Results of Proficiency Test
Naphtha
April 2017

CONTENTS

Appendices:

1   INTRODUCTION

Since 1994, the Institute for Interlaboratory Studies organizes a proficiency test for the analysis of Naphtha every year. The interlaboratory study on Naphtha was extended with PTs for the determination for Mercury, Arsenic/Lead and Vapour Pressure.

In the annual proficiency testing program of 2016/2017, it was decided to continue the 4 PTs on Naphtha. For participation have registered; in the main PT, 99 laboratories in 43 different countries; in the PT for Mercury, 48 laboratories in 25 different countries; in the PT for Arsenic and Lead, 37 laboratories in 18 different countries and in the PT for Vapour Pressure, 67 laboratories in 30 different countries. See appendix 2 for the number of participants per country per PT. In this report, the results of the 2017 proficiency test are presented and discussed. This report is also electronically available through the iis website www.iisnl.com.

2   SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organizer of this proficiency test. Sample analyses for fit-for-use and homogeneity testing were subcontracted to an ISO/IEC 17025 accredited laboratory. In this proficiency test, the participants received, depending on the registration, from one up to seven different samples of Naphtha, see table below. As the Mercury and Arsenic/Lead determination was problematic in previous round robins, it was decided to prepare also synthetic (artificial) Naphtha with a known amount of Arsenic and Lead and synthetic (artificial) Naphtha with a known amount of Mercury.

Samples	Type of bottle	Purpose	Matrix
#17045	0.5 L	For regular analyses	Real Naphtha
#17046	30 ml	For GC analyses	Real Naphtha
#17047	0.5 L	For Mercury	Artificial Naphtha
#17048	0.5 L	For Mercury	Real Naphtha
#17049	0.5 L	For Arsenic and Lead	Artificial Naphtha
#17050	0.5 L	For Arsenic and Lead	Real Naphtha
#17051	0.25 L	For DVPE	Real Naphtha

Table 1: Seven different Naphtha samples used in iis17N01

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/IEC 17043:2010 (R007), since January 2000, by the Dutch Accreditation Council (Raad voor Accreditatie). These PTs fall 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 organisation of these proficiency tests was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of March 2017 (iis-protocol, version 3.4). This protocol is electronically available through the iis website site 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

One drum with approx. 200 litres of light Naphtha was obtained from a local supplier. This batch was used to prepare five different samples;
After homogenisation a part of the batch was divided over 115 brown glass bottles of 0.5 litre and labelled #17045. The homogeneity of subsamples #17045 was checked by determination of Density at 15°C in accordance with ASTM D4052 on 8 stratified randomly selected samples, see table 2.

	Density at 15°C in kg/L		Density at 15°C in kg/L
sample #17045-1	0.72297	sample #17045-5	0.72296
sample #17045-2	0.72303	sample #17045-6	0.72294
sample #17045-3	0.72295	sample #17045-7	0.72294
sample #17045-4	0.72296	sample #17045-8	0.72296

Table 2: homogeneity test results of subsamples #17045

A second part, approximately 19 kg, was taken from the Naphtha batch and spiked with 1890 mg MTBE (98% pure) and 1980 mg Methanol (99.97% pure) especially for the GC analyses (so-called PIONA). After homogenisation 115 amber glass bottles of 30 ml were filled and labelled #17046. The homogeneity of subsamples #17046 was checked by determination of MTBE in accordance with an in house test method on 8 stratified randomly selected samples, see table 3.

	MTBE in mg/kg		MTBE in mg/kg
sample #17046-1	96.3	sample #17046-5	93.8
sample #17046-2	93.7	sample #17046-6	94.8
sample #17046-3	94.1	sample #17046-7	95.3
sample #17046-4	94.4	sample #17046-8	96.7

Table 3: homogeneity test results of subsamples #17046

A third part, approximately 25 kg, was taken from the Naphtha batch and spiked with 4 gram Conostan Hg std (100 mg/kg) and with 445 µg HgCl$_2$ especially for Mercury determination. After homogenisation 71 amber glass bottles of 0.5 litres were filled and labelled #17048. The homogeneity of subsamples #17048 was checked by determination of Mercury in accordance with UOP938-B on 4 stratified randomly selected samples, see table 4.

	Mercury in µg/kg
sample #17048-1	27.9
sample #17048-2	28.8
sample #17048-3	29.8
sample #17048-4	31.4

Table 4: homogeneity test results of subsamples #17048

A fourth part, approximately 22 kg, was taken from the Naphtha batch and spiked with 7 gram Conostan As std (100mg/kg) and with 1.5 gram AvGas (0.54 g Pb/L) especially for Arsenic and Lead determination. After homogenisation 55 amber glass bottles of 0.5 litres were filled and labelled #17050. The homogeneity of subsamples #17050 was checked by determination of Lead in accordance with an in house test method on 4 stratified randomly selected samples, see table 5.

	Lead in µg/kg
sample #17050-1	60
sample #17050-2	60
sample #17050-3	60
sample #17050-4	65

Table 5: homogeneity test results of subsamples #17050

The fifth part, approximately 25 litre, of the Naphtha batch was taken especially for DVPE determination and after homogenisation divided over 75 brown glass bottles of 0.25 litres and labelled #17051. The homogeneity of subsamples #17051 was checked by determination of DVPE in accordance with ASTM D5191 on 8 stratified randomly selected samples, see table 6.

	DVPE in psi		DVPE in psi
sample #17051-1	5.60	sample #17051-5	5.55
sample #17051-2	5.64	sample #17051-6	5.58
sample #17051-3	5.61	sample #17051-7	5.57
sample #17051-4	5.61	sample #17051-8	5.58

Table 6: homogeneity test results of subsamples #17051

Furthermore, a batch of approx. 60 kg of artificial Naphtha was prepared, see table 7.

Gasoline 100/140	41.9 kg
Petroleum Ether 40/60	4.7 kg
Cyclo Hexane	5.7 kg
Mixed-Xylenes	6.2 kg

Table 7: composition of artificial Naphtha

A part, approximately 25 kg, of the artificial Naphtha batch was spiked with 3 gram Conostan Hg std (100mg/kg) and with 316 µg $HgCl_2$ especially for Mercury determination. After homogenisation 66 amber glass bottles of 0.5 litres were filled and labelled #17047. The homogeneity of subsamples #17047 was checked by determination of Mercury in accordance with UOP938-B on 4 stratified randomly selected samples, see table 8.

	Mercury in µg/kg
sample #17047-1	12.1
sample #17047-2	12.5
sample #17047-3	13.8
sample #17047-4	12.1

Table 8: homogeneity test results of subsamples #17047

Another part, approximately 22 kg of the artificial Naphtha batch, was spiked with 4 gram Conostan As std (100mg/kg) and with 1.9 gram AvGas (0.54 g Pb/L) especially for Arsenic and Lead. After homogenisation of this, part 54 amber glass bottles of 0.5 litres were filled and labelled #17049. The homogeneity of subsamples #17049 was checked by determination of Arsenic and Lead in accordance with an in house test method on 4 stratified randomly selected samples, see table 9.

	Lead in µg/kg
sample #17049-1	85
sample #17049-2	90
sample #17049-3	95
sample #17049-4	90

Table 9: homogeneity test results of subsamples #17049

From the test results given in tables 2 - 9, besides table 7, the repeatabilities were calculated and compared with 0.3 times the corresponding reproducibilities of the reference test methods or with 0.3 times the reproducibility using the Horwitz equation in agreement with the procedure of ISO 13528, Annex B2 in the next table;

	Density in kg/L	MTBE in mg/kg	Mercury in µg/kg	Lead in µg/kg	DVPE in psi
r (#17045)	0.00008	--	--	--	--
r (#17046)	--	3.2	--	--	--
r (#17047)	--	--	2.3	--	--
r (#17048)	--	--	4.2	--	--
r (#17049)	--	--	--	11.4	--
r (#17050)	--	--	--	7.0	--
r (#17051)	--	--	--	--	0.08
0.3*R (ref.)	0.00015	6.4	3.3 / 6.7	17.4 / 12.5	0.12
reference	ISO12185:96	Horwitz	Horwitz	Horwitz	D5191:15

Table 10: repeatabilities of subsamples #17045, #17046, #17047, #17048, #17049, #17050 and #17051

The calculated repeatabilities of all samples, #17045 through #17051, were all in agreement with 0.3 times the corresponding reproducibilities of the reference test methods or with 0.3 times the estimated reproducibilities using the Horwitz equation. Therefore, the homogeneity of all prepared subsamples was assumed.
To each of the participating laboratories, depending on its registration, one or more of the following samples were sent on March 29, 2017. An SDS was added to the sample package.

Bottle size	Sample id.	Determinations
1 x 0.5 litre	#17045	Regular tests
1 x 0.03 litre	#17046	PIONA/PONA only
1 x 0.5 litre, each	#17047 & #17048	Mercury only
1 x 0.5 litre, each	#17049 & #17050	Arsenic/Lead only
1 x 0.25 litre	#17051	Vapour Pressure only

Table 11: bottle sizes, sample identification and determinations

2.5   STABILITY OF THE SAMPLES

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

2.6 ANALYSES

The participants were asked to determine the following analyses;
on <u>sample #17045</u>: Organic Chlorides, Colour Saybolt (Manual and/or Automated), Copper Corrosion 3hrs at 50°C, Density at 15°C, Distillation (IBP, 50% recovered and FBP), Mercaptan Sulphur as S and Sulphur.
on <u>sample #17046</u>: Oxygenates: Acetone, DIPE, MEK, Methanol, MTBE, TAME, Total Oxygenates, PIONA / PONA / PNA GC Determination (n-Paraffines, i-Paraffines, Olefins, Naphthenes, Aromatics, C4 & lighter hydrocarbons and Compounds with BP > 200°C) and Detail Hydrocarbon Analysis (DHA) (Pentane, Benzene, Cyclohexane, 2- or 3-Methylpentane, Heptane, Toluene and Octane).
on <u>samples #17047 and #17048</u>: Mercury only.
on <u>samples #17049 and #17050</u>: Arsenic and Lead only.
on <u>sample #17051</u>: TVP / DVPE only.

It was explicitly requested to treat the samples as if they were routine samples. Therefore, each laboratory is advised to perform only those analyses that normally are done in daily routine (but the laboratories are allowed to do all analyses). Furthermore, it was requested to report the test results using the indicated units on the report form and not to round the test results more, 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 calculations.

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 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 reanalysis). Additional or corrected test results are used for data analysis and original test results are placed under 'Remarks' in the test result tables in appendix 1. Test results that came in after the deadline were not taken into account in this screening for suspect data and thus these participants were not requested for checks.

3.1   STATISTICS

The protocol followed in the organization of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of March 2017 (iis-protocol, version 3.4).
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.

According to ISO 5725 the original test results per determination were submitted to Dixon's, Grubbs' and/or Rosner's outlier tests. 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. When the uncertainty passed the evaluation, no remarks are made in the report. However, when the uncertainty failed the evaluation it is mentioned in the report and it will have consequences for the evaluation of the test results.
Finally, the reproducibilities were calculated from the standard deviations by multiplying them with a factor of 2.8.

3.2   GRAPHICS

In order to visualise the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported 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 was projected over the Kernel Density Graph for reference.

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, e.g. ASTM or IP reproducibilities, the z-scores were calculated using a target standard deviation. This results in an evaluation independent of the variation of 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 targets values were used. In some cases a reproducibility based on former iis proficiency tests could be used.

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

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

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

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

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

4   EVALUATION

In this interlaboratory study, major problems with sample dispatch were encountered during the execution. Laboratories in Afghanistan, Brazil, Mexico, Nigeria and Saudi Arabia received the samples late or not at all due to several problems (i.e. customs clearance). Some laboratories reported that the equipment was in repair or broken and could therefore not analyse the samples (5 participants mentioned this for the Hg samples #17047 and #17048 and another 5 participants for the As-Pb samples #17049 and #17050).
Not all laboratories were able to report all analyses requested. Finally reported; 91 participants for sample #17045, 61 participants for sample #17046, 37 participants for sample #17047 and #17048, 22 participants for sample #17049 and #17050 and 59 participants for sample #17051 in total 1723 numerical test results. Observed were in total 84 outlying test results, which is 4.9%. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

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

4.1   EVALUATION PER SAMPLE AND PER TEST

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

Unfortunately, a suitable reference test method providing the precision data is not available for all determinations. For the tests that have no available precision data the calculated reproducibility was compared against the reproducibility estimated from the Horwitz equation.

In the iis PT reports, ASTM test methods are referred to with a number (e.g. D5808) and an added designation for the year that the test method was adopted or revised (e.g. D5808:09a). If applicable, a designation in parentheses is added to designate the year of reapproval (e.g. D5808:09a(2014)). In the test results tables of Appendix 1 only the test method number and year of adoption or revision e.g. D5808:09a will be used.

Sample #17045

Organic Chloride: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirement of UOP779:08.

Colour Saybolt: This determination was not problematic for both the manual and the automated modes. Three statistical outliers were observed for the manual mode and one statistical outlier for the automated mode.
The calculated reproducibilities after rejection of the statistical outliers for the manual and the automated modes are both in agreement with the respective requirements of ASTM D156:15 and ASTM D6045:12.

Copper Corrosion: No problems have been observed. All reporting participants agreed on a test result of 1(1A or 1B).

Density at 15°C: This determination may be problematic for a number of laboratories. Five statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirement of ISO12185:96.

Distillation: This determination was not problematic for 50% recovered and FBP but problematic for IBP (compared to the automatic mode only). In total three statistical outliers were observed. The calculated reproducibilities after rejection of the statistical outliers are in agreement with the requirements of ASTM D86-A:16a (automated mode) for 50% recovered and FBP but not for IBP. For the manual mode the calculated reproducibilities are in agreement with the requirements of ASTM D86-M:16a.

Mercaptan Sulphur: This determination was problematic. Six statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirement of ASTM D3227:16.

Sulphur: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in full agreement with the requirement of ASTM D4294:16e1. When the test results are evaluated per type of analysis only (ED XRF, WD XRF, UV F) the calculated reproducibilities are in agreement with the requirements of their respective test methods except for UV F. The average of UV F test results is low compared to the other two test methods which was also observed in the PT of 2016 (iis16N01).

Sample #17046

Acetone: This determination may be problematic at the level of 1 mg/kg. One statistical outlier was observed and one another test result was excluded. The calculated reproducibility after rejection of the suspect data is not in agreement with the estimated reproducibility using the Horwitz equation.

DIPE: No significant conclusions were drawn. All laboratories agreed on a value "less 10 mg/kg". One laboratory reported the sum of MTBE and DIPE.

MEK: This determination may be problematic at the level of 3 mg/kg. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the estimated reproducibility using the Horwitz equation.

Methanol: This determination is very problematic. The reported test results varied over a wide range of 0-175.9 mg/kg. The samples were spiked with Methanol. Therefore, the minimum Methanol concentration to be found was known (103 mg/kg). The laboratories should be able to find at least 84 mg/kg [103 mg/kg$_{(added amount)}$ − 19 mg/kg$_{(R Horwitz)}$]. Fifteen laboratories (>50%) reported a test result below this minimum concentration of 84 mg/kg. Therefore, it was decided not to calculate z-scores.

MTBE: This determination may be problematic at the level of 96 mg/kg. The samples were spiked with MTBE. Therefore, the minimum MTBE concentration to be found was known (97 mg/kg). The laboratories should be able to find at least 75 mg/kg [97 mg/kg$_{(added amount)}$ − 22 mg/kg$_{(R Horwitz)}$]. All laboratories were able to find at least 75 mg/kg MTBE.
No statistical outliers were observed, but two test values were excluded. The calculated reproducibility after rejection of the suspect data is not in agreement with the estimated reproducibility using the Horwitz equation.

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

Total Oxygenates: This determination may not be problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the estimated reproducibility using the Horwitz equation (based on 5 components).

PONA/PIONA (General): For this determination test results could be reported for 7 groups of compounds; n-Paraffines, i-Paraffines, Naphthenes, Aromatics, C4 and lighter and compounds with BP >200°C. Test results could be reported in %V/V and %M/M. This gives in total 14 parameters (see appendix 1). The test results are related as in general the sum of the groups is normalized to 100% (per unit). When 4 or more of the test results are observed as statistical outliers the other related test results were excluded. The determination is discussed per group of compounds in more details below.

Most observed reproducibilities were in line with obtained reproducibilities of previous rounds (see table 12):

	2017	2016	2015	2014	2013	2012	2011	2010	ASTM
n-Paraffines	9.8%	6.8%	3.3%	8.5%	7.6%	5.7%	6.8%	5.1%	3.2%
i-Paraffines	7.3%	6.5%	1.6%	6.0%	5.9%	4.0%	5.4%	4.0%	3.1%
Olefins *)	144%	186%	n.e.	325%	225%	259%	271%	220%	250%
Naphthenes	5.6%	5.2%	5.3%	3.0%	3.4%	5.9%	13%	10%	1.9%
Aromatics	13%	11%	10%	12%	13%	8.8%	5.7%	12%	8.9%
C4 & lighter	28%	28%	32%	44%	19%	19%	27%	38%	17%

Table 12: comparison of observed relative reproducibilities (%M/M) compared to the target relative reproducibility

*) the high values for Olefins are probably due to low concentrations in Naphtha.

n-Paraffines: This determination was very problematic for both %V/V and %M/M. For %V/V two statistical outliers were observed and two other test results were excluded. For %M/M two statistical outliers were observed and three other test results were excluded. The calculated reproducibilities after rejection of the suspect data are not at all in agreement with the requirements of ASTM D5443:14 or with the requirements of test method ASTM D6839:17.

i-Paraffines: This determination was very problematic for both %V/V and %M/M. For both %V/V and %M/M four statistical outliers were detected and one test result was excluded. The calculated reproducibilities after rejection of the suspect data are not at all in agreement with the requirements of ASTM D5443:14 or with the requirements of test method ASTM D6839:17.

Naphthenes: This determination was very problematic for both %V/V and %M/M. For %V/V two statistical outliers were observed and eleven test results were excluded. For %M/M one statistical outlier was observed and thirteen test results were excluded. The test results of test methods; ASTM D5134, ASTM D6729, ASTM D6730, GOST R 52714, ISO 22854 were excluded as these test methods are meant for DHA. It appeared that DHA test methods are not so suitable for the (more complex) Naphthenes determination. The calculated reproducibilities after rejection of the suspect data are not at all in agreement with the requirements of ASTM D5443:14.

Aromatics: This determination was not problematic for %V/V but only for %M/M. For %V/V six statistical outliers were observed. For %M/M seven statistical outliers were observed. However, the calculated reproducibility for %V/V after rejection of the statistical outliers is in agreement with the requirement of ASTM D5443:14 but the calculated reproducibility for %M/M is not in agreement.

≤ C4:   This determination was problematic for both %V/V and %M/M. For both groups three statistical outliers were observed and two test results were excluded. The calculated reproducibilities after rejection of the suspect data are not in agreement with the requirements of ASTM D5134:14.

BP>200°C: No statistical outliers were observed for the test results in %V/V and %M/M but one test result excluded. No precision data is available for the determination of this group. Therefore, no significant conclusions were drawn.

Olefines: This determination was not problematic for both %V/V and %M/M. For both groups three statistical outliers were observed and in total three test results were excluded. The calculated reproducibilities after rejection of the suspect data are in good agreement with the requirements of ASTM D6839:16.

Pentane (DHA):   This determination was problematic at a concentration of 5.9%M/M. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirement of ASTM D5134:13.

Benzene (DHA):   This determination was not problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is in agreement with the requirement of ASTM D5134:13.

Cyclohexane (DHA): This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirement of ASTM D5134:13.

2-Methylpentane (DHA): This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirement of ASTM D5134:13.

3-Methylpentane (DHA): This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirement of ASTM D5134:13.

Heptane (DHA): When the test results were evaluated against the requirement of ASTM D5134:13 the determination was very problematic: R(calc.)=0.25, while R(D5134:13)=0.07. In PT of 2016 (iis16N01) it was observed that the raw data of the interlaboratory study RR:D02-1265 by ASTM to calculate the precision of n-Heptane do not match, see report iis16N01 of the PT on Naphtha of 2016. The estimated reproducibility using the Horwitz equation describes the reproducibility of n-Heptane much better. Therefore, the estimated reproducibility using the Horwitz equation was used to calculate the z-scores.

The determination of n-Heptane may not be problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is in agreement with the estimated reproducibility using the Horwitz equation.

Toluene (DHA): When the test results were evaluated against the requirement of ASTM D5134:13 the determination was very problematic: R(calc.)=0.12, while R(D5134:13)=0.04. Therefore, analogue to the approach with n-Heptane the estimated reproducibility using the Horwitz equation was used to calculate z-scores.

This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the estimated reproducibility using the Horwitz equation.

Octane (DHA): This determination was problematic at a concentration of 5.2%M/M. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirement of ASTM D5134:13.

Samples #17047 and #17048

Mercury: For sample #17047 (artificial Naphtha), this determination may not be problematic. Sample #17047 was spiked up to a level of 25 µg/kg Hg. No statistical outliers were observed. The calculated reproducibility is in good agreement with the estimated reproducibility using the Horwitz equation. The average recovery of Mercury may be a bit low: "<65%".

For sample #17048 (real Naphtha), this determination may also not be problematic. Sample #17048 was spiked up to a level of 34 µg/kg Hg. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the estimated reproducibility using the Horwitz equation. The average recovery of Mercury may be good: "<97%".

Samples #17049 and #17050

Arsenic: For sample #17049 (artificial Naphtha), this determination was problematic. Sample #17049 was spiked up to a level of 19 µg/kg As. Only five results were reported. These test results varied from 2.2 to 17 µg/kg Arsenic. Therefore, no z-scores were calculated.

                              For sample #17050 (real Naphtha), this determination was not problematic. Sample #17050 was spiked up to a level of 31 µg/kg As. Therefore, the minimum As concentration to be found was known. The laboratories should be able to find at least 13 µg/kg [31 µg/kg$_{(added\ amount)}$ − 18 µg/kg$_{(R\ Horwitz)}$]. One test result below this minimum of 13 µg/kg is excluded for statistical evaluation. No statistical outliers were observed. The calculated reproducibility after rejection of the suspect data is in full agreement with the estimated reproducibility using the Horwitz equation. The average recovery of Arsenic may be satisfactory: "<75%".

Lead: For sample #17049 (artificial Naphtha), this determination may be problematic. Sample #17049 was spiked up to a level of 66 µg/kg Pb. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the estimated reproducibility using the Horwitz equation. The average recovery of Lead may be good: "<106%".

                              For sample #17050 (real Naphtha), this determination may be problematic. Sample #17050 was spiked up to a level of 53 µg/kg Pb. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the estimated reproducibility using the Horwitz equation. The average recovery of Lead may be satisfactory: "<87%".

Sample #17051

TVP: This determination was not problematic. Four statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with the requirement of ASTM D5191:15.

DVPE: This determination was not problematic. Five statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with the requirement of ASTM D5191:15.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the relevant reference test method and the reproducibility as found for the group of the participating laboratories. The target reproducibilities derived from the reference test methods (in casu ASTM test methods) or the estimated reproducibility using the Horwitz equation and the calculated reproducibilities (2.8 * sd) of the samples (see appendix 1) are compared in the next table.

