Institute for
Interlaboratory Studies

Results of Proficiency Test
Naphtha PIONA / PNA
April 2022

Organized by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

Author: ing. M. Meijer
Correctors: ing. G.A. Oosterlaken-Buijs & ing. R.J. Starink
Approved by: ing. A.S. Noordman-de Neef

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CONTENTS

1 INTRODUCTION

Since 1994 the Institute for Interlaboratory Studies (iis) organizes a proficiency scheme for the analysis of Naphtha every year. In 2021 it was decided to separate proficiency scheme for Oxygenates, PIONA, PNA and DHA analyzes in Naphtha from the Naphtha proficiency scheme with other type of analyzes in Naphtha. During the annual proficiency testing program 2021/2022 it was decided to continue the Naphtha PIONA / PNA round robin.

In this interlaboratory study 62 laboratories in 31 countries registered for participation, see appendix 2 for the number of participants per country. In this report the results of the Naphtha PIONA / PNA Naphtha proficiency test is 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 one sample of Naphtha in a 30 mL glass vial labelled #22051.
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 3 liters of Naphtha was selected. This batch was especially prepared for the GC analyzes. After homogenization approximately 100 amber glass bottles of 30 mL were filled and labelled #22051.
The homogeneity of the subsamples was checked by determination of MTBE in accordance with an in-house test method on 8 stratified randomly selected subsamples.

	MTBE in mg/kg
sample #22051-1	121.1
sample #22051-2	115.8
sample #22051-3	116.1
sample #22051-4	114.6
sample #22051-5	118.9
sample #22051-6	117.0
sample #22051-7	116.8
sample #22051-8	115.7

Table 1: homogeneity test results of subsamples #22051

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.

	MTBE in mg/kg
r (observed)	5.8
reference test method	D7423:17
0.3 x R (reference test method)	7.7

Table 2: evaluation of the repeatability of subsamples #22051

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 Naphtha labelled #22051 was sent on March 9, 2022. An SDS was added to the sample package.

2.5 STABILITY OF THE SAMPLES

The stability of the Naphtha packed in amber glass bottles was checked. The material was found to be sufficiently stable for the period of the proficiency test.

2.6 ANALYZES

The participants were requested to determine: Acetone, DIPE (Diisopropylether), Ethyl Acetate, MEK (Methyl Ethyl Ketone), Methanol, Ethanol, MTBE (Methyl tertiary-Butyl Ether), TAME (tertiary-Amyl Methyl Ether), Total Oxygenates, PIONA GC Determination (Total Paraffins, n-Paraffins, i-Paraffins, Olefins, Aromatics, Naphthenes and C4 and lighter hydrocarbons) in %V/V and %M/M, PNA GC Determination (Total Paraffins, Total Naphthenes, Total Aromatics and C4 and lighter hydrocarbons) in %V/V and %M/M and Detail Hydrocarbon Analysis (DHA) (Pentane, Benzene, Cyclohexane, 2- and 3-Methylpentane, Heptane, Toluene and Octane).

It was explicitly requested to treat the sample as if it was a routine sample 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 the original test results are placed under 'Remarks' in the 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:

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

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. Therefore, the usual interpretation of z-scores is as follows:

	$\lvert z \rvert$	< 1	good
1 <	$\lvert z \rvert$	< 2	satisfactory
2 <	$\lvert z \rvert$	< 3	questionable
3 <	$\lvert z \rvert$		unsatisfactory

4 EVALUATION

Large 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 another three weeks. Nine participants reported test results after the extended reporting date and twelve other participants did not report any test results. Not all participants were able to report all tests requested.
In total 50 participants reported 948 numerical test results. Observed were 52 outlying test results, which is 5.5%. In proficiency tests 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 TEST

In this section the reported test results are discussed per test. 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 in appendix 1. The abbreviations, used in these tables, are explained in appendix 3.

Unfortunately, a suitable reference test method providing the precision data is not available for all determinations. For these tests the calculated reproducibility was compared against the estimated reproducibility calculated with the Horwitz equation.

In the iis PT reports ASTM test methods are referred to with a number (e.g. D5443) and an added designation for the year that the test method was adopted or revised (e.g. D5443:14). When a method has been reapproved an “R” will be added and the year of approval (e.g. D5443:14R18).

Oxygenates

Acetone: This determination was not problematic. All reporting participants agreed on a concentration lower than 10 mg/kg. Therefore, no z-scores are calculated.

DIPE: This determination was not problematic. All reporting participants agreed on a concentration lower than 10 mg/kg. Therefore, no z-scores are calculated.

Ethyl Acetate: Only two participants reported a test result and agreed on a concentration lower than 10 mg/kg. Therefore, no z-scores are calculated.

MEK: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D7423:17.

Methanol: This determination was very problematic. Two statistical outliers were observed. It was decided not to calculate z-scores due to a large variation over the group compared to the target reproducibility.

Ethanol: This determination was problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of ASTM D7423:17.

MTBE: 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 D7423:17.

TAME: 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 D7423:17.

Total Oxygenates: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the estimated reproducibility calculated with the Horwitz equation based on 5 components.

PIONA %V/V

Total Paraffins: This determination was not problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ASTM D6839:21a.

n-Paraffins: This determination was problematic. One statistical outlier was observed and one other test result was excluded. The calculated reproducibility after rejection of the suspect data is not in agreement with the requirements of ASTM D6839:21a.

i-Paraffins: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ASTM D6839:21a.

Olefins: 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 D6839:21a.

Aromatics: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D6839:21a.

Naphthenes: This determination was not problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ASTM D6839:21a.

C4 and lighter: This determination may not be problematic. No statistical outliers were observed. Unfortunately, no requirements are given in ASTM D6839:21a. Therefore, no z-scores are calculated.

PIONA %M/M

Total Paraffins: This determination was not problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the estimated reproducibility calculated with the Horwitz equation based on 2 components.

n-Paraffins: This determination was not problematic. Two statistical outliers were observed and one other test result was excluded. The calculated reproducibility after rejection of the suspect data is in agreement with the estimated reproducibility calculated with the Horwitz equation based on 2 components.

i-Paraffins: This determination was not problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the estimated reproducibility calculated with the Horwitz equation based on 2 components.

Olefins: This determination may be problematic. No statistical outliers were observed. It was decided not to calculate z-scores due to a large variation over the group compared to the target reproducibility.

Aromatics: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the estimated reproducibility calculated with the Horwitz equation based on 2 components.

Naphthenes: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the estimated reproducibility calculated with the Horwitz equation based on 2 components.

C4 and lighter: This determination was very problematic. Two statistical outliers were observed. It was decided not to calculate z-scores due to a large variation over the group compared to the target reproducibility.

PNA %V/V

No precision data is available for the determination of PNA in %V/V. It was decided not to make use of the Horwitz equation as this formula is intended for mass concentrations and not for volume. Therefore, no z-scores are calculated.

PNA %M/M

Total Paraffins: 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 D5443:14R18.

Total Naphthenes: This determination was problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D5443:14R18.

Total Aromatics: 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 D5443:14R18.

C4 and lighter: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the estimated reproducibility calculated with the Horwitz equation based on 2 components.

DHA

Pentane: This determination was problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of ASTM D5134:21.

Benzene: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirement of ASTM D5134:21.

Cyclohexane: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirement of ASTM D5134:21.

2-Methylpentane: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the estimated reproducibility calculated with the Horwitz equation, but not with the strict requirement of ASTM D5134:21.

3-Methylpentane: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the estimated reproducibility calculated with the Horwitz equation, but not with the strict requirement of ASTM D5134:21.

Heptane: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the estimated reproducibility calculated with the Horwitz equation, but not with the strict requirement of ASTM D5134:21.

Toluene: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the estimated reproducibility calculated with the Horwitz equation, but not with the strict requirement of ASTM D5134:21.

Octane: 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 calculated with the Horwitz equation, nor with the strict requirement of ASTM D5134:21.

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 reference methods are presented in the next table.

Parameter	unit	n	average	2.8 * sd	R(lit)
Acetone	mg/kg	15	<10	n.e.	n.e.
DIPE	mg/kg	14	<10	n.e.	n.e.
Ethyl Acetate	mg/kg	2	<10	n.e.	n.e.
MEK	mg/kg	14	2.79	0.94	1.21
Methanol	mg/kg	15	67.7	45.9	(15.5)
Ethanol	mg/kg	15	3.43	2.69	1.75
MTBE	mg/kg	20	111	29	24
TAME	mg/kg	15	1.78	0.75	1.25
Total Oxygenates	%M/M	15	0.02	0.01	0.01
PIONA					
Total Paraffins	%V/V	37	65.2	1.5	1.6
n-Paraffins	%V/V	38	32.4	2.8	1.6
i-Paraffins	%V/V	38	33.1	1.7	1.6
Olefins	%V/V	36	0.14	0.20	0.29
Aromatics	%V/V	40	5.2	0.5	0.5
Naphthenes	%V/V	37	29.3	1.6	1.6
C4 and lighter	%V/V	30	2.2	1.4	n.a.
Total Paraffins	%M/M	35	61.9	1.9	5.3
n-Paraffins	%M/M	35	30.4	2.2	2.9
i-Paraffins	%M/M	35	31.6	1.5	3.0
Olefins	%M/M	36	0.15	0.27	(0.03)
Aromatics	%M/M	36	6.3	0.5	0.8
Naphthenes	%M/M	36	31.5	2.4	3.0
C4 and lighter	%M/M	24	1.89	0.72	(0.27)
PNA					
Total Paraffins	%V/V	11	65.2	0.8	n.a.
Total Naphthenes	%V/V	11	29.7	0.9	n.a.
Total Aromatics	%V/V	12	5.2	0.4	n.a.
C4 and lighter	%V/V	10	2.5	0.4	n.a.
Total Paraffins	%M/M	11	61.7	0.7	1.3
Total Naphthenes	%M/M	11	32.1	0.9	0.6
Total Aromatics	%M/M	12	6.3	0.6	0.7
C4 and lighter	%M/M	9	2.0	0.2	0.3
DHA					
Pentane	%M/M	26	6.64	0.68	0.50
Benzene	%M/M	27	0.52	0.04	0.06
Cyclohexane	%M/M	24	1.95	0.07	0.22
2-Methylpentane	%M/M	25	3.38	0.20	0.31
3-Methylpentane	%M/M	24	2.32	0.13	0.23
Heptane	%M/M	25	5.97	0.31	0.51

Parameter	unit	n	average	2.8 * sd	R(lit)
Toluene	%M/M	27	1.33	0.08	0.14
Octane	%M/M	25	5.28	0.73	0.46

Table 3: reproducibilities of tests on sample #22051

For results between brackets no z-scores are calculated.

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 PROFICIENCY TEST OF APRIL 2022 WITH PREVIOUS PTS

	April 2022	April 2021	April 2020	April 2019	April 2018
Number of reporting laboratories	50	56	74	93	104
Number of test results	948	1052	1446	1635	1831
Number of statistical outliers	52	73	130	73	88
Percentage of statistical outliers	5.5%	6.9%	9.0%	4.5%	4.8%

Table 4: 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 to the requirements of the reference test methods. The conclusions are given in the following table.

Parameter	April 2022	April 2021	April 2020	April 2019	April 2018
Oxygenates	-	-	-	-	+/-
PIONA *)	+	+/-	+	-	-
PNA *)	+	+	+	n.e.	n.e.
DHA	+	-	-	+	+/-

Table 5: comparison of determinations to the reference test methods

*) Up till 2019 PIONA and PNA was combined evaluated in the PT

The following performance categories were used:

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

APPENDIX 1

Determination of Acetone on sample #22051; results in mg/kg

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150		-----		-----	
171	D7423	<0.5		-----	
311	INH-403	1.3		-----	
323	In house	3		-----	
333		-----		-----	
334		-----		-----	
349		-----		-----	
360		-----		-----	
399	D7423	1.16		-----	
444		-----		-----	
445		-----		-----	
657	INH-0130	1.3		-----	
754	D7423	1.09		-----	
779	D7423	1.3		-----	
781		-----		-----	
785		-----		-----	
798		-----		-----	
824	D7423	1.0		-----	
855		-----		-----	
862		-----		-----	
864		-----		-----	
868		-----		-----	
873		-----		-----	
874	D7423	1.38		-----	
914		-----		-----	
922		-----		-----	
971	D7423	1.5		-----	
994		-----		-----	
1012		-----		-----	
1016	In house	1.56		-----	
1041		-----		-----	
1062		-----		-----	
1065		-----		-----	
1066		-----		-----	
1081		-----		-----	
1108		-----		-----	
1135	D7423	<1		-----	
1145		-----		-----	
1191		-----		-----	
1362		-----		-----	
1585		-----		-----	
1586		-----		-----	
1656		-----		-----	
1720		-----		-----	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1823		-----		-----	
1857		-----		-----	
1862		-----		-----	
1950		-----		-----	
1995	D7423	1.7		-----	
6028		-----		-----	
6134		-----		-----	
6185	In house	1.0		-----	
6198		-----		-----	
6200		-----		-----	
6379		-----		-----	
6438	D7423	2.0		-----	
6447		-----		-----	
9008		-----		-----	
	n	15			
	mean (n)	<10			

Determination of DIPE on sample #22051; results in mg/kg

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150		-----		-----	
171	D7423	<0.5		-----	
311	INH-403	<1.0		-----	
323	In house	< 2		-----	
333		-----		-----	
334		-----		-----	
349		-----		-----	
360		-----		-----	
399	D7423	<1		-----	
444		-----		-----	
445		-----		-----	
657	INH-0130	0		-----	
754	D7423	<0.5		-----	
779	D7423	<5.0		-----	
781		-----		-----	
785		-----		-----	
798		-----		-----	
824	D7423	<0.5		-----	
855		-----		-----	
862		-----		-----	
864		-----		-----	
868		-----		-----	
873		-----		-----	
874	D7423	<0.5		-----	
914		-----		-----	
922		-----		-----	
971	D7423	<0.5		-----	
994		-----		-----	
1012		-----		-----	
1016	In house	0.00		-----	
1041		-----		-----	
1062		-----		-----	
1065		-----		-----	
1066		-----		-----	
1081	ISO22854-A	0		-----	
1108		-----		-----	
1135	D7423	<1		-----	
1145		-----		-----	
1191		-----		-----	
1362		-----		-----	
1585		-----		-----	
1586		-----		-----	
1656		-----		-----	
1720		-----		-----	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1823		-----		-----	
1857		-----		-----	
1862		-----		-----	
1950		-----		-----	
1995	D7423	0		-----	
6028		-----		-----	
6134		-----		-----	
6185		-----		-----	
6198		-----		-----	
6200		-----		-----	
6379		-----		-----	
6438		-----		-----	
6447		-----		-----	
9008		-----		-----	
	n	14			
	mean (n)	<10			

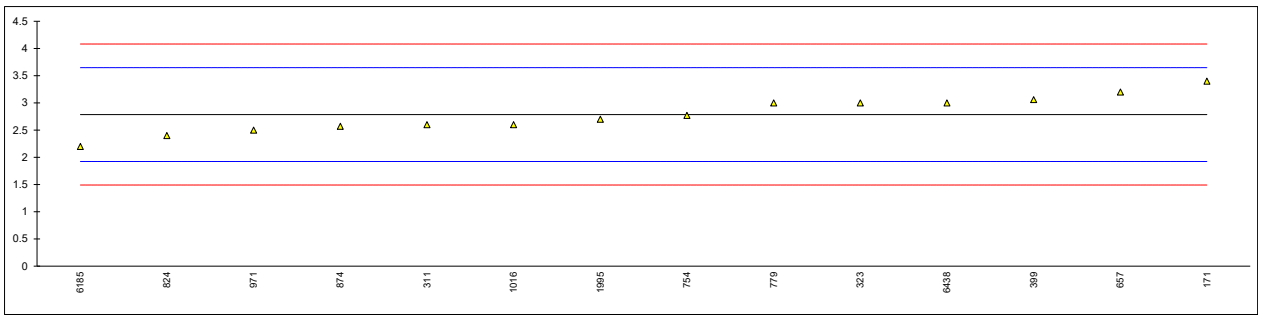
Determination of Ethyl Acetate on sample #22051; results in mg/kg

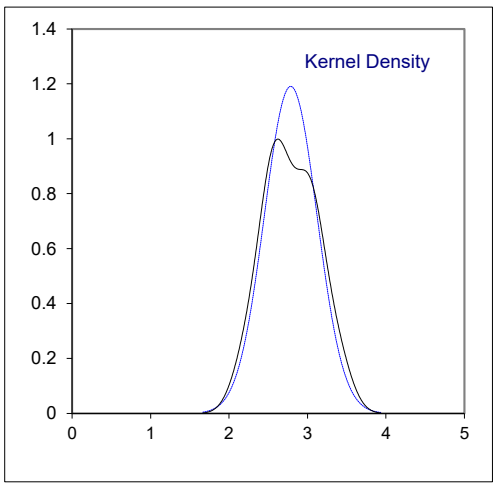
lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150		-----		-----	
171		-----		-----	
311		-----		-----	
323		-----		-----	
333		-----		-----	
334		-----		-----	
349		-----		-----	
360		-----		-----	
399		-----		-----	
444		-----		-----	
445		-----		-----	
657		-----		-----	
754		-----		-----	
779		-----		-----	
781		-----		-----	
785		-----		-----	
798		-----		-----	
824		-----		-----	
855		-----		-----	
862		-----		-----	
864		-----		-----	
868		-----		-----	
873		-----		-----	
874	D7423	<0.5		-----	
914		-----		-----	
922		-----		-----	
971		-----		-----	
994		-----		-----	
1012		-----		-----	
1016		-----		-----	
1041		-----		-----	
1062		-----		-----	
1065		-----		-----	
1066		-----		-----	
1081		-----		-----	
1108		-----		-----	
1135	D7423	<1		-----	
1145		-----		-----	
1191		-----		-----	
1362		-----		-----	
1585		-----		-----	
1586		-----		-----	
1656		-----		-----	
1720		-----		-----	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1823		-----		-----	
1857		-----		-----	
1862		-----		-----	
1950		-----		-----	
1995		-----		-----	
6028		-----		-----	
6134		-----		-----	
6185		-----		-----	
6198		-----		-----	
6200		-----		-----	
6379		-----		-----	
6438		-----		-----	
6447		-----		-----	
9008		-----		-----	
	n	2			
	mean (n)	<10			

Determination of MEK on sample #22051; results in mg/kg

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150		-----		-----	
171	D7423	3.4		1.42	
311	INH-403	2.6		-0.43	
323	In house	3		0.50	
333		-----		-----	
334		-----		-----	
349		-----		-----	
360		-----		-----	
399	D7423	3.06		0.64	
444		-----		-----	
445		-----		-----	
657	INH-0130	3.2		0.96	
754	D7423	2.77		-0.04	
779	D7423	3.0		0.50	
781		-----		-----	
785		-----		-----	
798		-----		-----	
824	D7423	2.4	C	-0.89	first reported 2.1
855		-----		-----	
862		-----		-----	
864		-----		-----	
868		-----		-----	
873		-----		-----	
874	D7423	2.57		-0.50	
914		-----		-----	
922		-----		-----	
971	D7423	2.5		-0.66	
994		-----		-----	
1012		-----		-----	
1016	In house	2.60		-0.43	
1041		-----		-----	
1062		-----		-----	
1065		-----		-----	
1066		-----		-----	
1081		-----		-----	
1108		-----		-----	
1135	D7423	<1		<-4.14	possibly a false negative test result?
1145		-----		-----	
1191		-----		-----	
1362		-----		-----	
1585		-----		-----	
1586		-----		-----	
1656		-----		-----	
1720		-----		-----	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1823		-----		-----	
1857		-----		-----	
1862		-----		-----	
1950		-----		-----	
1995	D7423	2.7		-0.20	
6028		-----		-----	
6134		-----		-----	
6185	In house	2.2		-1.36	
6198		-----		-----	
6200		-----		-----	
6379		-----		-----	
6438	D7423	3.0		0.50	
6447		-----		-----	
9008		-----		-----	

normality	OK
n	14
outliers	0
mean (n)	2.786
st.dev. (n)	0.3350
R(calc.)	0.938
st.dev.(D7423:17)	0.4316
R(D7423:17)	1.208

