-0.01	
1011	D5917	39.5416		-0.42	
1040	D7504	39.821		-0.03	
1041	D6563	39.83		-0.01	
1081	D6563	39.7544645		-0.12	
1250	D7504	39.8700		0.04	
1320	D7504	40.09		0.35	
1434	D7504	39.89153		0.07	
1530	D7504	39.961		0.17	
1812		39.64121		-0.28	
6201	D7504	38.53	R(0.01)	-1.82	
6262	D7504	39.8622		0.03	
6412	D5917	39.86729		0.04	
7009	D2306	39.894		0.07	

normality	suspect
n	23
outliers	1
mean (n)	39.8407
st.dev. (n)	0.11259
R(calc.)	0.3152
st.dev.(D7504:21)	0.72015
R(D7504:21)	2.0164

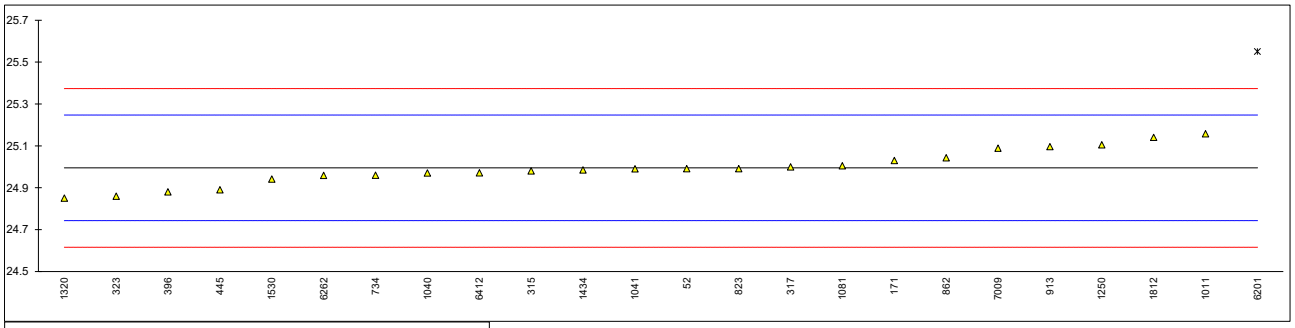


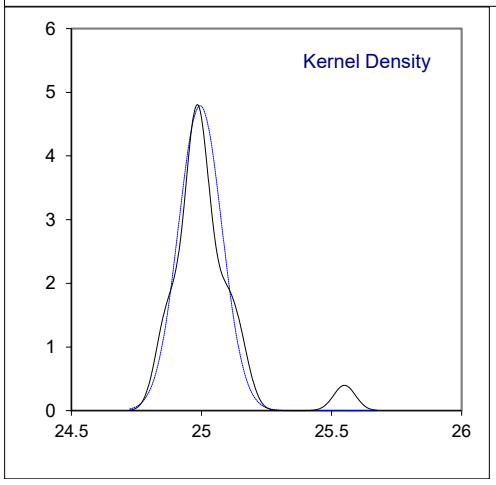


Determination of m-Xylene on sample #21181; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	24.9906		-0.04	
150		-----		-----	
171	D7504	25.0304		0.28	
315	D7504	24.98		-0.12	
317	D7504	25.00		0.04	
323	D6563	24.86		-1.07	
396	D7504	24.88		-0.91	
445	D6563	24.89		-0.83	
446		-----		-----	
551		-----		-----	
555		-----		-----	
558		-----		-----	
734	D7504	24.95967		-0.28	
823	D7504	24.9908		-0.03	
862	D7504	25.043		0.38	
913	D7504	25.0958		0.80	
1011	D5917	25.1576		1.29	
1040	D7504	24.971		-0.19	
1041	D6563	24.99		-0.04	
1081	D6563	25.0046901		0.08	
1250	D7504	25.1048		0.87	
1320	D7504	24.85		-1.15	
1434	D7504	24.98522		-0.08	
1530	D7504	24.942		-0.42	
1812		25.14018		1.15	
6201	D7504	25.55	R(0.01)	4.40	
6262	D7504	24.9594		-0.28	
6412	D5917	24.97132		-0.19	
7009	D2306	25.089		0.74	

normality	OK
n	23
outliers	1
mean (n)	24.9950
st.dev. (n)	0.08328
R(calc.)	0.2332
st.dev.(D7504:21)	0.12621
R(D7504:21)	0.3534

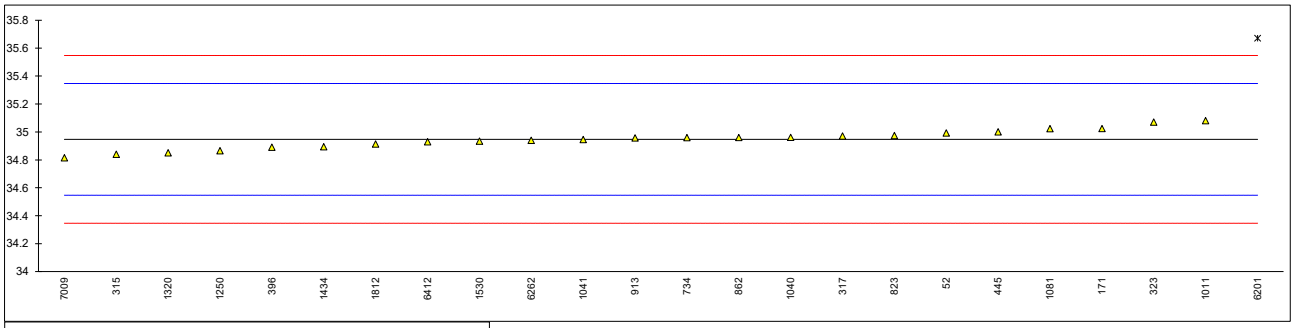


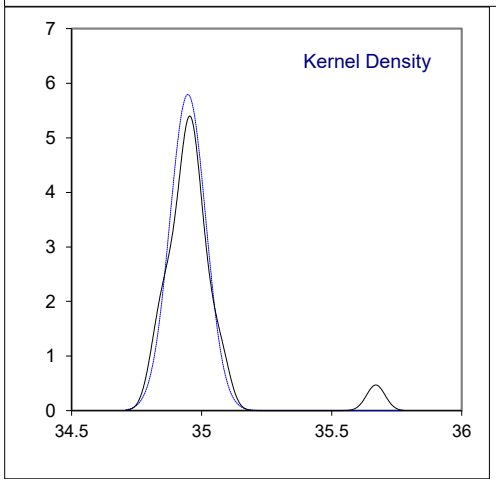


Determination of p-Xylene on sample #21181; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	34.9920		0.23	
150		-----		-----	
171	D7504	35.0237		0.38	
315	D7504	34.84		-0.53	
317	D7504	34.97		0.12	
323	D6563	35.07		0.61	
396	D7504	34.89		-0.28	
445	D6563	35.00		0.27	
446		-----		-----	
551		-----		-----	
555		-----		-----	
558		-----		-----	
734	D7504	34.958785		0.06	
823	D7504	34.9739		0.13	
862	D7504	34.96		0.07	
913	D7504	34.9558		0.04	
1011	D5917	35.0807		0.67	
1040	D7504	34.961		0.07	
1041	D6563	34.945		-0.01	
1081	D6563	35.0226012		0.38	
1250	D7504	34.8643		-0.41	
1320	D7504	34.85		-0.48	
1434	D7504	34.89339		-0.27	
1530	D7504	34.933		-0.07	
1812		34.91272		-0.17	
6201	D7504	35.67	R(0.01)	3.61	
6262	D7504	34.9394		-0.04	
6412	D5917	34.92911		-0.09	
7009	D2306	34.815		-0.66	

normality	OK
n	23
outliers	1
mean (n)	34.9470
st.dev. (n)	0.06884
R(calc.)	0.1928
st.dev.(D7504:21)	0.20006
R(D7504:21)	0.5602