Parameter	unit	n	average	2.8 * sd	R (lit)
Organic Chloride	mg/kg	38	31.2	7.6	7.3
Color Saybolt (automated)		32	29.9	0.9	1.2
Color Saybolt (manual)		33	29.9	0.8	2
Copper Corrosion		57	1 (1A)	n.a.	n.a.
Density at 15°C	kg/L	83	0.7230	0.0005	0.0005
Initial Boiling Point	°C	77	40.2	6.1	4.7
50% recovered	°C	74	110.3	2.1	4.1
Final Boiling Point	°C	77	169.1	6.9	7.1
Mercaptan Sulphur	mg/kg	53	96.1	9.4	7.1
Sulphur	mg/kg	71	327	82	80

Table 13: comparison of the observed and target reproducibilities of the sample #17045

Parameter	unit	n	average	2.8 * sd	R (lit)
Acetone	mg/kg	16	0.98	0.58	0.44
DIPE	mg/kg	23	<10	n.a.	n.a.
MEK	mg/kg	17	3.2	1.4	1.2
Methanol	mg/kg	26	82	71	(19)
MTBE	mg/kg	28	96	27	22
TAME	mg/kg	10	0.38	0.16	0.20
Total Oxygenates	%M/M	22	0.018	0.009	0.008
n-Paraffines	%V/V	39	31.3	2.9	1.0
i-Paraffines	%V/V	36	32.7	2.3	1.0
Naphthenes	%V/V	30	30.0	1.7	0.6
Aromatics	%V/V	38	5.72	0.71	0.67
C4 & lighter	%V/V	26	1.76	0.55	0.28
Compounds bp > 200°C	%V/V	10	0.23	0.48	n.a.
Olefins	%V/V	32	0.15	0.21	0.30
n-Paraffines	%M/M	41	29.4	2.9	0.9
i-Paraffines	%M/M	39	31.4	2.3	1.0
Naphthenes	%M/M	32	32.2	1.8	0.6
Aromatics	%M/M	40	6.9	0.9	0.7
C4 & lighter	%M/M	26	1.4	0.4	0.2
Compounds bp >200 °C	%M/M	11	0.24	0.57	n.a.
Olefins	%M/M	33	0.15	0.22	0.30
Pentane (DHA)	%M/M	36	5.88	0.91	0.46
Benzene (DHA)	%M/M	38	0.50	0.06	0.06

Parameter	unit	n	average	2.8 * sd	R (lit)
Cyclohexane (DHA)	%M/M	33	2.00	0.16	0.23
2-Methylpentane (DHA)	%M/M	33	3.27	0.33	1.11
3-Methylpentane (DHA)	%M/M	32	2.24	0.23	0.76
Heptane (DHA)	%M/M	36	5.74	0.25	0.49
Toluene (DHA)	%M/M	35	1.43	0.12	0.15
Octane (DHA)	%M/M	36	5.24	0.76	0.37

Table 14: comparison of the observed and target reproducibilities of the sample #17046

Parameter	unit	n	average	2.8 * sd	R (lit)
Mercury as Hg #17047	µg/kg	36	16.2	5.7	13.5
Mercury as Hg #17048	µg/kg	36	33.1	12.4	24.8

Table 15: comparison of the observed and target reproducibility of sample #17047 and #17048

Parameter	unit	n	average	2.8 * sd	R (lit)
Arsenic as As #17049	µg/kg	5	9.4	16.1	(8.5)
Arsenic as As #17050	µg/kg	5	23.1	16.0	18.3
Lead as Pb #17049	µg/kg	20	69.9	54.9	46.7
Lead as Pb #17050	µg/kg	20	46.3	37.8	32.9

Table 16: comparison of the observed and target reproducibilities of the samples #17049 and #17050

Parameter	unit	n	average	2.8 * sd	R (lit)
TVP	psi	46	6.29	0.19	0.40
DVPE	psi	54	5.52	0.25	0.40

Table 17: comparison of the observed and target reproducibilities of the sample #17051

For R(lit) given between brackets no z-scores were calculated, see discussion in paragraph 4.1.

Without further statistical calculations, it can be concluded that for a number of tests there is not a reasonable compliance of the group of participating laboratories with the relevant reference test methods. The problematic tests have been discussed in paragraph 4.1.

4.3   COMPARISON OF THE PROFICIENCY TEST OF APRIL 2017 WITH PREVIOUS PTS

	April 2017	April 2016	April 2015	April 2014	March 2013
Number of reporting labs	100	93	84	74	72
Number of test results reported	1723	1664	1560	1304	1339
Statistical outliers	84	88	52	49	101
Percentage outliers	4.9%	5.3%	3.3%	3.8%	7.5%

Table 18: comparison with previous proficiency tests

In proficiency tests, outlier percentages of 3% - 7.5% are quite normal.
The performance of the determinations of the proficiency tests was compared against the requirements of the respective reference test methods. The conclusions are given the following table:

Determination	April 2017	April 2016	April 2015	April 2014	March 2013
Organic Chloride	+/-	--	+	--	n.e.
Colour Saybolt	++	--	++	++	++
Density at 15°C	+/-	+/-	++	++	+
Distillation	+/-	-	++	+	+
Mercaptan Sulphur	-	-	n.a.	--	-
Sulphur	+/-	+/-	n.a.	--	+/-
Acetone	-	n.e.	n.e.	n.e.	n.e.
DIPE	n.e.	n.e.	n.e.	n.e.	n.e.
MEK	-	+/-	n.e.	n.e.	n.e.
Methanol	--	n.e.	--	--	--
MTBE	-	+	+/-	--	-
TAME	+	+/-	n.e.	n.e.	n.e.
Total Oxygenates	+/-	+/-	+	--	-
n-Paraffines	--	--	-	--	--
i-Paraffines	--	--	+	--	--
Naphthenes	--	--	--	--	--
Aromatics	+/-	+/-	++	+	-
C4 & lighter	--	--	--	--	-
Olefins	+	+	n.e.	--	+
DHA analyses	+	+/-	+/-	n.e.	n.e.
Mercury	++	+	+	++	+/-
Arsenic	+/-	+	+/-	+/-	--
Lead	-	+/-	--	--	--
Total Vapour Pressure	++	+	++	++	+
DVPE acc. to D5191	+	+	++	++	+

Table 19: comparison of the determinations against the requirements of the reference test methods

The performance of the determinations against the requirements of the respective reference test methods is listed in the above table. 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 Chlorides, Organic Total on sample #17045; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
140		-----		-----	
150	D7359	30.013		-0.45	
158		-----		-----	
171	D5808	24.0		-2.75	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	D5808	>25		-----	
317	UOP779	29		-0.83	
322	D5808	32.0		0.32	
323	D5808	33.0		0.70	
333	EN14077	29		-0.83	
334		-----		-----	
336		-----		-----	
337		-----		-----	
349	UOP588	33	C	0.70	first reported: 13
360		-----		-----	
399		-----		-----	
444	IP510	37.0		2.24	
445	IP510	26		-1.99	
494	EN14077	33.54		0.91	
529		-----		-----	
541		-----		-----	
557		-----		-----	
608		-----		-----	
657	D5808	33.6		0.94	
663	D5808	33.1		0.74	
750		-----		-----	
753		-----		-----	
754	UOP779	29.8		-0.53	
759		-----		-----	
779		-----		-----	
781	UOP779	30.62		-0.21	
785		-----		-----	
786		-----		-----	
824		-----		-----	
840	UOP588	26.2		-1.91	
855	D5808	32.9		0.65	
862	D5808	32.6		0.55	
864	D5808	31.7		0.20	
868	D5808	31.8		0.24	
872	UOP779	31.96		0.30	
873	UOP588	28.5		-1.03	
874		-----		-----	
875	UOP779	33		0.70	
912		-----		-----	
922		-----		-----	
963		-----		-----	
974		-----		-----	
982		-----		-----	
994		-----		-----	
995		-----		-----	
998		-----		-----	
1012		-----		-----	
1016		-----		-----	
1062		-----		-----	
1065	D7359	26.36		-1.85	
1066	UOP779	32		0.32	
1067	UOP779	33		0.70	
1081		-----		-----	
1107		-----		-----	
1145		-----		-----	
1201	D5808	30.4		-0.30	
1251		-----		-----	
1254		-----		-----	
1257		-----		-----	
1276		-----		-----	
1357	UOP779	33.5		0.89	
1429	D7359	35.0		1.47	
1455	UOP779	30		-0.45	
1556		-----		-----	
1585		-----		-----	
1603	In house	30		-0.45	
1613		-----		-----	

lab	method	value	mark	z(targ)	remarks
1631		-----		-----	
1653		-----		-----	
1656		-----		-----	
1737		-----		-----	
1741	D4929	31.4		0.09	
1776		-----		-----	
1788	D5808	32.4		0.48	
1796		-----		-----	
1810		-----		-----	
1823		-----		-----	
1857	UOP779	31		-0.07	
1858		-----		-----	
1949	UOP779	29.5		-0.64	
1950	UOP779	29.3		-0.72	
1967	IP510	30.5		-0.26	
1995	D7536	36		1.85	
6016		-----		-----	
6090		-----		-----	
7006	D5808	31.9		0.28	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9090		-----		-----	

	normality	OK		
	n	38		
	outliers	0		
	mean (n)	31.174		
	st.dev. (n)	2.7119		
	R(calc.)	7.593		
	R(UOP779:08)	7.293		application range 0.3-1000 mg/kg
Compare	R(D5808:09a)	1.3		application range 1-25 mg/kg
Compare	R(Horwitz)	8.322		

Kernel Density
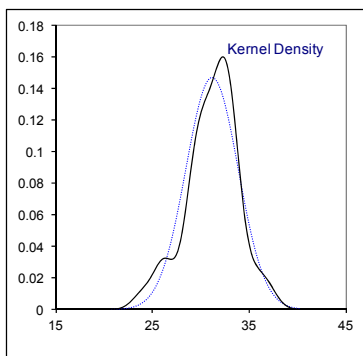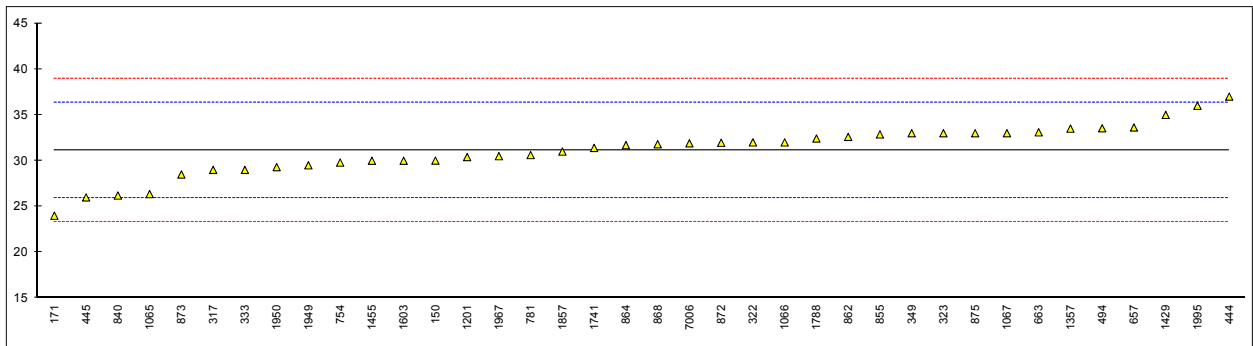
Determination of Color Saybolt Automated (D6045) and manual (D156) on sample #17045

lab	automatic	cuvette	value	mark	z(targ)	filter	manual	value	mark	z(targ)
120	D6045		29		-1.98			-----		-----
140			-----		-----		D156	30		0.13
150	D6045		>30		-----			-----		-----
158			-----		-----			-----		-----
171	D6045		>30		-----		D156	30		0.13
225	D6045		>30		-----			-----		-----
237			-----		-----	1	D156	30	C	0.13
238			-----		-----		D156	29		-1.27
311			-----		-----			-----		-----
317			-----		-----	0.5	D156	30		0.13
322			-----		-----	0.5	D156	30		0.13
323	D6045	50	29		-1.98			-----		-----
333	D6045		30		0.28			-----		-----
334			-----		-----		D156	28	R(0.01)	-2.67
336			-----		-----		D156	30		0.13
337			-----		-----			-----		-----
349	D6045		30		0.28			-----		-----
360			-----		-----	0.5	D156	30		0.13
399			-----		-----			-----		-----
444	D6045	50	>30		-----			-----		-----
445	D6045	50	30		0.28			-----		-----
494	D6045	50	27	R(0.01)	-6.49			-----		-----
529			-----		-----			-----		-----
541	D6045	100	>30		-----			-----		-----
557			-----		-----			-----		-----
608			-----		-----	1	D156	30		0.13
657			-----		-----	0.5	D156	30		0.13
663			-----		-----	0.5	D156	30		0.13
750			-----		-----		D156	30		0.13
753	D6045	100	>30		-----			-----		-----
754	D6045		>30		-----			-----		-----
759	D6045		30		0.28			-----		-----
779	D6045		>30		-----			-----		-----
781			-----		-----	0.5	D156	30		0.13
785	D6045	50.00	30		0.28			-----		-----
786			-----		-----			-----		-----
824	D6045	50	30		0.28			-----		-----
840			-----		-----			-----		-----
855	D6045	50	30		0.28			-----		-----
862	D6045	100	30		0.28	0.5	D156	30		0.13
864	D6045	100	30		0.28			-----		-----
868	D6045		30		0.28			-----		-----
872	D6045		>30		-----			-----		-----
873	D6045	50	30		0.28			-----		-----
874	D6045		30		0.28			-----		-----
875	D6045	50.00	30		0.28			-----		-----
912			-----		-----		D156	30		0.13
922	D6045	100	30		0.28	0.5	D156	30		0.13
963			-----		-----			-----		-----
974	D6045	100	29		-1.98	0.5	D156	29		-1.27
982			-----		-----	0.5	D156	28	C,R(0.01)	-2.67
994	D6045	50	30		0.28	0.5	D156	30		0.13
995			-----		-----		D156	30		0.13
998			-----		-----			-----		-----
1012	D6045		>30		-----			-----		-----
1016	D6045	100	>30		-----			-----		-----
1062			-----		-----			-----		-----
1065			-----		-----			-----		-----
1066			-----		-----		D156	29		-1.27
1067	D6045	100	30		0.28	0.5	D156	30		0.13
1081			-----		-----			-----		-----
1107			-----		-----			-----		-----
1145			-----		-----			-----		-----
1201	D6045	100	30		0.28	0.5	D156	30		0.13
1251			-----		-----			-----		-----
1254	D6045	100	30		0.28	0.5	D156	30		0.13
1257	D6045		30		0.28			-----		-----
1276	D6045		30		0.28		D156	30		0.13
1357	D6045	50	30		0.28			-----		-----
1429	D6045	50	30		0.28			-----		-----
1455			-----		-----			-----		-----
1556			-----		-----	0.5	D156	30		0.13
1585			-----		-----	0.5	D156	30		0.13
1603	In house	10	29		-1.98			-----		-----
1613	D6045	50	30		0.28			-----		-----

lab	automatic	cuvette	value	mark	z(targ)	filter	manual	value	mark	z(targ)
1631	D6045		30		0.28			-----		-----
1653			-----		-----			-----		-----
1656	D6045	50	30		0.28	0.5	D156	30		0.13
1737			-----		-----			-----		-----
1741			-----		-----		D156	30		0.13
1776			-----		-----	0.5	D156	30		0.13
1788			-----		-----			-----		-----
1796			-----		-----		D156	30		0.13
1810	D6045	50	30		0.28			-----		-----
1823			-----		-----			-----		-----
1857			-----		-----		D156	30		0.13
1858			-----		-----		D156	28	R(0.01)	-2.67
1949			-----		-----	0.5	D156	30		0.13
1950			-----		-----		D156	30		0.13
1967			-----		-----			-----		-----
1995	D6045		30		0.28			-----		-----
6016			-----		-----			-----		-----
6090			-----		-----			-----		-----
7006			-----		-----			-----		-----
9054			-----		-----			-----		-----
9057			-----		-----			-----		-----
9058			-----		-----			-----		-----
9061			-----		-----			-----		-----
9090	D6045		30		0.28			-----		-----
	normality		not OK				normality	not OK		
	n		32				n	33		
	outliers		1				outliers	3		
	mean (n)		29.875				mean (n)	29.909		
	st.dev. (n)		0.3360				st.dev. (n)	0.2919		
	R(calc.)		0.941				R(calc.)	0.817		
	R(D6045:12)		1.24				R(D156:15)	2		

Lab 237 first reported: 26
Lab 982 first reported: 29
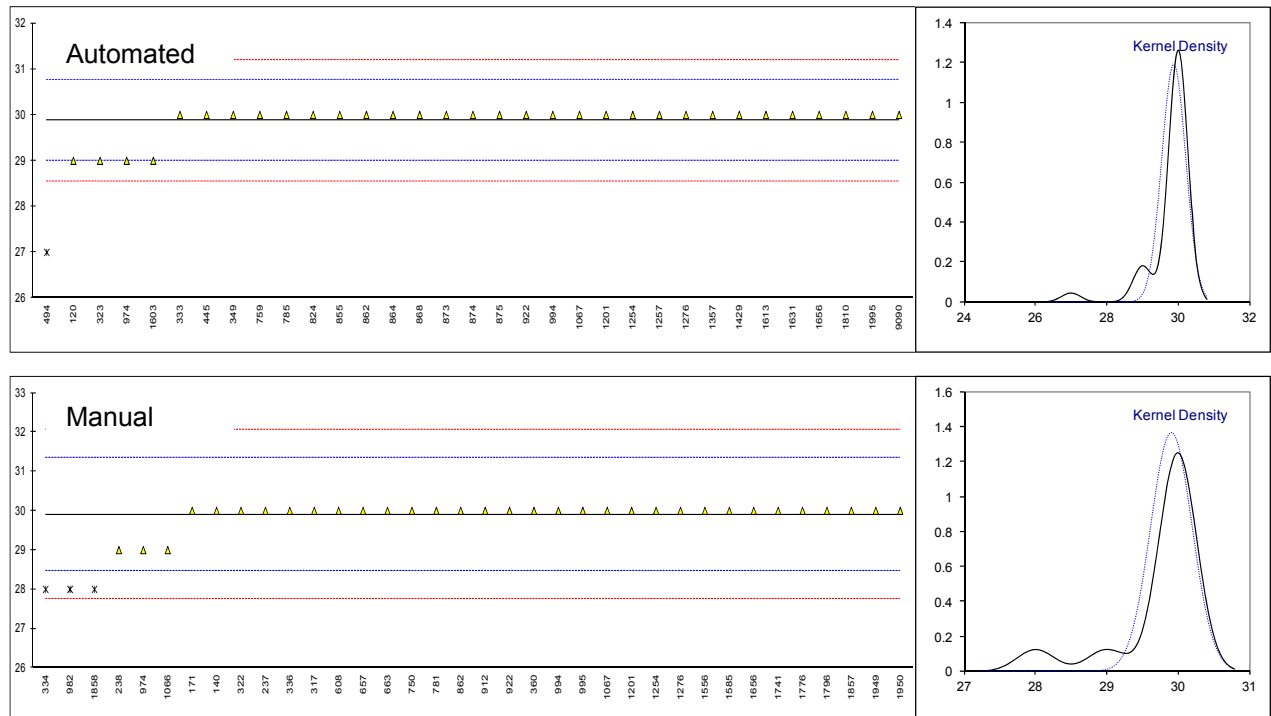
Determination of Copper Corrosion 3 hrs at 50°C on sample #17045

lab	method	value	mark	z(targ)	remarks
120	D130	1A		-----	
140	D130	1a		-----	
150	D130	1A		-----	
158		-----		-----	
171	D130	1a		-----	
225	D130	1a		-----	
237	D130	1A		-----	
238	D130	1A		-----	
311	D130	1A		-----	
317	D130	1A		-----	
322		-----		-----	
323	D130	1A		-----	
333	D130	1b		-----	
334	D130	1a		-----	
336	D130	1		-----	
337		-----		-----	
349		-----		-----	
360	D130	1A		-----	
399		-----		-----	
444		-----		-----	
445	IP154	1A		-----	
494	D130	1a		-----	
529		-----		-----	
541	D130	1a		-----	
557		-----		-----	
608	D130	1a		-----	
657		-----		-----	
663	D130	1a		-----	
750	D130	1a		-----	
753	D130	1A		-----	
754	D130	1a		-----	
759		-----		-----	
779		-----		-----	
781	D130	1a		-----	
785		-----		-----	
786		-----		-----	
824	D130	1a		-----	
840	D130	1a		-----	
855	D130	1a		-----	
862	D130	1a		-----	
864	D130	1a		-----	
868	D130	1a		-----	
872		-----		-----	
873	D130	1a		-----	
874	D130	1a		-----	
875	D130	1a		-----	
912	D130	1[A]		-----	
922	D130	1A		-----	
963		-----		-----	
974		-----		-----	
982		-----		-----	
994	D130	1a		-----	
995	D130	1a		-----	
998		-----		-----	
1012		-----		-----	
1016	D130	1A		-----	
1062		-----		-----	
1065		-----		-----	
1066	D130	1A		-----	
1067	D130	1A		-----	
1081		-----		-----	
1107		-----		-----	
1145		-----		-----	
1201	D130	1A		-----	
1251		-----		-----	
1254	D130	1a		-----	
1257	D130	1a		-----	
1276	D130	1a		-----	
1357	D130	1a		-----	
1429	D130	1b		-----	
1455	D130	1A		-----	
1556	ISO2160	1A		-----	
1585	D130	1a		-----	
1603	In house	1A		-----	
1613	D130	1a		-----	

lab	method	value	mark	z(targ)	remarks
1631	ISO2160	1		-----	
1653		-----		-----	
1656	IP154	1		-----	
1737		-----		-----	
1741	ISO2160	1		-----	
1776		-----		-----	
1788		-----		-----	
1796	D130	1a		-----	
1810		-----		-----	
1823		-----		-----	
1857	D130	1a		-----	
1858	D130	1A		-----	
1949	D130	1a		-----	
1950	D130	1a		-----	
1967		-----		-----	
1995	D130	1a		-----	
6016		-----		-----	
6090		-----		-----	
7006		-----		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9090		-----		-----	

normality	n.a.	
n	57	
outliers	0	
mean (n)	1 (1A))	
st.dev. (n)	n.a.	
R(calc.)	n.a.	
R()	n.a.	