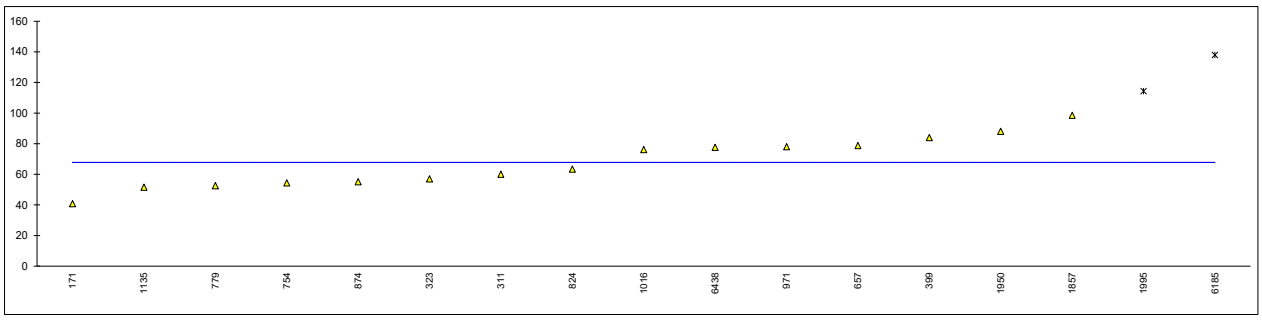

4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
6185
824
971
874
311
1016
1995
754
779
323
6438
399
657
171

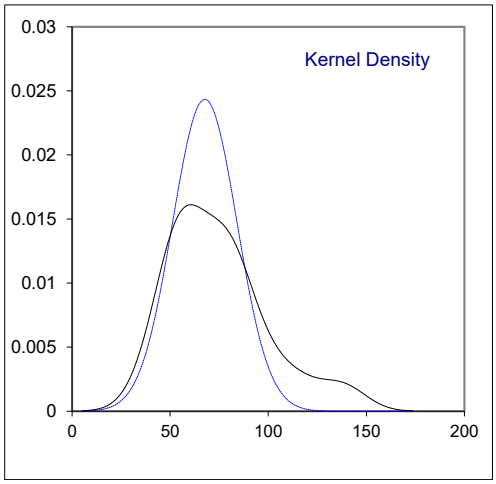

Kernel Density
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
1
2
3
4
5

Determination of Methanol on sample #22051; results in mg/kg

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150		-----		-----	
171	D7423	40.8		-----	
311	INH-403	60.0		-----	
323	In house	57		-----	
333		-----		-----	
334		-----		-----	
349		-----		-----	
360		-----		-----	
399	D7423	83.92		-----	
444		-----		-----	
445		-----		-----	
657	INH-0130	78.7		-----	
754	D7423	54.43		-----	
779	D7423	52.5		-----	
781		-----		-----	
785		-----		-----	
798		-----		-----	
824	D7423	63.3	C	-----	first reported <0.5
855		-----		-----	
862		-----		-----	
864		-----		-----	
868		-----		-----	
873		-----		-----	
874	D7423	55.09		-----	
914		-----		-----	
922		-----		-----	
971	D7423	78.0		-----	
994		-----		-----	
1012		-----		-----	
1016	In house	76.12		-----	
1041		-----		-----	
1062		-----		-----	
1065		-----		-----	
1066		-----		-----	
1081		-----		-----	
1108		-----		-----	
1135	D7423	51.6		-----	
1145		-----		-----	
1191		-----		-----	
1362		-----		-----	
1585		-----		-----	
1586		-----		-----	
1656		-----		-----	
1720		-----		-----	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1823		-----		-----	
1857	D7754	98.5		-----	
1862		-----		-----	
1950	D7754	88		-----	
1995	D7423	114.25	DG(0.05)	-----	
6028		-----		-----	
6134		-----		-----	
6185	In house	137.9	DG(0.05)	-----	
6198		-----		-----	
6200		-----		-----	
6379		-----		-----	
6438	D7423	77.6		-----	
6447		-----		-----	
9008		-----		-----	

normality	OK
n	15
outliers	2
mean (n)	67.704
st.dev. (n)	16.3923
R(calc.)	45.899
st.dev.(D7423:17)	(5.5185)
R(D7423:17)	(15.452)

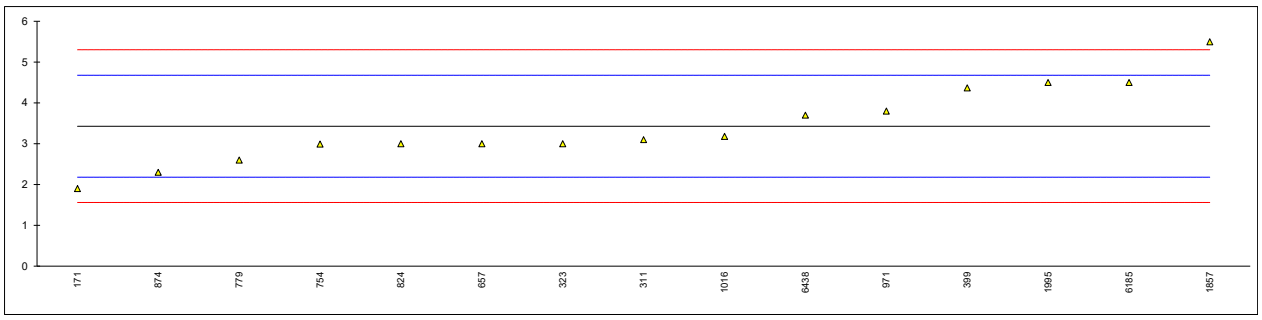

160
140
120
100
80
60
40
20
0
171
1135
779
754
874
323
311
824
1016
6438
971
657
399
1950
1857
1995
6185

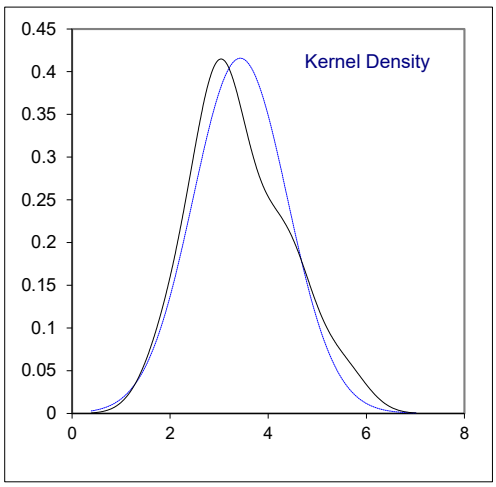

Kernel Density
0.03
0.025
0.02
0.015
0.01
0.005
0
0
50
100
150
200

Determination of Ethanol on sample #22051; results in mg/kg

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150		-----		-----	
171	D7423	1.9		-2.45	
311	INH-403	3.1		-0.53	
323	In house	3		-0.69	
333		-----		-----	
334		-----		-----	
349		-----		-----	
360		-----		-----	
399	D7423	4.37		1.51	
444		-----		-----	
445		-----		-----	
657	INH-0130	3.0		-0.69	
754	D7423	2.99		-0.70	
779	D7423	2.6		-1.33	
781		-----		-----	
785		-----		-----	
798		-----		-----	
824	D7423	3.0	C	-0.69	first reported 2.1
855		-----		-----	
862		-----		-----	
864		-----		-----	
868		-----		-----	
873		-----		-----	
874	D7423	2.30		-1.81	
914		-----		-----	
922		-----		-----	
971	D7423	3.8		0.59	
994		-----		-----	
1012		-----		-----	
1016	In house	3.18		-0.40	
1041		-----		-----	
1062		-----		-----	
1065		-----		-----	
1066		-----		-----	
1081		-----		-----	
1108		-----		-----	
1135	D7423	<1		<-3.89	possibly a false negative test result?
1145		-----		-----	
1191		-----		-----	
1362		-----		-----	
1585		-----		-----	
1586		-----		-----	
1656		-----		-----	
1720		-----		-----	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1823		-----		-----	
1857	D7754	5.5		3.32	
1862		-----		-----	
1950	D7754	<10	C	-----	first reported 10
1995	D7423	4.5		1.72	
6028		-----		-----	
6134		-----		-----	
6185	In house	4.5		1.72	
6198		-----		-----	
6200		-----		-----	
6379		-----		-----	
6438	D7423	3.7		0.43	
6447		-----		-----	
9008		-----		-----	

normality	OK
n	15
outliers	0
mean (n)	3.429
st.dev. (n)	0.9597
R(calc.)	2.687
st.dev.(D7423:17)	0.6241
R(D7423:17)	1.747

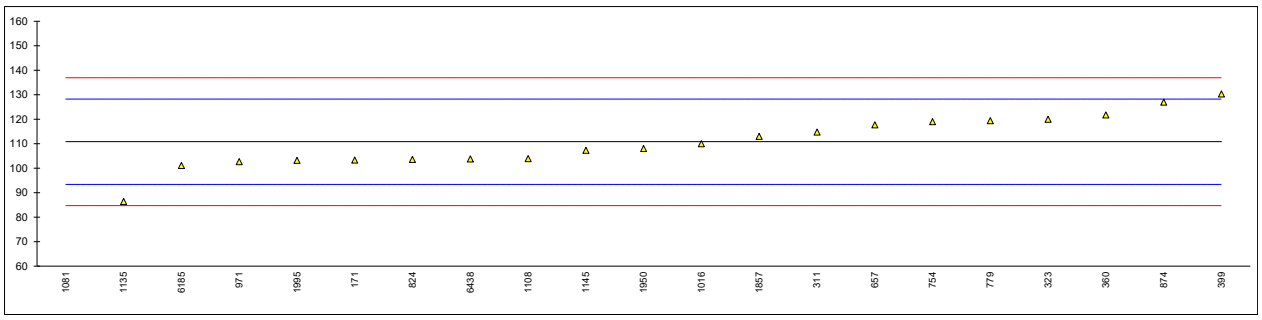

6
5
4
3
2
1
0
171
874
779
754
824
657
323
311
1016
6438
971
399
1995
6185
1857

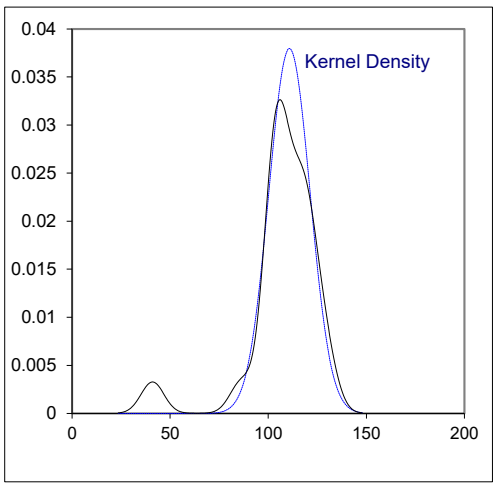

Kernel Density
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0
2
4
6
8

Determination of MTBE on sample #22051; results in mg/kg

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150		-----		-----	
171	D7423	103.3		-0.86	
311	INH-403	114.8		0.46	
323	In house	120		1.05	
333		-----		-----	
334		-----		-----	
349		-----		-----	
360	D7423	121.8		1.26	
399	D7423	130.32		2.24	
444		-----		-----	
445		-----		-----	
657	INH-0130	117.7		0.79	
754	D7423	119.04		0.94	
779	D7423	119.4		0.99	
781		-----		-----	
785		-----		-----	
798		-----		-----	
824	D7423	103.6	C	-0.83	first reported 27.7
855		-----		-----	
862		-----		-----	
864		-----		-----	
868		-----		-----	
873		-----		-----	
874	D7423	127.03		1.86	
914		-----		-----	
922		-----		-----	
971	D7423	102.7		-0.93	
994		-----		-----	
1012		-----		-----	
1016	In house	110.01		-0.09	
1041		-----		-----	
1062		-----		-----	
1065		-----		-----	
1066		-----		-----	
1081	ISO22854-A	41.05	R(0.01)	-8.01	
1108	D7423	103.9		-0.79	
1135	D7423	86.4		-2.80	
1145	D4815	107.3		-0.40	
1191		-----		-----	
1362		-----		-----	
1585		-----		-----	
1586		-----		-----	
1656		-----		-----	
1720		-----		-----	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1823		-----		-----	
1857	D7754	113.0		0.25	
1862		-----		-----	
1950	D7754	108		-0.32	
1995	D7423	103.2	C	-0.88	first reported 147.5
6028		-----		-----	
6134		-----		-----	
6185	In house	101.1		-1.12	
6198		-----		-----	
6200		-----		-----	
6379		-----		-----	
6438	D7423	103.8		-0.81	
6447		-----		-----	
9008		-----		-----	

normality	OK
n	20
outliers	1
mean (n)	110.820
st.dev. (n)	10.5097
R(calc.)	29.427
st.dev.(D7423:17)	8.7074
R(D7423:17)	24.381

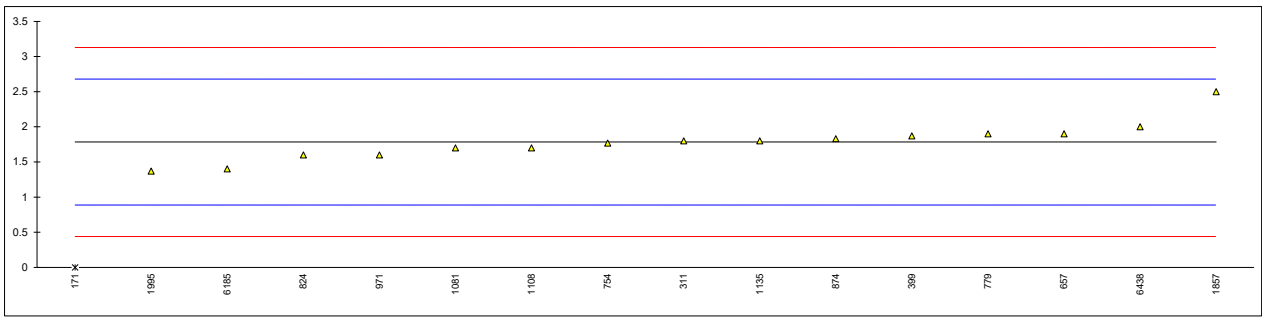

160
150
140
130
120
110
100
90
80
70
60
1081
1135
6185
971
1995
171
824
6438
1108
1145
1950
1016
1857
311
657
754
779
323
360
874
399

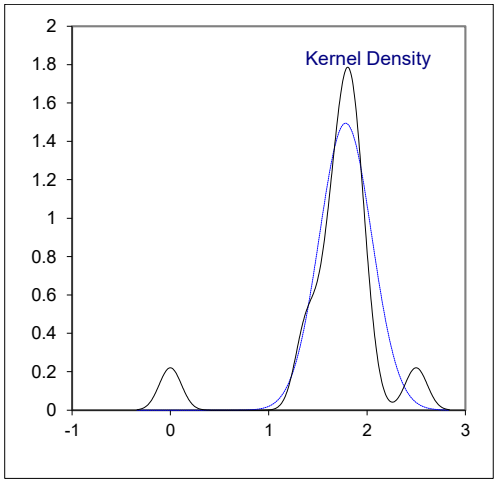

Kernel Density
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
0
50
100
150
200

Determination of TAME on sample #22051; results in mg/kg

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150		-----		-----	
171	D7423	0	C,G(0.01)	-3.98	first reported 3.2
311	INH-403	1.8		0.04	
323	In house	< 2		-----	
333		-----		-----	
334		-----		-----	
349		-----		-----	
360		-----		-----	
399	D7423	1.87		0.19	
444		-----		-----	
445		-----		-----	
657	INH-0130	1.9		0.26	
754	D7423	1.77		-0.03	
779	D7423	1.9		0.26	
781		-----		-----	
785		-----		-----	
798		-----		-----	
824	D7423	1.6		-0.41	
855		-----		-----	
862		-----		-----	
864		-----		-----	
868		-----		-----	
873		-----		-----	
874	D7423	1.83		0.11	
914		-----		-----	
922		-----		-----	
971	D7423	1.6		-0.41	
994		-----		-----	
1012		-----		-----	
1016		-----		-----	
1041		-----		-----	
1062		-----		-----	
1065		-----		-----	
1066		-----		-----	
1081	ISO22854-A	1.70		-0.18	
1108	D7423	1.7		-0.18	
1135	D7423	1.8		0.04	
1145		-----		-----	
1191		-----		-----	
1362		-----		-----	
1585		-----		-----	
1586		-----		-----	
1656		-----		-----	
1720		-----		-----	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1823		-----		-----	
1857	D7754	2.5		1.60	
1862		-----		-----	
1950	D7754	<10		-----	
1995	D7423	1.37		-0.92	
6028		-----		-----	
6134		-----		-----	
6185	In house	1.4		-0.85	
6198		-----		-----	
6200		-----		-----	
6379		-----		-----	
6438	D7423	2.0		0.49	
6447		-----		-----	
9008		-----		-----	

normality	not OK
n	15
outliers	1
mean (n)	1.783
st.dev. (n)	0.2669
R(calc.)	0.747
st.dev.(D7423:17)	0.4479
R(D7423:17)	1.254

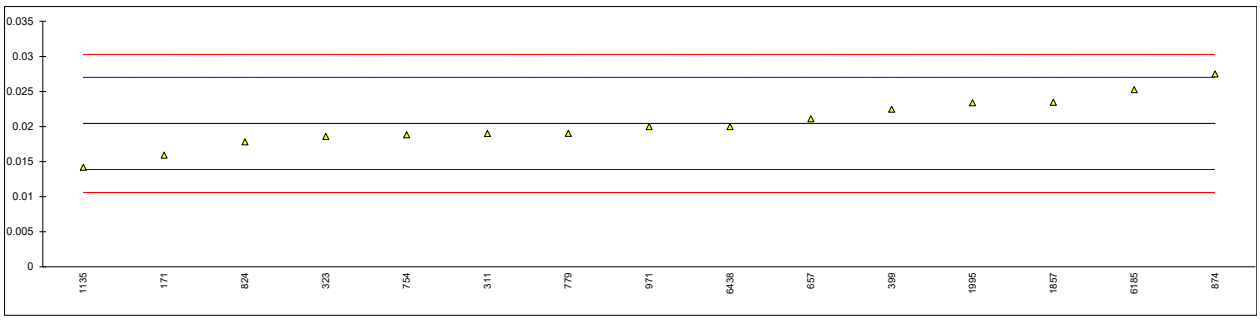

3.5
3
2.5
2
1.5
1
0.5
0
171
1995
6185
824
971
1081
1108
754
311
1135
874
399
779
657
6438
1857

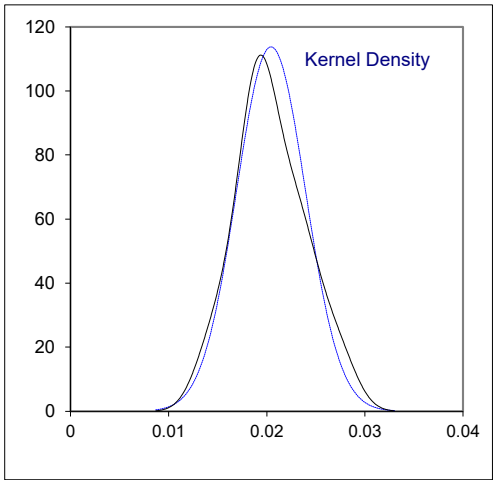

Kernel Density
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-1
0
1
2
3

Determination of Total Oxygenates on sample #22051; results in %M/M

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150		-----		-----	
171	D7423	0.01592	C	-1.38	first reported 159.2
311	INH-403	0.019		-0.44	
323	In house	0.0186		-0.56	
333		-----		-----	
334		-----		-----	
349		-----		-----	
360		-----		-----	
399	D7423	0.02247	C	0.62	first reported 224.7
444		-----		-----	
445		-----		-----	
657	INH-0130	0.0211	C	0.20	first reported 211
754	D7423	0.01883		-0.49	
779	D7423	0.01904	C	-0.43	reported 190.4
781		-----		-----	
785		-----		-----	
798		-----		-----	
824	D7423	0.01782	C	-0.80	first reported 37.0
855		-----		-----	
862		-----		-----	
864		-----		-----	
868		-----		-----	
873		-----		-----	
874	D7423	0.027501		2.15	
914		-----		-----	
922		-----		-----	
971	D7423	0.02		-0.13	
994		-----		-----	
1012		-----		-----	
1016		-----		-----	
1041		-----		-----	
1062		-----		-----	
1065		-----		-----	
1066		-----		-----	
1081		-----		-----	
1108		-----		-----	
1135	D7423	0.0142	C	-1.90	first reported 142
1145		-----		-----	
1191		-----		-----	
1362		-----		-----	
1585		-----		-----	
1586		-----		-----	
1656		-----		-----	
1720		-----		-----	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1823		-----		-----	
1857	D7754	0.02345		0.92	
1862		-----		-----	
1950		-----		-----	
1995	D7423	0.0234	C	0.90	first reported 278.3
6028		-----		-----	
6134		-----		-----	
6185	In house	0.02527	C	1.47	first reported 252.7
6198		-----		-----	
6200		-----		-----	
6379		-----		-----	
6438	D7423	0.02		-0.13	
6447		-----		-----	
9008		-----		-----	

normality	OK
n	15
outliers	0
mean (n)	0.02044
st.dev. (n)	0.003507
R(calc.)	0.00982
st.dev.(Horwitz 5 comp.)	0.003283
R(Horwitz 5 comp.)	0.00919