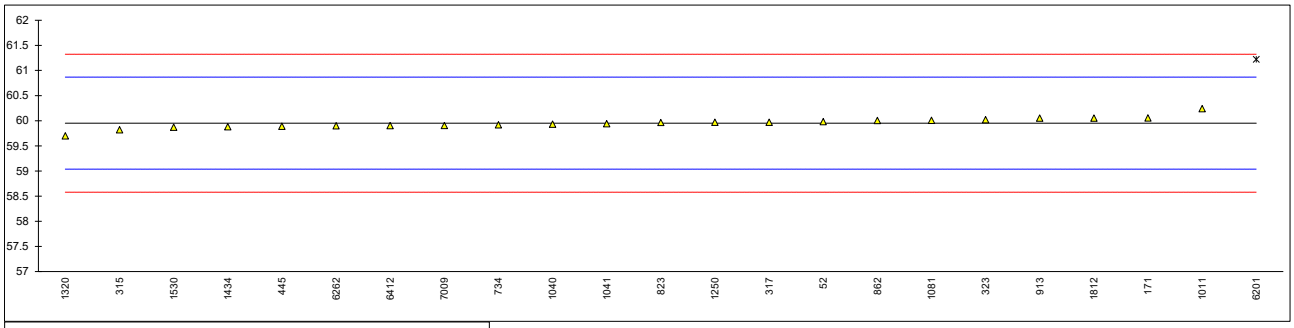


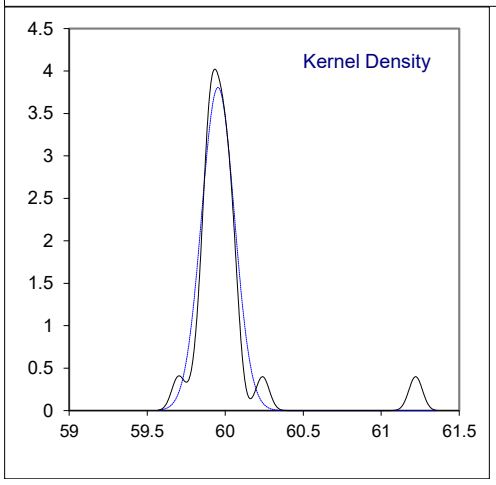


Determination of sum of m- and p-Xylenes on sample #21181; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	59.9826		0.06	
150		-----		-----	
171	D7504	60.0541		0.22	
315	D7504	59.82		-0.29	
317	D7504	59.97		0.04	
323	D6563	60.02	C	0.15	first reported 99.81
396		-----		-----	
445	D6563	59.89		-0.14	
446		-----		-----	
551		-----		-----	
555		-----		-----	
558		-----		-----	
734	D7504	59.918455		-0.08	
823	D7504	59.9648		0.03	
862	D7504	60.003		0.11	
913	D7504	60.0516		0.22	
1011	D5917	60.2383		0.62	
1040		59.932		-0.05	
1041	D6563	59.94		-0.03	
1081	D6563	60.00695		0.12	
1250	D7504	59.9691		0.04	
1320	D7504	59.70		-0.55	
1434	D7504	59.87861		-0.16	
1530	D7504	59.870		-0.18	
1812		60.05290		0.22	
6201	D7504	61.22	R(0.01)	2.77	
6262	D7504	59.8988		-0.12	
6412	D5917	59.90044		-0.11	
7009	D2306	59.904		-0.11	

normality	not OK
n	22
outliers	1
mean (n)	59.9530
st.dev. (n)	0.10483
R(calc.)	0.2935
st.dev.(D7504:21)	0.45765
R(D7504:21)	1.2814

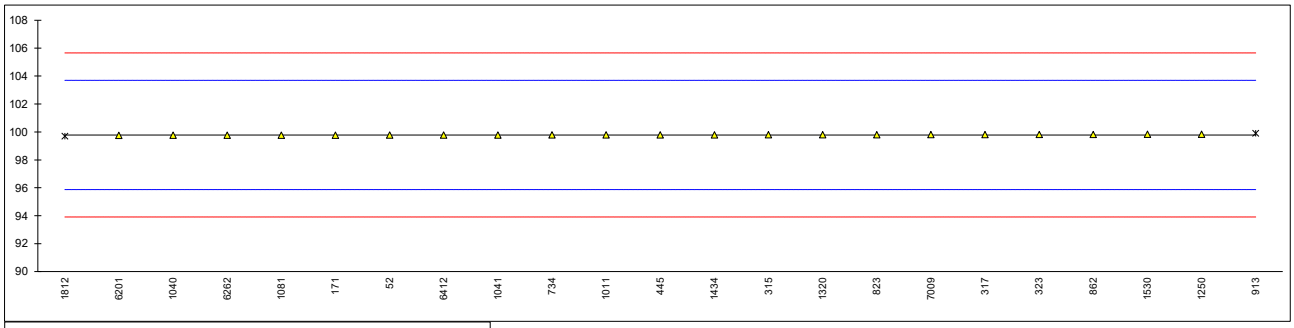


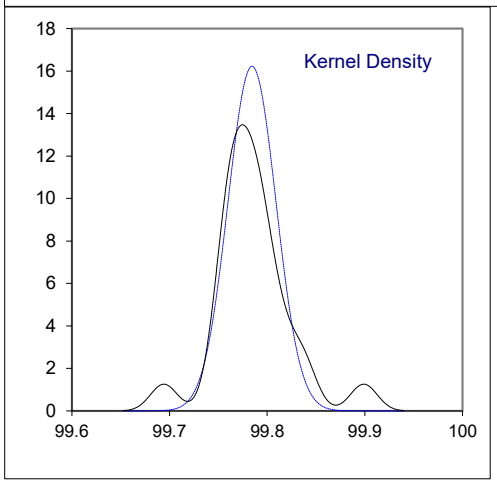


Determination of Total mixed-Xylenes on sample #21181; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	99.7651		-0.01	
150		-----		-----	
171	D7504	99.7616		-0.01	
315	D7504	99.79		0.00	
317	D7504	99.8		0.01	
323	D6563	99.81		0.01	
396		-----		-----	
445	D6563	99.78		0.00	
446		-----		-----	
551		-----		-----	
555		-----		-----	
558		-----		-----	
734	D7504	99.77459		0.00	
823	D7504	99.7903		0.00	
862	D7504	99.814		0.02	
913	D7504	99.8988	R(0.05)	0.06	
1011	D5917	99.7799		0.00	
1040		99.753		-0.02	
1041	D6563	99.77		-0.01	
1081	D6563	99.761414		-0.01	
1250	D7504	99.8391		0.03	
1320	D7504	99.79		0.00	
1434	D7504	99.78419		0.00	
1530	D7504	99.832		0.02	
1812		99.69411	R(0.05)	-0.05	
6201	D7504	99.75		-0.02	
6262	D7504	99.7610		-0.01	
6412	D5917	99.76773		-0.01	
7009	D2306	99.798		0.01	

normality	OK
n	21
outliers	2
mean (n)	99.7844
st.dev. (n)	0.02457
R(calc.)	0.0688
st.dev.(D7504:21)	1.95791
R(D7504:21)	5.4821