Determination of Density at 15°C on sample #17045; results in kg/L

lab	method	value	mark	z(targ)	remarks
120	D4052	0.7229		-0.74	
140	D4052	0.7232		0.94	
150	D4052	0.7230		-0.18	
158		-----		-----	
171	D4052	0.7229		-0.74	
225	D4052	0.7230		-0.18	
237	D4052	0.7233	C	1.50	first reported: 0.7233 kg/m^3
238	D4052	0.7188	R(0.01)	-23.70	
311	ISO12185	0.7230		-0.18	
317	D4052	0.7229		-0.74	
322	ISO12185	0.7231		0.38	
323	ISO12185	0.7231		0.38	
333	ISO12185	0.723		-0.18	
334	ISO12185	0.7232		0.94	
336	ISO12185	0.7231		0.38	
337	ISO12185	0.7231		0.38	
349	D4052	0.7234		2.06	
360	ISO12185	0.7231		0.38	
399	ISO12185	0.7225		-2.98	
444	D4052	0.7231	C	0.38	first reported: 0.7239
445	IP365	0.7230		-0.18	
494	D1298	0.7230		-0.18	
529		-----		-----	
541	ISO12185	0.7230		-0.18	
557		-----		-----	
608	D4052	0.7234		2.06	
657	ISO12185	0.7230		-0.18	
663	D4052	0.72310		0.38	
750		-----		-----	
753	D4052	0.7229		-0.74	
754	ISO12185	0.7230		-0.18	
759	ISO12185	0.7229		-0.74	
779	ISO12185	0.7228		-1.30	
781	ISO12185	0.7230		-0.18	
785	D4052	0.7229		-0.74	
786	D4052	0.7229		-0.74	
824	ISO12185	0.7230		-0.18	
840	D4052	0.72298		-0.29	
855	D4052	0.72312		0.49	
862	D4052	0.72309		0.32	
864	D4052	0.72305		0.10	
868	D4052	0.72307		0.21	
872	D4052	0.7229		-0.74	
873	D4052	0.7230		-0.18	
874	ISO12185	0.7229		-0.74	
875	D4052	0.7229		-0.74	
912	D4052	0.7232		0.94	
922	D4052	0.7231		0.38	
963		-----		-----	
974	D4052	0.7230		-0.18	
982	D1298	0.7190	C,R(0.01)	-22.58	first reported: 0.7205 kg/m^3
994	ISO12185	0.7232		0.94	
995	ISO12185	0.7234		2.06	
998		-----		-----	
1012	D4052	0.72328	C	1.39	reported: 723.28 kg/L
1016	D4052	0.7231		0.38	
1062	D4052	0.7229		-0.74	
1065	D4052	0.7235		2.62	
1066	D4052	0.7229		-0.74	
1067	D4052	0.7230		-0.18	
1081		-----		-----	
1107		-----		-----	
1145	D4052	0.72321	C	0.99	first reported: 0.72321 kg/m^3
1201	ISO12185	0.7230		-0.18	
1251		-----		-----	
1254	ISO12185	0.72287		-0.91	
1257	D4052	0.7230		-0.18	
1276	D4052	0.72296		-0.41	
1357	D4052	0.7227		-1.86	
1429	ISO12185	0.72305		0.10	
1455	ISO12185	0.7230		-0.18	
1556	ISO12185	0.72307		0.21	
1585	D4052	0.72293		-0.57	
1603	In house	0.7232		0.94	
1613	D4052	0.7237	R(0.01)	3.74	

lab	method	value	mark	z(targ)	remarks
1631	ISO12185	0.7229		-0.74	
1653		-----		-----	
1656	D4052	0.7247	C,R(0.01)	9.34	first reported: 0.7237
1737	D4052	0.7231		0.38	
1741	D4052	0.7228		-1.30	
1776	ISO12185	0.7230		-0.18	
1788	D4052	0.722955		-0.43	
1796	ISO12185	0.72298		-0.29	
1810	D1298	0.7230		-0.18	
1823	D4052	0.7233		1.50	
1857	ISO12185	0.72295		-0.46	
1858	D4052	0.7228		-1.30	
1949	ISO12185	0.7230		-0.18	
1950	ISO12185	0.7230		-0.18	
1967	D4052	0.7233		1.50	
1995	D4052	0.7233		1.50	
6016	D4052	0.72311		0.43	
6090	D4052	0.72863	C,R(0.01)	31.35	first reported: 722.18 kg/m^3
7006		-----		-----	
9054	D4052	0.7230		-0.18	
9057	D5002	0.72315		0.66	
9058	D5002	0.7227		-1.86	
9061	D5002	0.722995		-0.21	
9090	D4052	0.7230		-0.18	

normality	suspect
n	83
outliers	5
mean (n)	0.723033
st.dev. (n)	0.0001639
R(calc.)	0.000459
R(ISO12185:96)	0.0005
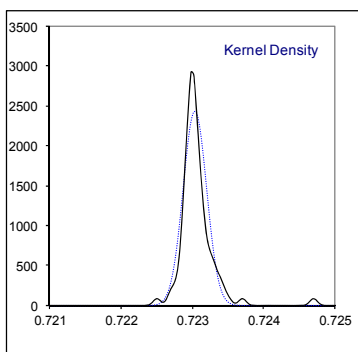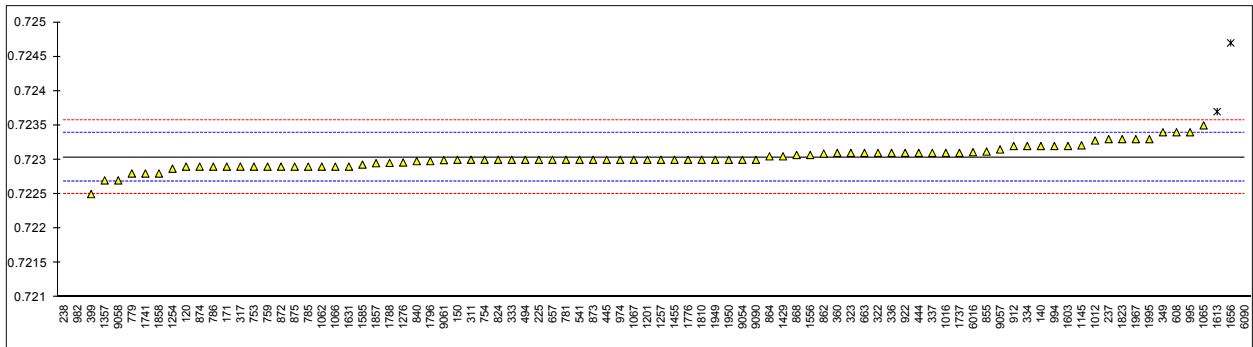
Determination of Distillation (automated and manual mode) on sample #17045; results in °C

lab	mode	method	IBP	mark	z(targ)	50%rec.	mark	z(targ)	FBP	mark	z(targ)
120	Automated		46.0		3.45	108.7		-1.09	166.6		-0.97
140	Automated	D86	38.1		-1.26	109.8		-0.34	167.5		-0.62
150	Automated	D86	40.1		-0.07	110.4		0.06	166.5		-1.01
158			-----		-----	-----		-----	-----		-----
171	Automated	D86	43.4		1.90	111.5		0.81	166.9		-0.85
225	Manual	D86	41.5		0.77	109.0		-0.89	172.0		1.16
237	Manual		43.0		1.66	109.5		-0.55	169.0		-0.02
238	Manual	D86	41.0		0.47	108.0		-1.57	172.0		1.16
311	Automated	D86	36.8		-2.03	110.0		-0.21	173.8		1.87
317	Automated	D86	36.6		-2.15	109.4		-0.62	165.0		-1.60
322			-----		-----	-----		-----	-----		-----
323	Automated	D86	39.8		-0.24	109.8		-0.34	166.1		-1.17
333	Automated	D86	38.5		-1.02	110.3		0.00	167.3		-0.69
334			43.3		1.84	110.5		0.13	170.1		0.41
336	Automated	D86	40.0		-0.13	110.4		0.06	168.6		-0.18
337			-----		-----	-----		-----	-----		-----
349			-----		-----	-----		-----	-----		-----
360	Automated	D86	39.7		-0.30	110.2		-0.07	167.4		-0.66
399	Automated	D86	39.8		-0.24	108.1		-1.50	166.2		-1.13
444			-----		-----	-----		-----	-----		-----
445	Automated	D86	38.9		-0.78	109.8		-0.34	166.1		-1.17
494	Automated	D86	39.6		-0.36	111.0		0.47	116.7	R(0.01)	-20.65
529			-----		-----	-----		-----	-----		-----
541	Automated	D86	38.0		-1.32	110.4		0.06	170.5		0.57
557			-----		-----	-----		-----	-----		-----
608			-----		-----	-----		-----	-----		-----
657	Automated	D86	40.4		0.11	110.3		0.00	173.9		1.91
663	Automated	D86	40.85		0.38	109.45		-0.58	168.10		-0.38
750			-----		-----	-----		-----	-----		-----
753	Manual	D86	41.5		0.77	110.0		-0.21	171.5		0.96
754	Manual	D86	40.5		0.17	109.5		-0.55	173.5		1.75
759	Manual	D86	41.5		0.77	110.0		-0.21	173.0		1.55
779	Manual	D86	41.0		0.47	109.5		-0.55	168.5		-0.22
781	Automated	D86	38.5		-1.02	110.5		0.13	168.4		-0.26
785	Manual	D86	37.5		-1.61	110.5		0.13	170.0		0.37
786	Automated	D86	42.9		1.60	111.6		0.88	169.8		0.29
824	Automated	D86	40.1		-0.07	111.0		0.47	168.8		-0.10
840	Automated	D86	37.97		-1.33	110.63		0.22	172.87		1.50
855	Automated	D86	39.3		-0.54	110.9		0.40	172.6		1.40
862	Automated	D86	39.7		-0.30	111.0		0.47	173.1		1.59
864	Automated		39.7		-0.30	111.0		0.47	172.8		1.47
868	Automated	D86	38.5		-1.02	110.5		0.13	170.2		0.45
872			-----		-----	-----		-----	-----		-----
873	Automated	D86	41.5		0.77	110.5		0.13	169.5		0.17
874	Manual	D86	42.0		1.07	109.5		-0.55	170.0		0.37
875	Automated	D86	42.9		1.60	110.5		0.13	170.5		0.57
912		D86	43.3		1.84	111.4		0.74	167.4		-0.66
922	Automated	D86	40.8		0.35	110.0		-0.21	167.2		-0.73
963			-----		-----	-----		-----	-----		-----
974	Automated	D86	39.6		-0.36	110.8		0.34	174.2		2.03
982	Manual	D86	40.0		-0.13	106.5	R(0.01)	-2.58	167.0	C	-0.81
994	Manual	D86	-----		-----	110.5		0.13	170.0		0.37
995	Manual	D86	41.5		0.77	110.0		-0.21	168.5	C	-0.22
998			-----		-----	-----		-----	-----		-----
1012	Automated	D86	38.6		-0.96	109.7		-0.41	166.3		-1.09
1016	Automated	D86	38.2		-1.20	110.3		0.00	167.1		-0.77
1062			-----		-----	-----		-----	-----		-----
1065	Automated	D86	43.3		1.84	111.5		0.81	167.7		-0.54
1066	Automated	D86	39.0		-0.72	110.2		-0.07	171.7		1.04
1067	Automated	D86	36.0		-2.51	110.8		0.34	167.5		-0.62
1081			-----		-----	-----		-----	-----		-----
1107			-----		-----	-----		-----	-----		-----
1145	Automated		40.6		0.23	109.9		-0.28	167.2		-0.73
1201	Automated	D86	37.9		-1.38	110.8		0.34	168.9		-0.06
1251			-----		-----	-----		-----	-----		-----
1254	Automated	ISO3405	39.8		-0.24	110.5		0.13	169.1		0.02
1257			38.7		-0.90	110.8		0.34	169.3		0.09
1276	Automated	D86	39.7		-0.30	110.2		-0.07	168.1		-0.38
1357	Automated	D86	41.3		0.65	110.9		0.40	168.0		-0.42
1429	Automated	D86	38.3		-1.14	110.8		0.34	167.5		-0.62
1455	Automated	D86	37.1		-1.85	110.5		0.13	167.8		-0.50
1556	Automated	ISO3405	37.0		-1.91	110.1		-0.14	166.9		-0.85
1585	Automated	D86	40.5		0.17	110.0		-0.21	170.5		0.57
1603	Automated	D86	38.5		-1.02	111.6		0.88	170.6		0.61
1613	Automated	D86	39.1		-0.66	110.6		0.20	167.3		-0.69

lab	mode	method	IBP	mark	z(targ)	50%rec.	mark	z(targ)	FBP	mark	z(targ)
1631	Automated	ISO3405	39.3		-0.54	110.1		-0.14	166.6		-0.97
1653			-----		-----	-----		-----	-----		-----
1656	Automated	ISO3405	37.7		-1.50	112.0		1.15	171.1		0.80
1737	Automated	D86	40.8		0.35	111.7		0.95	166.4		-1.05
1741	Automated	ISO3405	40.0		-0.13	110.5		0.13	172.4		1.32
1776	Automated	ISO3405	37.9		-1.38	110.3		0.00	167.0		-0.81
1788	Automated	D86	38.6		-0.96	111.2		0.61	171.5		0.96
1796	Automated	D86	41.4		0.71	110.4		0.06	174.5		2.14
1810	Automated	D86	38.3		-1.14	109.5		-0.55	167.2		-0.73
1823	Automated	D86/D7096	43.3		1.84	111.2		0.61	167.0		-0.81
1857	Automated	D86	39.5		-0.42	110.5		0.13	167.0		-0.81
1858	Manual	D86	39.5		-0.42	109.0		-0.89	170.5		0.57
1949	Manual	D86	42.5		1.36	109.5		-0.55	171.5		0.96
1950	Manual	D86	42.5		1.36	110.0		-0.21	171.0		0.76
1967	Manual	D86	45.0		2.85	106.0	R(0.01)	-2.92	164.0		-2.00
1995		D86	46		3.45	110		-0.21	169		-0.02
6016	Automated	D86	42.7		1.48	110.4		0.06	166.7		-0.93
6090	Automated	D86	38.2		-1.20	110.8		0.34	166.8		-0.89
7006	Automated	D86	44.5		2.56	-----		-----	165.5		-1.40
9054			-----		-----	-----		-----	-----		-----
9057			-----		-----	-----		-----	-----		-----
9058			-----		-----	-----		-----	-----		-----
9061			-----		-----	-----		-----	-----		-----
9090		D86	39.3		-0.54	-----		-----	167.6		-0.58
	normality		OK			suspect			OK		
	n		77			74			77		
	outliers		0			2			1		
	mean (n)		40.21			110.31			169.06		
	st.dev. (n)		2.172			0.762			2.477		
	R(calc.)		6.08			2.13			6.93		
	R(D86-A:16a)		4.7			4.12			7.1		
Compare R(D86-M:16a)			5.6			4.24			7.2		

Lab 982 first reported: 176.1 for FBP
Lab 995 first reported: 148.5 for FBP
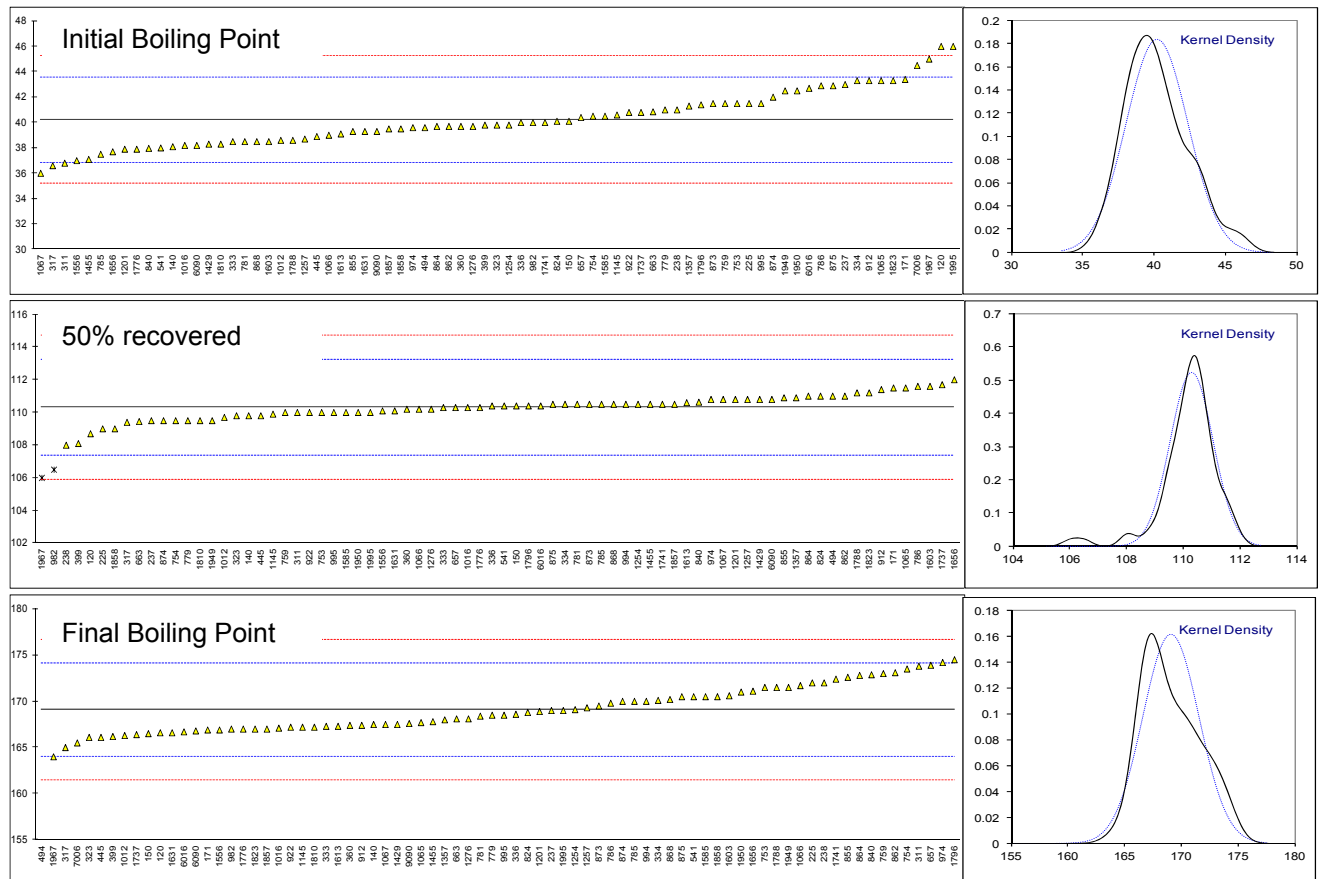
Determination of Mercaptan Sulphur as S on sample #17045; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120	D3227	96.5		0.17	
140	D3227	88		-3.16	
150	D3227	90.4		-2.22	
158		-----		-----	
171	D3227	98		0.76	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	UOP163	98.0		0.76	
317	UOP163	89		-2.77	
322	UOP163	95.3		-0.30	
323	UOP163	96		-0.02	
333		-----		-----	
334	D3227	96		-0.02	
336		-----		-----	
337		-----		-----	
349		-----		-----	
360		-----		-----	
399		-----		-----	
444	UOP163	100.7		1.82	
445	IP342	83	R(0.05)	-5.12	
494	D3227	96.4		0.13	
529		-----		-----	
541		-----		-----	
557		-----		-----	
608		-----		-----	
657	D3227	97		0.37	
663	D3227	95.2		-0.34	
750		-----		-----	
753	UOP163	99		1.15	
754	UOP163	96.3		0.09	
759	UOP163	99.2		1.23	
779	UOP163	95		-0.42	
781	UOP163	100		1.55	
785	UOP163	92.3		-1.48	
786	UOP163	97	C	0.37	first reported: 105
824		-----		-----	
840	D3227	95.0		-0.42	
855	D3227	100		1.55	
862	D3227	100.1		1.59	
864	D3227	98		0.76	
868	D3227	100.5		1.74	
872	UOP163	99		1.15	
873	D3227	99		1.15	
874	UOP163	97.8		0.68	
875	UOP163	93		-1.20	
912		-----		-----	
922	D3227	90		-2.38	
963		-----		-----	
974	D3227	80	C,R(0.05)	-6.30	first reported: 88
982		-----		-----	
994	UOP163	100.0		1.55	
995	D3227	100.8	C	1.86	first reported: 108
998		-----		-----	
1012		-----		-----	
1016	D3227	97.17		0.44	
1062		-----		-----	
1065	D3227	91	C	-1.99	first reported: 86
1066	UOP163	106	R(0.05)	3.90	
1067	UOP163	96		-0.02	
1081		-----		-----	
1107		-----		-----	
1145		-----		-----	
1201	D3227	96.89		0.33	
1251		-----		-----	
1254	D3227	97.62		0.61	
1257	D3227	94		-0.81	
1276	D3227	90.1		-2.34	
1357		-----		-----	
1429		-----		-----	
1455	D3227	97		0.37	
1556	UOP163	87.8		-3.24	
1585	D3227	96.2		0.06	
1603	In house	89		-2.77	
1613	D3227	96.0		-0.02	

lab	method	value	mark	z(targ)	remarks
1631	D3227	96.45		0.15	
1653		-----		-----	
1656	IP342	62	C,R(0.01)	-13.37	first reported: 79
1737		-----		-----	
1741	UOP163	96		-0.02	
1776	UOP163	96.87		0.32	
1788		-----		-----	
1796	UOP163	96.6		0.21	
1810	D3227	23.0	C,R(0.01)	-28.67	first reported: 86
1823		-----		-----	
1857	UOP163	98		0.76	
1858	UOP163	97		0.37	
1949	D3227	97.9		0.72	
1950	D3227	97		0.37	
1967	UOP163	98.0		0.76	
1995	UOP163	114.4	R(0.01)	7.20	
6016		-----		-----	
6090		-----		-----	
7006		-----		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9090		-----		-----	

normality	OK
n	53
outliers	6
mean (n)	96.058
st.dev. (n)	3.3740
R(calc.)	9.447
R(D3227:16)	7.134

Kernel Density
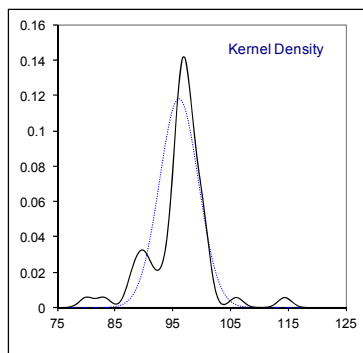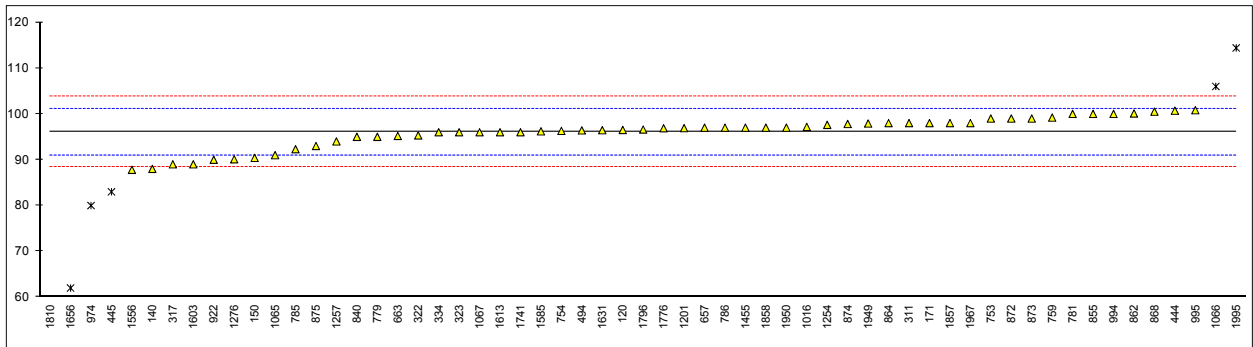
Determination of Sulphur on sample #17045; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120	D2622	317.2		-0.33	
140	D2622	351		0.85	
150	D2622	342.9		0.57	
158		-----		-----	
171	D2622	326		-0.03	
225		-----		-----	
237	D4294	300.0		-0.93	
238		-----		-----	
311	D2622	326		-0.03	
317	D2622	326		-0.03	
322	D3120	280.8		-1.61	
323	D5453	264		-2.19	
333	D4294	339		0.43	
334		-----		-----	
336		-----		-----	
337	D2622	349		0.78	
349		-----		-----	
360	D4294	360		1.16	
399	D4294	310		-0.59	
444		-----		-----	
445	D5453	283		-1.53	
494	D5453	363.7		1.29	
529		-----		-----	
541	D4294	294		-1.14	
557		-----		-----	
608	D5453	292.6		-1.19	
657	D5453	303.0		-0.83	
663	D5453	297.2		-1.03	
750	D2622	320		-0.24	
753	D4294	348		0.74	
754	D4294	327		0.01	
759	D4294	339		0.43	
779	ISO20884	342		0.53	
781	D4294	348		0.74	
785	ISO20884	342		0.53	
786		-----		-----	
824	D5453	298		-1.00	
840	D4294	300.2		-0.93	
855	D5453	325		-0.06	
862	D2622	322.2		-0.16	
864	D4294	324		-0.10	
868	D5453	321.5		-0.18	
872		-----		-----	
873	D4294	334		0.25	
874	D2622	342		0.53	
875	D4294	340		0.46	
912	D5453	308		-0.65	
922		-----		-----	
963		-----		-----	
974	D4294	365		1.34	
982		-----		-----	
994	D4294	362		1.23	
995	D4294	351		0.85	
998		-----		-----	
1012	D5453	300.2237		-0.93	
1016	D4951	340.6		0.48	
1062		-----		-----	
1065	D4294	376		1.72	
1066	D2622	324		-0.10	
1067	D2622	326		-0.03	
1081		-----		-----	
1107		-----		-----	
1145	D5453	326.8		0.00	
1201	D2622	390		2.21	
1251		-----		-----	
1254	D5453	303.51		-0.81	
1257	D5453	328		0.04	
1276	IP336	430	R(0.05)	3.61	
1357	D5453	312.5		-0.50	
1429		-----		-----	
1455	D2622	340		0.46	
1556	ISO20884	340.8		0.49	
1585	D4294	366.8		1.40	
1603	In house	333		0.22	
1613	D5453	278.8		-1.68	

lab	method	value	mark	z(targ)	remarks
1631	D5453	297.4		-1.03	
1653		-----		-----	
1656	D5453	264		-2.19	
1737		-----		-----	
1741	D5453	328		0.04	
1776	ISO20884	310.6		-0.56	
1788	D5453	306.97		-0.69	
1796	D4294	363.1		1.27	
1810	D4294	384		2.00	
1823	D5453	297.4		-1.03	
1857	D4294	383		1.97	
1858	D4294	365.8		1.37	
1949	ISO20884	327.2		0.02	
1950	D2622	338		0.39	
1967	D4294	372		1.58	
1995	D4294	251		-2.65	
6016	D4294	303.9		-0.80	
6090	ISO20846	321.06	C	-0.20	first reported: 215.82
7006	D5453	313.2		-0.47	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9090		-----		-----	