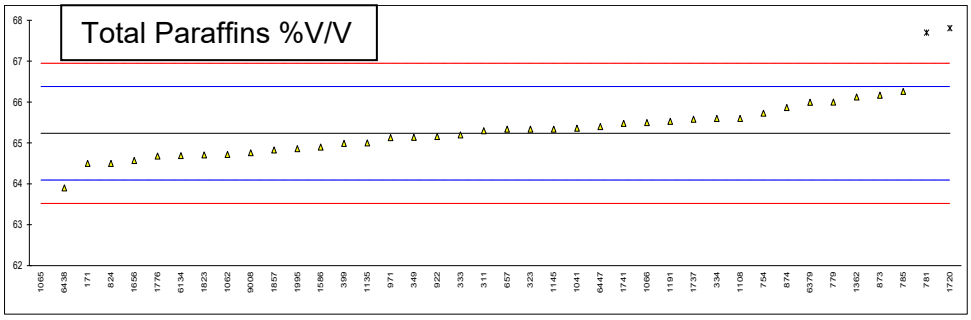

0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
1135
171
824
323
754
311
779
971
6438
657
399
1995
1857
6185
874

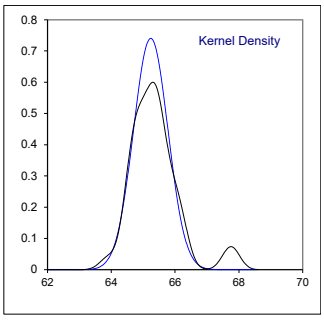

Kernel Density
120
100
80
60
40
20
0
0
0.01
0.02
0.03
0.04

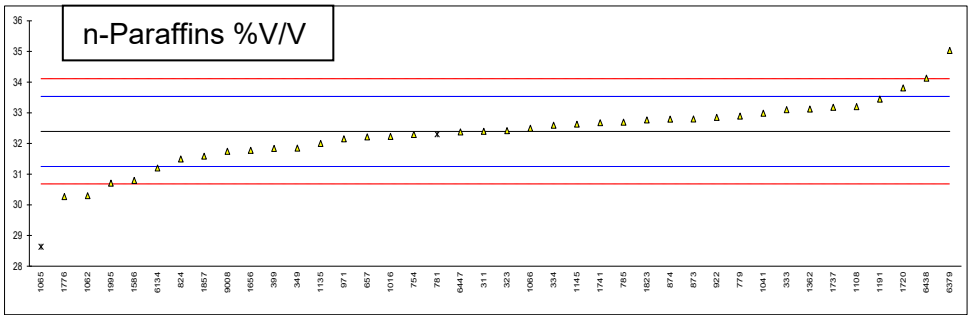
Determination of PIONA - Total Paraffins, n-Paraffins, i-Paraffins on sample #22051; results in %V/V

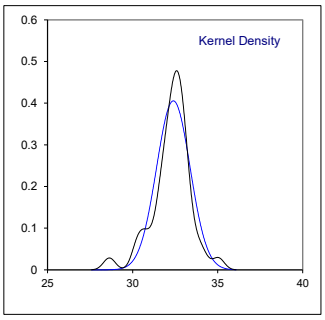
lab	method	Total P	mark	z(targ)	n-Paraf.	mark	z(targ)	i-Paraf.	mark	z(targ)
140		-----		-----	-----		-----	-----		-----
150		-----		-----	-----		-----	-----		-----
171	D6839	64.5		-1.29	-----		-----	-----		-----
311	D5443Mod.	65.3		0.11	32.4		0.01	32.9		-0.30
323	D5443	65.34		0.18	32.42		0.05	32.92		-0.27
333	D6839	65.2	C	-0.06	33.1		1.24	33.5	C	0.75
334	ISO22854-A	65.6		0.64	32.6		0.36	33.0		-0.13
349	ISO22854-A	65.14		-0.17	31.85		-0.95	33.28		0.36
360		-----		-----	-----		-----	-----		-----
399	ISO22854-A	64.99		-0.43	31.84		-0.97	33.15		0.14
444		-----		-----	-----		-----	-----		-----
445		-----		-----	-----		-----	-----		-----
657	D6839	65.34		0.18	32.22		-0.30	33.12		0.08
754	D6729	65.729		0.86	32.292		-0.18	33.437		0.64
779	D6729	66.000		1.34	32.894		0.88	33.106		0.06
781	D6729	67.698	R(0.01)	4.31	32.301	ex	-0.16	35.397	R(0.05)	4.07
785	D6729	66.26		1.79	32.70		0.54	33.56		0.85
798		-----		-----	-----		-----	-----		-----
824	D6839	64.5		-1.29	31.5		-1.56	33.0		-0.13
855		-----		-----	-----		-----	-----		-----
862		-----		-----	-----		-----	-----		-----
864		-----		-----	-----		-----	-----		-----
868		-----		-----	-----		-----	-----		-----
873	GOST P52714	66.17		1.63	32.80		0.71	33.37		0.52
874	D6729	65.867		1.10	32.795		0.70	33.072		0.00
914		-----		-----	-----		-----	-----		-----
922	D6730	65.161		-0.13	32.853		0.81	32.308		-1.34
971	D6839	65.13		-0.19	32.15		-0.42	32.98		-0.16
994		-----		-----	-----		-----	-----		-----
1012		-----		-----	-----		-----	-----		-----
1016		-----		-----	32.23		-0.28	33.23		0.28
1041	D6839	65.36		0.22	32.99		1.05	32.37		-1.23
1062	D6839	64.72		-0.90	30.30		-3.66	34.42		2.36
1065	In house	57.777	R(0.01)	-13.05	28.634	R(0.05)	-6.58	29.143	R(0.01)	-6.88
1066	ISO22854-A	65.5		0.46	32.5		0.19	33.0		-0.13
1081		-----		-----	-----		-----	-----		-----
1108		65.6		0.64	33.2		1.41	32.3		-1.35
1135	ISO22854-A	65.0		-0.41	32.0		-0.69	33.0		-0.13
1145		65.34		0.18	32.63		0.42	32.71		-0.63
1191	ISO22854-A	65.53		0.51	33.45		1.85	32.08		-1.74
1362	D6729	66.128		1.56	33.127		1.28	33.001		-0.13
1585		-----		-----	-----		-----	-----		-----
1586	D6839	64.9		-0.59	30.8		-2.79	34.2		1.97
1656	D5443	64.57		-1.17	31.78		-1.07	32.79		-0.49
1720	D5134	67.81	C,R(0.01)	4.50	33.81		2.48	33.33		0.45
1737	In house	65.58		0.60	33.18		1.38	32.40		-1.18
1741	D6839	65.48		0.43	32.68		0.50	32.80		-0.48
1776	ISO22854-A	64.68		-0.97	30.27		-3.71	34.41		2.34
1823	D6839	64.71		-0.92	32.77		0.66	31.94		-1.98
1857	ISO22854-A	64.83		-0.71	31.59		-1.40	33.24		0.29
1862		-----		-----	-----		-----	-----		-----
1950		-----		-----	-----		-----	-----		-----
1995	D5443	64.86		-0.66	30.71		-2.94	34.41	C	2.34
6028		-----		-----	-----		-----	-----		-----
6134		64.69		-0.96	31.20		-2.09	33.38		0.54
6185		-----		-----	-----		-----	-----		-----
6198		-----		-----	-----		-----	-----		-----
6200		-----		-----	-----		-----	-----		-----
6379	In house	65.995		1.33	35.035		4.62	32.07	C	-1.75
6438	D6730	63.90	C	-2.34	34.13		3.04	32.94		-0.23
6447	D6839	65.40		0.29	32.38		-0.02	33.02		-0.09
9008		64.76		-0.83	31.75		-1.12	33.01		-0.11
	normality	OK			OK			OK		
	n	37			38			38		
	outliers	3			1 +1ex			2		
	mean (n)	65.2367			32.3928			33.0725		
	st.dev. (n)	0.53869			0.98367			0.60112		
	R(calc.)	1.5083			2.7543			1.6831		
	st.dev.(D6839:21a)	0.57143			0.57143			0.57143		
	R(D6839:21a)	1.6			1.6			1.6		

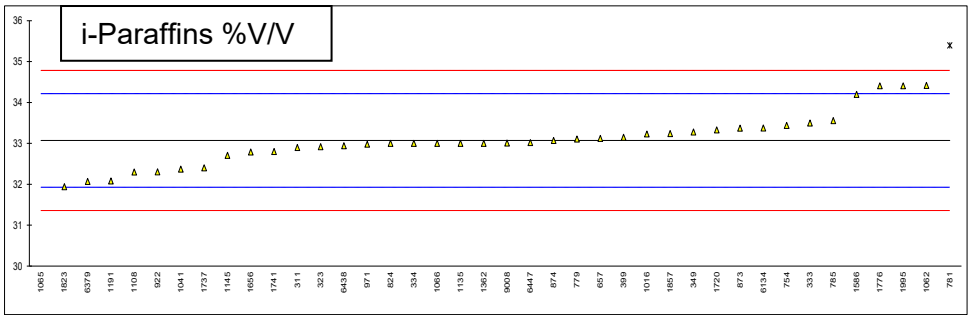
Lab 333 first reported 33.9 and 0.8
Lab 1720 first reported 67.14
Lab 1995 first reported 34.15
Lab 6379 first reported 30.96
Lab 6438 first reported 67.07
Lab 781 test result excluded from statistical evaluation as two of the three reported test results for paraffins are outliers

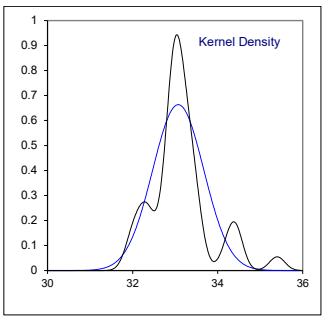






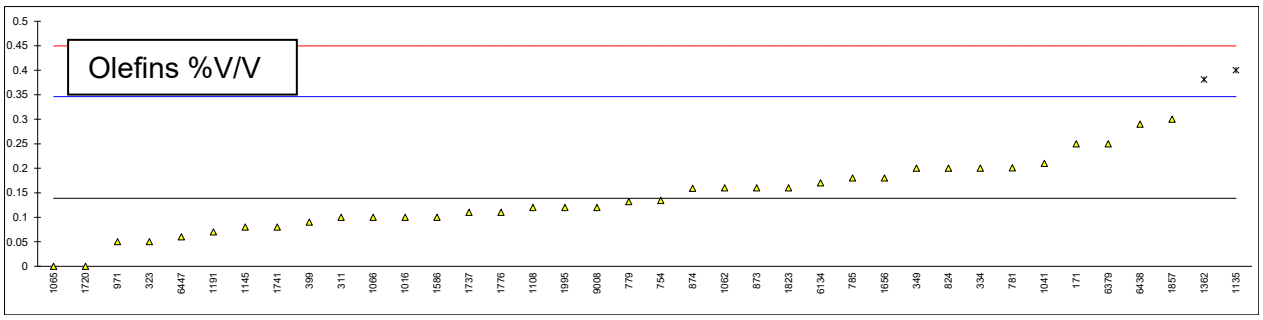


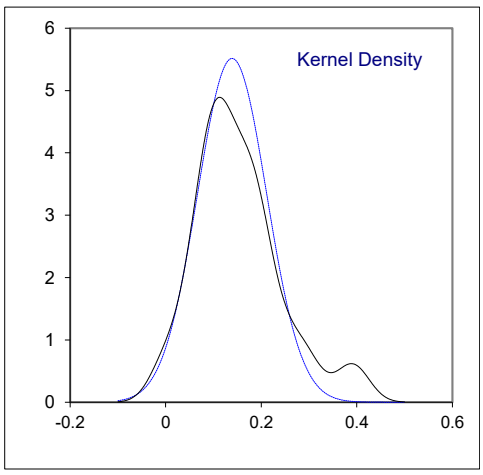


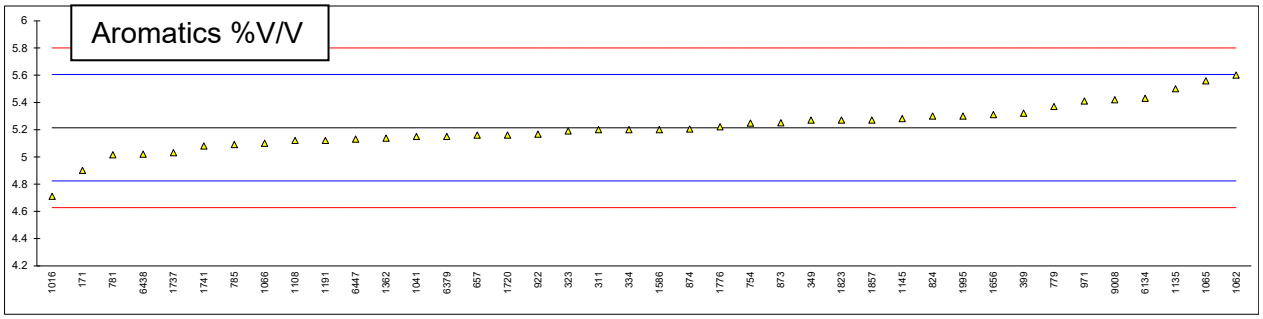


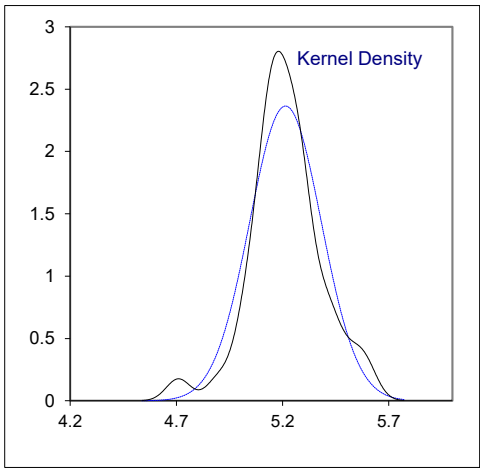
Determination of PIONA - Olefins and Aromatics on sample #22051; results in %V/V

lab	method	Olefins	mark	z(targ)	Aromatics	mark	z(targ)	remarks
140		-----		-----	-----		-----	
150		-----		-----	-----		-----	
171	D6839	0.25	C	1.07	4.9		-1.61	first reported 1.1
311	D5443Mod.	0.1		-0.37	5.2		-0.07	
323	D5443	0.05		-0.86	5.19		-0.12	
333	D6839	<0.40		-----	<19.32		-----	
334	ISO22854-A	0.2		0.59	5.2		-0.07	
349	ISO22854-A	0.20		0.59	5.27		0.29	
360		-----		-----	-----		-----	
399	ISO22854-A	0.09		-0.47	5.32		0.54	
444		-----		-----	-----		-----	
445		-----		-----	-----		-----	
657	D6839	<0.1		-----	5.16		-0.28	
754	D6729	0.134		-0.05	5.248		0.17	
779	D6729	0.132		-0.07	5.369		0.79	
781	D6729	0.201		0.60	5.015		-1.02	
785	D6729	0.18		0.40	5.09		-0.63	
798		-----		-----	-----		-----	
824	D6839	0.2		0.59	5.3		0.44	
855		-----		-----	-----		-----	
862		-----		-----	-----		-----	
864		-----		-----	-----		-----	
868		-----		-----	-----		-----	
873	GOST P52714	0.16		0.20	5.25		0.18	
874	D6729	0.159		0.20	5.204		-0.05	
914		-----		-----	-----		-----	
922		-----		-----	5.167		-0.24	
971	D6839	0.05		-0.86	5.41		1.00	
994		-----		-----	-----		-----	
1012		-----		-----	-----		-----	
1016	ISO22854-A	0.10		-0.37	4.71		-2.58	
1041	D6839	0.21		0.69	5.15		-0.33	
1062	D6839	0.16		0.20	5.60		1.97	
1065	In house	0.0		-1.34	5.558		1.76	
1066	ISO22854-A	0.1		-0.37	5.1		-0.58	
1081		-----		-----	-----		-----	
1108		0.12		-0.18	5.12		-0.48	
1135	ISO22854-A	0.4	DG(0.05)	2.52	5.5		1.46	
1145		0.08		-0.57	5.28		0.34	
1191	ISO22854-A	0.07		-0.66	5.12		-0.48	
1362	D6729	0.381	DG(0.05)	2.34	5.138		-0.39	
1585		-----		-----	-----		-----	
1586	D6839	0.1		-0.37	5.2		-0.07	
1656	D5443	0.18		0.40	5.31		0.49	
1720	D5134	0.0		-1.34	5.16		-0.28	
1737	In house	0.11		-0.28	5.03		-0.94	
1741	D6839	0.08		-0.57	5.08		-0.68	
1776	ISO22854-A	0.11		-0.28	5.22		0.03	
1823	D6839	0.16		0.20	5.27		0.29	
1857	ISO22854-A	0.30		1.56	5.27		0.29	
1862		-----		-----	-----		-----	
1950		-----		-----	-----		-----	
1995	D5443	0.12		-0.18	5.30		0.44	
6028		-----		-----	-----		-----	
6134		0.17		0.30	5.43		1.10	
6185		-----		-----	-----		-----	
6198		-----		-----	-----		-----	
6200		-----		-----	-----		-----	
6379	In house	0.25	C	1.07	5.15		-0.33	first reported 1.34
6438	D6730	0.29		1.46	5.02		-0.99	
6447	D6839	0.06		-0.76	5.13		-0.43	
9008		0.12		-0.18	5.42		1.05	
	normality	OK			suspect			
	n	36			40			
	outliers	2			0			
	mean (n)	0.1388			5.2140			
	st.dev. (n)	0.07235			0.16872			
	R(calc.)	0.2026			0.4724			
	st.dev.(D6839:21a)	0.10367			0.19561			
	R(D6839:21a)	0.2903			0.5477			


Olefins %V/V
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1065 1720 971 323 6447 1191 1145 1741 399 311 1066 1016 1586 1737 1776 1108 1995 9008 779 754 874 1062 873 1823 6134 785 1656 349 824 334 781 1041 171 6379 6438 1857 1362 1135

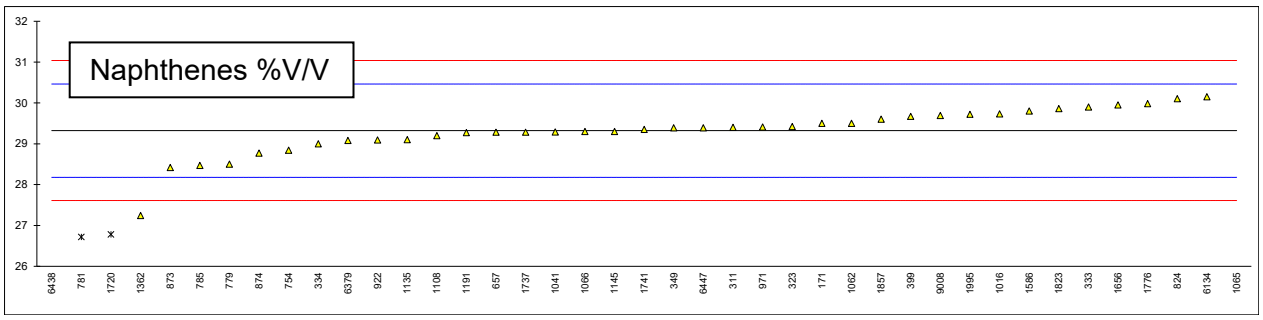

Kernel Density
6
5
4
3
2
1
0
-0.2 0 0.2 0.4 0.6

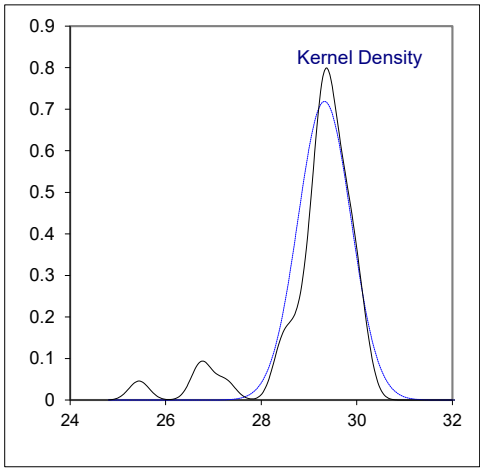

Aromatics %V/V
6
5.8
5.6
5.4
5.2
5
4.8
4.6
4.4
4.2
1016 171 781 6438 1737 1741 785 1066 1108 1191 6447 1362 1041 6379 657 1720 922 323 311 334 1586 874 1776 754 873 349 1823 1857 1145 824 1995 1656 399 779 971 9008 6134 1135 1065 1062