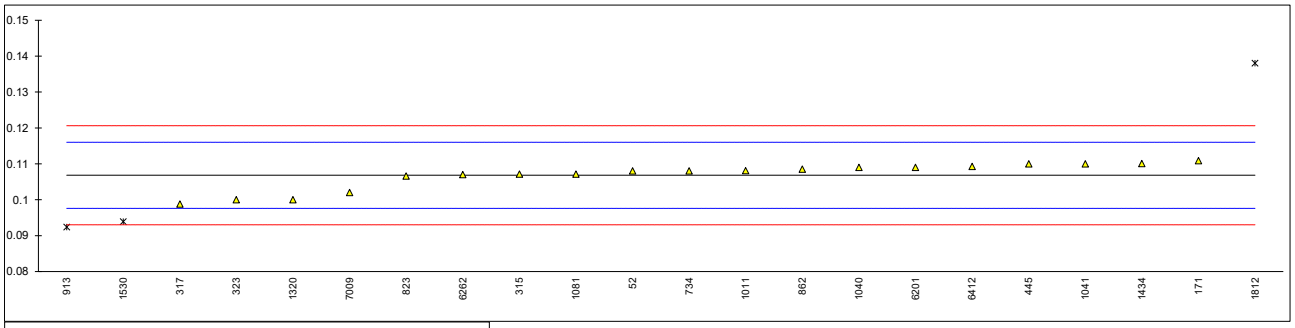


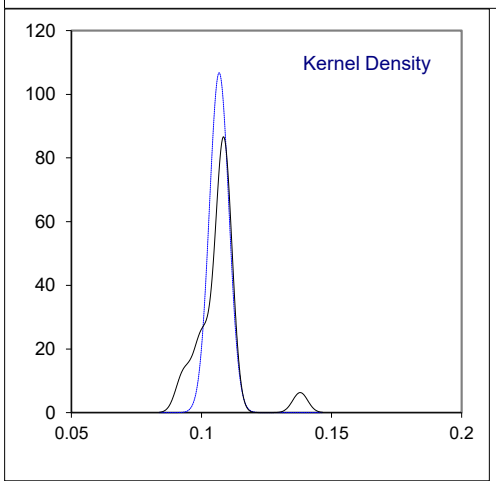


Determination of iso-Propyl Benzene (Cumene) on sample #21181; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	0.1080		0.26	
150		-----		-----	
171	D7504	0.1109		0.89	
315	D7504	0.1071		0.06	
317	D7504	0.0988		-1.74	
323	D6563	0.10		-1.48	
396		-----		-----	
445	D2360	0.110		0.69	
446		-----		-----	
551		-----		-----	
555		-----		-----	
558		-----		-----	
734	D7504	0.10802		0.26	
823	D7504	0.1066		-0.05	
862	D7504	0.1085		0.37	
913	D7504	0.0924	DG(0.05)	-3.13	
1011	D5917	0.1081		0.28	
1040	D7504	0.109		0.47	
1041	D6563	0.11		0.69	
1081	D6563	0.1071083		0.06	
1250		-----		-----	
1320	D7504	0.10		-1.48	
1434	D7504	0.11008		0.71	
1530	D7504	0.0939	DG(0.05)	-2.80	
1812		0.13799	G(0.01)	6.77	
6201	D7504	0.109		0.47	
6262	D7504	0.1070		0.04	
6412	D5917	0.10929		0.54	
7009	D2306	0.102		-1.05	

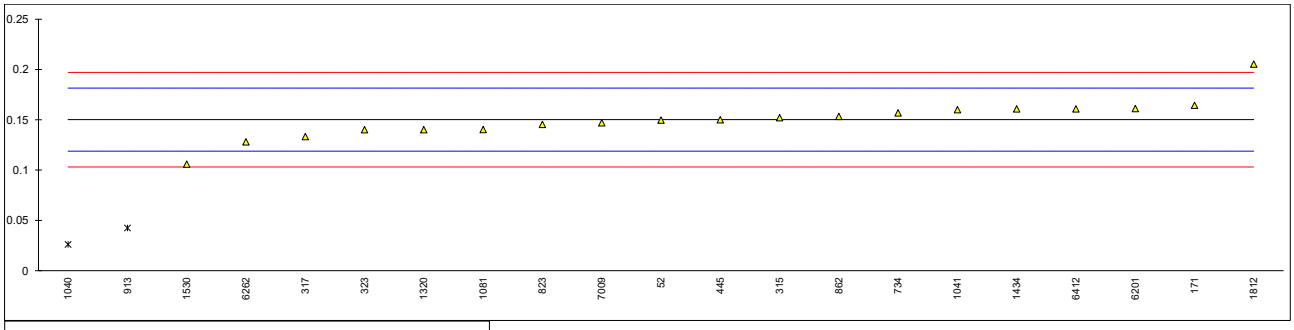
normality	OK
n	19
outliers	3
mean (n)	0.1068
st.dev. (n)	0.00374
R(calc.)	0.0105
st.dev.(D7504:21)	0.00461
R(D7504:21)	0.0129

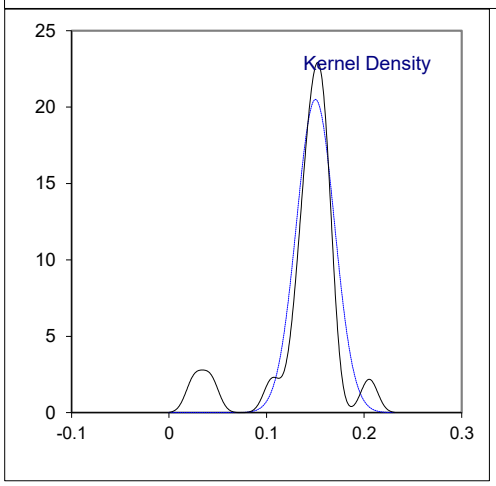




Determination of sum of C9 and heavier aromatics on sample #21181; results in %M/M

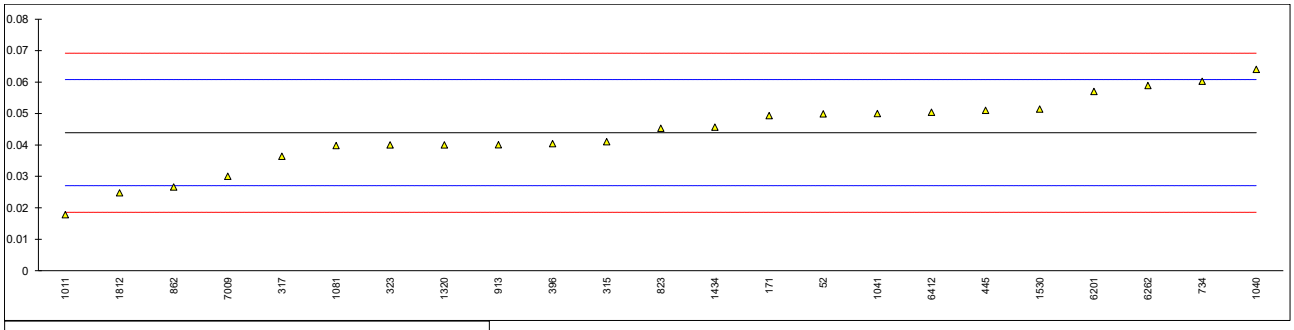
lab	method	value	mark	z(targ)	remarks
52	D7504	0.1497		-0.03	
150		-----		-----	
171	D7504	0.1644		0.89	
315	D7504	0.152		0.11	
317	D7504	0.1332		-1.06	
323	D6563	0.14		-0.64	
396		-----		-----	
445	D6563	0.15		-0.01	
446		-----		-----	
551		-----		-----	
555		-----		-----	
558		-----		-----	
734	D7504	0.15688		0.42	
823	D7504	0.1454		-0.30	
862	D7504	0.1534		0.20	
913	D7504	0.042433	R(0.01)	-6.74	
1011		-----		-----	
1040	D7504	0.026	R(0.01)	-7.77	
1041	D6563	0.16		0.61	
1081	D6563	0.1402847		-0.62	
1250		-----		-----	
1320	D7504	0.14		-0.64	
1434	D7504	0.16072		0.66	
1530	D7504	0.1059		-2.77	
1812		0.20533		3.45	
6201	D7504	0.161		0.67	
6262	D7504	0.1280		-1.39	
6412	D5917	0.16078		0.66	
7009	D2306	0.147		-0.20	
	normality	not OK			
	n	19			
	outliers	2			
	mean (n)	0.15021			
	st.dev. (n)	0.019463			
	R(calc.)	0.05450			
	st.dev.(Horwitz)	0.015985			
	R(Horwitz)	0.04476			4 components
Compare					
	R(D7504:21)	0.08490			

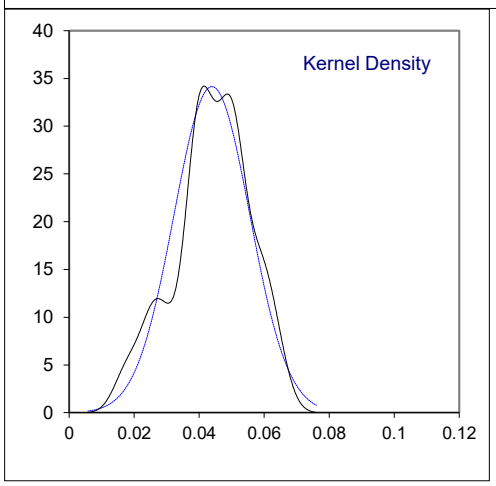




Determination of Non-aromatics on sample #21181; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	0.0499		0.71	
150		-----		-----	
171	D7504	0.0493		0.64	
315	D7504	0.041		-0.34	
317	D7504	0.0364		-0.89	
323	D6563	0.04		-0.46	
396	D7504	0.0404		-0.42	
445	D2360	0.051		0.84	
446		-----		-----	
551		-----		-----	
555		-----		-----	
558		-----		-----	
734	D7504	0.06026		1.94	
823	D7504	0.0453		0.17	
862	D7504	0.0266		-2.05	
913	D7504	0.040025		-0.46	
1011	D5917	0.0178		-3.10	
1040	D7504	0.064		2.38	
1041	D6563	0.05		0.72	
1081	D6563	0.0397742		-0.49	
1250		-----		-----	
1320	D7504	0.04		-0.46	
1434	D7504	0.04562		0.20	
1530	D7504	0.0514		0.89	
1812		0.02474		-2.27	
6201	D7504	0.057		1.55	
6262	D7504	0.0589		1.78	
6412	D5917	0.05040		0.77	
7009	D2306	0.030		-1.65	
	normality	OK			
	n	23			
	outliers	0			
	mean (n)	0.04391			
	st.dev. (n)	0.011687			
	R(calc.)	0.03272			
	st.dev.(Horwitz)	0.008434			
	R(Horwitz)	0.02361			9 components
Compare					
	R(D7504:21)	0.00511			