					ED XRF only	WD XRF only	UV F only
					(D4294&IP336)	(D2622&ISO20884)	(D5453&IP490ISO20846)
	normality	OK			suspect	not OK	suspect
	n	71			25	20	23
	outliers	1			1	0	0
	mean (n)	326.732			340.272	335.145	305.820
	st.dev. (n)	29.4219			32.7019	17.1073	22.3308
	R(calc.)	82.381			91.565	47.900	62.526
	R(D4294:16e1)	80.083			82.207	--	--
Compare R(D2622:16)		44.244			--	45.155	--
Compare R(D5453:16e1)		44.550			--	--	42.394

WD XRF = wavelength dispersion X-ray Fluorescence Spectroscopy

ED XRF = Energy dispersion X-ray Fluorescence Spectroscopy

UV F = ultra violet Fluorescence

Kernel Density
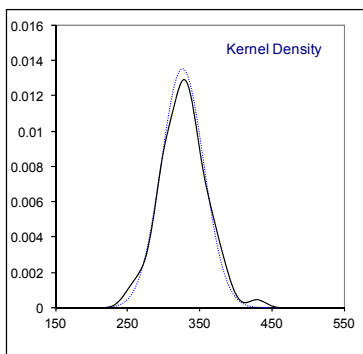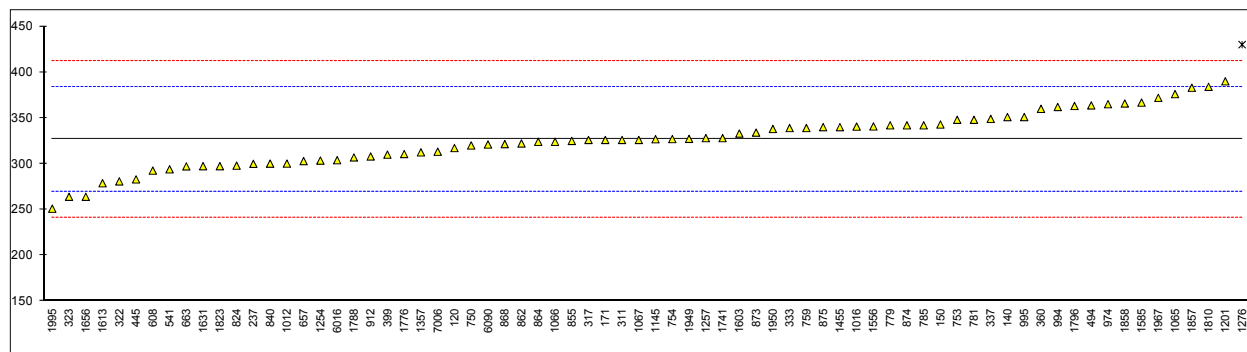
Determination of Acetone on sample #17046; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
140		-----		-----	
150	D7423	1.2		1.38	
158		-----		-----	
171	D7423	1.09		0.68	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	INH-403	<10		-----	
317		-----		-----	
322		-----		-----	
323	INH-304	<2		-----	
333		-----		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
349		-----		-----	
360		-----		-----	
399	D7423	0.8		-1.16	
444		-----		-----	
445		-----		-----	
494		-----		-----	
529		-----		-----	
541		-----		-----	
557		-----		-----	
608		-----		-----	
657	INH-0130	0.9	C	-0.52	first reported: 8.8
663		-----		-----	
750		-----		-----	
753		-----		-----	
754	D7423	1.0		0.11	
759	D7423	1.3		2.02	
779	D7423	1.14		1.00	
781		-----		-----	
785		-----		-----	
786		-----		-----	
824		0.6		-2.43	
840		-----		-----	
855	INH-024	<10		-----	
862	D7423	<10		-----	
864	D7423	<10		-----	
868	D7423	<10		-----	
872	D7423	1.2		1.38	
873	D7423	1.08		0.62	
874	D7423	1.1		0.75	
875		-----		-----	
912		-----		-----	
922		-----		-----	
963		-----		-----	
974	D7423	0.72		-1.66	
982		-----		-----	
994		-----		-----	
995		-----		-----	
998		-----		-----	
1012		-----		-----	
1016		-----		-----	
1062		-----		-----	
1065		-----		-----	
1066		-----		-----	
1067		-----		-----	
1081		-----		-----	
1107	D7423	0.77		-1.35	
1145	D4815	1.064		0.52	
1201		-----		-----	
1251		-----		-----	
1254		-----		-----	
1257		-----		-----	
1276	D7423	1.77	G(0.05)	5.00	
1357		-----		-----	
1429		-----		-----	
1455		-----		-----	
1556	D7423	1.05		0.43	
1585		-----		-----	
1603		-----		-----	
1613		-----		-----	

lab	method	value	mark	z(targ)	remarks
1631		-----		-----	
1653	D7423	0.7		-1.79	
1656		-----		-----	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1788		-----		-----	
1796		-----		-----	
1810		-----		-----	
1823		-----		-----	
1857		-----		-----	
1858		-----		-----	
1949	D7423	< 0.5		-----	
1950		-----		-----	
1967		-----		-----	
1995	D7423	0	ex	-6.23	excluded as zero is not a real test result
6016		-----		-----	
6090		-----		-----	
7006		-----		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9090		-----		-----	

normality	OK
n	16
outliers	1+1ex
mean (n)	0.982
st.dev. (n)	0.2077
R(calc.)	0.581
R(Horwitz)	0.441
Compare R(D7423:16a)	0.438
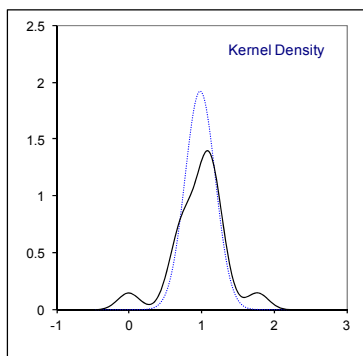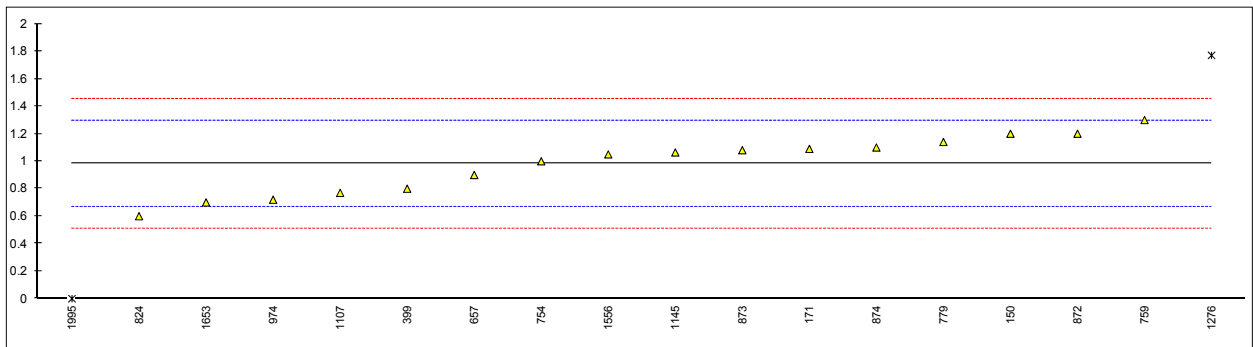
Determination of DIPE on sample #17046; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
140		-----		-----	
150	D7423	<1		-----	
158		-----		-----	
171	D7423	<0.5		-----	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	INH-403	<1		-----	
317		-----		-----	
322		-----		-----	
323	INH-304	<2		-----	
333		-----		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
349		-----		-----	
360		-----		-----	
399	D7423	<0.5		-----	
444		-----		-----	
445		-----		-----	
494		-----		-----	
529		-----		-----	
541		-----		-----	
557		-----		-----	
608		-----		-----	
657	INH-0130	<0.1		-----	
663		-----		-----	
750		-----		-----	
753		-----		-----	
754	D7423	Less 0.5		-----	
759	D7423	<0.5		-----	
779	D7423	<0.5		-----	
781		-----		-----	
785		-----		-----	
786		-----		-----	
824		<0.5		-----	
840		-----		-----	
855	INH-024	<10		-----	
862	D7423	<10		-----	
864	D7423	<10		-----	
868	D7423	<10		-----	
872	D7423	<0.5		-----	
873	D7423	<0.05		-----	
874	D7423	<0.5		-----	
875		-----		-----	
912		-----		-----	
922		-----		-----	
963		-----		-----	
974	D7423	<0.50		-----	
982		-----		-----	
994		-----		-----	
995		-----		-----	
998		-----		-----	
1012		-----		-----	
1016		-----		-----	
1062		-----		-----	
1065		-----		-----	
1066		-----		-----	
1067		-----		-----	
1081		-----		-----	
1107	D7423	0.11		-----	
1145		-----		-----	
1201		-----		-----	
1251		-----		-----	
1254		-----		-----	
1257		-----		-----	
1276	D7423	1.08		-----	
1357		-----		-----	
1429		-----		-----	
1455		-----		-----	
1556	D7423	<0,5		-----	
1585		-----		-----	
1603		-----		-----	
1613		-----		-----	

lab	method	value	mark	z(targ)	remarks
1631		-----		-----	
1653	D7423	<1		-----	
1656		-----		-----	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1788		-----		-----	
1796		-----		-----	
1810		-----		-----	
1823		-----		-----	
1857		-----		-----	
1858		-----		-----	
1949	D7423	90.67	ex	-----	test value is sum of MTBE+DIPE
1950		-----		-----	
1967		-----		-----	
1995	D7423	0		-----	
6016		-----		-----	
6090		-----		-----	
7006		-----		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9090		-----		-----	

normality	n.a.	
n	23	
outliers	0+1ex	
mean (n)	< 10	
st.dev. (n)	n.a.	
R(calc.)	n.a.	
R(lit.)	n.a.	

Determination of MEK on sample #17046; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
140		-----		-----	
150	D7423	3.5		0.59	
158		-----		-----	
171	D7423	3.5		0.59	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	INH-403	<10		-----	
317		-----		-----	
322		-----		-----	
323	INH-304	2		-2.86	
333		-----		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
349		-----		-----	
360		-----		-----	
399	D7423	3.5		0.59	
444		-----		-----	
445		-----		-----	
494		-----		-----	
529		-----		-----	
541		-----		-----	
557		-----		-----	
608		-----		-----	
657	INH-0130	3.3		0.13	
663		-----		-----	
750		-----		-----	
753		-----		-----	
754	D7423	3.3		0.13	
759	D7423	2.6		-1.48	
779	D7423	2.76		-1.12	
781		-----		-----	
785		-----		-----	
786		-----		-----	
824		2.9		-0.79	
840		-----		-----	
855	INH-024	3		-0.56	
862	D7423	<10		-----	
864	D7423	<10		-----	
868	D7423	<10		-----	
872	D7423	3.7		1.05	
873	D7423	3.52		0.63	
874	D7423	3.8		1.28	
875		-----		-----	
912		-----		-----	
922		-----		-----	
963		-----		-----	
974	D7423	6.81	G(0.01)	8.20	
982		-----		-----	
994		-----		-----	
995		-----		-----	
998		-----		-----	
1012		-----		-----	
1016		-----		-----	
1062		-----		-----	
1065		-----		-----	
1066		-----		-----	
1067		-----		-----	
1081		-----		-----	
1107	D7423	3.33		0.19	
1145		-----		-----	
1201		-----		-----	
1251		-----		-----	
1254		-----		-----	
1257		-----		-----	
1276	D7423	1.04	G(0.01)	-5.07	
1357		-----		-----	
1429		-----		-----	
1455		-----		-----	
1556	D7423	4.06		1.87	
1585		-----		-----	
1603		-----		-----	
1613		-----		-----	

lab	method	value	mark	z(targ)	remarks
1631		-----		-----	
1653	D7423	3.2		-0.10	
1656		-----		-----	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1788		-----		-----	
1796		-----		-----	
1810		-----		-----	
1823		-----		-----	
1857		-----		-----	
1858		-----		-----	
1949	D7423	< 0.5		<-6.31	possibly a false negative test result?
1950		-----		-----	
1967		-----		-----	
1995	D7423	3.2		-0.10	
6016		-----		-----	
6090		-----		-----	
7006		-----		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9090		-----		-----	

normality	suspect
n	17
outliers	2
mean (n)	3.245
st.dev. (n)	0.4904
R(calc.)	1.373
R(Horwitz)	1.218
compare R(D7423:16a)	1.306
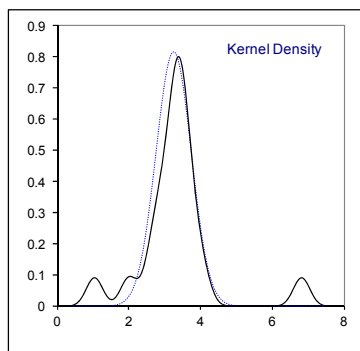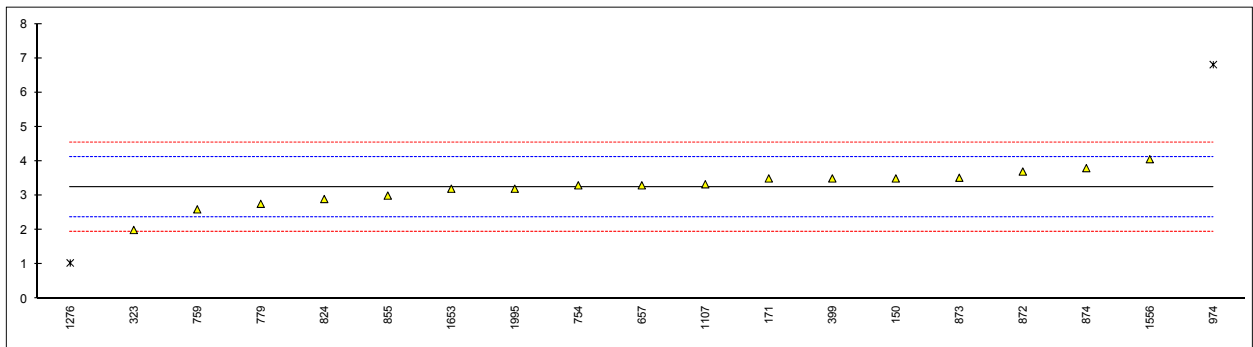
Determination of Methanol on sample #17046; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
140		-----		-----	
150	D7423	138.4		-----	
158		-----		-----	
171	D7423	175.9	G(0.05)	-----	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	INH-403	47		-----	
317		-----		-----	
322		-----		-----	
323	INH-304	84		-----	
333		-----		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
349		-----		-----	
360		-----		-----	
399	D7423	118.0		-----	
444		-----		-----	
445		-----		-----	
494		-----		-----	
529		-----		-----	
541		-----		-----	
557		-----		-----	
608		-----		-----	
657	INH-0130	88.1		-----	
663		-----		-----	
750		-----		-----	
753		-----		-----	
754	D7423	71.2		-----	
759	D7423	78.34		-----	
779	D7423	70.47		-----	
781		-----		-----	
785		-----		-----	
786		-----		-----	
824		74.6		-----	
840		-----		-----	
855	INH-024	64		-----	
862	D7423	65.7		-----	
864	D7423	65.2		-----	
868	D7423	59.8		-----	
872	D7423	76.2		-----	
873	D7423	81.32		-----	
874	D7423	110.3		-----	
875		-----		-----	
912		-----		-----	
922		-----		-----	
963		-----		-----	
974	D7423	20.50	C	-----	first reported: 24.74
982		-----		-----	
994		-----		-----	
995		-----		-----	
998		-----		-----	
1012		-----		-----	
1016		75.487		-----	
1062		-----		-----	
1065		-----		-----	
1066		-----		-----	
1067		-----		-----	
1081		-----		-----	
1107	D7423	70.89		-----	
1145	D4815	109.960		-----	
1201		-----		-----	
1251		-----		-----	
1254		-----		-----	
1257		-----		-----	
1276	D7423	96.74		-----	
1357		-----		-----	
1429		-----		-----	
1455		-----		-----	
1556	D7423	105.10	C	-----	first reported: 141.72
1585		-----		-----	
1603		-----		-----	
1613		-----		-----	

lab	method	value	mark	z(targ)	remarks
1631		-----		-----	
1653	D7423	48.7		-----	
1656		-----		-----	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1788		-----		-----	
1796		-----		-----	
1810		-----		-----	
1823		-----		-----	
1857	D7754	92		-----	
1858		-----		-----	
1949	D7423	99.08		-----	
1950	D7754	111		-----	
1967		-----		-----	
1995	D7423	0	ex	-----	test result excluded as zero is not a real test result
6016		-----		-----	
6090		-----		-----	
7006		-----		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9090		-----		-----	

normality	OK			
n	26			
outliers	1+1ex		Spike	
mean (n)	81.619		103	"Recovery: < 79%", see § 4.1
st.dev. (n)	25.3608			
R(calc.)	71.010			
R(Horwitz)	(18.850)			
Compare R(D7423:16a)	16.930			
Compare R(iis16N01)	45.420			
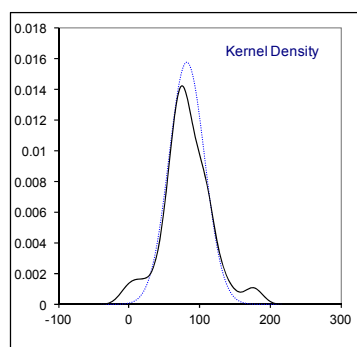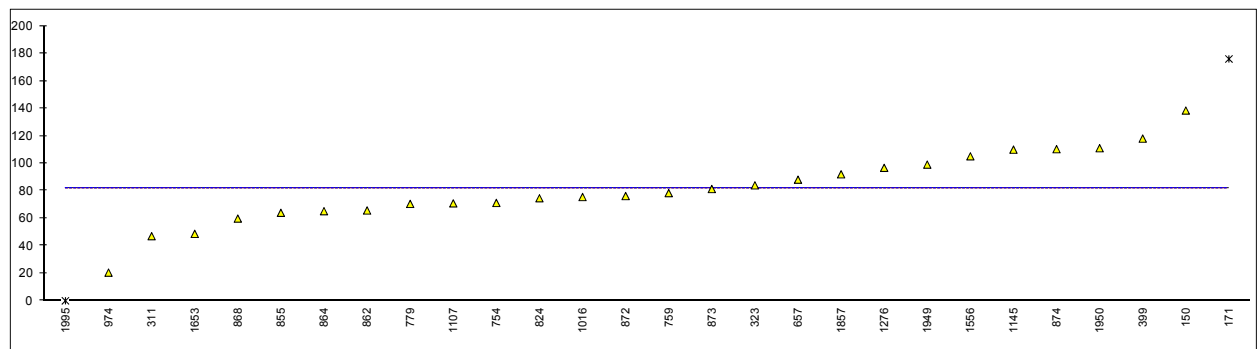
Determination of MTBE on sample #17046; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
140		-----		-----	
150	D7423	92.2		-0.50	
158		-----		-----	
171	D7423	93.6		-0.32	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	INH-403	90		-0.78	
317		-----		-----	
322		-----		-----	
323	INH-304	89		-0.91	
333		-----		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
349		-----		-----	
360	D7423	84.79		-1.46	
399	D7423	87.6		-1.10	
444		-----		-----	
445		-----		-----	
494		-----		-----	
529		-----		-----	
541		-----		-----	
557		-----		-----	
608		-----		-----	
657	INH-0130	105.9		1.27	also reported: ETBE = 0.3 mg/kg
663		-----		-----	
750		-----		-----	
753		-----		-----	
754	D7423	96.4		0.04	
759	D7423	95.8		-0.03	
779	D7423	95.93		-0.02	
781		-----		-----	
785		-----		-----	
786		-----		-----	
824		83.7		-1.60	
840		-----		-----	
855	INH-024	98		0.25	
862	D7423	94.6		-0.19	
864	D7423	98.1		0.26	
868	D7423	102.0		0.77	
872	D7423	110.3		1.84	
873	D7423	109.99		1.80	
874	D7423	117.1		2.72	
875		-----		-----	
912		-----		-----	
922		-----		-----	
963		-----		-----	
974	D7423	95.39		-0.09	
982		-----		-----	
994		-----		-----	
995		-----		-----	
998		-----		-----	
1012		-----		-----	
1016		79.383		-2.16	
1062		-----		-----	
1065		-----		-----	
1066		-----		-----	
1067		-----		-----	
1081		-----		-----	
1107	D7423	94.45		-0.21	
1145	D4815	107.855		1.52	
1201		-----		-----	
1251		-----		-----	
1254		-----		-----	
1257		-----		-----	
1276	D7423	80.76		-1.98	
1357		-----		-----	
1429		-----		-----	
1455		-----		-----	
1556	D7423	112.52	C	2.13	first reported: 125.11
1585		-----		-----	
1603		-----		-----	
1613		-----		-----	

lab	method	value	mark	z(targ)	remarks
1631		-----		-----	
1653	D7423	92.6		-0.45	
1656		-----		-----	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1788		-----		-----	
1796	IP PM BG/91	94.9		-0.15	
1810		-----		-----	
1823		-----		-----	
1857	D7754	87		-1.17	
1858		-----		-----	
1949	D7423	90.67	ex	-0.70	excluded: test value is sum of MTBE+DIPE
1950	D7754	100		0.51	
1967		-----		-----	
1995	D7423	0	ex	-12.42	excluded as zero is not a real test result
6016		-----		-----	
6090		-----		-----	
7006		-----		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9090		-----		-----	

normality	OK			
n	28			
outliers	0+2ex		Spike	
mean (n)	96.067		97	Recovery: < 99%
st.dev. (n)	9.5781			
R(calc.)	26.819			
R(Horwitz)	21.649			
Compare R(D7423:16a)	21.304			
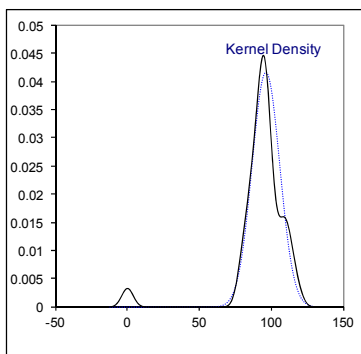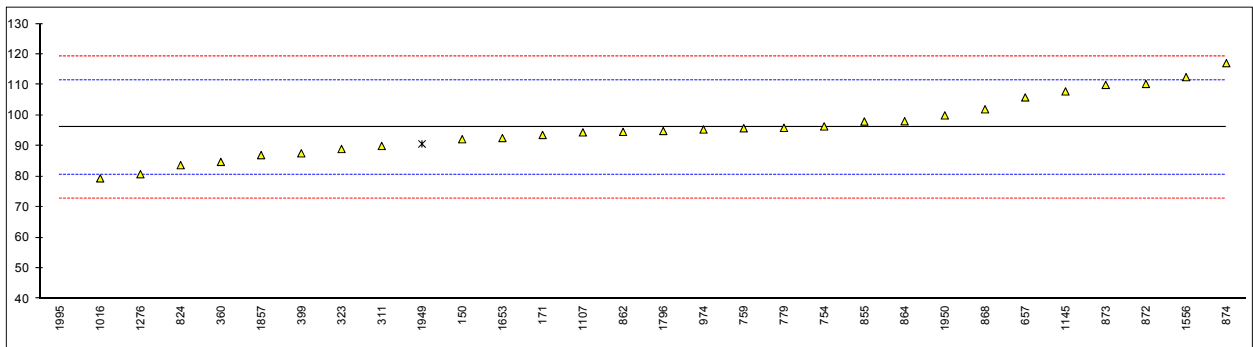
Determination of TAME on sample #17046; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
140		-----		-----	
150	D7423	<1		-----	
158		-----		-----	
171	D7423	<0.5		-----	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	INH-403	<1		-----	
317		-----		-----	
322		-----		-----	
323	INH-304	<2		-----	
333		-----		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
349		-----		-----	
360		-----		-----	
399	D7423	0.4		0.32	
444		-----		-----	
445		-----		-----	
494		-----		-----	
529		-----		-----	
541		-----		-----	
557		-----		-----	
608		-----		-----	
657	INH-0130	0.4	C	0.32	first reported: 3.6
663		-----		-----	
750		-----		-----	
753		-----		-----	
754	D7423	<0.5		-----	
759	D7423	<0.5		-----	
779	D7423	<0.5		-----	
781		-----		-----	
785		-----		-----	
786		-----		-----	
824		<0.5		-----	
840		-----		-----	
855	INH-024	<10		-----	
862	D7423	<10		-----	
864	D7423	<10		-----	
868	D7423	<10		-----	
872	D7423	0.4		0.32	
873	D7423	0.32		-0.82	
874	D7423	0.39		0.18	
875		-----		-----	
912		-----		-----	
922		-----		-----	
963		-----		-----	
974	D7423	0.42		0.61	
982		-----		-----	
994		-----		-----	
995		-----		-----	
998		-----		-----	
1012		-----		-----	
1016		-----		-----	
1062		-----		-----	
1065		-----		-----	
1066		-----		-----	
1067		-----		-----	
1081		-----		-----	
1107	D7423	0.38		0.03	
1145	D4815	0.3957		0.26	
1201		-----		-----	
1251		-----		-----	
1254		-----		-----	
1257		-----		-----	
1276	D7423	1.74	D(0.01)	19.48	
1357		-----		-----	
1429		-----		-----	
1455		-----		-----	
1556	D7423	0.43		0.75	
1585		-----		-----	
1603		-----		-----	
1613		-----		-----	