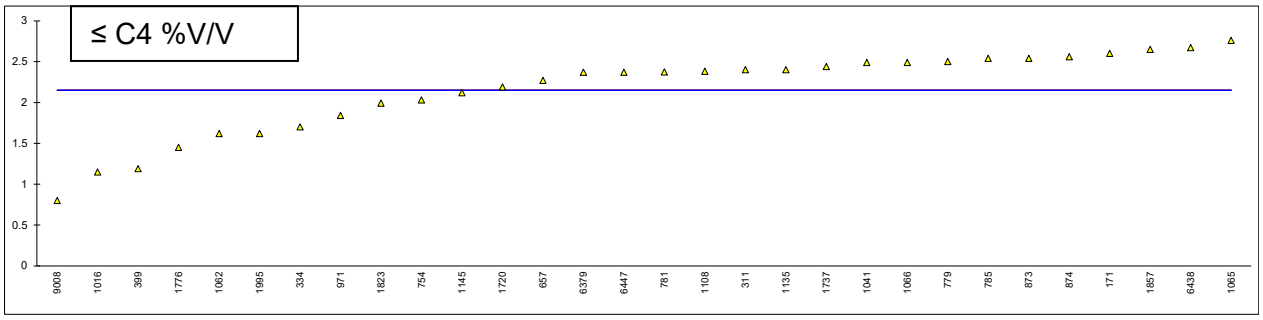

Kernel Density
3
2.5
2
1.5
1
0.5
0
4.2 4.7 5.2 5.7

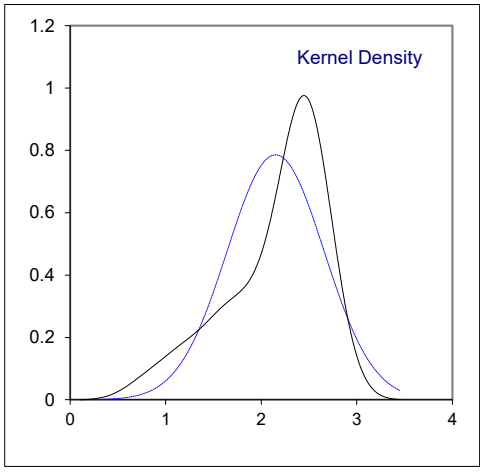
Determination of PIONA - Naphthenes and C4 and lighter hydrocarbons on sample #22051; results in %V/V

lab	method	Naphthenes	mark	z(targ)	≤ C4	mark	z(targ)	remarks
140		-----		-----	-----		-----	
150		-----		-----	-----		-----	
171	D6839	29.5		0.31	2.6		-----	
311	D5443Mod.	29.4		0.13	2.4		-----	
323	D5443	29.42		0.17	-----		-----	
333	D6839	29.9	C	1.01	-----		-----	first reported 61.0
334	ISO22854-A	29.0		-0.57	1.7		-----	
349	ISO22854-A	29.39		0.12	-----		-----	
360		-----		-----	-----		-----	
399	ISO22854-A	29.67		0.61	1.19		-----	
444		-----		-----	-----		-----	
445		-----		-----	-----		-----	
657	D6839	29.28		-0.08	2.27		-----	
754	D6729	28.841		-0.84	2.031		-----	
779	D6729	28.499		-1.44	2.501		-----	
781	D6729	26.717	R(0.01)	-4.56	2.373		-----	
785	D6729	28.47		-1.49	2.54		-----	
798		-----		-----	-----		-----	
824	D6839	30.1		1.36	-----		-----	
855		-----		-----	-----		-----	
862		-----		-----	-----		-----	
864		-----		-----	-----		-----	
868		-----		-----	-----		-----	
873	GOST P52714	28.42		-1.58	2.54		-----	
874	D6729	28.770		-0.97	2.560		-----	
914		-----		-----	-----		-----	
922	D6730	29.094		-0.40	-----		-----	
971	D6839	29.41		0.15	1.84		-----	
994		-----		-----	-----		-----	
1012		-----		-----	-----		-----	
1016	ISO22854-A	29.73		0.71	1.15		-----	
1041	D6839	29.29		-0.06	2.49		-----	
1062	D6839	29.50		0.31	1.62		-----	
1065	In house	36.665	R(0.01)	12.85	2.76		-----	
1066	ISO22854-A	29.3		-0.04	2.49		-----	
1081		-----		-----	-----		-----	
1108		29.2		-0.22	2.38		-----	
1135	ISO22854-A	29.1		-0.39	2.4		-----	
1145		29.30		-0.04	2.12		-----	
1191	ISO22854-A	29.27		-0.09	-----		-----	
1362	D6729	27.244		-3.64	-----		-----	
1585		-----		-----	-----		-----	
1586	D6839	29.8		0.83	-----		-----	
1656	D5443	29.95		1.10	-----		-----	
1720	D5134	26.78	C,R(0.01)	-4.45	2.19		-----	first reported 27.70
1737	In house	29.28		-0.08	2.44		-----	
1741	D6839	29.35		0.05	-----		-----	
1776	ISO22854-A	29.98		1.15	1.45		-----	
1823	D6839	29.86		0.94	1.99		-----	
1857	ISO22854-A	29.60		0.48	2.65		-----	
1862		-----		-----	-----		-----	
1950		-----		-----	-----		-----	
1995	D5443	29.72		0.69	1.62		-----	
6028		-----		-----	-----		-----	
6134		30.15		1.45	-----		-----	
6185		-----		-----	-----		-----	
6198		-----		-----	-----		-----	
6200		-----		-----	-----		-----	
6379	In house	29.08	C	-0.43	2.37		-----	first reported 27.365
6438	D6730	25.44	C,R(0.01)	-6.80	2.67		-----	first reported 27.07
6447	D6839	29.39		0.12	2.37		-----	
9008		29.69		0.64	0.80		-----	
	normality	not OK			OK			
	n	37			30			
	outliers	4			0			
	mean (n)	29.3229			2.1502			
	st.dev. (n)	0.55486			0.50792			
	R(calc.)	1.5536			1.4222			
	st.dev.(D6839:21a)	0.57143			n.a.			
	R(D6839:21a)	1.6			n.a.			


Naphthenes %V/V
32
31
30
29
28
27
26
6438 781 1720 1362 873 785 779 874 754 334 6379 922 1135 1108 1191 657 1737 1041 1066 1145 1741 349 6447 311 971 323 171 1062 1857 399 9008 1995 1016 1586 1823 333 1656 1776 824 6134 1065


Kernel Density
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
24 26 28 30 32

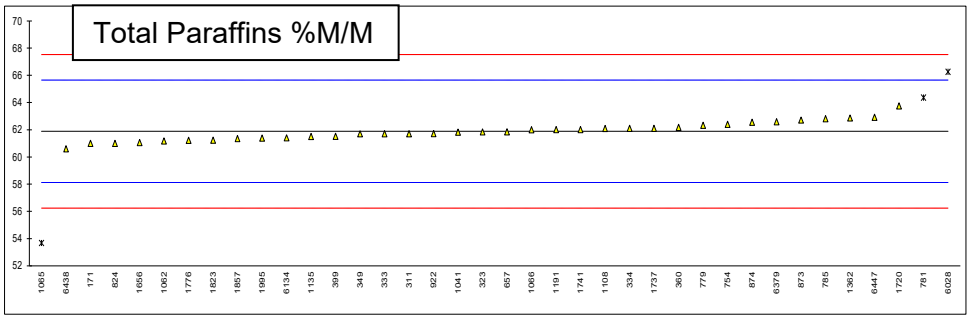

≤ C4 %V/V
3
2.5
2
1.5
1
0.5
0
9008 1016 399 1776 1062 1995 334 971 1823 754 1145 1720 657 6379 6447 781 1108 311 1135 1737 1041 1066 779 785 873 874 171 1857 6438 1065

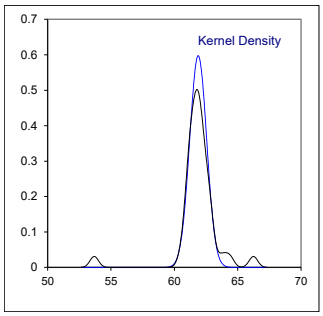

Kernel Density
1.2
1
0.8
0.6
0.4
0.2
0
0 1 2 3 4

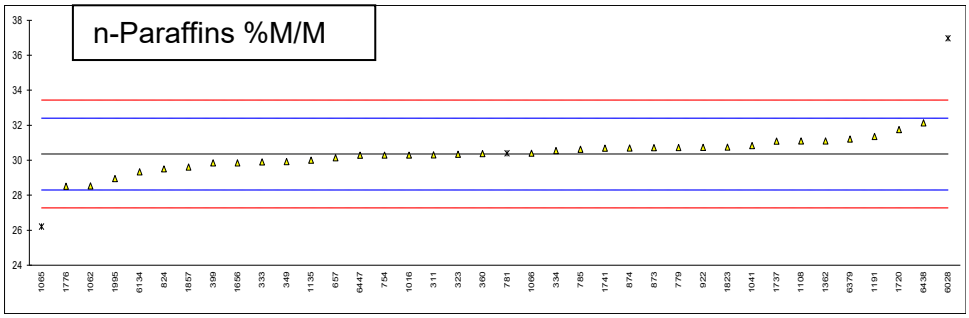
Determination of PIONA - Total Paraffins, n-Paraffins, i-Paraffins on sample #22051; results in %M/M

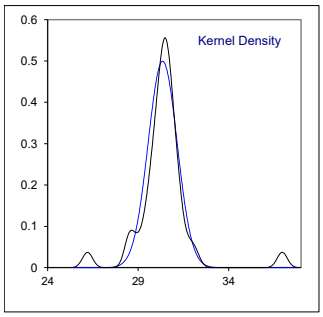
lab	method	Total P	mark	z(targ)	n-Paraf.	mark	z(targ)	i-Paraf.	mark	z(targ)
140		-----		-----	-----		-----	-----		-----
150		-----		-----	-----		-----	-----		-----
171	D6839	61.0		-0.47	-----		-----	-----		-----
311	D5443Mod.	61.7		-0.10	30.3		-0.05	31.4		-0.19
323	D5443	61.83		-0.03	30.34		-0.01	31.49		-0.11
333	D6839	61.7	C	-0.10	29.9		-0.44	32.0	C	0.37
334	ISO22854-A	62.1		0.11	30.55		0.19	31.55		-0.05
349	ISO22854-A	61.69		-0.10	29.91		-0.43	31.78		0.16
360	D5443	62.17		0.15	30.37		0.02	31.80		0.18
399	ISO22854-A	61.51		-0.20	29.85		-0.49	31.66		0.05
444		-----		-----	-----		-----	-----		-----
445		-----		-----	-----		-----	-----		-----
657	D6839	61.84		-0.02	30.13		-0.22	31.71		0.10
754	D6729	62.386		0.27	30.287		-0.06	32.099		0.46
779	D6729	62.321		0.23	30.715		0.35	31.606		0.00
781	D6729	64.358	R(0.05)	1.31	30.391	ex	0.04	33.967	R(0.01)	2.22
785	D6729	62.80		0.49	30.62		0.26	32.18		0.54
798		-----		-----	-----		-----	-----		-----
824	D6839	61.0		-0.47	29.5		-0.83	31.5		-0.10
855		-----		-----	-----		-----	-----		-----
862		-----		-----	-----		-----	-----		-----
864		-----		-----	-----		-----	-----		-----
868		-----		-----	-----		-----	-----		-----
873	GOST P52714	62.70		0.43	30.71		0.35	31.99		0.36
874	D6729	62.540		0.35	30.690		0.33	31.850		0.23
914		-----		-----	-----		-----	-----		-----
922	D6730	61.713		-0.09	30.727		0.37	30.986		-0.58
971		-----		-----	-----		-----	-----		-----
994		-----		-----	-----		-----	-----		-----
1012		-----		-----	-----		-----	-----		-----
1016		-----		-----	30.29		-0.06	31.75		0.13
1041	D6839	61.81		-0.04	30.83		0.47	30.99		-0.58
1062	D6839	61.17		-0.38	28.53		-1.77	32.64		0.97
1065	In house	53.673	R(0.01)	-4.36	26.199	R(0.01)	-4.04	27.474	R(0.01)	-3.89
1066	ISO22854-A	62.0		0.06	30.4		0.05	31.6		-0.01
1081		-----		-----	-----		-----	-----		-----
1108		62.08		0.10	31.1		0.73	31.0		-0.57
1135	ISO22854-A	61.5		-0.20	30.0		-0.34	31.5		-0.10
1145		-----		-----	-----		-----	-----		-----
1191	ISO22854-A	62.01		0.07	31.35		0.97	30.66		-0.89
1362	D6729	62.857		0.52	31.100		0.73	31.757		0.14
1585		-----		-----	-----		-----	-----		-----
1586		-----		-----	-----		-----	-----		-----
1656	D5443	61.05		-0.44	29.85		-0.49	31.20		-0.38
1720	D5134	63.75		0.99	31.74		1.35	32.01		0.38
1737	In house	62.1		0.11	31.09		0.72	31.01		-0.56
1741	D6839	62.01		0.07	30.68		0.32	31.33		-0.26
1776	ISO22854-A	61.21		-0.36	28.51		-1.79	32.70		1.03
1823	D6839	61.22		-0.35	30.74		0.38	30.48		-1.06
1857	ISO22854-A	61.34		-0.29	29.60		-0.73	31.74		0.13
1862		-----		-----	-----		-----	-----		-----
1950		-----		-----	-----		-----	-----		-----
1995	D5443	61.38		-0.27	28.95		-1.36	32.43		0.77
6028	D5134	66.25	R(0.01)	2.32	36.96	R(0.01)	6.43	29.29	R(0.01)	-2.18
6134		61.40		-0.26	29.33		-0.99	31.94		0.31
6185		-----		-----	-----		-----	-----		-----
6198		-----		-----	-----		-----	-----		-----
6200		-----		-----	-----		-----	-----		-----
6379	In house	62.59		0.37	31.21	C	0.84	30.63	C	-0.92
6438	D6730	60.59	C	-0.69	32.13		1.73	31.65		0.04
6447	D6839	62.91		0.54	30.28		-0.07	31.63		0.02
9008		-----		-----	-----		-----	-----		-----
	normality	OK			OK			OK		
	n	35			35			35		
	outliers	3			2 +1ex			3		
	mean (n)	61.8851			30.3517			31.6071		
	st.dev. (n)	0.66799			0.79900			0.52087		
	R(calc.)	1.8704			2.2372			1.4584		
	st.dev.(Horwitz 2 comp.)	1.88148			1.02723			1.06321		
	R(Horwitz 2 comp.)	5.2682			2.8762			2.9770		

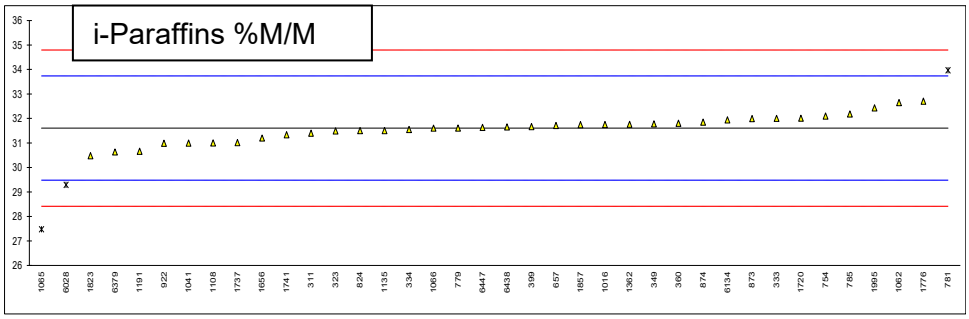
Lab 333 first reported 30.6 and 0.7
Lab 6379 first reported 33.01 and 29.58
Lab 6438 first reported 63.78
Lab 781 test result excluded from statistical evaluation as two of the three reported test results for paraffins are outliers

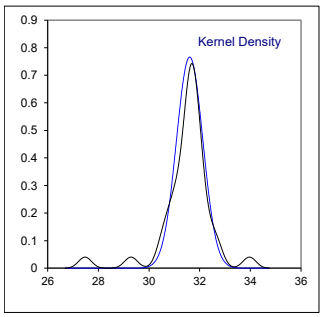






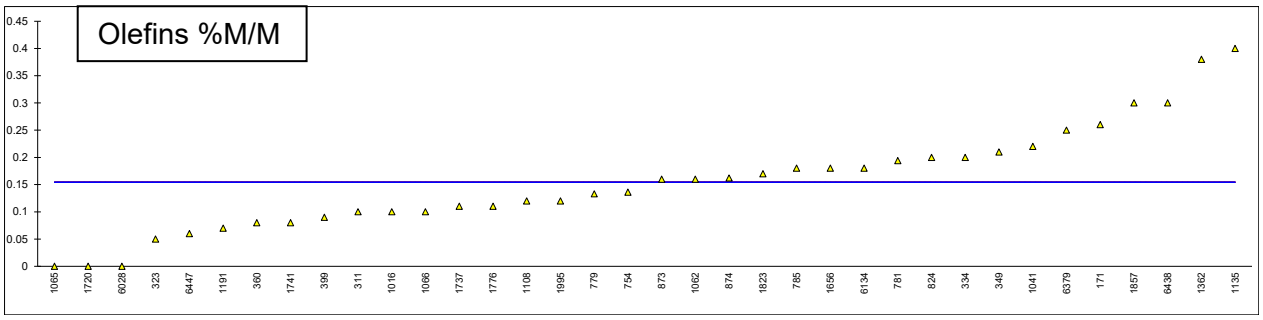


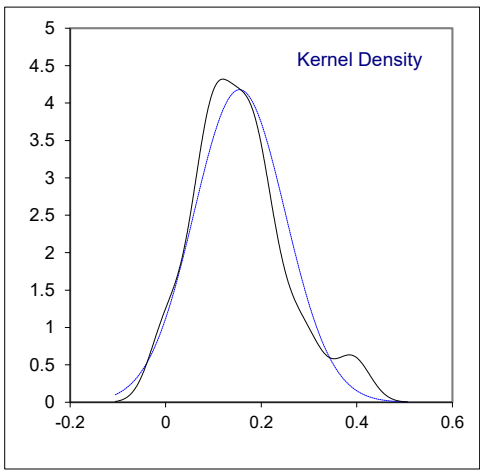


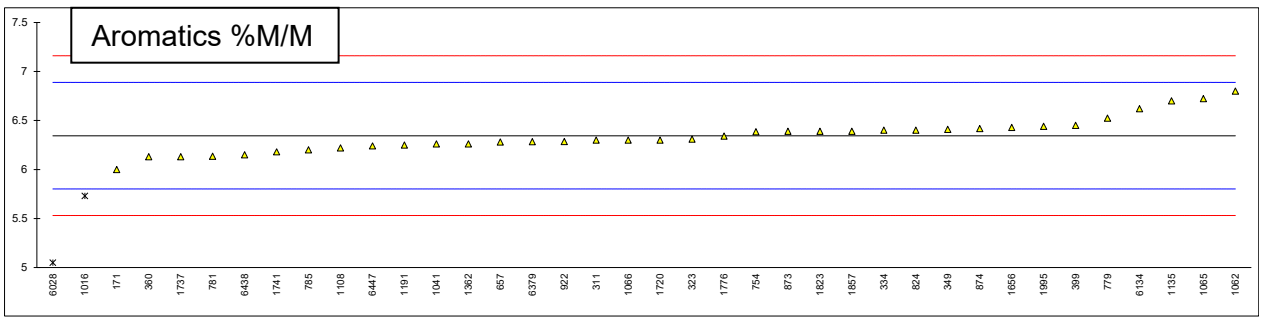


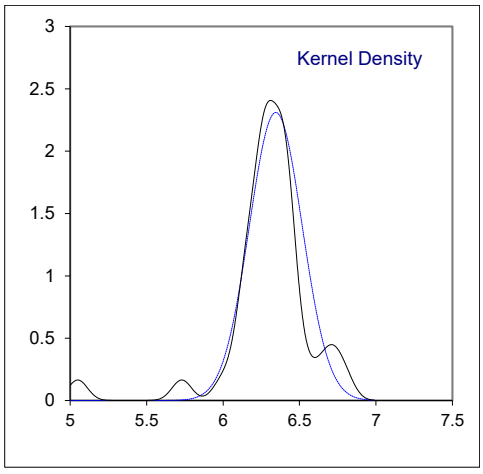
Determination of PIONA - Olefins and Aromatics on sample #22051; results in %M/M