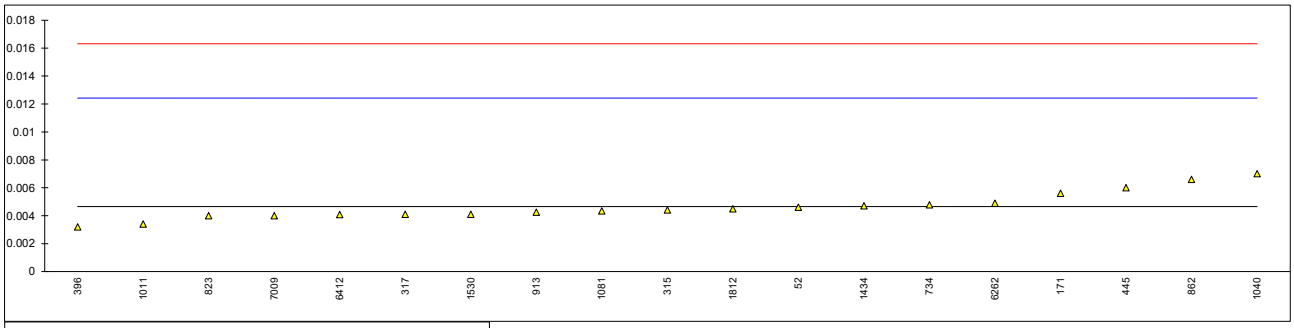


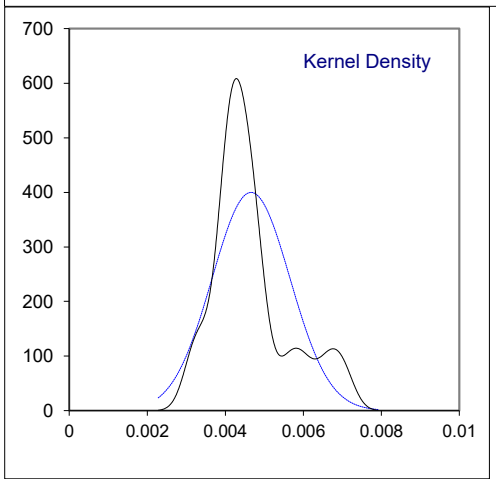


Determination of Benzene on sample #21182; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	0.0046		-0.02	
150		-----		-----	
171	D7504	0.0056		0.24	
315	D7504	0.0044		-0.07	
317	D7504	0.0041		-0.14	
323	D6563	< 0.01		-----	
396	D7504	0.0032		-0.38	
445	D2360	0.006		0.34	
446		-----		-----	
551		-----		-----	
555		-----		-----	
558		-----		-----	
734	D7504	0.004775		0.03	
823	D7504	0.0040		-0.17	
862	D7504	0.0066		0.50	
913	D7504	0.00425		-0.11	
1011	D5917	0.0034		-0.32	
1040	D7504	0.007		0.60	
1041	D6563	<0,01		-----	
1081	D6563	0.0043378		-0.08	
1250		-----		-----	
1320	D7504	<0.01		-----	
1434		0.00471		0.01	
1530	D7504	0.0041		-0.14	
1812		0.004492		-0.04	
6201		-----		-----	
6262	D7504	0.0049		0.06	
6412	D5917	0.00408		-0.15	
7009	D2306	0.004		-0.17	

normality	suspect
n	19
outliers	0
mean (n)	0.00466
st.dev. (n)	0.000997
R(calc.)	0.00279
st.dev.(D7504:21)	0.003884
R(D7504:21)	0.01087

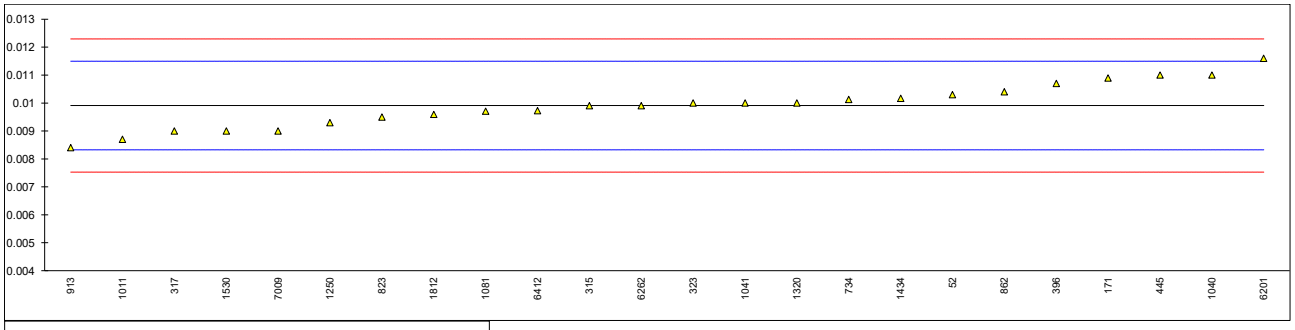


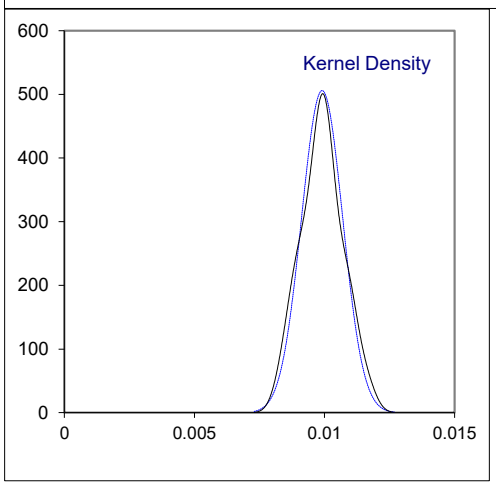


Determination of Toluene on sample #21182; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	0.0103		0.49	
150		-----		-----	
171	D7504	0.0109		1.24	
315	D7504	0.0099		-0.02	
317	D7504	0.0090		-1.15	
323	D6563	0.01		0.11	
396	D7504	0.0107		0.99	
445	D2360	0.011		1.37	
446		-----		-----	
551		-----		-----	
555		-----		-----	
558		-----		-----	
734	D7504	0.010125		0.27	
823	D7504	0.0095		-0.52	
862	D7504	0.0104		0.61	
913	D7504	0.00840		-1.91	
1011	D5917	0.0087		-1.53	
1040	D7504	0.011		1.37	
1041	D6563	0.01		0.11	
1081	D6563	0.0097058		-0.26	
1250	D7504	0.0093		-0.77	
1320	D7504	0.01		0.11	
1434		0.01017		0.32	
1530	D7504	0.0090		-1.15	
1812		0.009594		-0.40	
6201	D7504	0.0116		2.12	
6262	D7504	0.0099		-0.02	
6412	D5917	0.00973		-0.23	
7009	D2306	0.009		-1.15	

	normality	OK
	n	24
	outliers	0
	mean (n)	0.00991
	st.dev. (n)	0.000789
	R(calc.)	0.00221
	st.dev.(Horwitz)	0.000794
	R(Horwitz)	0.00222
Compare		
	R(D7504:21)	0.02339