lab	method	value	mark	z(targ)	remarks
1631		-----		-----	
1653	D7423	<1		-----	
1656		-----		-----	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1788		-----		-----	
1796		-----		-----	
1810		-----		-----	
1823		-----		-----	
1857		-----		-----	
1858		-----		-----	
1949	D7423	< 0.5		-----	
1950		-----		-----	
1967		-----		-----	
1995	D7423	0.24		-1.97	
6016		-----		-----	
6090		-----		-----	
7006		-----		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9090		-----		-----	

normality	not OK	
n	10	
outliers	1	
mean (n)	0.378	
st.dev. (n)	0.0566	
R(calc.)	0.158	
R(Horwitz)	0.196	
Compare R(D7423:16a)	0.673	application range D7423:16a: 0.50 – 100 mg/kg
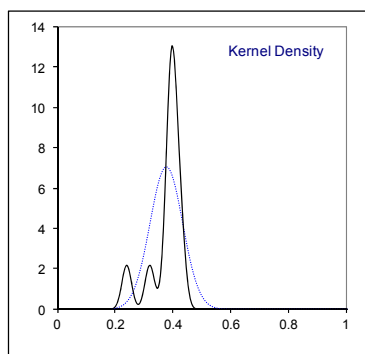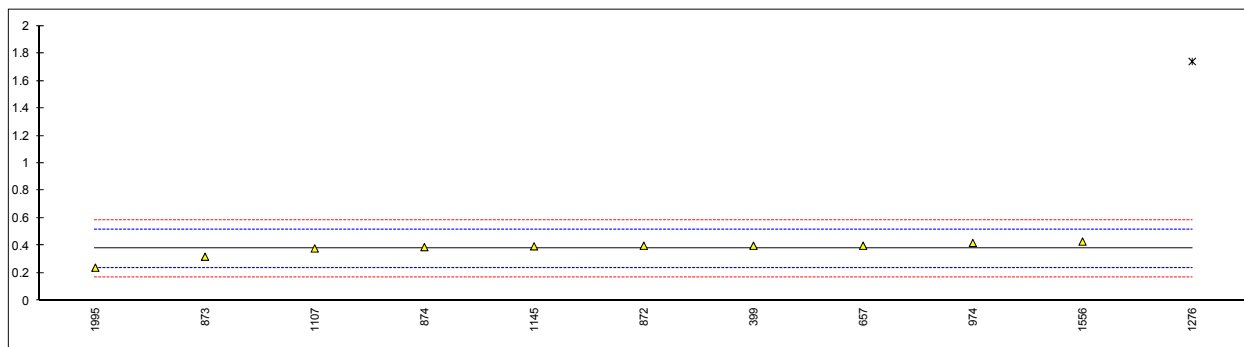
Determination of Total Oxygenates on sample #17046; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
140		-----		-----	
150		-----		-----	
158		-----		-----	
171	D7423	0.02819	C,G(0.05)	3.34	reported: 281.9%M/M
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	INH-403	0.016	C	-0.75	first reported: 160%M/M
317		-----		-----	
322		-----		-----	
323		-----		-----	
333		-----		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
349		-----		-----	
360		-----		-----	
399		-----		-----	
444		-----		-----	
445		-----		-----	
494		-----		-----	
529		-----		-----	
541		-----		-----	
557		-----		-----	
608		-----		-----	
657	INH-657	0.0202	C	0.66	first reported: 0.0226
663		-----		-----	
750		-----		-----	
753		-----		-----	
754	D7423	0.0180		-0.08	
759	D7423	0.0192		0.32	
779	D7423	0.0176		-0.21	
781		-----		-----	
785		-----		-----	
786		-----		-----	
824	D7423	0.01685		-0.47	
840		-----		-----	
855	INH-024	0.0168		-0.48	
862	D7423	0.01658		-0.56	
864	D7423	0.017		-0.42	
868	D7423	0.01697		-0.43	
872	D7423	0.0198	C	0.52	first reported: 198 %M/M
873	D7423	0.0200		0.59	
874	D7423	0.02297		1.59	
875		-----		-----	
912		-----		-----	
922		-----		-----	
963		-----		-----	
974	D7423	0.0143		-1.32	
982		-----		-----	
994		-----		-----	
995		-----		-----	
998		-----		-----	
1012		-----		-----	
1016		-----		-----	
1062		-----		-----	
1065		-----		-----	
1066		-----		-----	
1067		-----		-----	
1081		-----		-----	
1107	D7423	0.01879		0.18	
1145	D4815	0.0225		1.43	
1201		-----		-----	
1251		-----		-----	
1254		-----		-----	
1257		-----		-----	
1276	D4815	0.00654	C,DG(0.05)	-3.93	reported: 65.4%M/M
1357		-----		-----	
1429		-----		-----	
1455		-----		-----	
1556	D7423	0.0233	C	1.70	first reported: 0.0281
1585		-----		-----	
1603		-----		-----	
1613		-----		-----	

lab	method	value	mark	z(targ)	remarks
1631		-----		-----	
1653	D7423	0.0151		-1.05	
1656		-----		-----	
1737		-----		-----	
1741		-----		-----	
1776		-----		-----	
1788		-----		-----	
1796		-----		-----	
1810		-----		-----	
1823		-----		-----	
1857	D7754	0.0192		0.32	
1858		-----		-----	
1949	D7423	0.018975	C	0.25	first reported: 189.75 %M/M
1950	D7754	0.0211		0.96	
1967		-----		-----	
1995		0.010064	C	-2.74	reported: 100.64 %M/M
6016		-----		-----	
6090		-----	W	-----	first reported: 0.11
7006		-----		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9090		-----		-----	

normality	suspect
n	22
outliers	2
mean (n)	0.01824
st.dev. (n)	0.003039
R(calc.)	0.00851
R(Horwitz; n=5)	0.00835
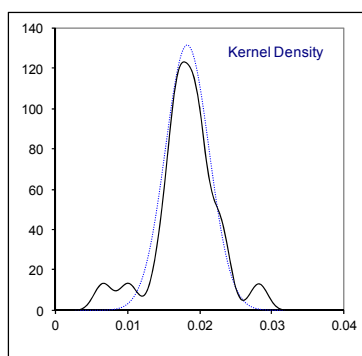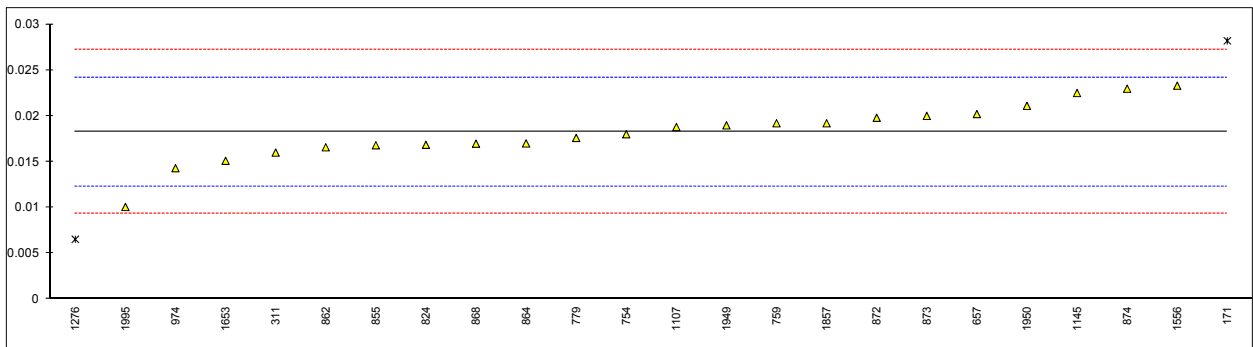
PONA/PIONA/PNA (n-Paraffines, i-Paraffines, Naphthenes) determination on sample #17046; results in %V/V

lab	method	n-Paraf.	mark	z(targ)	i-Paraf.	mark	z(targ)	Naphth.	mark	z(targ)
120		-----		-----	-----		-----	-----		-----
140	D5443	25.78	R(1)	-16.38	30.49	ex	-6.46	31.77	R(5)	8.26
150	D5134	30.912		-1.28	-----		-----	-----		-----
158		-----		-----	-----		-----	-----		-----
171					-----		-----	-----		-----
225		-----		-----	-----		-----	-----		-----
237		-----		-----	-----		-----	-----		-----
238		-----		-----	-----		-----	-----		-----
311	D5443	30.4		-2.79	33.8		3.06	30.2		0.96
317	D5443	32.31		2.83	32.07		-1.92	29.49		-2.34
322		-----		-----	-----		-----	-----		-----
323	D5443	30.12		-3.61	33.18		1.28	31.05		4.91
333	D6839	29.3		-6.02	32.18		-1.60	31.17		5.47
334	D6839	30.80		-1.61	33.30		1.63	29.71		-1.32
336		-----		-----	-----		-----	-----		-----
337		-----		-----	-----		-----	-----		-----
349		-----		-----	-----		-----	-----		-----
360		-----		-----	-----		-----	-----		-----
399	D5443	30.61		-2.17	32.55		-0.53	30.01		0.08
444		-----		-----	-----		-----	-----		-----
445	D5443	30.49		-2.52	33.68		2.72	29.84		-0.71
494	D6839	31.95		1.77	31.85		-2.55	30.56		2.63
529		-----		-----	-----		-----	-----		-----
541		-----		-----	-----		-----	-----		-----
557		-----		-----	-----		-----	-----		-----
608	D6730	31.8252	ex,C	1.40	37.6597	C,R(1)	14.18	22.8145	ex,C	-33.37
657	D5443	31.19		-0.46	32.69		-0.13	30.19		0.91
663		-----		-----	-----		-----	-----		-----
750	GOST 52714	32.24		2.63	33.78		3.01	27.89	ex	-9.78
753		-----		-----	-----		-----	-----		-----
754	D6729	31.522		0.51	32.348		-1.12	29.956	ex	-0.17
759		-----		-----	-----		-----	-----		-----
779	D6729	31.556		0.61	32.673		-0.18	29.677	ex	-1.47
781	D6839	31.53		0.54	32.96		0.65	29.60		-1.83
785		-----		-----	-----		-----	-----		-----
786		-----		-----	-----		-----	-----		-----
824	D5443	31.84		1.45	32.92		0.53	29.71		-1.32
840		-----		-----	-----		-----	-----		-----
855	D6839	30.73		-1.82	33.27		1.54	30.02		0.12
862	D6839	30.78		-1.67	32.89		0.44	30.11		0.54
864	D6839	-----		-----	-----		-----	29.81		-0.85
868	D6839	30.52		-2.43	33.26		1.51	30.24		1.15
872	D6839	31.51		0.48	33.69		2.75	28.99		-4.66
873	GOST 52714	32.68		3.92	32.59		-0.42	28.92	ex	-4.99
874		-----		-----	-----		-----	-----		-----
875		-----		-----	-----		-----	-----		-----
912		-----		-----	-----		-----	-----		-----
922	D6730	32.682	ex	3.93	36.219	R(1)	10.03	23.838	ex	-28.61
963		-----		-----	-----		-----	-----		-----
974	D6730	31.93		1.71	31.80	C	-2.69	33.58	ex,C	16.67
982		-----		-----	-----		-----	-----		-----
994	GOST 52714	31.95		1.77	-----		-----	-----		-----
995		-----		-----	-----		-----	-----		-----
998		-----		-----	-----		-----	-----		-----
1012		-----		-----	-----		-----	-----		-----
1016		31.67		0.95	32.48		-0.74	29.94		-0.25
1062		-----		-----	-----		-----	-----		-----
1065		32.055		2.08	32.530		-0.59	28.977		-4.72
1066	D6839	31.4		0.15	32.9		0.47	29.8		-0.90
1067		-----		-----	-----		-----	-----		-----
1081		-----		-----	-----		-----	-----		-----
1107	D5134	33.69		6.89	34.54		5.19	26.31	ex,C	-17.12
1145	D6293	34.703	C,R(5)	9.87	30.797		-5.58	28.490		-6.99
1201	D6839	31.08		-0.79	33.04		0.88	30.10		0.50
1251		-----		-----	-----		-----	-----		-----
1254		-----		-----	-----		-----	-----		-----
1257		-----		-----	-----		-----	-----		-----
1276		-----		-----	-----		-----	-----		-----
1357	D6839	30.22		-3.32	35.25	R(5)	7.24	30.25	C	1.19
1429		-----		-----	-----		-----	-----		-----
1455		-----		-----	-----		-----	-----		-----
1556	ISO22854	32.04		2.04	32.31		-1.22	29.93	ex	-0.29
1585		-----		-----	-----		-----	-----		-----
1603		-----		-----	-----		-----	-----		-----
1613	D6839	32.14		2.33	32.00		-2.12	30.00		0.03

lab	method	n-Paraf.	mark	z(targ)	i-Paraf.	mark	z(targ)	Naphth.	mark	z(targ)
1631		-----		-----	-----		-----	-----		-----
1653	D5134	31.217		-0.38	33.223		1.40	28.335	ex	-7.71
1656	D5443	29.3		-6.02	33.4		1.91	29.4	C	-2.76
1737	In house	31.16		-0.55	35.63	R(5)	8.33	27.67	R(5)	-10.80
1741	D6839	30.48		-2.55	33.22		1.39	30.21		1.01
1776		-----	W	-----	-----	W	-----	-----	W	-----
1788		-----		-----	-----		-----	-----		-----
1796		-----		-----	-----		-----	-----		-----
1810	D6839	33.47		6.24	31.23		-4.33	29.34		-3.04
1823	D6839	31.07		-0.82	32.80		0.19	30.22		1.05
1857	D5443	31.15		-0.58	32.50		-0.68	30.50		2.36
1858		-----		-----	-----		-----	-----		-----
1949		-----		-----	-----		-----	30.63		2.96
1950		-----		-----	-----		-----	-----		-----
1967		-----		-----	-----		-----	-----		-----
1995	D5443	29.71		-4.82	33.25		1.48	31.24		5.79
6016	D6729	33.835		7.32	30.776		-5.64	15.462	ex	-67.54
6090		-----		-----	-----		-----	-----		-----
7006		-----		-----	-----		-----	-----		-----
9054		-----		-----	-----		-----	-----		-----
9057		-----		-----	-----		-----	-----		-----
9058		-----		-----	-----		-----	-----		-----
9061		-----		-----	-----		-----	-----		-----
9090		-----		-----	-----		-----	-----		-----
	normality	OK			OK			OK		
	n	39			36			30		
	outliers	2+2ex			4+1ex			2+11ex		
	mean (n)	31.3476			32.7355			29.9932		
	st.dev. (n)	1.04819			0.81316			0.61910		
	R(calc.)	2.9349			2.2768			1.7335		
	R(D5443:14)	0.9518			0.9727			0.6024		
compare	R(D6839:17)	1.6			1.6			1.6		

R(5)=R(0.05) and R(1)=R(0.01). See for excluded test results § 4.1
Lab 608 first reported: 32.1927; 37.0993; 23.8856 respectively
Lab 974 first reported: 36.94; 23.92
Lab 1107 first reported: 27.31
Lab 1145 first reported: 34.61
Lab 1357 first reported: 28.37
Lab 1656 first reported: 31.5
Lab 1776 first reported: 32.23; 38.51; 21.59 respectively
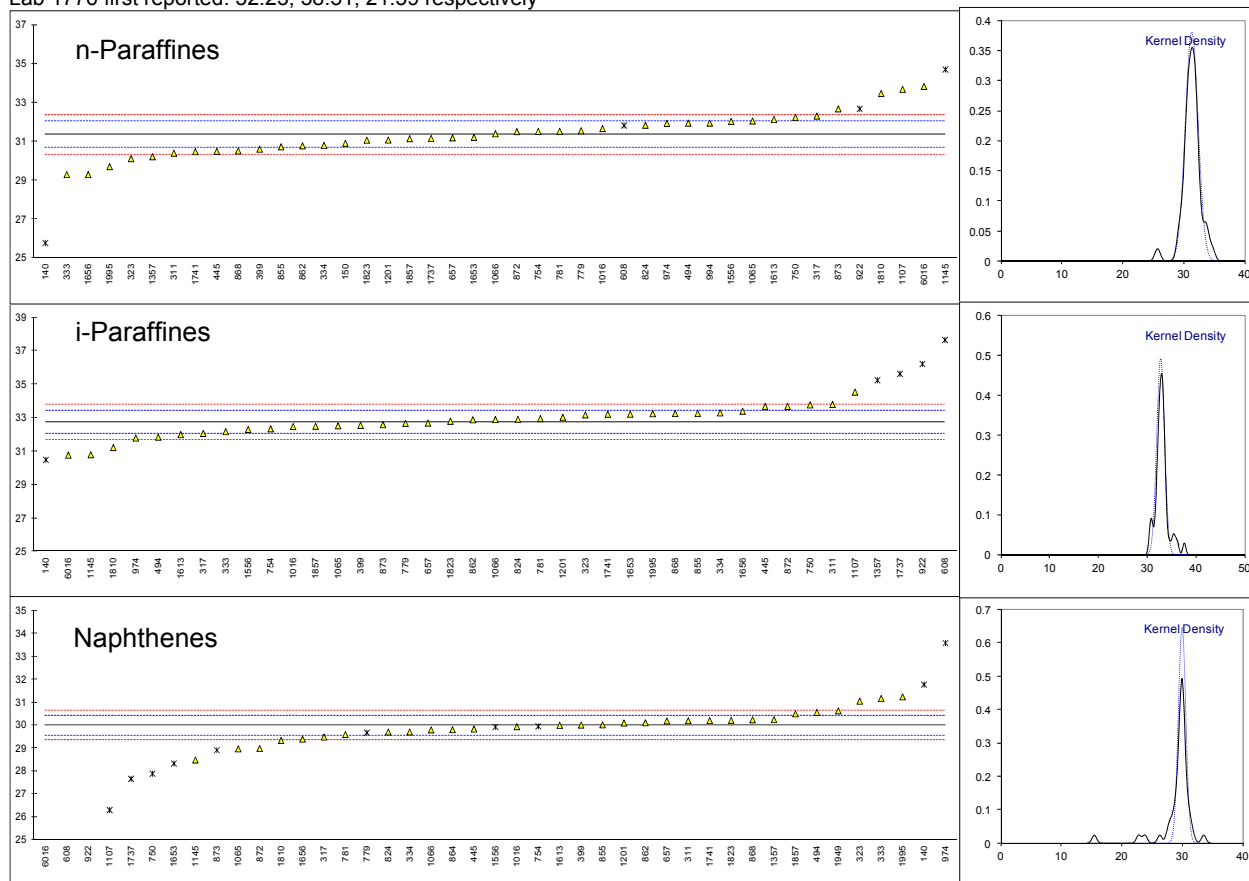
n-Paraffines

i-Paraffines

Naphthenes

PONA/PIONA/PNA (Aromatics, C4 and lighter, Comp. with BP>200°C) determination on sample #17046; results in %V/V (continued)

lab	method	Arom.	mark	z(targ)	≤C4	mark	z(targ)	Bp>200	mark	z(targ)
120		-----		-----	-----		-----	-----		-----
140	D5443	8.82	R(1)	12.96	-----		-----	0.73	ex	-----
150	D5134	6.159		1.83	-----		-----	-----		-----
158		-----		-----	-----		-----	-----		-----
171					-----		-----	-----		-----
225		-----		-----	-----		-----	-----		-----
237		-----		-----	-----		-----	-----		-----
238		-----		-----	-----		-----	-----		-----
311	D5443	5.5		-0.92	1.4		-3.70	0.5	C	-----
317	D5443	5.53		-0.80	1.77		0.06	<0.05		-----
322		-----		-----	-----		-----	-----		-----
323	D5443	5.51		-0.88	-----		-----	-----		-----
333	D6839	7.07	R(5)	5.64	-----		-----	-----		-----
334	D6839	5.87		0.63	-----		-----	-----		-----
336		-----		-----	-----		-----	-----		-----
337		-----		-----	-----		-----	-----		-----
349		-----		-----	-----		-----	-----		-----
360		-----		-----	-----		-----	-----		-----
399	D5443	5.78		0.25	-----		-----	-----		-----
444		-----		-----	-----		-----	-----		-----
445	D5443	5.71		-0.04	1.85		0.87	0.40		-----
494	D6839	5.62		-0.42	1.95		1.89	-----		-----
529		-----		-----	-----		-----	-----		-----
541		-----		-----	-----		-----	-----		-----
557		-----		-----	-----		-----	-----		-----
608	D6730	7.569	C,R(1)	7.73	1.9177	ex	1.56	-----		-----
657	D5443	5.67		-0.21	1.57	C	-1.98	-----		-----
663		-----		-----	-----		-----	-----		-----
750	GOST 52714	5.85		0.54	1.86		0.97	-----		-----
753		-----		-----	-----		-----	-----		-----
754	D6729	6.012		1.22	1.687		-0.79	-----		-----
759		-----		-----	-----		-----	-----		-----
779	D6729	5.936		0.90	1.905		1.43	-----		-----
781	D6839	5.75		0.12	1.800		0.36	0.13		-----
785		-----		-----	-----		-----	-----		-----
786		-----		-----	-----		-----	-----		-----
824	D5443	5.46		-1.09	1.77		0.06	-----		-----
840		-----		-----	-----		-----	-----		-----
855	D6839	5.84		0.50	1.81		0.46	-----		-----
862	D6839	6.08		1.50	1.81		0.46	-----		-----
864	D6839	5.68		-0.17	1.89		1.28	-----		-----
868	D6839	5.69		-0.13	1.83		0.67	-----		-----
872	D6839	5.67		-0.21	-----		-----	-----		-----
873	GOST 52714	5.73		0.04	1.86		0.97	-----		-----
874		-----		-----	-----		-----	-----		-----
875		-----		-----	-----		-----	-----		-----
912		-----		-----	-----		-----	-----		-----
922	D6730	6.947	R(1)	5.13	1.793	ex	0.29	-----		-----
963		-----		-----	-----		-----	-----		-----
974	D6730	5.5	C	-0.92	1.76		-0.04	-----		-----
982		-----		-----	-----		-----	-----		-----
994		-----		-----	-----		-----	-----		-----
995		-----		-----	-----		-----	-----		-----
998		-----		-----	-----		-----	-----		-----
1012		-----		-----	-----		-----	-----		-----
1016		5.76		0.17	0.84	R(1)	-9.40	0.03		-----
1062		-----		-----	-----		-----	-----		-----
1065		6.435		2.99	1.99		2.29	-----		-----
1066	D6839	5.8		0.33	1.49		-2.79	0.1		-----
1067		-----		-----	-----		-----	-----		-----
1081		-----		-----	-----		-----	-----		-----
1107	D5134	4.54	C,R(5)	-4.94	2.20		4.43	-----		-----
1145	D6293	5.897		0.74	1.617		-1.50	0.493		-----
1201	D6839	5.62		-0.42	1.34		-4.31	-----		-----
1251		-----		-----	-----		-----	-----		-----
1254		-----		-----	-----		-----	-----		-----
1257		-----		-----	-----		-----	-----		-----
1276		-----		-----	-----		-----	-----		-----
1357	D6839	5.92		0.83	-----		-----	-----		-----
1429		-----		-----	-----		-----	-----		-----
1455		-----		-----	-----		-----	-----		-----
1556	ISO22854	5.62		-0.42	1.94		1.79	0.23		-----
1585		-----		-----	-----		-----	-----		-----
1603		-----		-----	-----		-----	-----		-----
1613	D6839	5.26		-1.92	-----		-----	-----		-----

lab	method	Arom.	mark	z(targ)	≤C4	mark	z(targ)	Bp>200	mark	z(targ)
1631		-----		-----	-----		-----	-----		-----
1653	D5134	6.648	R(5)	3.88	1.614		-1.53	<0.01		-----
1656	D5443	5.7		-0.09	-----		-----	0.2		-----
1737	In house	5.35		-1.55	1.55		-2.18	-----		-----
1741	D6839	5.96		1.00	-----		-----	-----		-----
1776		-----	W	-----	-----	W	-----	-----		-----
1788		-----		-----	-----		-----	-----		-----
1796		-----		-----	-----		-----	-----		-----
1810	D6839	5.73		0.04	-----		-----	-----		-----
1823	D6839	5.80		0.33	1.65		-1.16	0.06		-----
1857	D5443	5.66		-0.25	1.25	R(5)	-5.23	-----		-----
1858		-----		-----	-----		-----	-----		-----
1949	D5443	5.65		-0.29	-----		-----	0.20		-----
1950		-----		-----	-----		-----	-----		-----
1967		-----		-----	-----		-----	-----		-----
1995	D5443	5.72		0.00	0.62	R(1)	-11.63	NIL		-----
6016	D6729	4.944		-3.25	1.961		2.00	-----		-----
6090		-----	W	-----	-----		-----	-----		-----
7006		-----		-----	-----		-----	-----		-----
9054		-----		-----	-----		-----	-----		-----
9057		-----		-----	-----		-----	-----		-----
9058		-----		-----	-----		-----	-----		-----
9061		-----		-----	-----		-----	-----		-----
9090		-----		-----	-----		-----	-----		-----
	normality	not OK			OK			OK		
	n	38			26			10		
	outliers	6			3+2ex			0+1ex		
	mean (n)	5.7203			1.7644			0.2343		
	st.dev. (n)	0.25517			0.19503			0.17269		
	R(calc.)	0.7145			0.5461			0.4835		
	R(D5443:14)	0.6697		R(D5134:13)	0.2755			n.a.		
compare	R(D6839:17)	0.5659		application range 20-45						