lab	method	Olefins	mark	z(targ)	Aromatics	mark	z(targ)	remarks
140		-----		-----	-----		-----	
150		-----		-----	-----		-----	
171	D6839	0.26	C	-----	6.0		-1.27	first reported 1.2
311	D5443Mod.	0.1		-----	6.3		-0.17	
323	D5443	0.05		-----	6.31		-0.13	
333	D6839	<0.29		-----	<16.85		-----	
334	ISO22854-A	0.2		-----	6.4		0.20	
349	ISO22854-A	0.21		-----	6.41		0.24	
360	D5443	0.08		-----	6.13		-0.79	
399	ISO22854-A	0.09		-----	6.45		0.39	
444		-----		-----	-----		-----	
445		-----		-----	-----		-----	
657	D6839	<0.1		-----	6.28		-0.24	
754	D6729	0.136		-----	6.385		0.15	
779	D6729	0.133		-----	6.523		0.65	
781	D6729	0.194		-----	6.134		-0.78	
785	D6729	0.18		-----	6.20		-0.53	
798		-----		-----	-----		-----	
824	D6839	0.2		-----	6.4		0.20	
855		-----		-----	-----		-----	
862		-----		-----	-----		-----	
864		-----		-----	-----		-----	
868		-----		-----	-----		-----	
873	GOST P52714	0.16		-----	6.39		0.17	
874	D6729	0.162		-----	6.418		0.27	
914		-----		-----	-----		-----	
922		-----		-----	6.286		-0.22	
971		-----		-----	-----		-----	
994		-----		-----	-----		-----	
1012		-----		-----	-----		-----	
1016	ISO22854-A	0.10		-----	5.73	R(0.05)	-2.26	
1041	D6839	0.22		-----	6.26		-0.31	
1062	D6839	0.16		-----	6.80		1.67	
1065	In house	0.0		-----	6.722		1.39	
1066	ISO22854-A	0.1		-----	6.3		-0.17	
1081		-----		-----	-----		-----	
1108		0.12		-----	6.22		-0.46	
1135	ISO22854-A	0.4		-----	6.7		1.31	
1145		-----		-----	-----		-----	
1191	ISO22854-A	0.07		-----	6.25		-0.35	
1362	D6729	0.380		-----	6.260		-0.31	
1585		-----		-----	-----		-----	
1586		-----		-----	-----		-----	
1656	D5443	0.18		-----	6.43		0.31	
1720	D5134	0.0		-----	6.30		-0.17	
1737	In house	0.11		-----	6.13		-0.79	
1741	D6839	0.08		-----	6.18		-0.61	
1776	ISO22854-A	0.11		-----	6.34		-0.02	
1823	D6839	0.17		-----	6.39		0.17	
1857	ISO22854-A	0.30		-----	6.39		0.17	
1862		-----		-----	-----		-----	
1950		-----		-----	-----		-----	
1995	D5443	0.12		-----	6.44		0.35	
6028	D5134	0.0		-----	5.05	R(0.01)	-4.77	
6134		0.18		-----	6.62		1.01	
6185		-----		-----	-----		-----	
6198		-----		-----	-----		-----	
6200		-----		-----	-----		-----	
6379	In house	0.25	C	-----	6.285		-0.22	first reported 1.395
6438	D6730	0.30		-----	6.15		-0.72	
6447	D6839	0.06		-----	6.24		-0.39	
9008		-----		-----	-----		-----	
	normality	OK			OK			
	n	36			36			
	outliers	0			2			
	mean (n)	0.1546			6.3451			
	st.dev. (n)	0.09547			0.17272			
	R(calc.)	0.2673			0.4836			
	st.dev.(Horwitz 2 comp.)	(0.01158)			0.27179			
	R(Horwitz 2 comp.)	(0.0324)			0.7610			


Olefins %M/M
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1065 1720 6028 323 6447 1191 360 1741 399 311 1016 1066 1737 1776 1108 1995 779 754 873 1062 874 1823 785 1656 6134 781 824 334 349 1041 6379 171 1857 6438 1362 1135

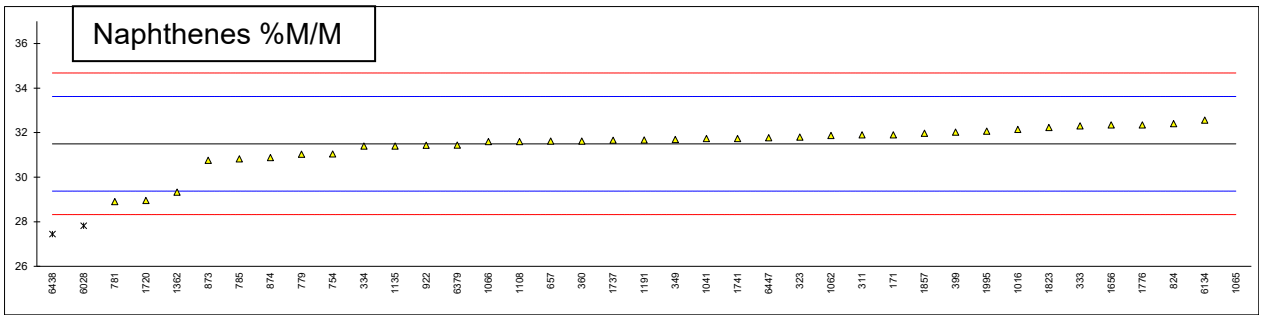

Kernel Density
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
-0.2 0 0.2 0.4 0.6

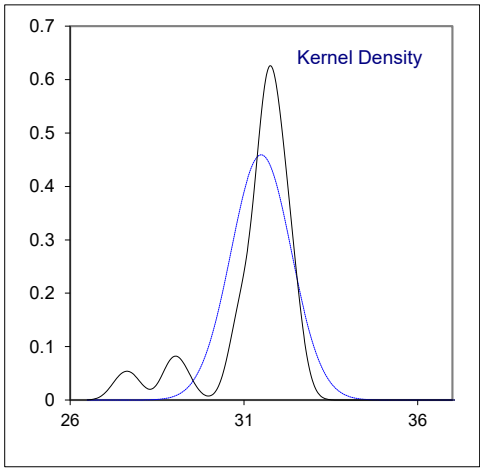

Aromatics %M/M
7.5
7
6.5
6
5.5
5
6028 1016 171 360 1737 781 6438 1741 785 1108 6447 1191 1041 1362 657 6379 922 311 1066 1720 323 1776 754 873 1823 1857 334 824 349 874 1656 1995 399 779 6134 1135 1065 1062

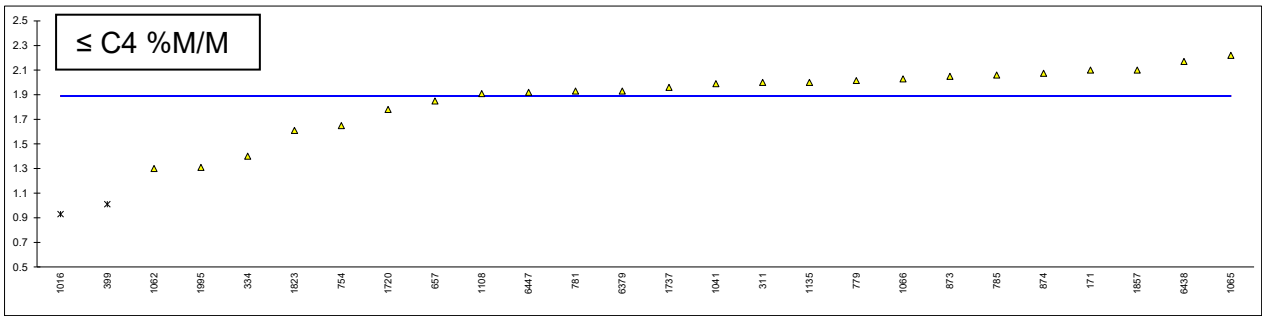

Kernel Density
3
2.5
2
1.5
1
0.5
0
5 5.5 6 6.5 7 7.5

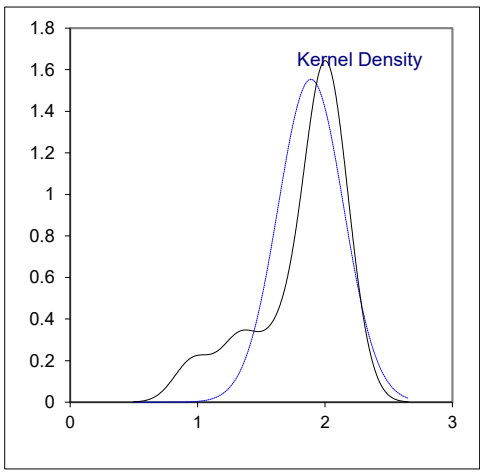
Determination of PIONA - Naphthenes and C4 and lighter hydrocarbons on sample #22051; results in %M/M

lab	method	Naphthenes	mark	z(targ)	≤ C4	mark	z(targ)	remarks
140		-----		-----	-----		-----	
150		-----		-----	-----		-----	
171	D6839	31.9		0.38	2.1		-----	
311	D5443Mod.	31.9		0.38	2.0		-----	
323	D5443	31.80		0.29	-----		-----	
333	D6839	32.3	C	0.76	-----		-----	first reported 63.4
334	ISO22854-A	31.4		-0.09	1.4		-----	
349	ISO22854-A	31.69		0.18	-----		-----	
360	D5443	31.62		0.12	-----		-----	
399	ISO22854-A	32.02		0.49	1.01	DG(0.05)	-----	
444		-----		-----	-----		-----	
445		-----		-----	-----		-----	
657	D6839	31.62		0.12	1.85		-----	
754	D6729	31.040		-0.43	1.649		-----	
779	D6729	31.023		-0.45	2.015		-----	
781	D6729	28.908		-2.44	1.929		-----	
785	D6729	30.82		-0.64	2.06		-----	
798		-----		-----	-----		-----	
824	D6839	32.4		0.85	-----		-----	
855		-----		-----	-----		-----	
862		-----		-----	-----		-----	
864		-----		-----	-----		-----	
868		-----		-----	-----		-----	
873	GOST P52714	30.75		-0.70	2.05		-----	
874	D6729	30.880		-0.58	2.074		-----	
914		-----		-----	-----		-----	
922	D6730	31.433		-0.06	-----		-----	
971		-----		-----	-----		-----	
994		-----		-----	-----		-----	
1012		-----		-----	-----		-----	
1016	ISO22854-A	32.14		0.61	0.93	DG(0.05)	-----	
1041	D6839	31.73		0.22	1.99		-----	
1062	D6839	31.87		0.35	1.30		-----	
1065	In house	39.604	R(0.01)	7.65	2.22		-----	
1066	ISO22854-A	31.6		0.10	2.03		-----	
1081		-----		-----	-----		-----	
1108		31.6		0.10	1.91		-----	
1135	ISO22854-A	31.4		-0.09	2.0		-----	
1145		-----		-----	-----		-----	
1191	ISO22854-A	31.67		0.16	-----		-----	
1362	D6729	29.325		-2.05	-----		-----	
1585		-----		-----	-----		-----	
1586		-----		-----	-----		-----	
1656	D5443	32.34		0.80	-----		-----	
1720	D5134	28.95	C	-2.40	1.78		-----	first reported 29.95
1737	In house	31.66		0.15	1.96		-----	
1741	D6839	31.73		0.22	-----		-----	
1776	ISO22854-A	32.34		0.80	-----		-----	
1823	D6839	32.23		0.69	1.61		-----	
1857	ISO22854-A	31.97		0.45	2.10		-----	
1862		-----		-----	-----		-----	
1950		-----		-----	-----		-----	
1995	D5443	32.06		0.53	1.31		-----	
6028	D5134	27.82	R(0.01)	-3.47	-----		-----	
6134		32.56		1.00	-----		-----	
6185		-----		-----	-----		-----	
6198		-----		-----	-----		-----	
6200		-----		-----	-----		-----	
6379	In house	31.44	C	-0.05	1.93		-----	first reported 29.57
6438	D6730	27.44	C,R(0.01)	-3.83	2.17		-----	first reported 28.77
6447	D6839	31.77	C	0.26	1.92	C	-----	fr. 29.39 and 2.37
9008		-----		-----	-----		-----	
	normality	not OK			OK			
	n	36			24			
	outliers	3			2			
	mean (n)	31.4969			1.8899			
	st.dev. (n)	0.86891			0.25685			
	R(calc.)	2.4329			0.7192			
	st.dev.(Horwitz 2 comp.)	1.06006			(0.09714)			
	R(Horwitz 2 comp.)	2.9682			(0.2720)			


Naphthenes %M/M
36
34
32
30
28
26
6438 6028 781 1720 1362 873 785 874 779 754 334 1135 922 6379 1066 1108 657 360 1737 1191 349 1041 1741 6447 323 1062 311 171 1857 399 1995 1016 1823 333 1656 1776 824 6134 1065

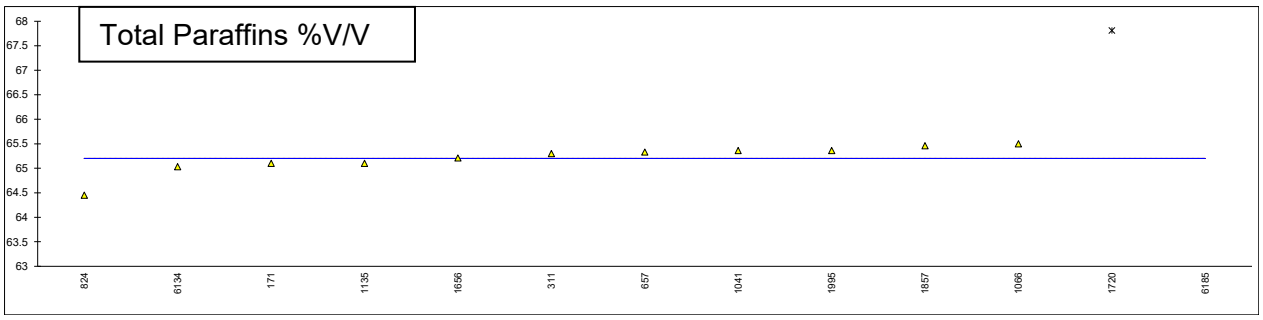

Kernel Density
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
26
31
36

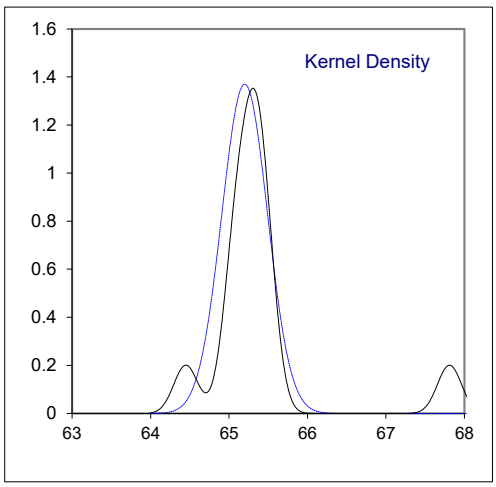

≤ C4 %M/M
2.5
2.3
2.1
1.9
1.7
1.5
1.3
1.1
0.9
0.7
0.5
1016 399 1062 1995 334 1823 754 1720 657 1108 6447 781 6379 1737 1041 311 1135 779 1066 873 785 874 171 1857 6438 1065

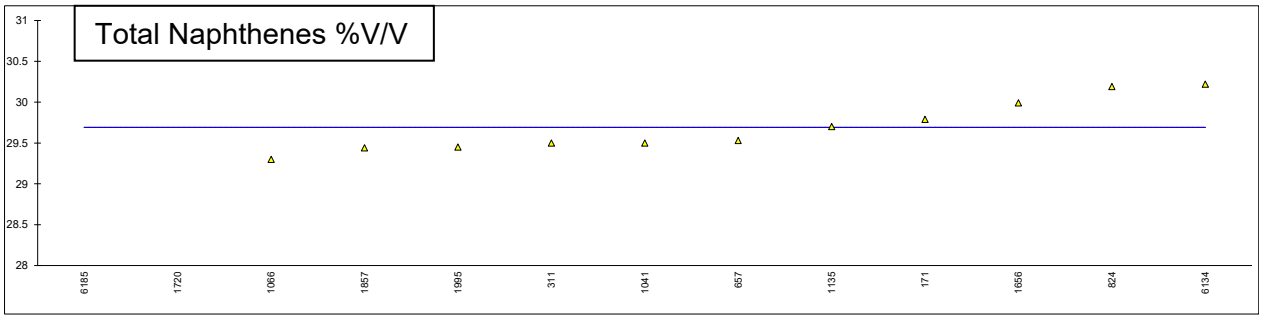

Kernel Density
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
1
2
3

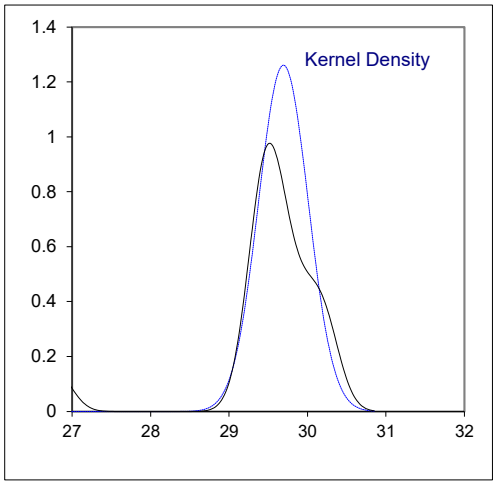
Determination of PNA - Total Paraffins, Total Naphthenes on sample #22051; results in %V/V

lab	method	Total Paraffins	mark	z(targ)	Total Naphthenes	mark	z(targ)	remarks
140		-----		-----	-----		-----	
150		-----		-----	-----		-----	
171	D5443	65.10		-----	29.79		-----	
311	D5443	65.3		-----	29.5		-----	
323		-----		-----	-----		-----	
333		-----		-----	-----		-----	
334		-----		-----	-----		-----	
349		-----		-----	-----		-----	
360		-----		-----	-----		-----	
399		-----		-----	-----		-----	
444		-----		-----	-----		-----	
445		-----		-----	-----		-----	
657	D5443	65.33		-----	29.53		-----	
754		-----		-----	-----		-----	
779		-----		-----	-----		-----	
781		-----		-----	-----		-----	
785		-----		-----	-----		-----	
798		-----		-----	-----		-----	
824	D5443	64.45		-----	30.19		-----	
855		-----		-----	-----		-----	
862		-----		-----	-----		-----	
864		-----		-----	-----		-----	
868		-----		-----	-----		-----	
873		-----		-----	-----		-----	
874		-----		-----	-----		-----	
914		-----		-----	-----		-----	
922		-----		-----	-----		-----	
971		-----		-----	-----		-----	
994		-----		-----	-----		-----	
1012		-----		-----	-----		-----	
1016		-----		-----	-----		-----	
1041	D5443	65.36		-----	29.50		-----	
1062		-----		-----	-----		-----	
1065		-----		-----	-----		-----	
1066	ISO22854-A	65.5		-----	29.3		-----	
1081		-----		-----	-----		-----	
1108		-----		-----	-----		-----	
1135	D6839	65.1		-----	29.7		-----	
1145		-----		-----	-----		-----	
1191		-----		-----	-----		-----	
1362		-----		-----	-----		-----	
1585		-----		-----	-----		-----	
1586		-----		-----	-----		-----	
1656	D5443	65.21		-----	29.99		-----	
1720	D5134	67.81	C,G(0.01)	-----	26.78	C,G(0.01)	-----	fr. 67.14 and 27.7
1737		-----		-----	-----		-----	
1741		-----		-----	-----		-----	
1776		-----		-----	-----		-----	
1823		-----		-----	-----		-----	
1857	ISO22854-A	65.46		-----	29.44		-----	
1862		-----		-----	-----		-----	
1950		-----		-----	-----		-----	
1995	D5443	65.36		-----	29.45		-----	
6028		-----		-----	-----		-----	
6134	D6839	65.03		-----	30.22		-----	
6185	In house	70.11	G(0.01)	-----	22.87	G(0.01)	-----	
6198		-----		-----	-----		-----	
6200		-----		-----	-----		-----	
6379		-----		-----	-----		-----	
6438		-----		-----	-----		-----	
6447		-----		-----	-----		-----	
9008		-----		-----	-----		-----	
	normality	not OK			OK			
	n	11			11			
	outliers	2			2			
	mean (n)	65.2000			29.6918			
	st.dev. (n)	0.29107			0.31638			
	R(calc.)	0.8150			0.8859			


Total Paraffins %V/V
68
67.5
67
66.5
66
65.5
65
64.5
64
63.5
63
824
6134
171
1135
1656
311
657
1041
1995
1857
1066
1720
6185