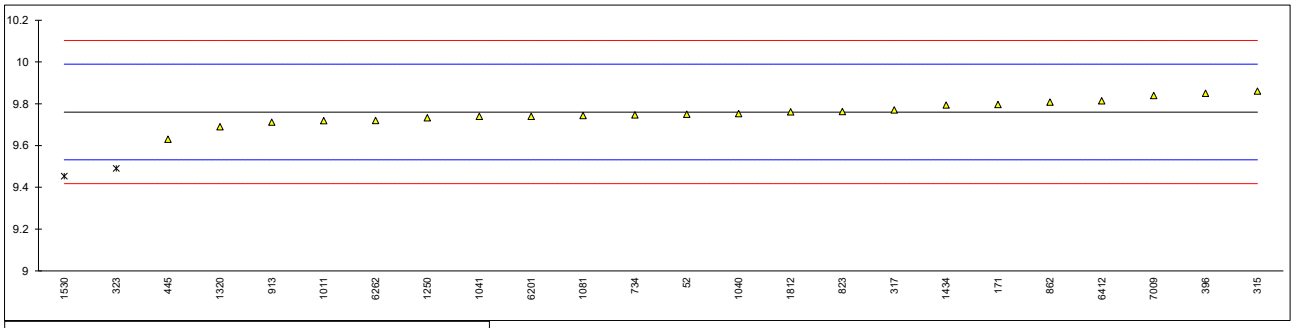


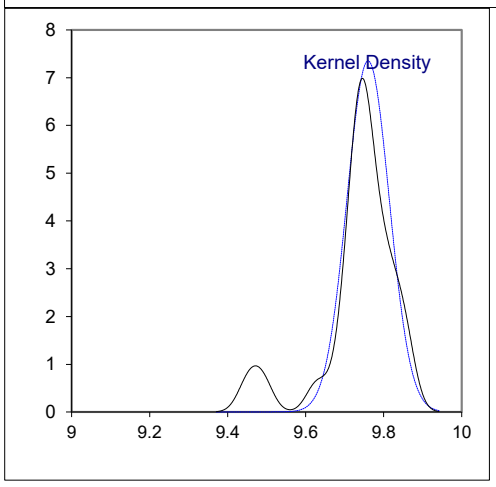


Determination of Ethylbenzene on sample #21182; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	9.7489		-0.10	
150		-----		-----	
171	D7504	9.7964		0.32	
315	D7504	9.86		0.87	
317	D7504	9.77		0.08	
323	D6563	9.49	R(0.01)	-2.36	
396	D7504	9.85		0.78	
445	D6563	9.63		-1.14	
446		-----		-----	
551		-----		-----	
555		-----		-----	
558		-----		-----	
734	D7504	9.746605		-0.12	
823	D7504	9.7619		0.01	
862	D7504	9.808		0.42	
913	D7504	9.71130		-0.43	
1011	D5917	9.7184		-0.37	
1040	D7504	9.753		-0.06	
1041	D6563	9.74		-0.18	
1081	D6563	9.7436247		-0.15	
1250	D7504	9.7323		-0.25	
1320	D7504	9.69		-0.62	
1434		9.79370		0.29	
1530	D7504	9.453	R(0.01)	-2.69	
1812		9.76083		0.00	
6201	D7504	9.74		-0.18	
6262	D7504	9.7195		-0.36	
6412	D5917	9.81385		0.47	
7009	D2306	9.839		0.69	

normality	OK
n	22
outliers	2
mean (n)	9.76033
st.dev. (n)	0.054264
R(calc.)	0.15194
st.dev.(D7504:21)	0.114307
R(D7504:21)	0.32006





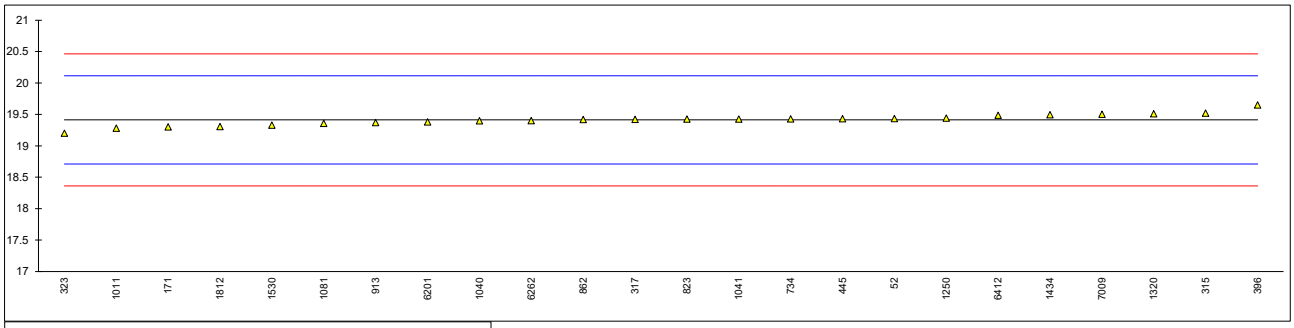
Determination of p-Diethylbenzene on sample #21182; results in %M/M

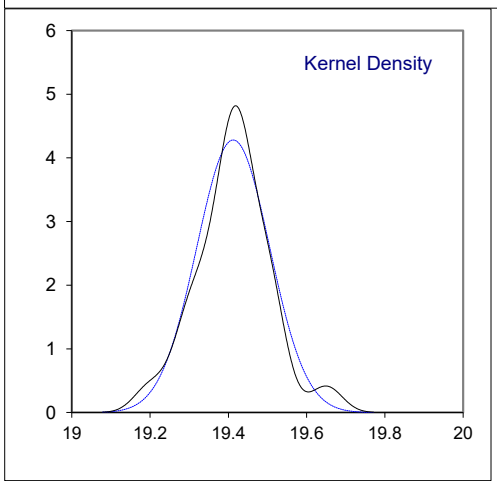
lab	method	value	mark	z(targ)	remarks
52		-----		-----	
150		-----		-----	
171		-----		-----	
315	D7504	<0.002		-----	
317		-----		-----	
323		-----		-----	
396		-----		-----	
445		-----		-----	
446		-----		-----	
551		-----		-----	
555		-----		-----	
558		-----		-----	
734	D7504	0.0000		-----	
823	D7504	<0.0002		-----	
862	D7504	<0.0002		-----	
913		-----		-----	
1011		-----		-----	
1040		-----		-----	
1041	D6563	<0,01		-----	
1081	D6563	0		-----	
1250		-----		-----	
1320		-----		-----	
1434		0		-----	
1530		-----		-----	
1812		-----		-----	
6201		-----		-----	
6262	D7504	<0.0005		-----	
6412		-----		-----	
7009	D2306	0.000		-----	
	normality				
	n	9			
	mean (n)	<0.01			

Determination of o-Xylene on sample #21182; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	19.4319		0.06	
150		-----		-----	
171	D7504	19.3010		-0.32	
315	D7504	19.52		0.31	
317	D7504	19.42		0.02	
323	D6563	19.20		-0.61	
396	D7504	19.65		0.68	
445	D6563	19.43		0.05	
446		-----		-----	
551		-----		-----	
555		-----		-----	
558		-----		-----	
734	D7504	19.427135		0.04	
823	D7504	19.4241		0.03	
862	D7504	19.418		0.02	
913	D7504	19.36985		-0.12	
1011	D5917	19.2798		-0.38	
1040	D7504	19.397		-0.04	
1041	D6563	19.425		0.04	
1081	D6563	19.3577617		-0.16	
1250	D7504	19.4410		0.08	
1320	D7504	19.51		0.28	
1434		19.49506		0.24	
1530	D7504	19.327		-0.24	
1812		19.30646		-0.30	
6201	D7504	19.38		-0.09	
6262	D7504	19.3995		-0.04	
6412	D5917	19.48530		0.21	
7009	D2306	19.502		0.26	

normality	suspect
n	24
outliers	0
mean (n)	19.4124
st.dev. (n)	0.09318
R(calc.)	0.2609
st.dev.(D7504:21)	0.35089
R(D7504:21)	0.9825