R(5)=R(0.05) and R(1)=R(0.01). See for excluded test results § 4.1
Lab 311 first reported: 1
Lab 608 first reported: 6.6107
Lab 657 first reported: 0.21
Lab 974 first reported: 7.10
Lab 1107 first reported: 4.47
Lab 1776 first reported: 6.76; 1.82 respectively
Lab 6090 first reported: 7.1
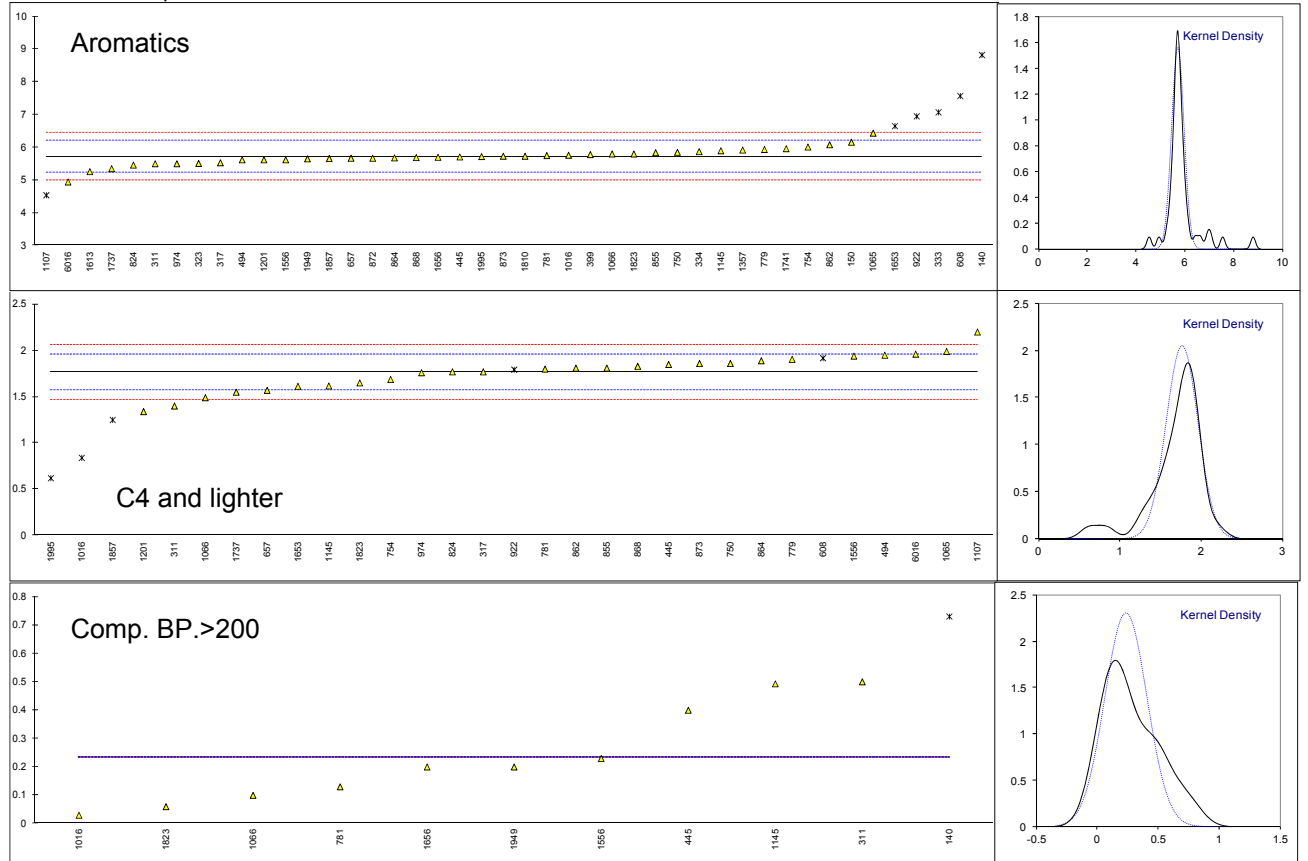
Aromatics

Kernel Density

C4 and lighter

Kernel Density

Comp. BP.>200

Kernel Density

PONA/PIONA/PNA (Olefines) determination on sample #17046; results in %V/V (continued)

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
140		-----		-----	
150	D5134	0.018		-1.22	
158		-----		-----	
171		-----		-----	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	D5443	0.05		-0.92	
317	D6839	0.55	R(0.01)	3.76	
322		-----		-----	
323	D6839	<1.5		-----	
333	D6839	0.28		1.23	
334	D6839	0.31		1.51	
336		-----		-----	
337		-----		-----	
349		-----		-----	
360		-----		-----	
399	D6839	0.98	R(0.01)	7.78	
444		-----		-----	
445	D5433Mod.	0.27		1.14	
494	D6839	0.02		-1.20	
529		-----		-----	
541		-----		-----	
557		-----		-----	
608		-----		-----	
657	D6839	0.26		1.05	
663		-----		-----	
750	GOST 52714	0.15		0.02	
753		-----		-----	
754		0.162		0.13	
759		-----		-----	
779		0.158		0.09	
781	D6839	0.16		0.11	
785		-----		-----	
786		-----		-----	
824	D6839	<0.1		-----	
840		-----		-----	
855	D6839	0.14		-0.08	
862	D6839	0.15		0.02	
864	D6839	0.13		-0.17	
868	D6839	<0.1		-----	
872	D6839	0.14		-0.08	
873	GOST 52714	0.08		-0.64	
874		-----		-----	
875		-----		-----	
912		-----		-----	
922	D6730	0.033	ex	-1.08	excluded see § 4.1
963		-----		-----	
974	D6730	0.11		-0.36	
982		-----		-----	
994	GOST 52714	0.16		0.11	
995		-----		-----	
998		-----		-----	
1012		-----		-----	
1016		0.15		0.02	
1062		-----		-----	
1065		0.003		-1.36	
1066	D6839	<0.1		-----	
1067		-----		-----	
1081		-----		-----	
1107	D6839	<0.1		-----	
1145	D6293	0.113		-0.33	
1201	D6839	0.16		0.11	
1251		-----		-----	
1254		-----		-----	
1257		-----		-----	
1276		-----		-----	
1357	D6839	0.24		0.86	
1429		-----		-----	
1455		-----		-----	
1556	ISO22854	0.11		-0.36	
1585		-----		-----	
1603		-----		-----	
1613	D6839	<0.1		-----	

lab	method	value	mark	z(targ)	remarks
1631		-----		-----	
1653	D5134	<0.01		-----	
1656	D5443	0.1		-0.45	
1737	In house	0.19		0.39	
1741	D6839	0.13		-0.17	
1776		-----		-----	
1788		-----		-----	
1796		-----		-----	
1810	D6839	0.24		0.86	
1823	D6839	0.10		-0.45	
1857	D6839	0.19		0.39	
1858		-----		-----	
1949	D6839	0.19		0.39	
1950		-----		-----	
1967		-----		-----	
1995	D5443	0.08		-0.64	
6016	D6729	14.052	R(0.01)	130.11	
6090		-----	W	-----	first reported: 2.8
7006		-----		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9090		-----		-----	

normality	OK
n	32
outliers	3+1ex
mean (n)	0.1483
st.dev. (n)	0.07550
R(calc.)	0.2114
R(D6839:17)	0.2992
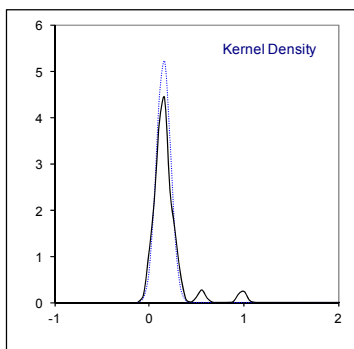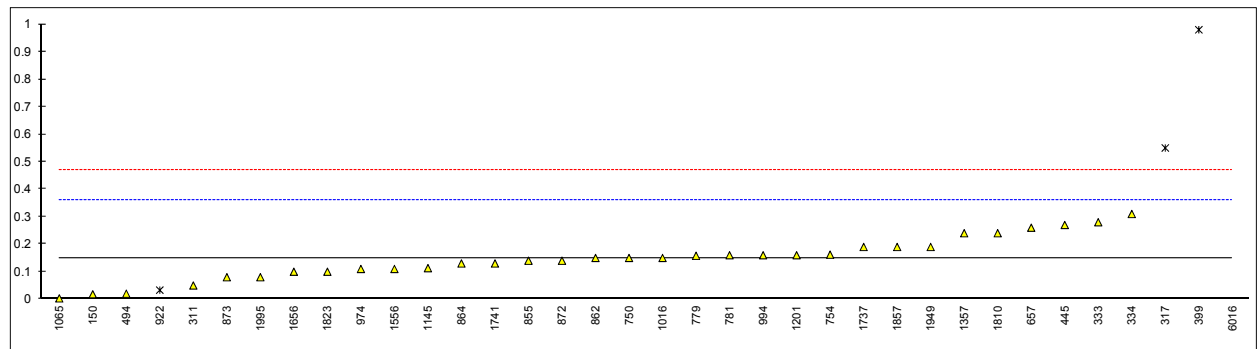
Kernel Density

PONA/PIONA/PNA (n-Paraffines, i-Paraffines, Naphthenes) determination on sample #17046; results in %M/M

lab	method	n-Paraf.	mark	z(targ)	i-Paraf.	mark	z(targ)	Naphth.	mark	z(targ)
120		-----		-----	-----		-----	-----		-----
140	D5443	29.1	ex	-0.79	24.10	R(1)	-21.41	33.25	ex	4.56
150	D5134	29.089		-0.83	-----		-----	-----		-----
158		-----		-----	-----		-----	-----		-----
171				-----	-----		-----	-----		-----
225		-----		-----	-----		-----	-----		-----
237		-----		-----	-----		-----	-----		-----
238		-----		-----	-----		-----	-----		-----
311	D5443	28.4		-2.92	32.3		2.70	32.4		0.75
317	D5443	30.30		2.85	30.65		-2.15	31.72		-2.30
322		-----		-----	-----		-----	-----		-----
323	D5443	28.15		-3.68	31.67		0.85	33.37		5.09
333	D6839	27.39		-5.99	30.62		-2.24	33.24		4.51
334	D6839	28.93		-1.31	31.76		1.11	31.91		-1.45
336				-----	-----		-----	-----		-----
337				-----	-----		-----	-----		-----
349		-----		-----	-----		-----	-----		-----
360	D5443	29.18		-0.55	31.89		1.50	32.00		-1.05
399	D5443	28.59		-2.34	31.08		-0.88	32.26		0.12
444		-----		-----	-----		-----	-----		-----
445	D5443	28.38		-2.98	32.29		2.67	32.14		-0.42
494	D6839	29.84		1.46	30.39		-2.91	32.93		3.12
529		-----		-----	-----		-----	-----		-----
541		-----		-----	-----		-----	-----		-----
557		-----		-----	-----		-----	-----		-----
608	D6730	29.9047	ex,C	1.65	36.3635	C,R(1)	14.65	24.5373	ex,C	-34.51
657	D5443	29.24		-0.37	31.21		-0.50	32.44		0.93
663		-----		-----	-----		-----	-----		-----
750	GOST52714	30.20		2.55	32.01		1.85	30.04	ex,C	-9.83
753		-----		-----	-----		-----	-----		-----
754	D6729	29.485		0.38	30.904		-1.40	32.175	ex	-0.26
759		-----		-----	-----		-----	-----		-----
779	D6729	29.390		0.09	31.135		-0.72	32.159	ex	-0.33
781	D6839	29.54		0.54	31.54		0.47	31.78		-2.03
785		-----		-----	-----		-----	-----		-----
786		-----		-----	-----		-----	-----		-----
824	D5443	29.83		1.43	31.51		0.38	31.97		-1.18
840		-----		-----	-----		-----	-----		-----
855	D6839	28.63		-2.22	31.87		1.44	32.32		0.39
862	D6839	28.69		-2.04	31.37		-0.03	32.44		0.93
864				-----	-----		-----	32.15		-0.37
868	D6839	28.43		-2.83	31.86		1.41	32.50		1.19
872	D6839	29.39		0.09	32.38		2.94	31.23		-4.50
873	GOST52714	30.65		3.92	31.24		-0.41	31.08	ex	-5.17
874		-----		-----	-----		-----	-----		-----
875		-----		-----	-----		-----	-----		-----
912		-----		-----	-----		-----	-----		-----
922	D6730	30.701	ex	4.07	34.980	R(5)	10.58	25.582	ex	-29.82
963		-----		-----	-----		-----	-----		-----
974	D6730	30.00		1.94	30.02	C	-4.00	35.22	ex,C	13.39
982		-----		-----	-----		-----	-----		-----
994	GOST52714	29.97		1.85	-----		-----	-----		-----
995		-----		-----	-----		-----	-----		-----
998		-----		-----	-----		-----	-----		-----
1012		-----		-----	-----		-----	-----		-----
1016		29.77		1.24	30.97		-1.21	32.15		-0.37
1062		-----		-----	-----		-----	-----		-----
1065		29.991		1.91	31.088		-0.86	31.123		-4.98
1066	D6839	29.4		0.12	31.4		0.06	32.1		-0.60
1067		-----		-----	-----		-----	-----		-----
1081		-----		-----	-----		-----	-----		-----
1107	D5134	31.71		7.14	33.23		5.44	29.01	ex,C	-14.45
1145	D6293	32.773	R(1)	10.37	29.367		-5.92	30.613		-7.27
1201	D6839	28.98		-1.16	31.67		0.85	32.41		0.79
1251		-----		-----	-----		-----	-----		-----
1254		-----		-----	-----		-----	-----		-----
1257		-----		-----	-----		-----	-----		-----
1276	D5134	24.621	R(1)	-14.41	30.183	ex	-3.52	33.506	ex	5.70
1357	D6839	28.39		-2.95	33.20	C	5.35	32.51	C	1.24
1429		-----		-----	-----		-----	-----		-----
1455		-----		-----	-----		-----	-----		-----
1556	ISO22854	30.07		2.16	30.85		-1.56	32.18	ex	-0.24
1585		-----		-----	-----		-----	-----		-----
1603		-----		-----	-----		-----	-----		-----
1613	D6839	30.70		4.07	31.50		0.35	31.70		-2.39

lab	method	n-Paraf.	mark	z(targ)	i-Paraf.	mark	z(targ)	Naphth.	mark	z(targ)
1631		-----		-----	-----		-----	-----		-----
1653	D5134	29.246		-0.35	31.829		1.32	30.292	ex	-8.71
1656	D5443	28	C	-4.14	31.7		0.94	31.5	C	-3.29
1737	In house	29.16		-0.61	34.33	R(5)	8.67	29.83	R(5)	-10.78
1741	D6839	28.52		-2.56	31.71		0.97	32.45		0.97
1776		-----	W	-----	-----	W	-----	-----	W	-----
1788		-----		-----	-----		-----	-----		-----
1796		-----		-----	-----		-----	-----		-----
1810	D6839	31.40		6.20	29.84		-4.53	31.59		-2.89
1823	D6839	29.06		-0.92	31.34		-0.12	32.48		1.10
1857	D5443	29.11		-0.76	31.07		-0.91	32.80		2.54
1858		-----		-----	-----		-----	-----		-----
1949		-----		-----	-----		-----	32.96		3.26
1950		-----		-----	-----		-----	-----		-----
1967		-----		-----	-----		-----	-----		-----
1995	D5443	27.7		-5.05	31.74		1.06	33.56		5.95
6016	D6729	32.191		8.60	29.885		-4.40	16.756	ex	-69.39
6090		-----		-----	-----		-----	-----		-----
7006		-----		-----	-----		-----	-----		-----
9054		-----		-----	-----		-----	-----		-----
9057		-----		-----	-----		-----	-----		-----
9058		-----		-----	-----		-----	-----		-----
9061		-----		-----	-----		-----	-----		-----
9090	D5443	28.71		-1.98	31.77		1.14	32.73		2.23
	normality	OK			OK			OK		
	n	41			39			32		
	outliers	2+3ex			4+1ex			1+13ex		
	mean (n)	29.3610			31.3810			32.2336		
	st.dev. (n)	1.02589			0.81527			0.64492		
	R(calc.)	2.8725			2.2828			1.8058		
	R(D5443:14)	0.9212			0.9523			0.6245		
	compare R(D6839:17)	1.6			1.6			1.6		

R(5)=R(0.05) and R(1)=R(0.01). See for excluded test results § 4.1
Lab 608 first reported: 30.3050; 35.9217; 25.5029 respectively
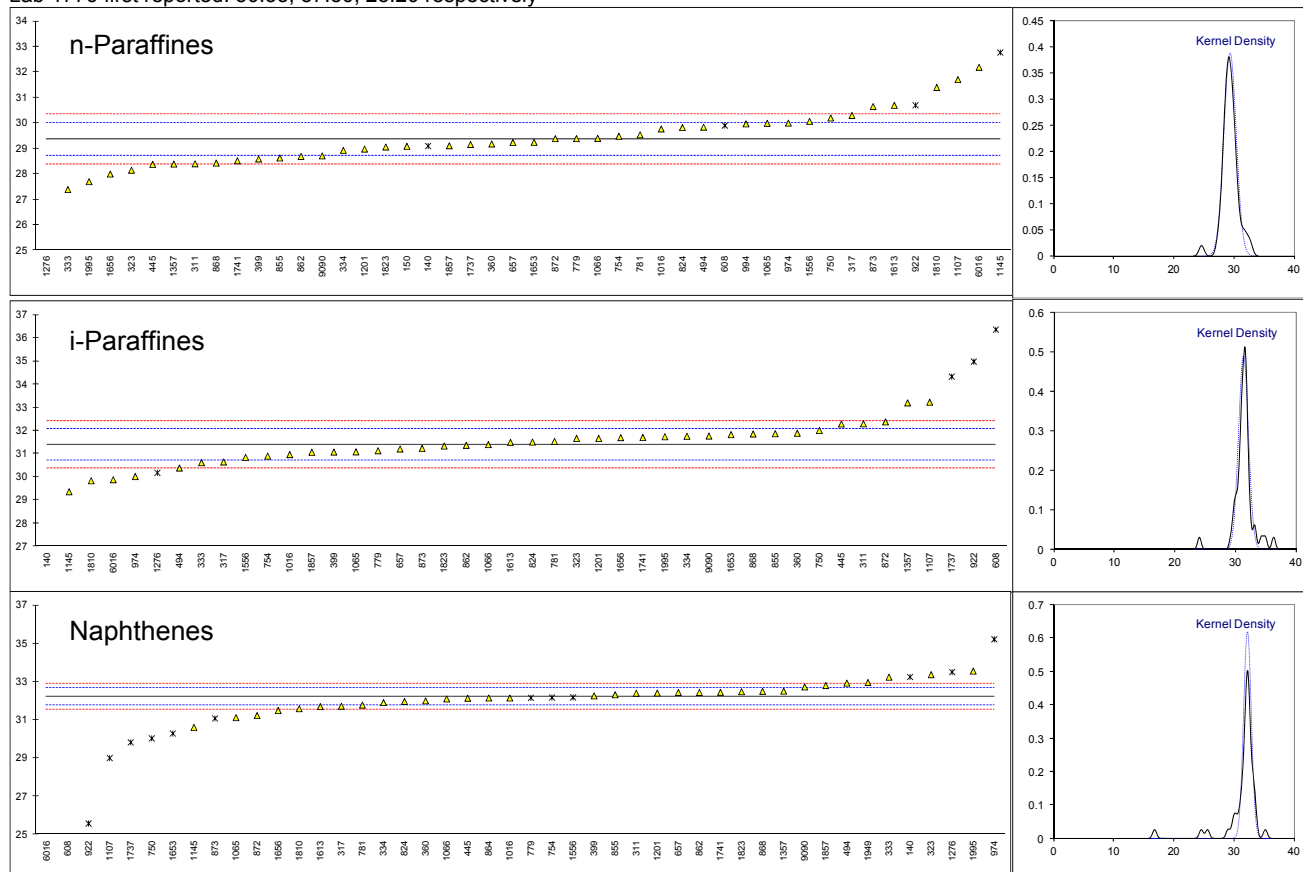Lab 750 first reported: 30.04
Lab 974 first reported: 35.64; 25.64
Lab 1107 first reported: 29.59
Lab 1357 first reported: 33.81; 30.40 respectively
Lab 1656 first reported: 27.4; 33.9 respectively
Lab 1776 first reported: 30.35; 37.30; 23.20 respectively

n-Paraffines

i-Paraffines

Naphthenes

PONA/PIONA/PNA (Aromatics, C4 and lighter, Comp. with BP>200°C) determination on sample #17046; results in %M/M (continued)