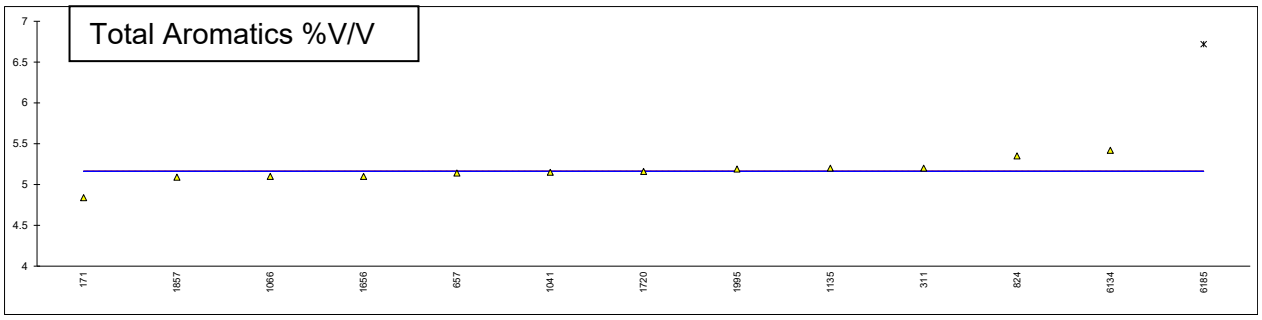

Kernel Density
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
63
64
65
66
67
68

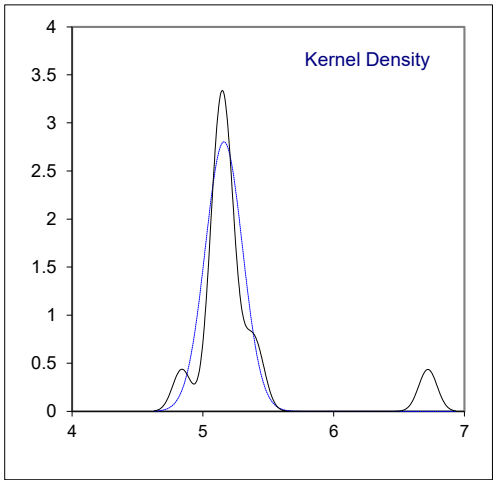

Total Naphthenes %V/V
31
30.5
30
29.5
29
28.5
28
6185
1720
1066
1857
1995
311
1041
657
1135
171
1656
824
6134

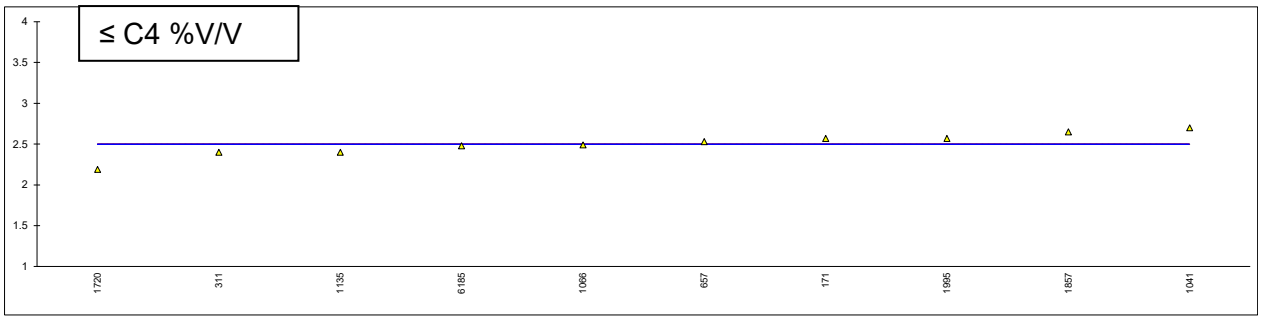

Kernel Density
1.4
1.2
1
0.8
0.6
0.4
0.2
0
27
28
29
30
31
32

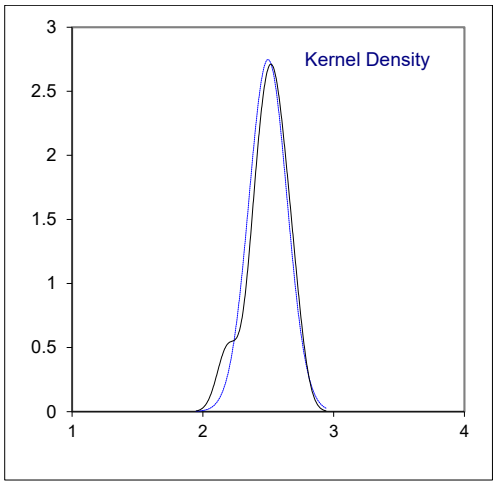
Determination of PNA - Total Aromatics and C4 and lighter hydrocarbons on sample #22051; results in %V/V

lab	method	Total Aromatics	mark	z(targ)	≤ C4	mark	z(targ)	remarks
140		-----		-----	-----		-----	
150		-----		-----	-----		-----	
171	D5443	4.84		-----	2.57		-----	
311	D5443	5.2		-----	2.4		-----	
323		-----		-----	-----		-----	
333		-----		-----	-----		-----	
334		-----		-----	-----		-----	
349		-----		-----	-----		-----	
360		-----		-----	-----		-----	
399		-----		-----	-----		-----	
444		-----		-----	-----		-----	
445		-----		-----	-----		-----	
657	D5443	5.14		-----	2.53		-----	
754		-----		-----	-----		-----	
779		-----		-----	-----		-----	
781		-----		-----	-----		-----	
785		-----		-----	-----		-----	
798		-----		-----	-----		-----	
824	D5443	5.35		-----	-----		-----	
855		-----		-----	-----		-----	
862		-----		-----	-----		-----	
864		-----		-----	-----		-----	
868		-----		-----	-----		-----	
873		-----		-----	-----		-----	
874		-----		-----	-----		-----	
914		-----		-----	-----		-----	
922		-----		-----	-----		-----	
971		-----		-----	-----		-----	
994		-----		-----	-----		-----	
1012		-----		-----	-----		-----	
1016		-----		-----	-----		-----	
1041	D5443	5.15		-----	2.70		-----	
1062		-----		-----	-----		-----	
1065		-----		-----	-----		-----	
1066	ISO22854-A	5.1		-----	2.49		-----	
1081		-----		-----	-----		-----	
1108		-----		-----	-----		-----	
1135	D6839	5.2		-----	2.4		-----	
1145		-----		-----	-----		-----	
1191		-----		-----	-----		-----	
1362		-----		-----	-----		-----	
1585		-----		-----	-----		-----	
1586		-----		-----	-----		-----	
1656	D5443	5.1	C	-----	-----		-----	first reported 4.8
1720	D5134	5.16		-----	2.19		-----	
1737		-----		-----	-----		-----	
1741		-----		-----	-----		-----	
1776		-----		-----	-----		-----	
1823		-----		-----	-----		-----	
1857	ISO22854-A	5.09		-----	2.65		-----	
1862		-----		-----	-----		-----	
1950		-----		-----	-----		-----	
1995	D5443	5.19		-----	2.57		-----	
6028		-----		-----	-----		-----	
6134	D6839	5.42		-----	-----		-----	
6185	In house	6.72	G(0.01)	-----	2.48		-----	
6198		-----		-----	-----		-----	
6200		-----		-----	-----		-----	
6379		-----		-----	-----		-----	
6438		-----		-----	-----		-----	
6447		-----		-----	-----		-----	
9008		-----		-----	-----		-----	
	normality	not OK			suspect			
	n	12			10			
	outliers	1			0			
	mean (n)	5.1617			2.4980			
	st.dev. (n)	0.14231			0.14520			
	R(calc.)	0.3985			0.4066			


Total Aromatics %V/V
7
6.5
6
5.5
5
4.5
4
171
1857
1066
1656
657
1041
1720
1995
1135
311
824
6134
6185

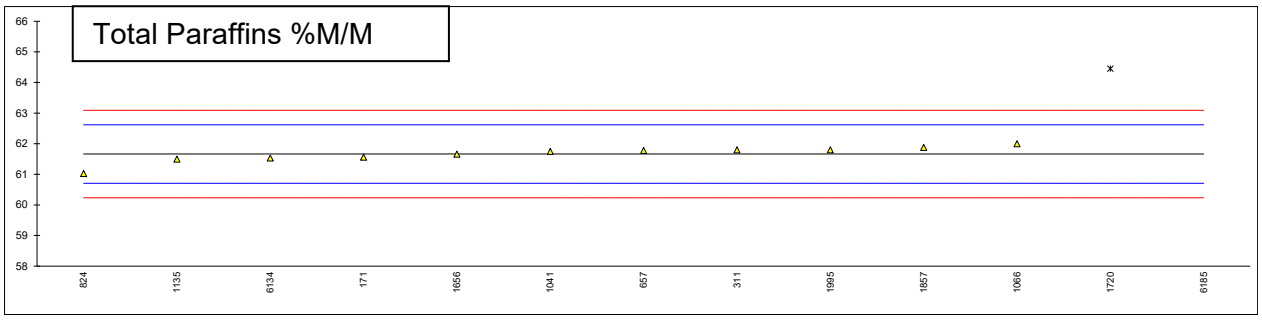

Kernel Density
4
3.5
3
2.5
2
1.5
1
0.5
0
4
5
6
7

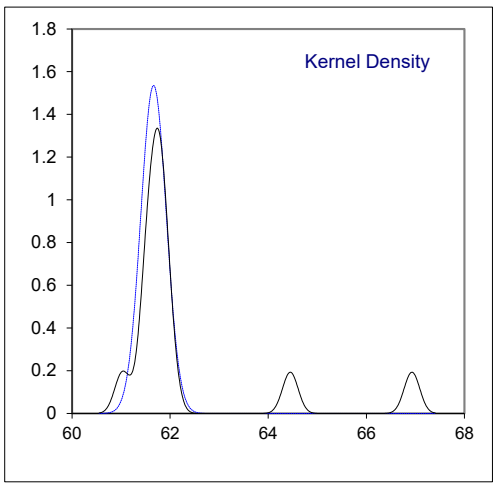

≤ C4 %V/V
4
3.5
3
2.5
2
1.5
1
1720
311
1135
6 185
1066
657
171
1995
1857
1041

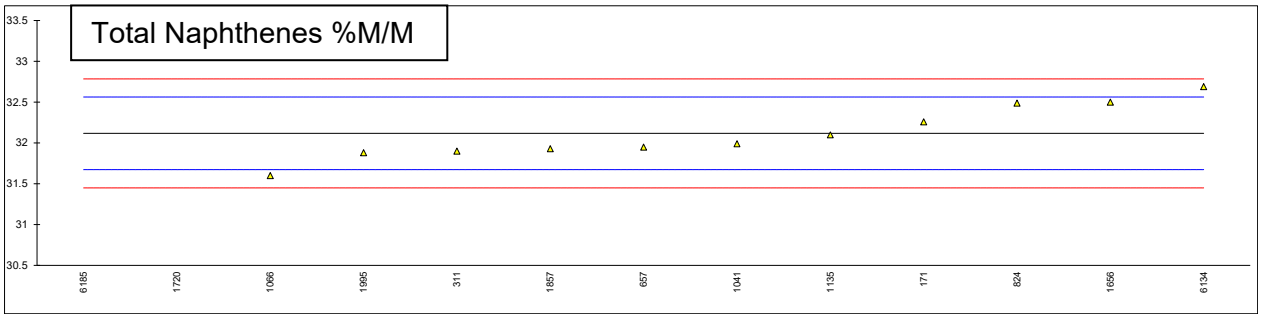

Kernel Density
3
2.5
2
1.5
1
0.5
0
1
2
3
4

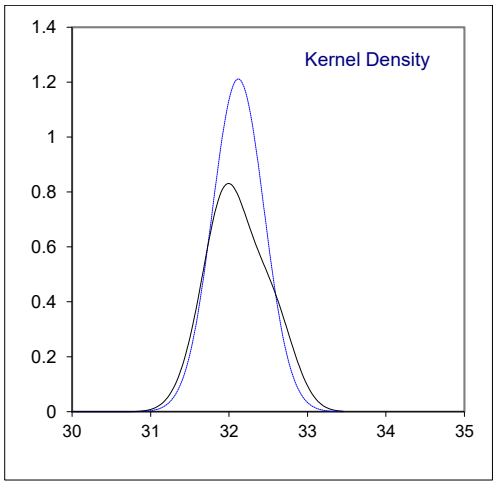
Determination of PNA - Total Paraffins, Total Naphthenes on sample #22051; results in %M/M

lab	method	Total Paraffins	mark	z(targ)	Total Naphthenes	mark	z(targ)	remarks
140		-----		-----	-----		-----	
150		-----		-----	-----		-----	
171	D5443	61.56		-0.22	32.26		0.64	
311	D5443	61.8		0.29	31.9		-0.98	
323		-----		-----	-----		-----	
333		-----		-----	-----		-----	
334		-----		-----	-----		-----	
349		-----		-----	-----		-----	
360		-----		-----	-----		-----	
399		-----		-----	-----		-----	
444		-----		-----	-----		-----	
445		-----		-----	-----		-----	
657	D5443	61.78		0.25	31.95		-0.75	
754		-----		-----	-----		-----	
779		-----		-----	-----		-----	
781		-----		-----	-----		-----	
785		-----		-----	-----		-----	
798		-----		-----	-----		-----	
824	D5443	61.03		-1.33	32.49		1.67	
855		-----		-----	-----		-----	
862		-----		-----	-----		-----	
864		-----		-----	-----		-----	
868		-----		-----	-----		-----	
873		-----		-----	-----		-----	
874		-----		-----	-----		-----	
914		-----		-----	-----		-----	
922		-----		-----	-----		-----	
971		-----		-----	-----		-----	
994		-----		-----	-----		-----	
1012		-----		-----	-----		-----	
1016		-----		-----	-----		-----	
1041	D5443	61.75		0.18	31.99		-0.57	
1062		-----		-----	-----		-----	
1065		-----		-----	-----		-----	
1066	ISO22854-A	62.0		0.71	31.6		-2.32	
1081		-----		-----	-----		-----	
1108		-----		-----	-----		-----	
1135	D6839	61.5		-0.34	32.1		-0.08	
1145		-----		-----	-----		-----	
1191		-----		-----	-----		-----	
1362		-----		-----	-----		-----	
1585		-----		-----	-----		-----	
1586		-----		-----	-----		-----	
1656	D5443	61.66		-0.01	32.50		1.72	
1720	D5134	64.45	C,G(0.01)	5.85	28.95	C,G(0.01)	-14.23	fr. 63.75 and 29.95
1737		-----		-----	-----		-----	
1741		-----		-----	-----		-----	
1776		-----		-----	-----		-----	
1823		-----		-----	-----		-----	
1857	ISO22854-A	61.88		0.46	31.93		-0.84	
1862		-----		-----	-----		-----	
1950		-----		-----	-----		-----	
1995	D5443	61.80		0.29	31.88		-1.07	
6028		-----		-----	-----		-----	
6134	D6839	61.53		-0.28	32.69		2.57	
6185	In house	66.93	G(0.01)	11.05	24.64	G(0.01)	-33.58	
6198		-----		-----	-----		-----	
6200		-----		-----	-----		-----	
6379		-----		-----	-----		-----	
6438		-----		-----	-----		-----	
6447		-----		-----	-----		-----	
9008		-----		-----	-----		-----	
	normality	not OK			OK			
	n	11			11			
	outliers	2			2			
	mean (n)	61.6627			32.1173			
	st.dev. (n)	0.25981			0.32930			
	R(calc.)	0.7275			0.9221			
	st.dev.(D5443:14R18)	0.47676			0.22264			
	R(D5443:14R18)	1.3349			0.6234			


Total Paraffins %M/M
66
65
64
63
62
61
60
59
58
824
1135
6134
171
1656
1041
657
311
1995
1857
1066
1720
6185

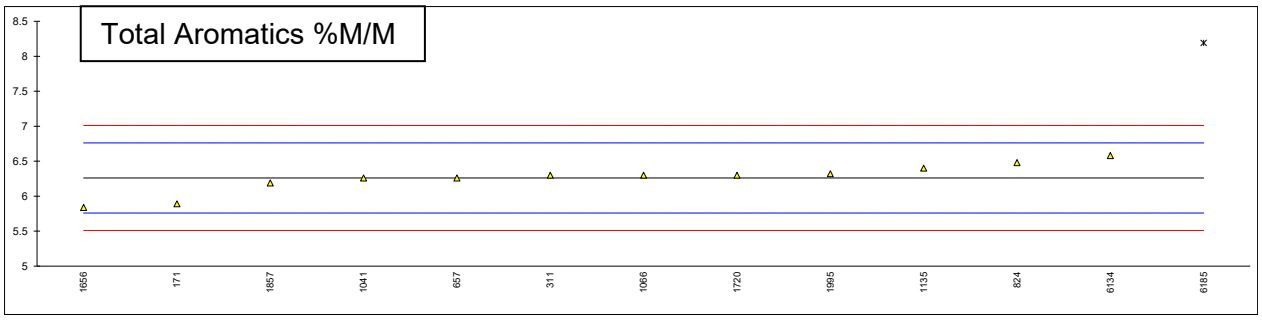

Kernel Density
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
60
62
64
66
68

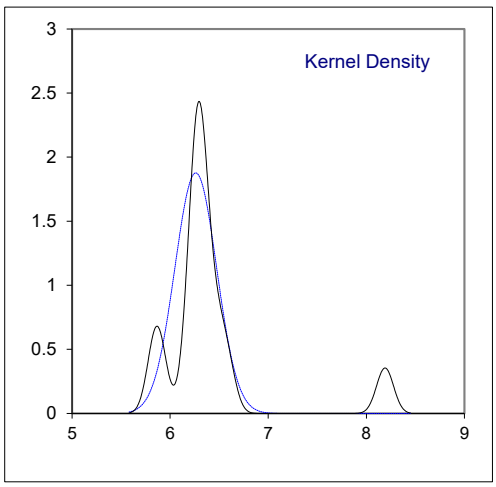

Total Naphthenes %M/M
33.5
33
32.5
32
31.5
31
30.5
6185
1720
1066
1995
311
1857
657
1041
1135
171
824
1656
6134

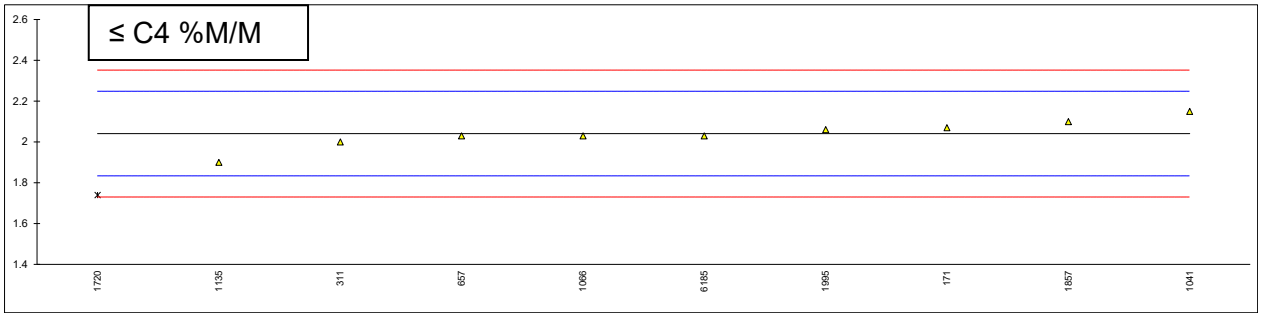

Kernel Density
1.4
1.2
1
0.8
0.6
0.4
0.2
0
30
31
32
33
34
35

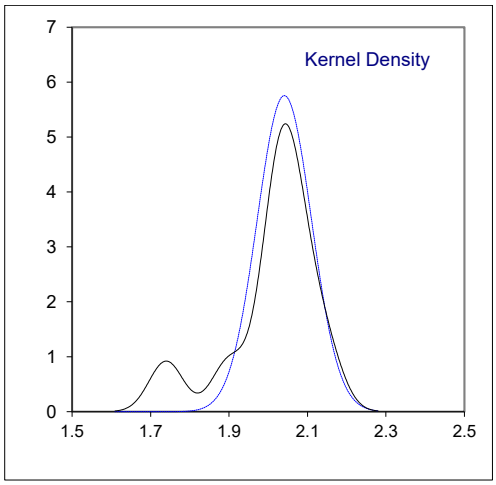
Determination of PNA - Total Aromatics and C4 and lighter hydrocarbons on sample #22051; results in %M/M

lab	method	Total Aromatics	mark	z(targ)	≤ C4	mark	z(targ)	remarks
140		-----		-----	-----		-----	
150		-----		-----	-----		-----	
171	D5443	5.89		-1.48	2.07		0.28	
311	D5443	6.3		0.16	2.0		-0.40	
323		-----		-----	-----		-----	
333		-----		-----	-----		-----	
334		-----		-----	-----		-----	
349		-----		-----	-----		-----	
360		-----		-----	-----		-----	
399		-----		-----	-----		-----	
444		-----		-----	-----		-----	
445		-----		-----	-----		-----	
657	D5443	6.26		0.00	2.03		-0.11	
754		-----		-----	-----		-----	
779		-----		-----	-----		-----	
781		-----		-----	-----		-----	
785		-----		-----	-----		-----	
798		-----		-----	-----		-----	
824	D5443	6.48		0.88	-----		-----	
855		-----		-----	-----		-----	
862		-----		-----	-----		-----	
864		-----		-----	-----		-----	
868		-----		-----	-----		-----	
873		-----		-----	-----		-----	
874		-----		-----	-----		-----	
914		-----		-----	-----		-----	
922		-----		-----	-----		-----	
971		-----		-----	-----		-----	
994		-----		-----	-----		-----	
1012		-----		-----	-----		-----	
1016		-----		-----	-----		-----	
1041	D5443	6.26		0.00	2.15		1.05	
1062		-----		-----	-----		-----	
1065		-----		-----	-----		-----	
1066	ISO22854-A	6.3		0.16	2.03		-0.11	
1081		-----		-----	-----		-----	
1108		-----		-----	-----		-----	
1135	D6839	6.4		0.56	1.9		-1.36	
1145		-----		-----	-----		-----	
1191		-----		-----	-----		-----	
1362		-----		-----	-----		-----	
1585		-----		-----	-----		-----	
1586		-----		-----	-----		-----	
1656	D5443	5.84		-1.68	-----		-----	
1720	D5134	6.30		0.16	1.74	C,G(0.05)	-2.90	first reported 1.78
1737		-----		-----	-----		-----	
1741		-----		-----	-----		-----	
1776		-----		-----	-----		-----	
1823		-----		-----	-----		-----	
1857	ISO22854-A	6.19		-0.28	2.10		0.57	
1862		-----		-----	-----		-----	
1950		-----		-----	-----		-----	
1995	D5443	6.32		0.24	2.06		0.18	
6028		-----		-----	-----		-----	
6134	D6839	6.58		1.28	-----		-----	
6185	In house	8.19	G(0.01)	7.71	2.03		-0.11	
6198		-----		-----	-----		-----	
6200		-----		-----	-----		-----	
6379		-----		-----	-----		-----	
6438		-----		-----	-----		-----	
6447		-----		-----	-----		-----	
9008		-----		-----	-----		-----	
	normality	OK			suspect			
	n	12			9			
	outliers	1			1			
	mean (n)	6.2600			2.0411			
	st.dev. (n)	0.21256			0.06936			
	R(calc.)	0.5952			0.1942			
	st.dev.(D5443:14R18)	0.25020			0.10371			
	R(D5443:14R18)	0.7006			0.2904	R(Horwitz 2 comp.)		