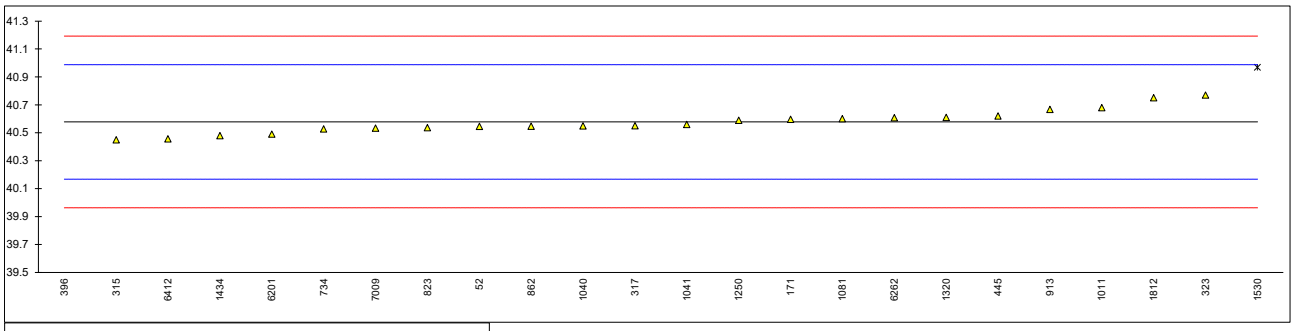


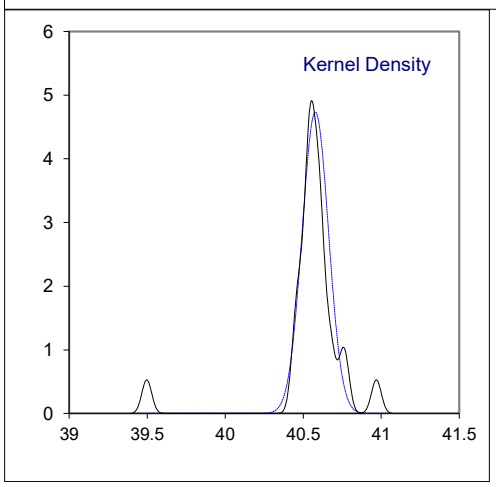


Determination of m-Xylene on sample #21182; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	40.5456		-0.16	
150		-----		-----	
171	D7504	40.5959		0.09	
315	D7504	40.45		-0.62	
317	D7504	40.55		-0.14	
323	D6563	40.77	C	0.94	first reported 40.99
396	D7504	39.498	C,R(0.01)	-5.27	first reported 39.98
445	D6563	40.62		0.21	
446		-----		-----	
551		-----		-----	
555		-----		-----	
558		-----		-----	
734	D7504	40.52733		-0.25	
823	D7504	40.5362		-0.20	
862	D7504	40.546		-0.16	
913	D7504	40.6675		0.44	
1011	D5917	40.6797		0.50	
1040	D7504	40.549		-0.14	
1041	D6563	40.56		-0.09	
1081	D6563	40.6004617		0.11	
1250	D7504	40.5886		0.05	
1320	D7504	40.61		0.16	
1434		40.47898		-0.48	
1530	D7504	40.969	R(0.01)	1.91	
1812		40.75132		0.85	
6201	D7504	40.49		-0.43	
6262	D7504	40.6075		0.14	
6412	D5917	40.45576		-0.60	
7009	D2306	40.534		-0.21	

normality	OK
n	22
outliers	2
mean (n)	40.5779
st.dev. (n)	0.08423
R(calc.)	0.2359
st.dev.(D7504:21)	0.20490
R(D7504:21)	0.5737

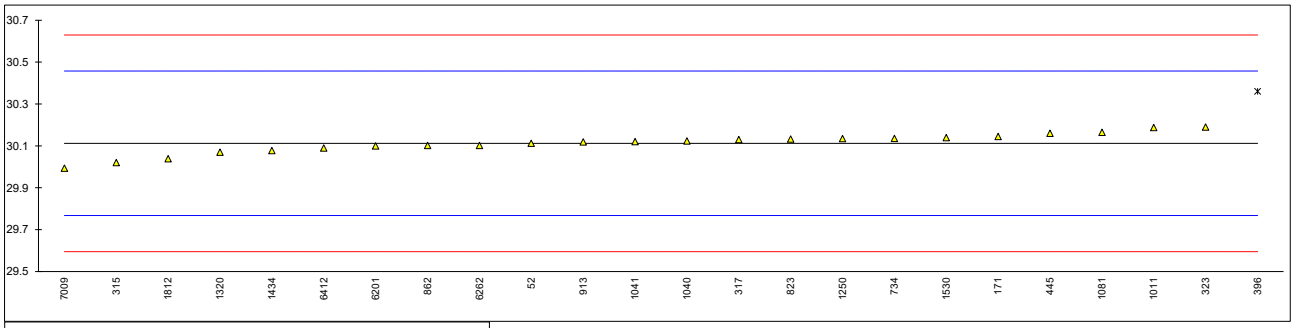


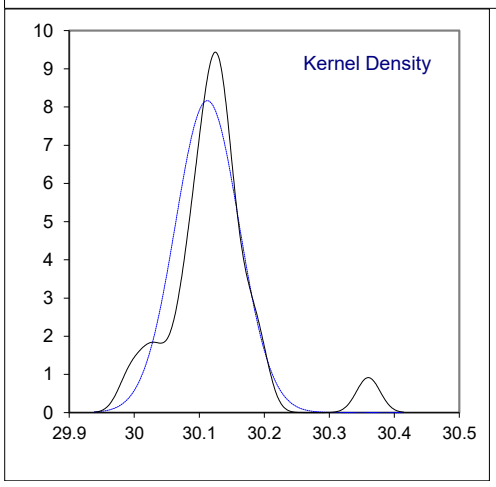


Determination of p-Xylene on sample #21182; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	30.1122		0.00	
150		-----		-----	
171	D7504	30.1447		0.19	
315	D7504	30.02		-0.54	
317	D7504	30.13		0.10	
323	D6563	30.19		0.45	
396	D7504	30.36	R(0.01)	1.44	
445	D6563	30.16		0.28	
446		-----		-----	
551		-----		-----	
555		-----		-----	
558		-----		-----	
734	D7504	30.135625		0.14	
823	D7504	30.1321		0.11	
862	D7504	30.102		-0.06	
913	D7504	30.11845		0.04	
1011	D5917	30.1875		0.44	
1040	D7504	30.123		0.06	
1041	D6563	30.12		0.04	
1081	D6563	30.1639951		0.30	
1250	D7504	30.1348		0.13	
1320	D7504	30.07		-0.25	
1434		30.07740		-0.20	
1530	D7504	30.139		0.15	
1812		30.03830		-0.43	
6201	D7504	30.10		-0.07	
6262	D7504	30.1022		-0.06	
6412	D5917	30.08961		-0.13	
7009	D2306	29.993		-0.69	

normality	OK
n	23
outliers	1
mean (n)	30.1123
st.dev. (n)	0.04884
R(calc.)	0.1368
st.dev.(D7504:21)	0.17239
R(D7504:21)	0.4827

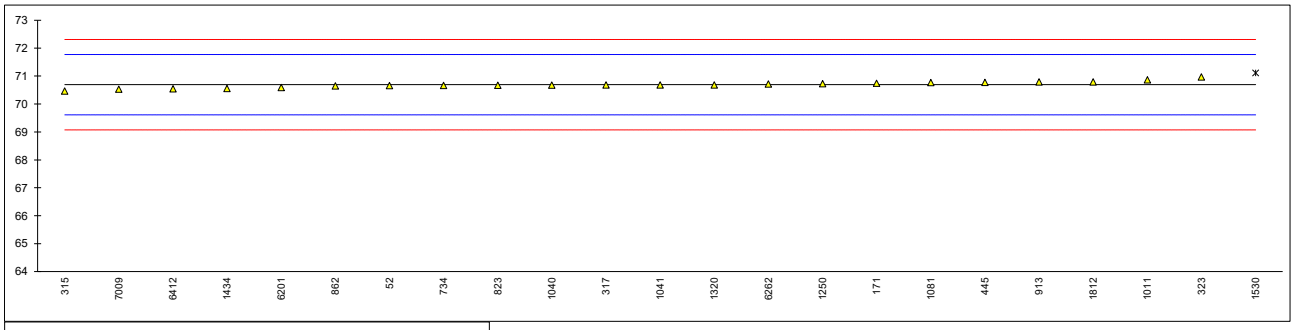


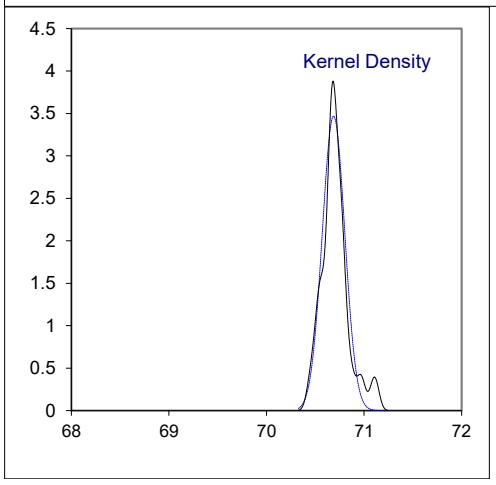


Determination of sum of m- and p-Xylenes on sample #21182; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	70.6578		-0.06	
150		-----		-----	
171	D7504	70.7406		0.10	
315	D7504	70.46		-0.42	
317	D7504	70.68		-0.02	
323	D6563	70.97	C	0.52	first reported 90.38
396		-----		-----	
445	D6563	70.77		0.15	
446		-----		-----	
551		-----		-----	
555		-----		-----	
558		-----		-----	
734	D7504	70.662955		-0.05	
823	D7504	70.6683		-0.04	
862	D7504	70.647		-0.08	
913	D7504	70.78595		0.18	
1011	D5917	70.8672		0.33	
1040		70.672		-0.03	
1041	D6563	70.68		-0.02	
1081	D6563	70.764456		0.14	
1250	D7504	70.7234		0.06	
1320	D7504	70.68		-0.02	
1434		70.55638		-0.24	
1530	D7504	71.109	R(0.05)	0.78	
1812		70.78962		0.19	
6201	D7504	70.59		-0.18	
6262	D7504	70.7097		0.04	
6412	D5917	70.54537		-0.27	
7009	D2306	70.527		-0.30	

normality	OK
n	22
outliers	1
mean (n)	70.6885
st.dev. (n)	0.11502
R(calc.)	0.3221
st.dev.(D7504:21)	0.53960
R(D7504:21)	1.5109