lab	method	Arom.	mark	z(targ)	≤C4	mark	z(targ)	Bp>200	mark	z(targ)
120		-----		-----	-----		-----	-----		-----
140	D5443	10.36	R(1)	13.15	-----		-----	0.76	ex	-----
150	D5134	7.481		2.19	-----		-----	-----		-----
158		-----		-----	-----		-----	-----		-----
171		-----		-----	-----		-----	-----		-----
225		-----		-----	-----		-----	-----		-----
237		-----		-----	-----		-----	-----		-----
238		-----		-----	-----		-----	-----		-----
311	D5443	6.7		-0.78	1.1		-3.79	0.5	C	-----
317	D5443	6.70		-0.78	1.43		0.27	<0.05		-----
322		-----		-----	-----		-----	-----		-----
323	D5443	6.65		-0.97	-----		-----	-----		-----
333	D6839	8.47	R(5)	5.95	-----		-----	-----		-----
334	D6839	7.09		0.70	-----		-----	-----		-----
336		-----		-----	-----		-----	-----		-----
337		-----		-----	-----		-----	-----		-----
349		-----		-----	-----		-----	-----		-----
360	D5443	6.81		-0.36	1.43		0.27	0.02		-----
399	D5443	6.97		0.25	-----		-----	-----		-----
444		-----		-----	-----		-----	-----		-----
445	D5443	6.91		0.02	1.49		1.01	0.49		-----
494	D6839	6.83		-0.29	1.57		2.00	-----		-----
529		-----		-----	-----		-----	-----		-----
541		-----		-----	-----		-----	-----		-----
557		-----		-----	-----		-----	-----		-----
608	D6730	9.0842	C,R(1)	8.29	1.5483	ex	1.73	-----		-----
657	D5443	6.85		-0.21	1.27	C	-1.70	-----		-----
663		-----		-----	-----		-----	-----		-----
750	GOST52714	7.10		0.74	1.50		1.13	-----		-----
753		-----		-----	-----		-----	-----		-----
754	D6729	7.279		1.42	1.373		-0.43	-----		-----
759		-----		-----	-----		-----	-----		-----
779	D6729	7.160		0.97	1.523		1.42	-----		-----
781	D6839	6.96		0.21	1.447		0.48	0.13		-----
785		-----		-----	-----		-----	-----		-----
786		-----		-----	-----		-----	-----		-----
824	D5443	6.61		-1.12	1.43		0.27	-----		-----
840		-----		-----	-----		-----	-----		-----
855	D6839	7.04		0.51	1.51		1.26	-----		-----
862	D6839	7.35		1.69	1.47		0.77	-----		-----
864	D6839	6.86		-0.17	1.50		1.13	-----		-----
868	D6839	6.87		-0.14	1.48		0.89	-----		-----
872	D6839	6.85		-0.21	-----		-----	-----		-----
873	GOST52714	6.95		0.17	1.44		0.40	-----		-----
874		-----		-----	-----		-----	-----		-----
875		-----		-----	-----		-----	-----		-----
912		-----		-----	-----		-----	-----		-----
922	D6730	8.429	R(1)	5.80	1.445	ex,C	0.46	-----		-----
963		-----		-----	-----		-----	-----		-----
974	D6730	6.25	C	-2.49	1.42		0.15	-----		-----
982		-----		-----	-----		-----	-----		-----
994		-----		-----	-----		-----	-----		-----
995		-----		-----	-----		-----	-----		-----
998		-----		-----	-----		-----	-----		-----
1012		-----		-----	-----		-----	-----		-----
1016		6.96		0.21	0.67	R(1)	-9.09	0.03		-----
1062		-----		-----	-----		-----	-----		-----
1065		7.795		3.38	1.61		2.49	-----		-----
1066	D6839	7.0		0.36	1.21		-2.44	0.1		-----
1067		-----		-----	-----		-----	-----		-----
1081		-----		-----	-----		-----	-----		-----
1107	D5134	5.56	C,R(5)	-5.12	-----		-----	-----		-----
1145	D6293	7.137		0.88	1.307		-1.24	0.593		-----
1201	D6839	6.79		-0.44	1.07		-4.16	-----		-----
1251		-----		-----	-----		-----	-----		-----
1254		-----		-----	-----		-----	-----		-----
1257		-----		-----	-----		-----	-----		-----
1276	D5134	11.038	R(1)	15.73	-----		-----	-----		-----
1357	D6839	7.16		0.97	-----		-----	-----		-----
1429		-----		-----	-----		-----	-----		-----
1455		-----		-----	-----		-----	-----		-----
1556	ISO22854	6.80		-0.40	1.55		1.75	0.28		-----
1585		-----		-----	-----		-----	-----		-----
1603		-----		-----	-----		-----	-----		-----
1613	D6839	6.35		-2.11	<=C4		-----	<==		-----

lab	method	Arom.	mark	z(targ)	≤C4	mark	z(targ)	Bp>200	mark	z(targ)
1631		-----		-----	-----		-----	-----		-----
1653	D5134	8.022	R(5)	4.25	1.291		-1.44	<0.01		-----
1656	D5443	6.9		-0.02	-----		-----	0.2		-----
1737	In house	6.49		-1.58	1.24		-2.07	-----		-----
1741	D6839	7.20		1.12	-----		-----	-----		-----
1776		-----	W	-----	-----	W	-----	-----		-----
1788										
1796		-----		-----	-----		-----	-----		-----
1810	D6839	6.92		0.06	-----		-----	-----		-----
1823	D6839	7.02		0.44	1.34		-0.84	0.06		-----
1857	D5443	6.83		-0.29	0.99	R(5)	-5.15	-----		-----
1858		-----		-----	-----		-----	-----		-----
1949	D5443	6.84		-0.25	-----		-----	0.24		-----
1950		-----		-----	-----		-----	-----		-----
1967		-----		-----	-----		-----	-----		-----
1995	D5443	6.88		-0.10	0.49	R(1)	-11.30	NIL		-----
6016	D6729	6.088		-3.11	1.603		2.40	-----		-----
6090		-----		-----	-----		-----	-----		-----
7006		-----		-----	-----		-----	-----		-----
9054		-----		-----	-----		-----	-----		-----
9057		-----		-----	-----		-----	-----		-----
9058		-----		-----	-----		-----	-----		-----
9061		-----		-----	-----		-----	-----		-----
9090	D5443	6.79		-0.44	-----		-----	-----		-----
	normality	suspect			OK			OK		
	n	40			26			11		
	outliers	7			3+2ex			0+1ex		
	mean (n)	6.9055			1.4078			0.2403		
	st.dev. (n)	0.30979			0.14297			0.20359		
	R(calc.)	0.8674			0.4003			0.5701		
	R(D5443:14)	0.7358		R(D5134:13)	0.2274			n.a.		
compare R(D6839:17)		0.6086		application range 20-45						

R(5)=R(0.05) and R(1)=R(0.01). See for excluded test results § 4.1
Lab 311 first reported: 1.1
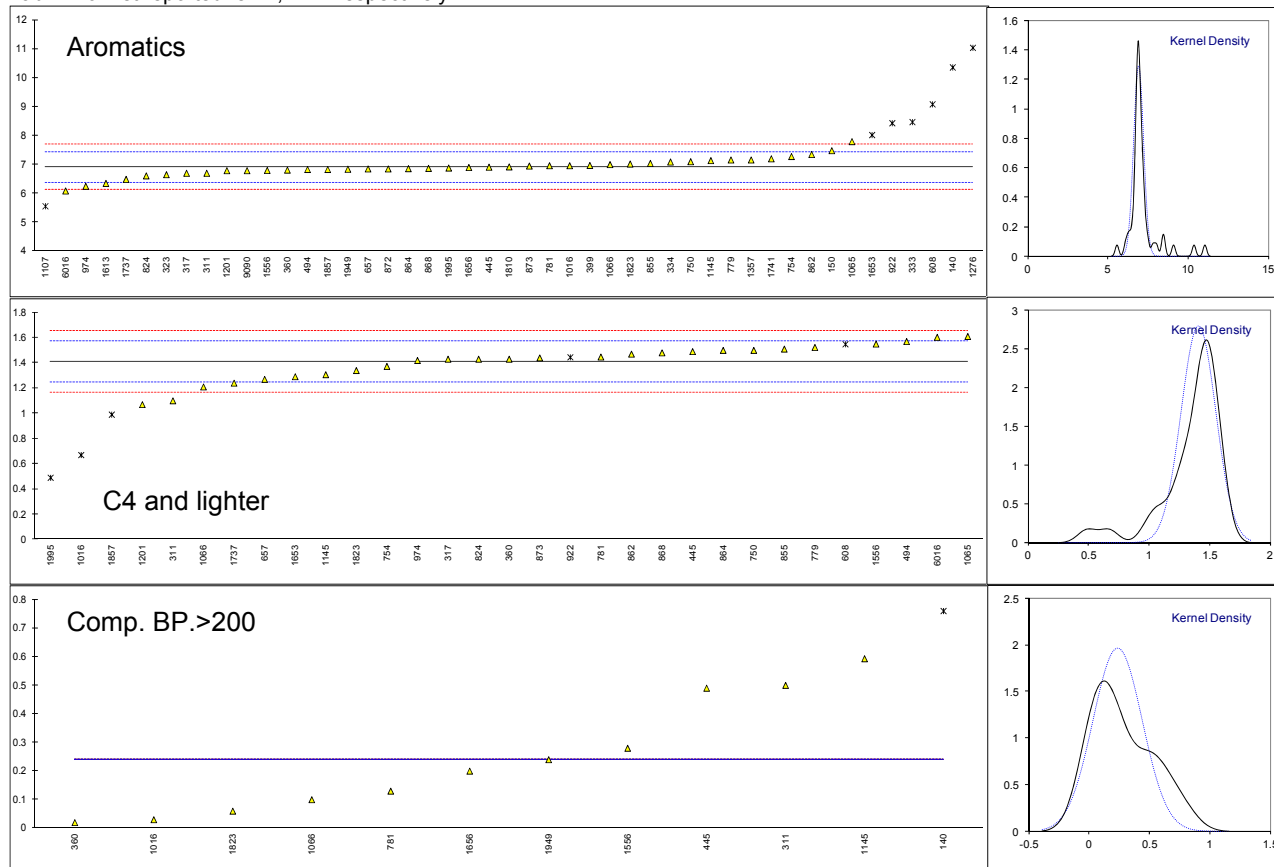Lab 608 first reported: 8.0625
Lab 657 first reported: 0.17
Lab 922 first reported: 2.506
Lab 974 first reported: 8.61
Lab 1107 first reported: 5.48
Lab 1776 first reported: 8.24; 1.47 respectively

PONA/PIONA/PNA (Olefines) determination on sample #17046; results in %M/M (continued)

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
140		-----		-----	
150	D5134	0.017		-1.24	
158		-----		-----	
171		-----		-----	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	D5443	0.05		-0.93	
317	D6839	0.64	C,R(0.01)	4.57	first reported: 0.56
322		-----		-----	
323	D6839	<1.5		-----	
333	D6839	0.28		1.21	
334	D6839	0.32		1.59	
336		-----		-----	
337		-----		-----	
349		-----		-----	
360	D6839	0.12		-0.28	
399	D6839	1.00	R(0.01)	7.92	
444		-----		-----	
445	D5433Mod.	0.26		1.03	
494	D6839	0.02		-1.21	
529		-----		-----	
541		-----		-----	
557		-----		-----	
608		-----		-----	
657	D6839	0.27		1.12	
663		-----		-----	
750	GOST52714	0.15		0.00	
753		-----		-----	
754		0.157		0.07	
759		-----		-----	
779		0.156		0.06	
781	D6839	0.17		0.19	
785		-----		-----	
786		-----		-----	
824	D6839	<0.1		-----	
840		-----		-----	
855	D6839	0.14		-0.09	
862	D6839	0.15		0.00	
864	D6839	0.14		-0.09	
868	D6839	<0.1		-----	
872	D6839	0.15		0.00	
873	GOST52714	0.08		-0.65	
874		-----		-----	
875		-----		-----	
912		-----		-----	
922	D6730	0.034	ex	-1.08	excluded see § 4.1
963		-----		-----	
974	D6730	0.11		-0.37	
982		-----		-----	
994	GOST52714	0.17		0.19	
995		-----		-----	
998		-----		-----	
1012		-----		-----	
1016		0.15		0.00	
1062		-----		-----	
1065		0.003		-1.37	
1066	D6839	<0.1		-----	
1067		-----		-----	
1081		-----		-----	
1107	D6839	<0.1		-----	
1145	D6293	0.110		-0.37	
1201	D6839	0.16		0.10	
1251		-----		-----	
1254		-----		-----	
1257		-----		-----	
1276		0.299	ex	1.39	excluded see § 4.1
1357	D6839	0.25		0.93	
1429		-----		-----	
1455		-----		-----	
1556	ISO22854	0.10		-0.46	
1585		-----		-----	
1603		-----		-----	
1613	D6839	<0.1		-----	

lab	method	value	mark	z(targ)	remarks
1631		-----		-----	
1653	D5134	<0.01		-----	
1656	D5443	0.1		-0.46	
1737	In house	0.19		0.37	
1741	D6839	0.13		-0.18	
1776		-----		-----	
1788		-----		-----	
1796		-----		-----	
1810	D6839	0.26		1.03	
1823	D6839	0.10		-0.46	
1857	D6839	0.19		0.37	
1858		-----		-----	
1949	D6839	0.21		0.56	
1950		-----		-----	
1967		-----		-----	
1995	D5443	0.08		-0.65	
6016	D6729	14.121	R(0.01)	130.12	
6090		-----		-----	
7006		-----		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9090	D5443	<0.05		-----	

normality	OK
n	33
outliers	3+2ex
mean (n)	0.1498
st.dev. (n)	0.07713
R(calc.)	0.2160
R(D6839:16)	0.3006
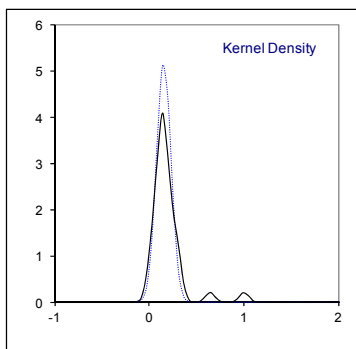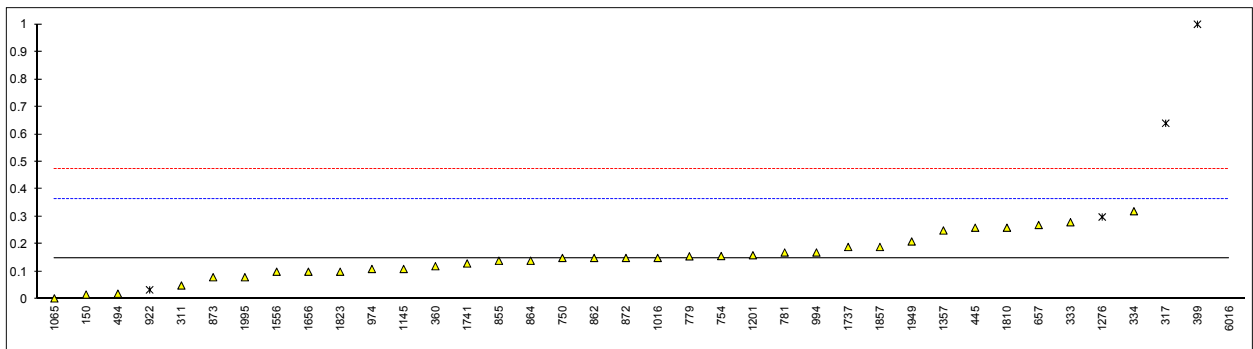
Determination of Pentane (DHA) on sample #17046; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
140	D5134	5.24		-3.91	
150	D5134	5.287		-3.62	
158		-----		-----	
171		5.845		-0.22	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	D5134	5.79		-0.55	
317		-----		-----	
322		-----		-----	
323		-----		-----	
333		-----		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
349		-----		-----	
360	D5134	5.75		-0.79	
399	D5134	5.66		-1.34	
444		5.674		-1.26	
445		-----		-----	
494		-----		-----	
529		-----		-----	
541		-----		-----	
557		-----		-----	
608	D6730	5.9404		0.37	
657	D6730	5.8086		-0.44	
663		-----		-----	
750	GOST52714	5.96		0.49	
753		-----		-----	
754	D6729	5.774		-0.65	
759		-----		-----	
779	D6729	5.911		0.19	
781	D6729	5.737		-0.87	
785		-----		-----	
786		-----		-----	
824		-----		-----	
840	D5134	5.555	C	-1.98	first reported: 8.946 as sum of Pentane isomers
855		-----		-----	
862		5.772		-0.66	
864		-----		-----	
868	D5134	5.807		-0.45	
872		-----		-----	
873		6.07		1.16	
874		-----		-----	
875		-----		-----	
912		-----		-----	
922	D6729	5.9604		0.49	
963		-----		-----	
974	D6730	5.832		-0.29	
982		-----		-----	
994	GOST52714	-----		-----	
995		5.94		0.36	
998		-----		-----	
1012		-----		-----	
1016		-----		-----	
1062		-----		-----	
1065		6.065		1.13	
1066	D6729	5.939		0.36	
1067	D5134	5.9		0.12	
1081		-----		-----	
1107	D5134	6.582	C	4.28	first reported: 6.584
1145		-----		-----	
1201		-----		-----	
1251		-----		-----	
1254		-----		-----	
1257		-----		-----	
1276		-----		-----	
1357		-----		-----	
1429		5.929		0.30	
1455		-----		-----	
1556	D6729	6.18		1.83	
1585	D6729	6.1473		1.63	
1603		-----		-----	
1613	D6730	6.52		3.90	

lab	method	value	mark	z(targ)	remarks
1631		-----		-----	
1653	D5134	5.165		-4.37	
1656	D5443	5.3		-3.54	
1737		-----		-----	
1741		-----		-----	
1776	D6729mod	-----	W	-----	first reported: 10.07
1788		-----		-----	
1796	D6729	6.012		0.80	
1810		-----		-----	
1823		-----		-----	
1857		-----		-----	
1858	D6729	6.3987		3.16	
1949	D6729	6.010		0.79	
1950	D5134	6.11		1.40	
1967	D6729	5.7395		-0.86	
1995		-----		-----	
6016	D6729	6.3777		3.04	
6090		-----		-----	
7006		-----		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9090		-----		-----	

normality	OK
n	36
outliers	0
mean (n)	5.8802
st.dev. (n)	0.32394
R(calc.)	0.9070
R(D5134:13)	0.4588
Compare R(Horwitz)	0.5044

Kernel Density
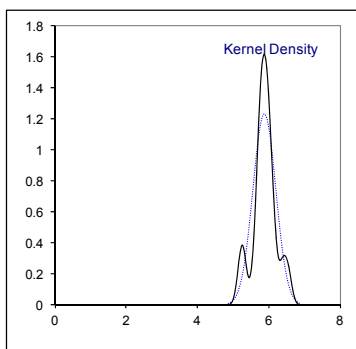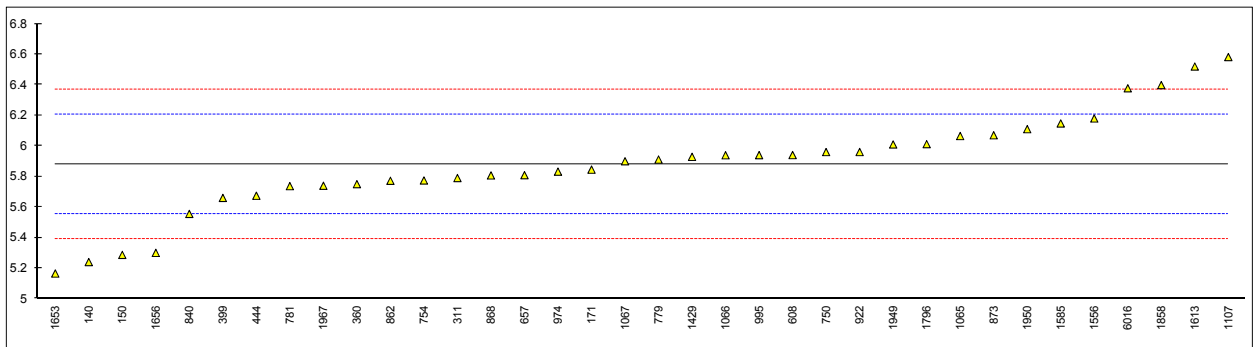
Determination of Benzene (DHA) on sample #17046; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
140	D5134	0.47		-1.32	
150	D5134	0.472		-1.22	
158		-----		-----	
171		0.489		-0.40	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	D5134	0.50	C	0.14	first reported: 0.60
317		-----		-----	
322		-----		-----	
323		-----		-----	
333		-----		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
349		-----		-----	
360	D5134	0.50		0.14	
399	D5134	0.50		0.14	
444		0.489		-0.40	
445		-----		-----	
494		-----		-----	
529		-----		-----	
541		-----		-----	
557		-----		-----	
608	D6730	0.5034		0.30	
657	D6730	0.4995		0.12	
663		-----		-----	
750	GOST52714	0.50		0.14	
753		-----		-----	
754	D6729	0.494		-0.15	
759		-----		-----	
779	D6729	0.493		-0.20	
781	D6729	0.480		-0.83	
785		-----		-----	
786		-----		-----	
824		-----		-----	
840	D5134	0.476		-1.03	
855		-----		-----	
862		0.500		0.14	
864		-----		-----	
868	D5134	0.498		0.04	
872		-----		-----	
873		0.49		-0.35	
874		-----		-----	
875		-----		-----	
912		-----		-----	
922	D6729	0.4854		-0.57	
963		-----		-----	
974	D6730	0.541		2.13	
982		-----		-----	
994	GOST52714	0.50		0.14	
995		0.48		-0.83	
998		-----		-----	
1012		-----		-----	
1016		-----		-----	
1062		-----		-----	
1065		0.509		0.58	
1066	D6729	0.503		0.29	
1067	D5134	0.5		0.14	
1081		-----		-----	
1107	D5134	0.457		-1.95	
1145		-----		-----	
1201		-----		-----	
1251		-----		-----	
1254		-----		-----	
1257		-----		-----	
1276		-----		-----	
1357		-----		-----	
1429		0.539		2.04	
1455		-----		-----	
1556	D6729	0.52		1.11	
1585	D6729	0.4945		-0.13	
1603		-----		-----	
1613	D6730	0.50		0.14	

lab	method	value	mark	z(targ)	remarks
1631		-----		-----	
1653	D5134	0.453		-2.15	
1656	D5443	0.5		0.14	
1737		-----		-----	
1741		-----		-----	
1776	D6729mod	-----	W	-----	first reported: 0.49
1788		-----		-----	
1796	D6729	0.501		0.19	
1810	D6893	0.45		-2.29	
1823		-----		-----	
1857		-----		-----	
1858	D6729	0.5483		2.49	
1949	D6729	0.511		0.67	
1950	D5134	0.50		0.14	
1967	D6729	0.4947		-0.12	
1995	D5443	0.4	R(0.01)	-4.72	
6016	D6729	0.550		2.57	
6090		-----		-----	
7006		-----		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9090		-----		-----	

normality	suspect
n	38
outliers	1
mean (n)	0.4971
st.dev. (n)	0.02246
R(calc.)	0.0629
R(D5134:13)	0.0576
Compare R(Horwitz)	0.0619
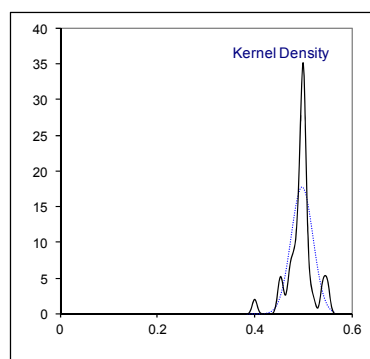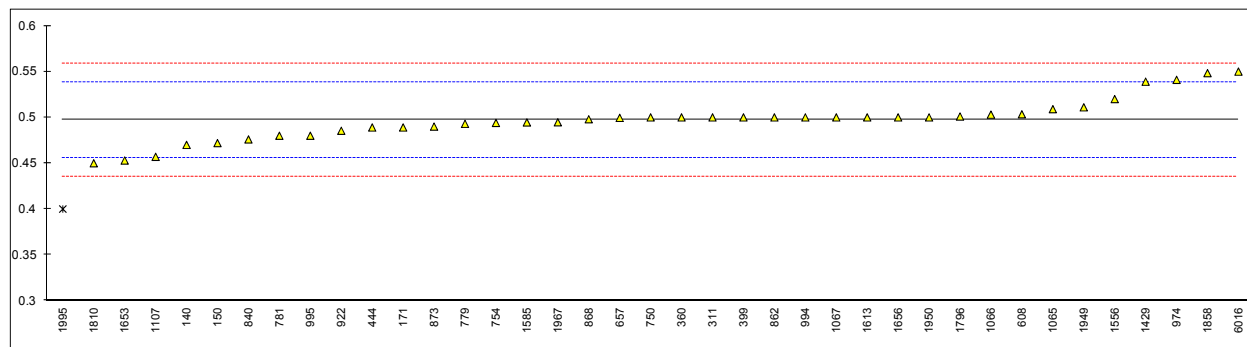
Determination of Cyclohexane (DHA) on sample #17046; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
140	D5134	1.92		-0.95	
150	D5134	1.928		-0.85	
158		-----		-----	
171		2.010		0.16	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	D5134	2.02		0.29	
317		-----		-----	
322		-----		-----	
323		-----		-----	
333		-----		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
349		-----		-----	
360		-----		-----	
399	D5134	2.01		0.16	
444		1.951		-0.57	
445		-----		-----	
494		-----		-----	
529		-----		-----	
541		-----		-----	
557		-----		-----	
608	D6730	2.0167		0.25	
657	D6730	1.9864		-0.13	
663		-----		-----	
750	GOST52714	2.00		0.04	
753		-----		-----	
754	D6729	1.969		-0.34	
759		-----		-----	
779	D6729	1.979		-0.22	
781	D6729	1.947		-0.62	
785		-----		-----	
786		-----		-----	
824		-----		-----	
840	D5134	1.972		-0.31	
855		-----		-----	
862		1.961		-0.44	
864		-----		-----	
868	D5134	1.994		-0.04	
872		-----		-----	
873		1.99		-0.08	
874		-----		-----	
875		-----		-----	
912		-----		-----	
922	D6729	1.9850		-0.15	
963		-----		-----	
974	D6730	3.457	C,R(0.01)	18.08	first reported: 2.335
982		-----		-----	
994	GOST52714	1.99		-0.08	
995		1.98		-0.21	
998		-----		-----	
1012		-----		-----	
1016		-----		-----	
1062		-----		-----	
1065		2.011		0.18	
1066		-----		-----	
1067	D5134	2.0		0.04	
1081		-----		-----	
1107	D5134	2.120		1.53	
1145		-----		-----	
1201		-----		-----	
1251		-----		-----	
1254		-----		-----	
1257		-----		-----	
1276		-----		-----	
1357		-----		-----	
1429		1.984		-0.16	
1455		-----		-----	
1556	D6729	2.05		0.66	
1585	D6729	1.9940		-0.04	
1603		-----		-----	
1613	D6730	2.05		0.66	

lab	method	value	mark	z(targ)	remarks
1631		-----		-----	
1653	D5134	1.851		-1.81	
1656	D5443	5.0	R(0.01)	37.19	
1737		-----		-----	
1741		-----		-----	
1776	D6729mod	-----	W	-----	first reported: 1.95
1788		-----		-----	
1796	D6729	1.988		-0.11	
1810		-----		-----	
1823		-----		-----	
1857		-----		-----	
1858	D6729	2.1035		1.32	
1949	D6729	2.005		0.10	
1950	D5134	1.99		-0.08	
1967	D6729	1.9730		-0.30	
1995		-----		-----	
6016	D6729	2.1668		2.10	
6090		-----		-----	
7006		-----		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9090		-----		-----	

|		
	normality	not OK
	n	33
	outliers	2
	mean (n)	1.9968
	st.dev. (n)	0.05691
	R(calc.)	0.1593
	R(D5134:13)	0.2261
Compare R(Horwitz)		0.2015