Total Aromatics %M/M
8.5
8
7.5
7
6.5
6
5.5
5
1656
171
1857
1041
657
311
1066
1720
1995
1135
824
6134
6185


Kernel Density
3
2.5
2
1.5
1
0.5
0
5
6
7
8
9

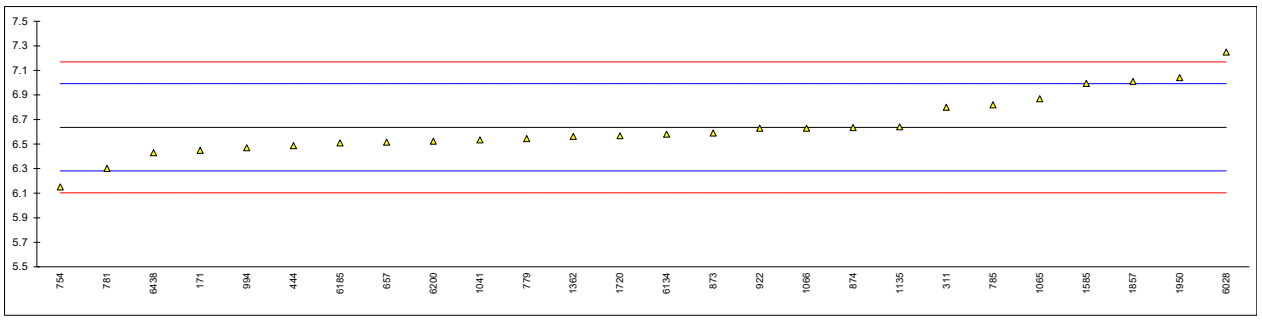

≤ C4 %M/M
2.6
2.4
2.2
2
1.8
1.6
1.4
1720
1135
311
657
1066
6185
1995
171
1857
1041

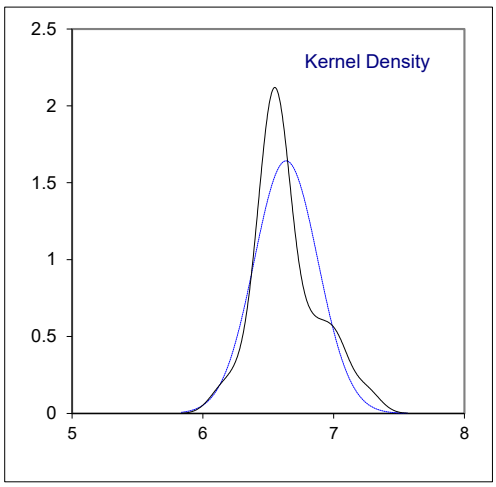

Kernel Density
7
6
5
4
3
2
1
0
1.5
1.7
1.9
2.1
2.3
2.5

Determination of Pentane on sample #22051; results in %M/M

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150		-----		-----	
171	D5134	6.45		-1.05	
311	D5134	6.8		0.92	
323		-----		-----	
333		-----		-----	
334		-----		-----	
349		-----		-----	
360		-----		-----	
399		-----		-----	
444	D5134	6.4875		-0.84	
445		-----		-----	
657	D6730	6.5152	C	-0.68	first reported 10.954
754	D6729	6.151		-2.73	
779	D6729	6.545		-0.51	
781	D6729	6.302		-1.88	
785	D6729	6.82		1.03	
798		-----		-----	
824		-----		-----	
855		-----		-----	
862		-----		-----	
864		-----		-----	
868		-----		-----	
873	GOST P52714	6.59		-0.26	
874	D6729	6.634		-0.01	
914		-----		-----	
922	D6729	6.63		-0.03	
971		-----		-----	
994	D5134	6.47		-0.94	
1012		-----		-----	
1016		-----		-----	
1041	D5134	6.535		-0.57	
1062		-----		-----	
1065	In house	6.87		1.32	
1066	D5134	6.63		-0.03	
1081		-----		-----	
1108		-----		-----	
1135	D5134	6.64		0.02	
1145		-----		-----	
1191		-----		-----	
1362	D6729	6.563		-0.41	
1585	D5134	6.994		2.01	
1586		-----		-----	
1656		-----		-----	
1720	D5134	6.568		-0.38	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1823		-----		-----	
1857	D5134	7.011		2.11	
1862		-----		-----	
1950	D5134	7.041		2.28	
1995		-----		-----	
6028	D5134	7.25		3.45	
6134	D6730	6.58		-0.32	
6185	In house	6.51		-0.71	
6198		-----		-----	
6200	D6730	6.5244		-0.63	
6379		-----		-----	
6438	D6730	6.43	C	-1.16	first reported 4.66
6447		-----		-----	
9008		-----		-----	

normality	OK
n	26
outliers	0
mean (n)	6.6362
st.dev. (n)	0.24294
R(calc.)	0.6802
st.dev.(D5134:21)	0.17769
R(D5134:21)	0.4975

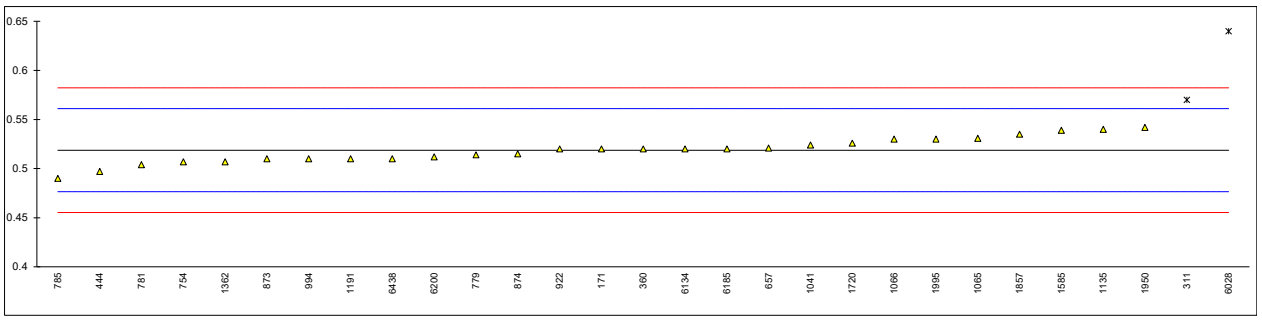

7.5
7.3
7.1
6.9
6.7
6.5
6.3
6.1
5.9
5.7
5.5
754
781
6438
171
994
444
6185
657
6200
1041
779
1362
1720
6134
873
922
1066
874
1135
311
785
1065
1585
1857
1950
6028

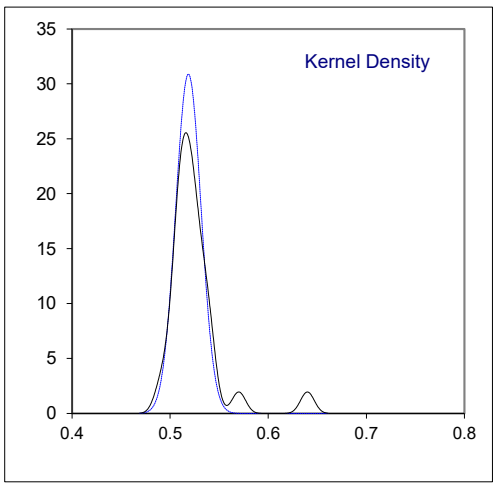

Kernel Density
2.5
2
1.5
1
0.5
0
5
6
7
8

Determination of Benzene on sample #22051; results in %M/M

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150		-----		-----	
171	D5134	0.52		0.06	
311	D5134	0.57	C,R(0.05)	2.43	first reported 0.59
323		-----		-----	
333		-----		-----	
334		-----		-----	
349		-----		-----	
360	D5134	0.52		0.06	
399		-----		-----	
444	D5134	0.4971		-1.02	
445		-----		-----	
657	D6730	0.521		0.11	
754	D6729	0.507		-0.55	
779	D6729	0.514		-0.22	
781	D6729	0.504		-0.69	
785	D6729	0.49		-1.35	
798		-----		-----	
824		-----		-----	
855		-----		-----	
862		-----		-----	
864		-----		-----	
868		-----		-----	
873	GOST P52714	0.51		-0.41	
874	D6729	0.515		-0.17	
914		-----		-----	
922	D6729	0.52		0.06	
971		-----		-----	
994	D5134	0.51		-0.41	
1012		-----		-----	
1016		-----		-----	
1041	D5134	0.524		0.25	
1062		-----		-----	
1065	In house	0.531		0.58	
1066	D5134	0.53		0.54	
1081		-----		-----	
1108		-----		-----	
1135	D5134	0.54		1.01	
1145		-----		-----	
1191	ISO22854-A	0.51		-0.41	
1362	D6729	0.507		-0.55	
1585	D5134	0.539		0.96	
1586		-----		-----	
1656		-----		-----	
1720	D5134	0.526		0.35	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1823		-----		-----	
1857	D5134	0.535		0.77	
1862		-----		-----	
1950	D5134	0.542		1.10	
1995	D5443	0.53		0.54	
6028	D5134	0.64	R(0.01)	5.73	
6134	D6730	0.52		0.06	
6185	In house	0.52		0.06	
6198		-----		-----	
6200	D6730	0.5120		-0.32	
6379		-----		-----	
6438	D6730	0.51		-0.41	
6447		-----		-----	
9008		-----		-----	

normality	OK
n	27
outliers	2
mean (n)	0.5187
st.dev. (n)	0.01292
R(calc.)	0.0362
st.dev.(D5134:21)	0.02116
R(D5134:21)	0.0593

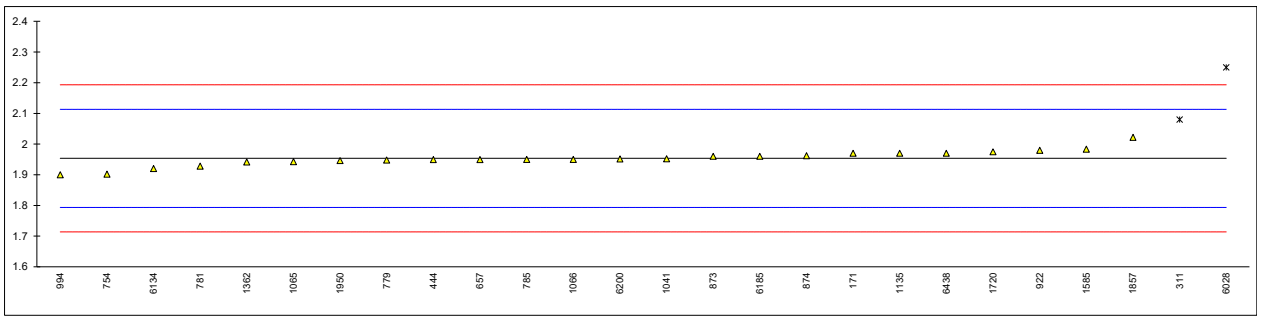

0.65
0.6
0.55
0.5
0.45
0.4
785
444
781
754
1362
873
994
1191
6438
6200
779
874
922
171
360
6134
6185
657
1041
1720
1066
1995
1065
1857
1585
1135
1950
311
6028

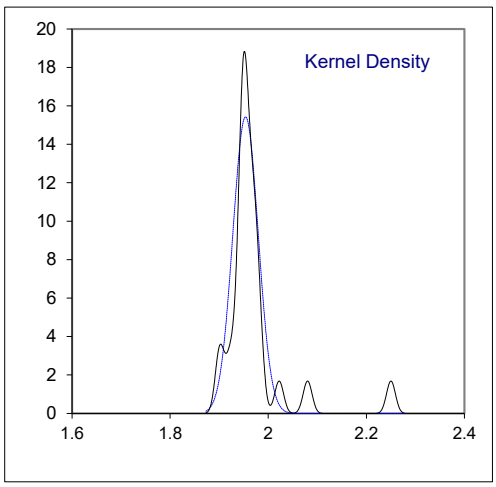

Kernel Density
35
30
25
20
15
10
5
0
0.4
0.5
0.6
0.7
0.8

Determination of Cyclohexane on sample #22051; results in %M/M

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150		-----		-----	
171	D5134	1.97		0.21	
311	D5134	2.08	R(0.01)	1.58	
323		-----		-----	
333		-----		-----	
334		-----		-----	
349		-----		-----	
360		-----		-----	
399		-----		-----	
444	D5134	1.9492		-0.05	
445		-----		-----	
657	D6730	1.9495		-0.05	
754	D6729	1.902		-0.64	
779	D6729	1.948		-0.07	
781	D6729	1.928		-0.32	
785	D6729	1.95		-0.04	
798		-----		-----	
824		-----		-----	
855		-----		-----	
862		-----		-----	
864		-----		-----	
868		-----		-----	
873	GOST P52714	1.96		0.08	
874	D6729	1.962		0.11	
914		-----		-----	
922	D6729	1.98		0.33	
971		-----		-----	
994	D5134	1.90		-0.67	
1012		-----		-----	
1016		-----		-----	
1041	D5134	1.952		-0.02	
1062		-----		-----	
1065	In house	1.943		-0.13	
1066	D5134	1.95		-0.04	
1081		-----		-----	
1108		-----		-----	
1135	D5134	1.97		0.21	
1145		-----		-----	
1191		-----		-----	
1362	D6729	1.942		-0.14	
1585	D5134	1.983	C	0.37	first reported 2.101
1586		-----		-----	
1656		-----		-----	
1720	D5134	1.975		0.27	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1823		-----		-----	
1857	D5134	2.022		0.86	
1862		-----		-----	
1950	D5134	1.946		-0.09	
1995		-----		-----	
6028	D5134	2.25	R(0.01)	3.71	
6134	D6730	1.92		-0.42	
6185	In house	1.96		0.08	
6198		-----		-----	
6200	D6730	1.9517		-0.02	
6379		-----		-----	
6438	D6730	1.97		0.21	
6447		-----		-----	
9008		-----		-----	

normality	suspect
n	24
outliers	2
mean (n)	1.9535
st.dev. (n)	0.02586
R(calc.)	0.0724
st.dev.(D5134:21)	0.07987
R(D5134:21)	0.2236

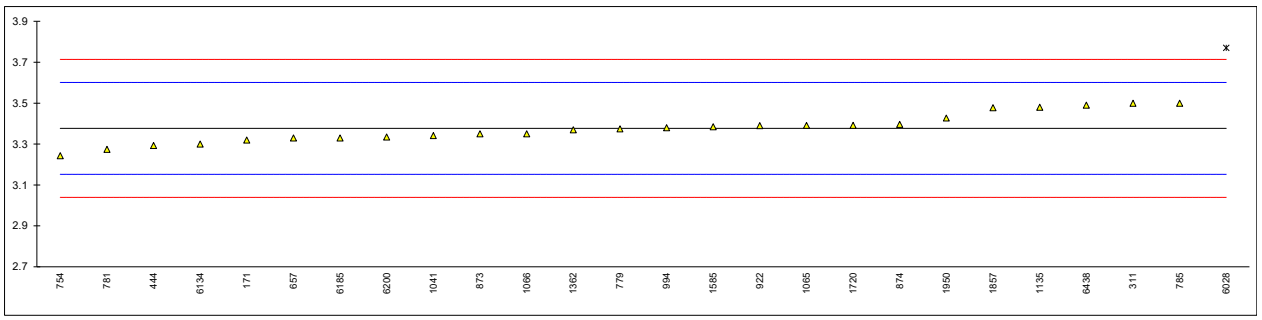

2.4
2.3
2.2
2.1
2
1.9
1.8
1.7
1.6
994
754
6134
781
1362
1065
1950
779
444
657
785
1066
6200
1041
873
6185
874
171
1135
6438
1720
922
1585
1857
311
6028

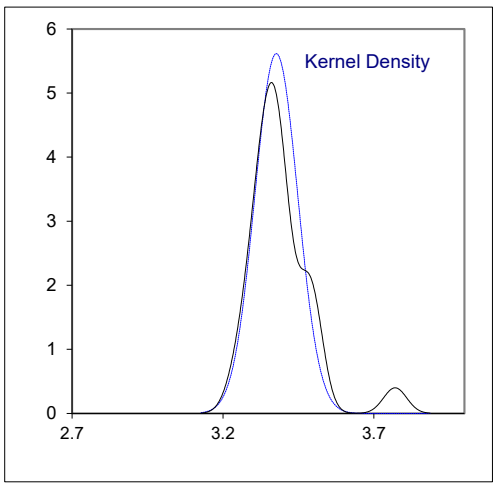

Kernel Density
20
18
16
14
12
10
8
6
4
2
0
1.6
1.8
2
2.2
2.4

Determination of 2-Methylpentane on sample #22051; results in %M/M

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150		-----		-----	
171	D5134	3.32		-0.50	
311	D5134	3.50		1.10	
323		-----		-----	
333		-----		-----	
334		-----		-----	
349		-----		-----	
360		-----		-----	
399		-----		-----	
444	D5134	3.2929		-0.75	
445		-----		-----	
657	D6730	3.3300		-0.42	
754	D6729	3.243		-1.19	
779	D6729	3.374		-0.02	
781	D6729	3.274		-0.91	
785	D6729	3.50		1.10	
798		-----		-----	
824		-----		-----	
855		-----		-----	
862		-----		-----	
864		-----		-----	
868		-----		-----	
873	GOST P52714	3.35		-0.24	
874	D6729	3.396		0.17	
914		-----		-----	
922	D6729	3.39		0.12	
971		-----		-----	
994	D5134	3.38		0.03	
1012		-----		-----	
1016		-----		-----	
1041	D5134	3.342		-0.31	
1062		-----		-----	
1065	In house	3.391		0.13	
1066	D5134	3.35		-0.24	
1081		-----		-----	
1108		-----		-----	
1135	D5134	3.48		0.92	
1145		-----		-----	
1191		-----		-----	
1362	D6729	3.370		-0.06	
1585	D5134	3.385		0.07	
1586		-----		-----	
1656		-----		-----	
1720	D5134	3.392		0.14	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1823		-----		-----	
1857	D5134	3.478		0.90	
1862		-----		-----	
1950	D5134	3.427		0.45	
1995		-----		-----	
6028	D5134	3.77	R(0.01)	3.50	
6134	D6730	3.30		-0.68	
6185	In house	3.33		-0.42	
6198		-----		-----	
6200	D6730	3.3345		-0.38	
6379		-----		-----	
6438	D6730	3.49		1.01	
6447		-----		-----	
9008		-----		-----	

	normality	OK
	n	25
	outliers	1
	mean (n)	3.3768
	st.dev. (n)	0.07105
	R(calc.)	0.1989
	st.dev.(Horwitz)	0.11246
	R(Horwitz)	0.3149
Compare:		
	R(D5134:21)	0.1148