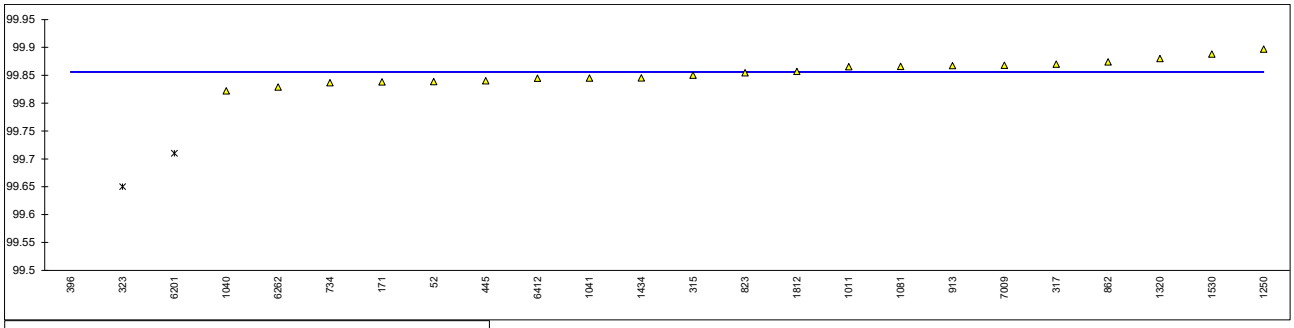


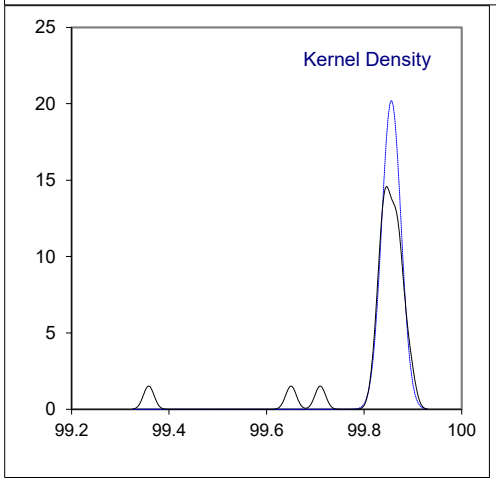


Determination of Total mixed-Xylenes on sample #21182; results in %M/M

lab	method	value	mark	z(targ)	iis calc.	mark	remarks
52	D7504	90.0897		-----	99.8386		
150		-----		-----	-----		
171	D7504	90.0416		-----	99.8380		
315	D7504	99.84		-----	99.8500		
317	D7504	90.10		-----	99.8700		
323	D6563	90.38		-----	99.6500	R(0.01)	
396		-----		-----	99.3580	R(0.01)	
445	D6563	99.84		-----	99.8400		
446		-----		-----	-----		
551		-----		-----	-----		
555		-----		-----	-----		
558		-----		-----	-----		
734	D7504	99.836695		-----	99.8367		
823	D7504	99.8543		-----	99.8543		
862	D7504	90.065		-----	99.8740		
913	D7504	99.8671		-----	99.8671		
1011	D5917	90.1470		-----	99.8654		
1040		90.069		-----	99.8220		
1041	D6563	90.11		-----	99.8450		
1081	D6563	90.122217		-----	99.8658		
1250	D7504	90.1644		-----	99.8967		
1320	D7504	90.19		-----	99.8800		
1434	D7504	99.84514		-----	99.8451		
1530	D7504	90.434		-----	99.8880		
1812		90.09608		-----	99.8569		
6201	D7504	89.97		-----	99.7100	R(0.01)	
6262	D7504	90.1092		-----	99.8287		
6412	D5917	90.03067		-----	99.8445		
7009	D2306	90.029		-----	99.8680		
	normality				OK		
	n				21		
	outliers				3		
	mean (n)				99.85594		
	st.dev. (n)				0.019744		
	R(calc.)				0.05528		
	st.dev.(D7504:21)				n.e.		
	R(D7504:21)				n.e.		

The column “iis calc” is the sum of m-Xylene, o-Xylene, p-Xylene and ethylbenzene calculated as Total mixed Xylenes as per test method ASTM D7504:21

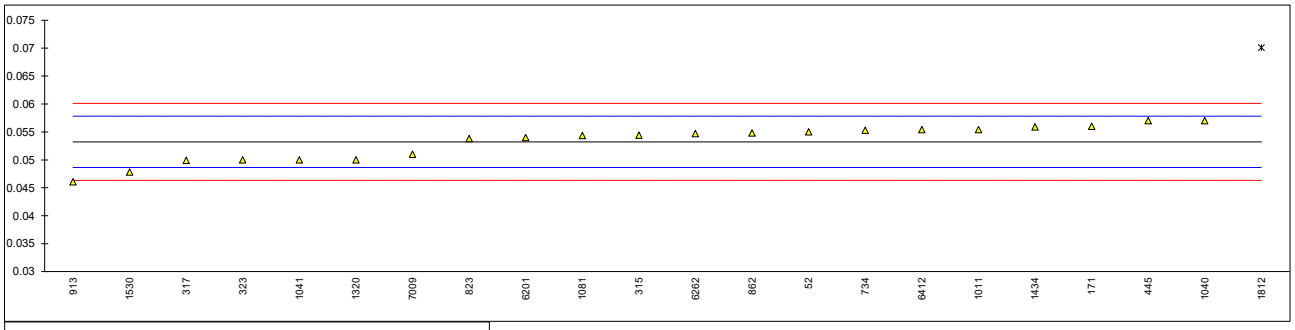


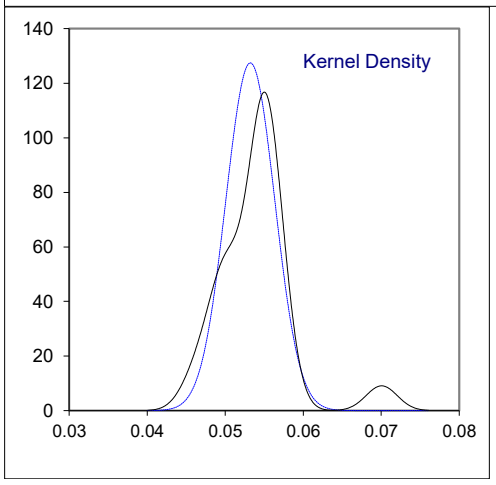


Determination of iso-Propyl Benzene (Cumene) on sample #21182; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	0.0550		0.77	
150		-----		-----	
171	D7504	0.0560		1.21	
315	D7504	0.0544		0.51	
317	D7504	0.0499		-1.45	
323	D6563	0.05		-1.41	
396		-----		-----	
445	D2360	0.057		1.64	
446		-----		-----	
551		-----		-----	
555		-----		-----	
558		-----		-----	
734	D7504	0.0553		0.90	
823	D7504	0.0538		0.25	
862	D7504	0.0548		0.69	
913	D7504	0.046075		-3.12	
1011	D5917	0.0554		0.95	
1040	D7504	0.057		1.64	
1041	D6563	0.05		-1.41	
1081	D6563	0.0543306		0.48	
1250		-----		-----	
1320	D7504	0.05		-1.41	
1434		0.05589		1.16	
1530	D7504	0.0478		-2.37	
1812		0.07006	R(0.01)	7.33	
6201	D7504	0.054		0.34	
6262	D7504	0.0547		0.64	
6412	D5917	0.05539		0.94	
7009	D2306	0.051		-0.97	

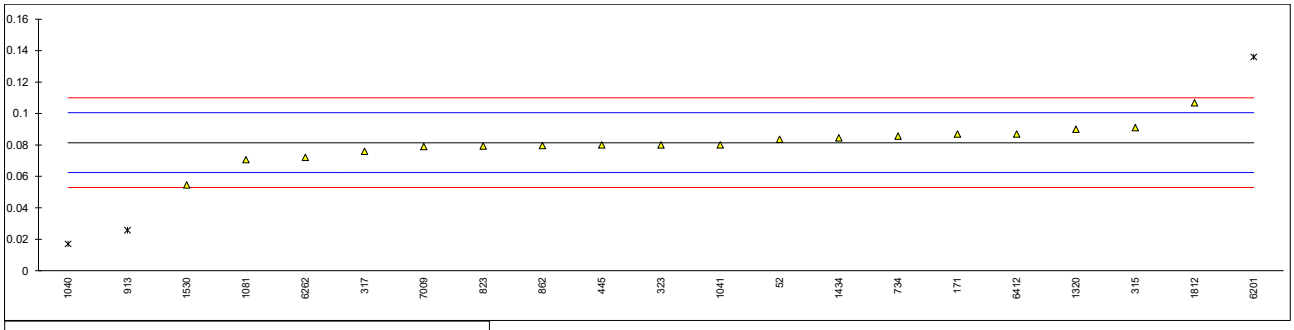
normality	OK
n	21
outliers	1
mean (n)	0.05323
st.dev. (n)	0.003132
R(calc.)	0.00877
st.dev.(D7504:21)	0.002295
R(D7504:21)	0.00643

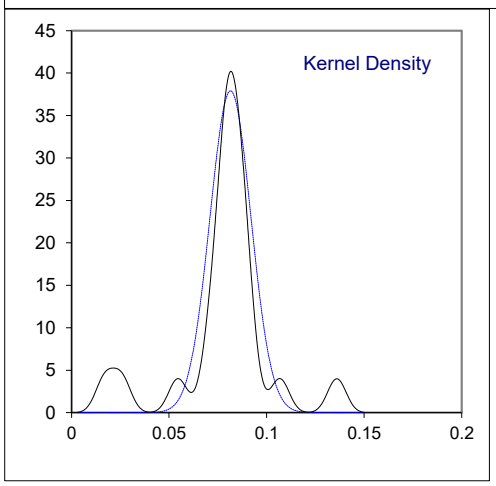




Determination of sum of C9 and heavier aromatics on sample #21182; results in %M/M

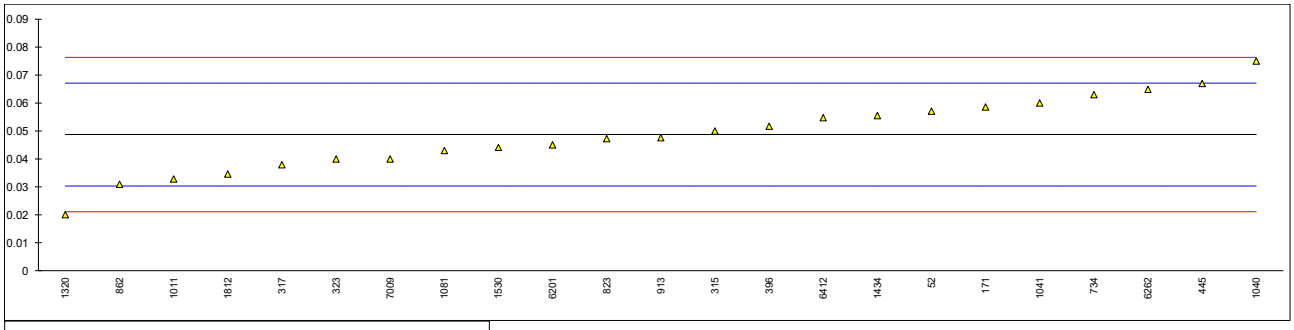
lab	method	value	mark	z(targ)	remarks
52	D7504	0.0835		0.22	
150		-----		-----	
171	D7504	0.0869		0.57	
315	D7504	0.091		1.00	
317	D7504	0.0759		-0.58	
323	D6563	0.08		-0.15	
396		-----		-----	
445	D6563	0.08		-0.15	
446		-----		-----	
551		-----		-----	
555		-----		-----	
558		-----		-----	
734	D7504	0.08559		0.44	
823	D7504	0.0793		-0.23	
862	D7504	0.0796		-0.19	
913	D7504	0.025675	DG(0.05)	-5.87	
1011		-----		-----	
1040	D7504	0.017	DG(0.05)	-6.78	
1041	D6563	0.08		-0.15	
1081	D6563	0.0705728		-1.14	
1250		-----		-----	
1320	D7504	0.09		0.90	
1434		0.08449		0.32	
1530	D7504	0.0545		-2.84	
1812		0.10679		2.67	
6201	D7504	0.136	G(0.01)	5.74	
6262	D7504	0.0720		-0.99	
6412	D5917	0.08698		0.58	
7009	D2306	0.079		-0.26	
	normality	not OK			
	n	18			
	outliers	3			
	mean (n)	0.08145			
	st.dev. (n)	0.0105			
	R(calc.)	0.02946			
	st.dev.(Horwitz)	0.009504			
	R(Horwitz)	0.02661			4 components
Compare					
	R(D7504:21)	0.04604			

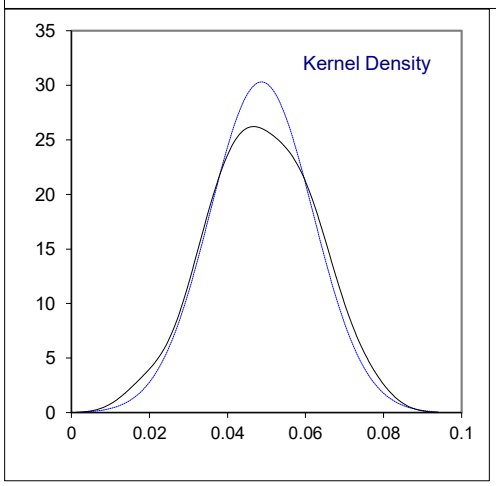




Determination of Non-aromatics on sample #21182; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D7504	0.0571		0.91	
150		-----		-----	
171	D7504	0.0586		1.07	
315	D7504	0.050		0.14	
317	D7504	0.0379		-1.17	
323	D6563	0.04		-0.95	
396	D7504	0.0517		0.32	
445	D2360	0.067		1.98	
446		-----		-----	
551		-----		-----	
555		-----		-----	
558		-----		-----	
734	D7504	0.0630		1.55	
823	D7504	0.0472		-0.16	
862	D7504	0.0309		-1.93	
913	D7504	0.047575		-0.12	
1011	D5917	0.0328		-1.73	
1040	D7504	0.075		2.85	
1041	D6563	0.06		1.22	
1081	D6563	0.042973		-0.62	
1250		-----		-----	
1320	D7504	0.02		-3.12	
1434		0.05549		0.73	
1530	D7504	0.0441		-0.50	
1812		0.03459		-1.53	
6201	D7504	0.045		-0.40	
6262	D7504	0.0649		1.76	
6412	D5917	0.05471	C	0.65	first reported 0.01323
7009	D2306	0.040		-0.95	
	normality	OK			
	n	23			
	outliers	0			
	mean (n)	0.04872			
	st.dev. (n)	0.013167			
	R(calc.)	0.03687			
	st.dev.(Horwitz)	0.009213			
	R(Horwitz)	0.02580			9 components
Compare					
	R(D7504:21)	0.00567			





APPENDIX 2

Number of participants per country

2 labs in	BELGIUM
3 labs in	BRAZIL
1 lab in	CANADA
1 lab in	CHINA, People's Republic
4 labs in	GERMANY
1 lab in	INDIA
1 lab in	IRAN, Islamic Republic of
1 lab in	ISRAEL
1 lab in	ITALY
1 lab in	KAZAKHSTAN
1 lab in	KOREA, Republic of
4 labs in	NETHERLANDS
1 lab in	PAKISTAN
2 labs in	PORTUGAL
1 lab in	SLOVAKIA
2 labs in	UNITED KINGDOM
2 labs in	UNITED STATES OF AMERICA

APPENDIX 3

Abbreviations

C	= final test result after checking of first reported suspect test 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
R(0.01)	= outlier in Rosner's outlier test
R(0.05)	= straggler in Rosner's outlier test
E	= calculation difference between reported test result and result calculated by iis
W	= test result withdrawn on request of participant
ex	= test result excluded from statistical evaluation
n.a.	= not applicable
n.e.	= not evaluated
n.d.	= not detected
fr.	= first reported
f+?	= possibly a false positive test result?
f-?	= possibly a false negative test result?
SDS	= Safety Data Sheet

Literature

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