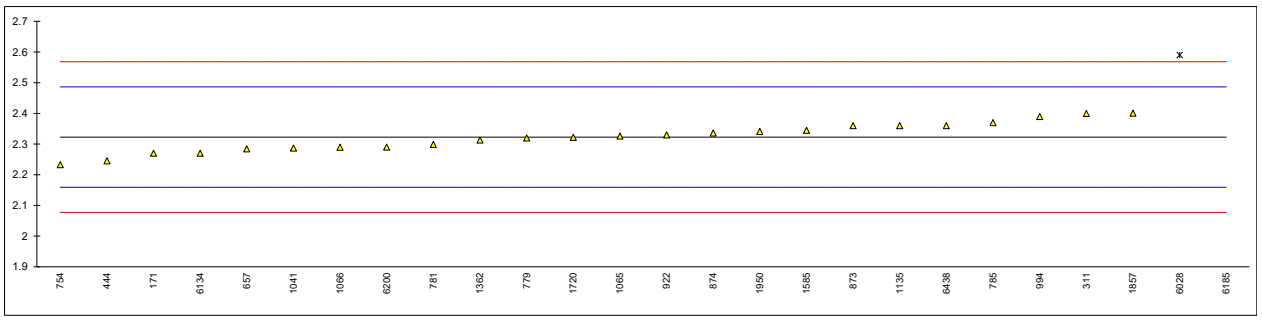

3.9
3.7
3.5
3.3
3.1
2.9
2.7
754
781
444
6134
171
657
6185
6200
1041
873
1066
1362
779
994
1585
922
1065
1720
874
1950
1857
1135
6438
311
785
6028

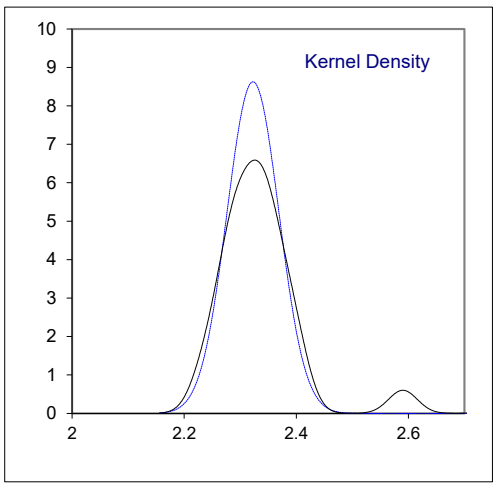

Kernel Density
6
5
4
3
2
1
0
2.7
3.2
3.7

Determination of 3-Methylpentane on sample #22051; results in %M/M

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150		-----		-----	
171	D5134	2.27		-0.64	
311	D5134	2.40		0.95	
323		-----		-----	
333		-----		-----	
334		-----		-----	
349		-----		-----	
360		-----		-----	
399		-----		-----	
444	D5134	2.2451		-0.95	
445		-----		-----	
657	D6730	2.2845		-0.47	
754	D6729	2.233		-1.10	
779	D6729	2.320		-0.03	
781	D6729	2.299		-0.29	
785	D6729	2.37		0.58	
798		-----		-----	
824		-----		-----	
855		-----		-----	
862		-----		-----	
864		-----		-----	
868		-----		-----	
873	GOST P52714	2.36		0.46	
874	D6729	2.336		0.16	
914		-----		-----	
922	D6729	2.33		0.09	
971		-----		-----	
994	D5134	2.39		0.82	
1012		-----		-----	
1016		-----		-----	
1041	D5134	2.287		-0.44	
1062		-----		-----	
1065	In house	2.326		0.04	
1066	D5134	2.29		-0.40	
1081		-----		-----	
1108		-----		-----	
1135	D5134	2.36		0.46	
1145		-----		-----	
1191		-----		-----	
1362	D6729	2.313		-0.12	
1585	D5134	2.345		0.27	
1586		-----		-----	
1656		-----		-----	
1720	D5134	2.322		-0.01	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1823		-----		-----	
1857	D5134	2.401		0.96	
1862		-----		-----	
1950	D5134	2.341		0.22	
1995		-----		-----	
6028	D5134	2.59	R(0.01)	3.27	
6134	D6730	2.27		-0.64	
6185	In house	2.78	R(0.01)	5.59	
6198		-----		-----	
6200	D6730	2.2904		-0.39	
6379		-----		-----	
6438	D6730	2.36		0.46	
6447		-----		-----	
9008		-----		-----	

	normality	OK
	n	24
	outliers	2
	mean (n)	2.3226
	st.dev. (n)	0.04628
	R(calc.)	0.1296
	st.dev.(Horwitz)	0.08184
	R(Horwitz)	0.2291
Compare:		
	R(D5134:21)	0.0790

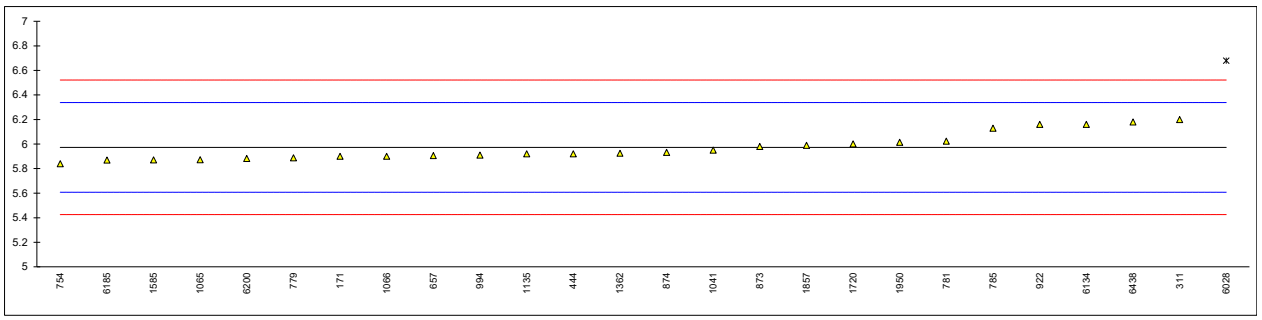

2.7
2.6
2.5
2.4
2.3
2.2
2.1
2
1.9
754
444
171
6134
657
1041
1066
6200
781
1362
779
1720
1065
922
874
1950
1585
873
1135
6438
785
994
311
1857
6028
6185

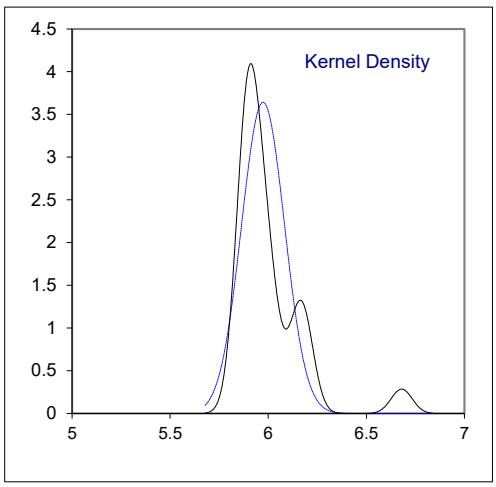

Kernel Density
10
9
8
7
6
5
4
3
2
1
0
2
2.2
2.4
2.6

Determination of Heptane on sample #22051; results in %M/M

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150		-----		-----	
171	D5134	5.90		-0.40	
311	D5134	6.2		1.24	
323		-----		-----	
333		-----		-----	
334		-----		-----	
349		-----		-----	
360		-----		-----	
399		-----		-----	
444	D5134	5.9207		-0.29	
445		-----		-----	
657	D6730	5.9067	C	-0.36	first reported 12.809
754	D6729	5.839		-0.73	
779	D6729	5.888		-0.47	
781	D6729	6.024		0.28	
785	D6729	6.13		0.86	
798		-----		-----	
824		-----		-----	
855		-----		-----	
862		-----		-----	
864		-----		-----	
868		-----		-----	
873	GOST P52714	5.98		0.04	
874	D6729	5.932		-0.23	
914		-----		-----	
922	D6729	6.16		1.02	
971		-----		-----	
994	D5134	5.91		-0.35	
1012		-----		-----	
1016		-----		-----	
1041	D5134	5.951		-0.12	
1062		-----		-----	
1065	In house	5.872		-0.55	
1066	D5134	5.90		-0.40	
1081		-----		-----	
1108		-----		-----	
1135	D5134	5.92		-0.29	
1145		-----		-----	
1191		-----		-----	
1362	D6729	5.925		-0.26	
1585	D5134	5.871		-0.56	
1586		-----		-----	
1656		-----		-----	
1720	D5134	6.001		0.15	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1823		-----		-----	
1857	D5134	5.990		0.09	
1862		-----		-----	
1950	D5134	6.014		0.22	
1995		-----		-----	
6028	D5134	6.68	R(0.01)	3.87	
6134	D6730	6.16		1.02	
6185	In house	5.87		-0.56	
6198		-----		-----	
6200	D6730	5.8828		-0.49	
6379		-----		-----	
6438	D6730	6.18		1.13	
6447		-----		-----	
9008		-----		-----	

	normality	OK
	n	25
	outliers	1
	mean (n)	5.9731
	st.dev. (n)	0.10953
	R(calc.)	0.3067
	st.dev.(Horwitz)	0.18257
	R(Horwitz)	0.5112
Compare:		
	R(D5134:21)	0.0733

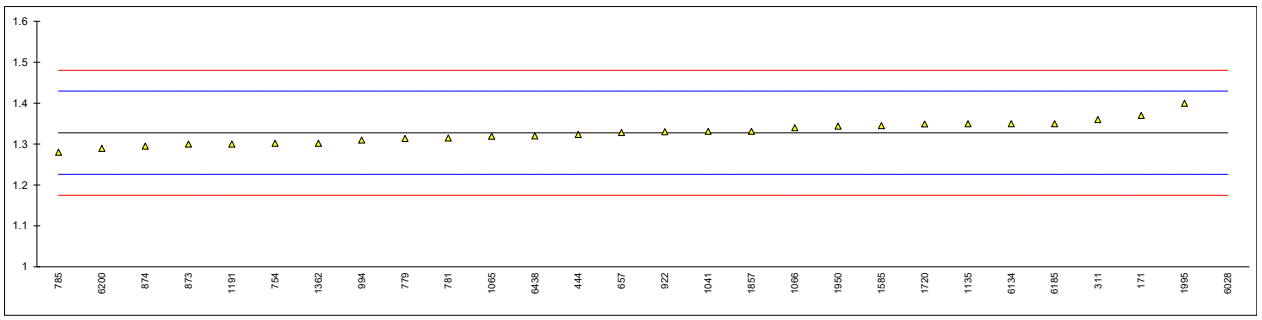

7
6.8
6.6
6.4
6.2
6
5.8
5.6
5.4
5.2
5
754
6185
1585
1065
6200
779
171
1066
657
994
1135
444
1362
874
1041
873
1857
1720
1950
781
785
922
6134
6438
311
6028

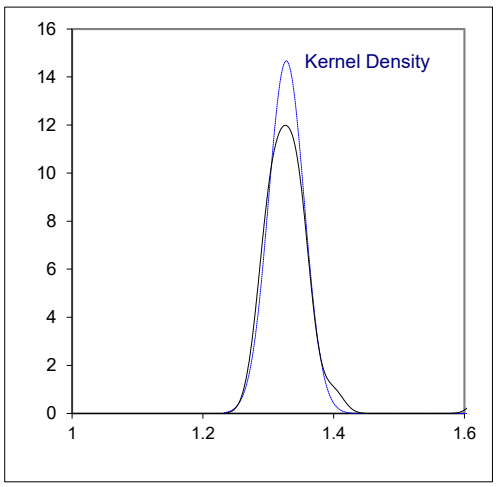

Kernel Density
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
5
5.5
6
6.5
7

Determination of Toluene on sample #22051; results in %M/M

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150		-----		-----	
171	D5134	1.37		0.83	
311	D5134	1.36		0.63	
323		-----		-----	
333		-----		-----	
334		-----		-----	
349		-----		-----	
360		-----		-----	
399		-----		-----	
444	D5134	1.3233		-0.09	
445		-----		-----	
657	D6730	1.3284		0.01	
754	D6729	1.302		-0.51	
779	D6729	1.314		-0.27	
781	D6729	1.315		-0.25	
785	D6729	1.28		-0.94	
798		-----		-----	
824		-----		-----	
855		-----		-----	
862		-----		-----	
864		-----		-----	
868		-----		-----	
873	GOST P52714	1.30		-0.54	
874	D6729	1.295		-0.64	
914		-----		-----	
922	D6729	1.33		0.04	
971		-----		-----	
994	D5134	1.31		-0.35	
1012		-----		-----	
1016		-----		-----	
1041	D5134	1.331		0.06	
1062		-----		-----	
1065	In house	1.319		-0.17	
1066	D5134	1.34		0.24	
1081		-----		-----	
1108		-----		-----	
1135	D5134	1.35		0.44	
1145		-----		-----	
1191	ISO22854-A	1.30		-0.54	
1362	D6729	1.302		-0.51	
1585	D5134	1.345	C	0.34	first reported 1.246
1586		-----		-----	
1656		-----		-----	
1720	D5134	1.349		0.42	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1823		-----		-----	
1857	D5134	1.331		0.06	
1862		-----		-----	
1950	D5134	1.344		0.32	
1995	D5443	1.4		1.42	
6028	D5134	1.63	R(0.01)	5.94	
6134	D6730	1.35		0.44	
6185	In house	1.35		0.44	
6198		-----		-----	
6200	D6730	1.2897		-0.75	
6379		-----		-----	
6438	D6730	1.32		-0.15	
6447		-----		-----	
9008		-----		-----	

	normality	OK
	n	27
	outliers	1
	mean (n)	1.3277
	st.dev. (n)	0.02718
	R(calc.)	0.0761
	st.dev.(Horwitz)	0.05089
	R(Horwitz)	0.1425
Compare:		
	R(D5134:21)	0.0412

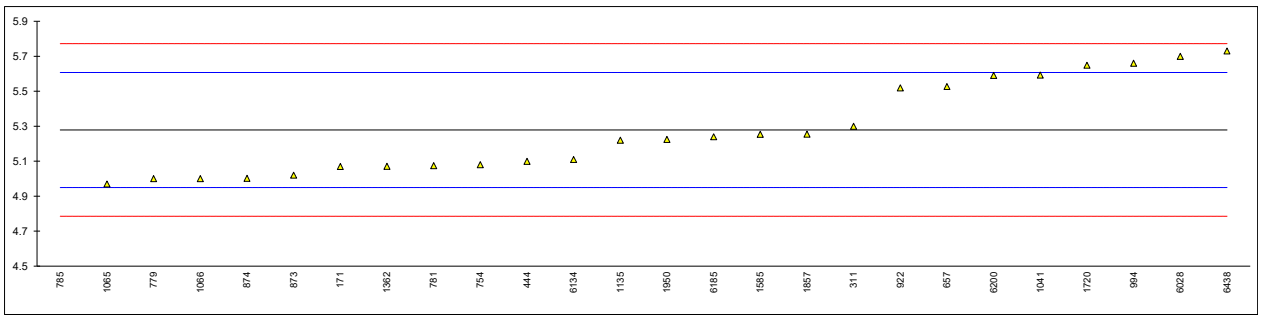

1.6
1.5
1.4
1.3
1.2
1.1
1
785
6200
874
873
1191
754
1362
994
779
781
1065
6438
444
657
922
1041
1857
1066
1950
1585
1720
1135
6134
6185
311
171
1995
6028


Kernel Density
16
14
12
10
8
6
4
2
0
1
1.2
1.4
1.6

Determination of Octane on sample #22051; results in %M/M

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150		-----		-----	
171	D5134	5.07		-1.27	
311	D5134	5.3		0.13	
323		-----		-----	
333		-----		-----	
334		-----		-----	
349		-----		-----	
360		-----		-----	
399		-----		-----	
444	D5134	5.0987		-1.09	
445		-----		-----	
657	D6730	5.5268	C	1.51	first reported 13.428
754	D6729	5.080		-1.21	
779	D6729	5.000		-1.69	
781	D6729	5.074		-1.24	
785	D6729	4.05	R(0.01)	-7.47	
798		-----		-----	
824		-----		-----	
855		-----		-----	
862		-----		-----	
864		-----		-----	
868		-----		-----	
873	GOST P52714	5.02		-1.57	
874	D6729	5.002		-1.68	
914		-----		-----	
922	D6729	5.52		1.47	
971		-----		-----	
994	D5134	5.66		2.32	
1012		-----		-----	
1016		-----		-----	
1041	D5134	5.593		1.91	
1062		-----		-----	
1065	In house	4.97		-1.88	
1066	D5134	5.00		-1.69	
1081		-----		-----	
1108		-----		-----	
1135	D5134	5.22		-0.36	
1145		-----		-----	
1191		-----		-----	
1362	D6729	5.071		-1.26	
1585	D5134	5.254		-0.15	
1586		-----		-----	
1656		-----		-----	
1720	D5134	5.649		2.25	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1823		-----		-----	
1857	D5134	5.255		-0.14	
1862		-----		-----	
1950	D5134	5.225		-0.32	
1995		-----		-----	
6028	D5134	5.70		2.57	
6134	D6730	5.11		-1.02	
6185	In house	5.24		-0.23	
6198		-----		-----	
6200	D6730	5.5907		1.90	
6379		-----		-----	
6438	D6730	5.73		2.75	
6447		-----		-----	
9008		-----		-----	

normality	OK
n	25
outliers	1
mean (n)	5.2784
st.dev. (n)	0.25917
R(calc.)	0.7257
st.dev.(Horwitz)	0.16437
R(Horwitz)	0.4602
Compare:	
R(D5134:21)	0.3695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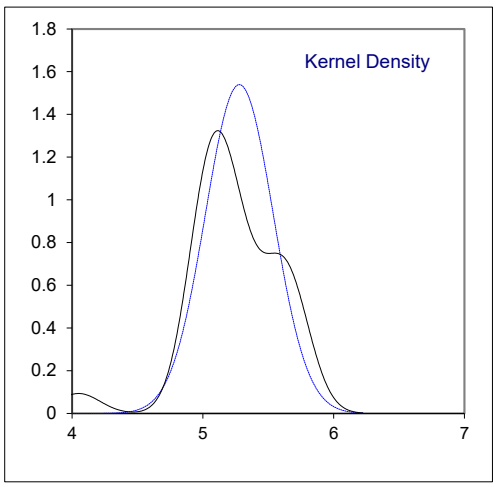
5.7
5.5
5.3
5.1
4.9
4.7
4.5
785
1065
779
1066
874
873
171
1362
781
754
444
6134
1135
1950
6185
1585
1857
311
922
657
6200
1041
1720
994
6028
6438


Kernel Density
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
4
5
6
7

APPENDIX 2

Number of participants per country

1 lab in	AUSTRALIA
1 lab in	AZERBAIJAN
3 labs in	BELGIUM
1 lab in	BULGARIA
6 labs in	CHINA, People's Republic
1 lab in	EGYPT
2 labs in	FINLAND
3 labs in	FRANCE
1 lab in	GERMANY
1 lab in	GREECE
2 labs in	INDIA
1 lab in	ISRAEL
1 lab in	ITALY
1 lab in	KOREA, Republic of
1 lab in	KUWAIT
1 lab in	MALTA
5 labs in	NETHERLANDS
1 lab in	NIGERIA
1 lab in	PAKISTAN
12 labs in	RUSSIAN FEDERATION
1 lab in	SAUDI ARABIA
1 lab in	SERBIA
1 lab in	SINGAPORE
1 lab in	SPAIN
1 lab in	SUDAN
1 lab in	SWEDEN
1 lab in	THAILAND
1 lab in	TUNISIA
1 lab in	UNITED ARAB EMIRATES
4 labs in	UNITED KINGDOM
3 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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7 P.L. Davies, Fr. Z. Anal. Chem, 331, 513, (1988)
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