Kernel Density
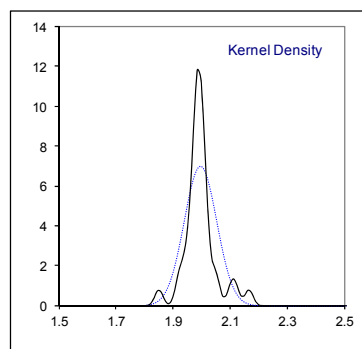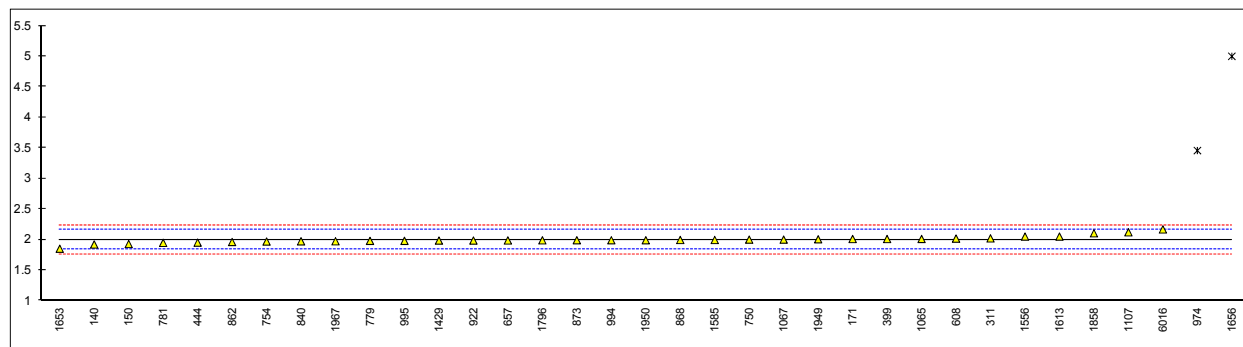
Determination of 2-Methylpentane (DHA) on sample #17046; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
140	D5134	3.06		-0.53	
150	D5134	3.028		-0.61	
158		-----		-----	
171		3.249		-0.05	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	D5134	3.26		-0.02	
317		-----		-----	
322		-----		-----	
323		-----		-----	
333		-----		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
349		-----		-----	
360		-----		-----	
399	D5134	3.18		-0.22	
444		3.206		-0.16	
445		-----		-----	
494		-----		-----	
529		-----		-----	
541		-----		-----	
557		-----		-----	
608	D6730	3.2976		0.07	
657	D6730	3.2257		-0.11	
663		-----		-----	
750	GOST52714	3.31		0.10	
753		-----		-----	
754	D6729	3.234		-0.09	
759		-----		-----	
779	D6729	3.267		0.00	
781	D6729	3.185		-0.21	
785		-----		-----	
786		-----		-----	
824		-----		-----	
840	D5134	3.143		-0.32	
855		-----		-----	
862		3.205		-0.16	
864		-----		-----	
868	D5134	3.246		-0.06	
872		-----		-----	
873		3.33		0.15	
874		-----		-----	
875		-----		-----	
912		-----		-----	
922	D6729	3.2928		0.06	
963		-----		-----	
974		-----		-----	
982		-----		-----	
994	GOST52714	3.26		-0.02	
995		3.24		-0.07	
998		-----		-----	
1012		-----		-----	
1016		-----		-----	
1062		-----		-----	
1065		3.284		0.04	
1066	D6729	-----		-----	
1067	D5134	3.3		0.08	
1081		-----		-----	
1107	D5134	3.490		0.56	
1145		-----		-----	
1201		-----		-----	
1251		-----		-----	
1254		-----		-----	
1257		-----		-----	
1276		-----		-----	
1357		-----		-----	
1429		3.240		-0.07	
1455		-----		-----	
1556	D6729	3.38		0.28	
1585	D6729	3.3165		0.12	
1603		-----		-----	
1613	D6730	3.45		0.46	

lab	method	value	mark	z(targ)	remarks
1631		-----		-----	
1653	D5134	2.986		-0.71	
1656		-----		-----	
1737		-----		-----	
1741		-----		-----	
1776	D6729mod	-----	W	-----	first reported: 3.25
1788		-----		-----	
1796	D6729	3.319		0.13	
1810		-----		-----	
1823		-----		-----	
1857		-----		-----	
1858	D6729	3.4437		0.44	
1949	D6729	3.332		0.16	
1950	D5134	3.34		0.18	
1967	D6729	3.2260		-0.11	
1995		-----		-----	
6016	D6729	3.5418		0.69	
6090		-----		-----	
7006		-----		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9090		-----		-----	

	normality	OK
	n	33
	outliers	0
	mean (n)	3.2687
	st.dev. (n)	0.11847
	R(calc.)	0.3317
	R(D5134:13)	1.1114
Compare R(Horwitz)		0.3063

Kernel Density
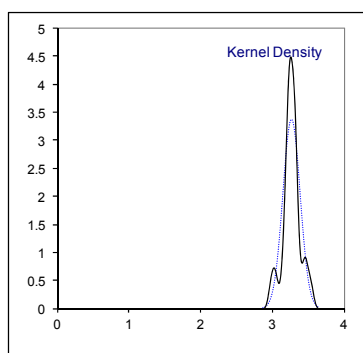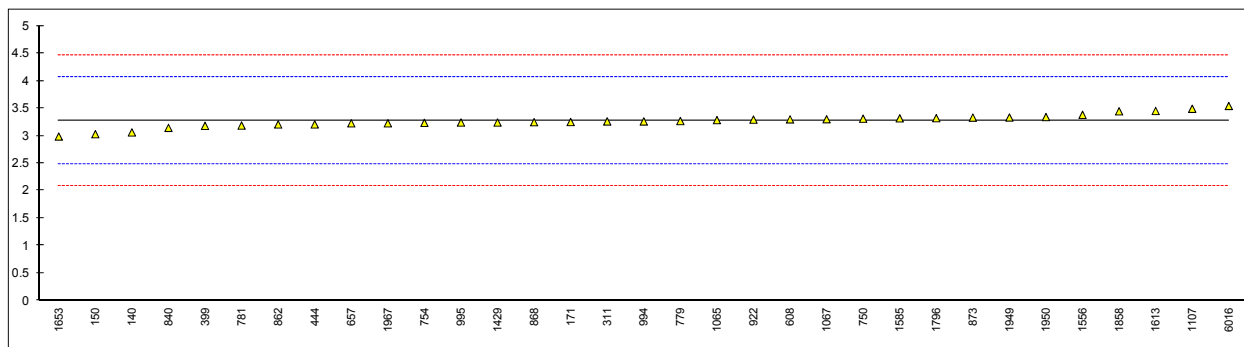
Determination of 3-Methylpentane (DHA) on sample #17046; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
140	D5134	2.12		-0.45	
150	D5134	2.095		-0.55	
158		-----		-----	
171		2.228		-0.06	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311		-----		-----	
317		-----		-----	
322		-----		-----	
323		-----		-----	
333		-----		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
349		-----		-----	
360		-----		-----	
399	D5134	2.19		-0.20	
444		2.160		-0.31	
445		-----		-----	
494		-----		-----	
529		-----		-----	
541		-----		-----	
557		-----		-----	
608	D6730	2.2678		0.09	
657	D6730	2.2216		-0.08	
663		-----		-----	
750	GOST52714	2.28		0.13	
753		-----		-----	
754	D6729	2.217		-0.10	
759		-----		-----	
779	D6729	2.247		0.01	
781	D6729	2.194		-0.18	
785		-----		-----	
786		-----		-----	
824		-----		-----	
840	D5134	2.163		-0.30	
855		-----		-----	
862		2.205		-0.14	
864		-----		-----	
868	D5134	2.238		-0.02	
872		-----		-----	
873		2.28		0.13	
874		-----		-----	
875		-----		-----	
912		-----		-----	
922	D6729	2.2547		0.04	
963		-----		-----	
974		-----		-----	
982		-----		-----	
994	GOST52714	2.24		-0.01	
995		2.16		-0.31	
998		-----		-----	
1012		-----		-----	
1016		-----		-----	
1062		-----		-----	
1065		2.257		0.05	
1066		-----		-----	
1067	D5134	2.3		0.21	
1081		-----		-----	
1107	D5134	2.396		0.56	
1145		-----		-----	
1201		-----		-----	
1251		-----		-----	
1254		-----		-----	
1257		-----		-----	
1276		-----		-----	
1357		-----		-----	
1429		2.209		-0.13	
1455		-----		-----	
1556	D6729	2.32		0.28	
1585	D6729	2.2885		0.16	
1603		-----		-----	
1613	D6730	2.35		0.39	

lab	method	value	mark	z(targ)	remarks
1631		-----		-----	
1653	D5134	2.049		-0.72	
1656		-----		-----	
1737		-----		-----	
1741		-----		-----	
1776	D6729mod	-----	W	-----	first reported: 2.22
1788		-----		-----	
1796	D6729	2.277		0.12	
1810		-----		-----	
1823		-----		-----	
1857		-----		-----	
1858	D6729	2.3626		0.44	
1949	D6729	2.303		0.22	
1950	D5134	2.28		0.13	
1967	D6729	2.2207		-0.09	
1995		-----		-----	
6016	D6729	2.4313		0.69	
6090		-----		-----	
7006		-----		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9090		-----		-----	

normality	OK
n	32
outliers	0
mean (n)	2.2439
st.dev. (n)	0.08235
R(calc.)	0.2306
R(D5134:13)	0.7629
Compare R(Horwitz)	0.2225
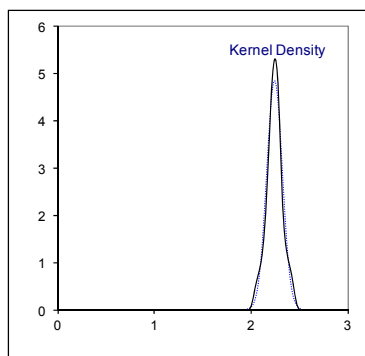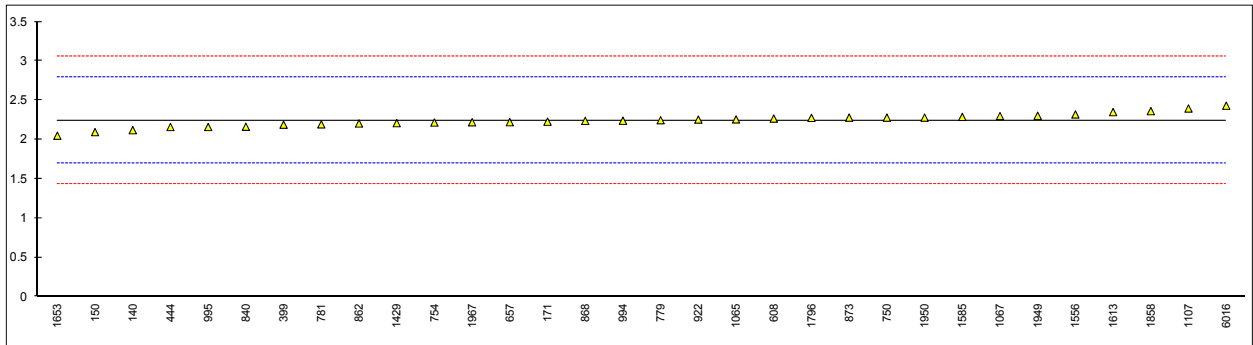
Determination of Heptane (DHA) on sample #17046; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
140	D5134	5.68		-0.34	
150	D5134	5.618		-0.69	
158		-----		-----	
171		5.681		-0.33	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311	D5134	5.83		0.51	
317		-----		-----	
322		-----		-----	
323		-----		-----	
333		-----		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
349		-----		-----	
360	D5134	5.75		0.06	
399	D5134	5.70		-0.23	
444		5.681		-0.33	
445		-----		-----	
494		-----		-----	
529		-----		-----	
541		-----		-----	
557		-----		-----	
608	D6730	5.7638		0.14	
657	D6730	5.7297		-0.06	
663		-----		-----	
750	GOST52714	5.82		0.45	
753		-----		-----	
754	D6729	5.754		0.08	
759		-----		-----	
779	D6729	5.696		-0.25	
781	D6729	5.735		-0.03	
785		-----		-----	
786		-----		-----	
824		-----		-----	
840	D5134	5.585		-0.88	
855		-----		-----	
862		5.592		-0.84	
864		-----		-----	
868	D5134	5.685		-0.31	
872		-----		-----	
873		5.86		0.68	
874		-----		-----	
875		-----		-----	
912		-----		-----	
922	D6729	5.9177		1.01	
963		-----		-----	
974	D6730	5.675		-0.37	
982		-----		-----	
994	GOST52714	5.74		0.00	
995		5.65		-0.51	
998		-----		-----	
1012		-----		-----	
1016		-----		-----	
1062		-----		-----	
1065		5.748		0.05	
1066	D6729	5.700		-0.23	
1067	D5134	5.9		0.91	
1081		-----		-----	
1107	D5134	5.849		0.62	
1145		-----		-----	
1201		-----		-----	
1251		-----		-----	
1254		-----		-----	
1257		-----		-----	
1276		-----		-----	
1357		-----		-----	
1429		5.676		-0.36	
1455		-----		-----	
1556	D6729	5.72		-0.11	
1585	D6729	5.7856		0.26	
1603		-----		-----	
1613	D6730	5.93		1.08	

lab	method	value	mark	z(targ)	remarks
1631		-----		-----	
1653	D5134	5.580		-0.91	
1656	D5443	5.7		-0.23	
1737		-----		-----	
1741		-----		-----	
1776	D6729mod	-----	W	-----	first reported: 5.79
1788		-----		-----	
1796	D6729	5.757		0.10	
1810		-----		-----	
1823		-----		-----	
1857		-----		-----	
1858	D6729	5.8219		0.47	
1949	D6729	5.833		0.53	
1950	D5134	5.77		0.17	
1967	D6729	5.7197		-0.11	
1995		-----		-----	
6016	D6729	6.1354	R(0.01)	2.24	
6090		-----		-----	
7006		-----		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9090		-----		-----	

	normality	OK
	n	36
	outliers	1
	mean (n)	5.7398
	st.dev. (n)	0.08908
	R(calc.)	0.2494
	R(Horwitz)	0.4942
Compare R(D5134:13)		0.0719

Kernel Density
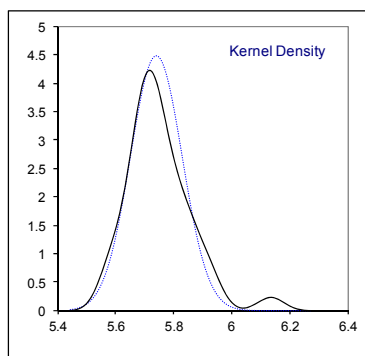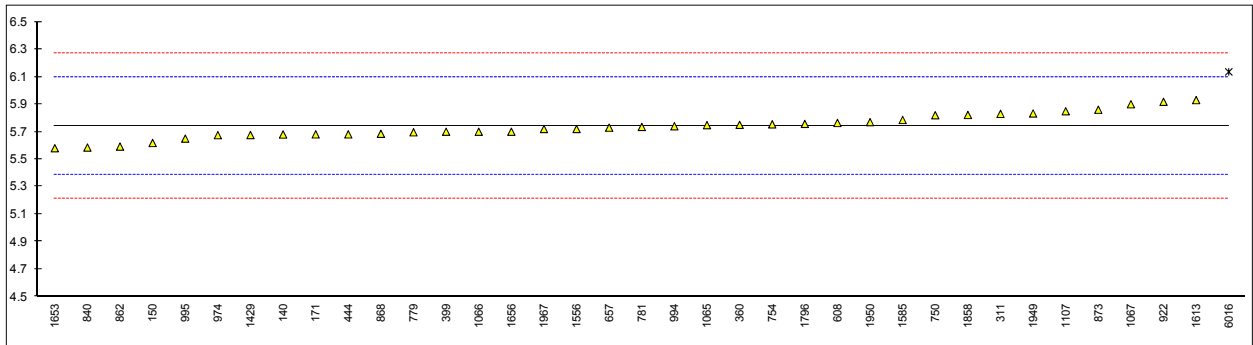
Determination of Toluene (DHA) on sample #17046; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
140	D5134	1.40		-0.62	
150	D5134	1.404		-0.55	
158		-----		-----	
171		1.437		0.06	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311		-----		-----	
317		-----		-----	
322		-----		-----	
323		-----		-----	
333		-----		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
349		-----		-----	
360	D5134	1.45		0.30	
399	D5134	1.48		0.85	
444		1.423		-0.20	
445		-----		-----	
494		-----		-----	
529		-----		-----	
541		-----		-----	
557		-----		-----	
608	D6730	1.4326		-0.02	
657	D6730	1.4262		-0.14	
663		-----		-----	
750	GOST52714	1.42		-0.25	
753		-----		-----	
754	D6729	1.415		-0.35	
759		-----		-----	
779	D6729	1.408		-0.48	
781	D6729	1.422		-0.22	
785		-----		-----	
786		-----		-----	
824		-----		-----	
840	D5134	1.426		-0.14	
855		-----		-----	
862		1.403		-0.57	
864		-----		-----	
868	D5134	1.422		-0.22	
872		-----		-----	
873		1.40		-0.62	
874		-----		-----	
875		-----		-----	
912		-----		-----	
922	D6729	1.3933		-0.75	
963		-----		-----	
974	D6730	1.445		0.21	
982		-----		-----	
994	GOST52714	1.43		-0.07	
995		1.50		1.22	
998		-----		-----	
1012		-----		-----	
1016		-----		-----	
1062		-----		-----	
1065		1.43		-0.07	
1066	D6729	1.425		-0.16	
1067	D5134	1.5		1.22	
1081		-----		-----	
1107	D5134	1.262	R(0.05)	-3.16	
1145		-----		-----	
1201		-----		-----	
1251		-----		-----	
1254		-----		-----	
1257		-----		-----	
1276		-----		-----	
1357		-----		-----	
1429		1.508		1.37	
1455		-----		-----	
1556	D6729	1.43		-0.07	
1585	D6729	1.4340		0.00	
1603		-----		-----	
1613	D6730	1.37		-1.17	

lab	method	value	mark	z(targ)	remarks
1631		-----		-----	
1653	D5134	1.329		-1.93	
1656	D5443	1.5		1.22	
1737		-----		-----	
1741		-----		-----	
1776	D6729mod	-----	W	-----	first reported: 1.41
1788		-----		-----	
1796	D6729	1.416		-0.33	
1810		-----		-----	
1823		-----		-----	
1857		-----		-----	
1858	D6729	1.4950		1.13	
1949	D6729	1.442		0.15	
1950	D5134	1.41		-0.44	
1967	D6729	1.4179		-0.29	
1995	D5443	1.15	R(0.01)	-5.22	
6016	D6729	1.5401		1.96	
6090		-----		-----	
7006		-----		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9090		-----		-----	

normality	OK
n	35
outliers	2
mean (n)	1.4338
st.dev. (n)	0.04204
R(calc.)	0.1177
R(Horwitz)	0.1521
Compare R(D5134:13)	0.0444
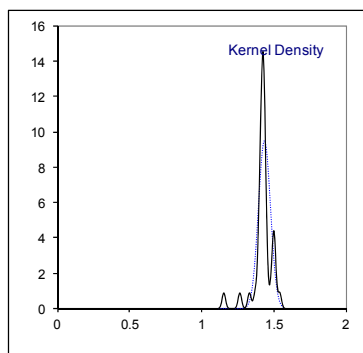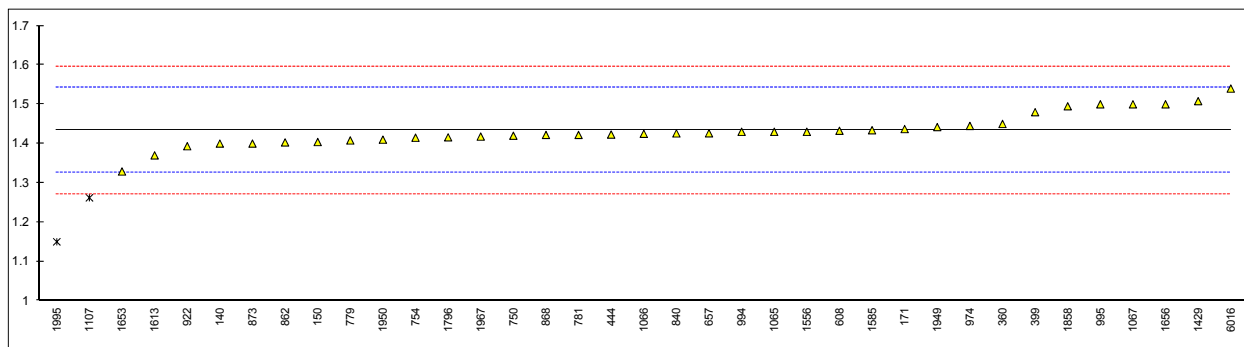
Determination of Octane (DHA) on sample #17046; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
140	D5134	5.50		2.01	
150	D5134	5.517		2.14	
158		-----		-----	
171		4.833		-3.08	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311		-----		-----	
317		-----		-----	
322		-----		-----	
323		-----		-----	
333		-----		-----	
334		-----		-----	
336		-----		-----	
337		-----		-----	
349		-----		-----	
360	D5134	4.93		-2.34	
399	D5134	4.93		-2.34	
444		5.105		-1.00	
445		-----		-----	
494		-----		-----	
529		-----		-----	
541		-----		-----	
557		-----		-----	
608	D6730	5.4458		1.60	
657	D6730	5.4118		1.34	
663		-----		-----	
750	GOST52714	5.45		1.63	
753		-----		-----	
754	D6729	5.160		-0.58	
759		-----		-----	
779	D6729	4.826		-3.13	
781	D6729	4.940		-2.26	
785		-----		-----	
786		-----		-----	
824		-----		-----	
840	D5134	4.799		-3.34	
855		-----		-----	
862		5.021		-1.65	
864		-----		-----	
868	D5134	5.393		1.20	
872		-----		-----	
873		5.46		1.71	
874		-----		-----	
875		-----		-----	
912		-----		-----	
922	D6729	5.5458		2.36	
963		-----		-----	
974	D6730	5.299		0.48	
982		-----		-----	
994	GOST52714	5.16		-0.58	
995		5.29		0.41	
998		-----		-----	
1012		-----		-----	
1016		-----		-----	
1062		-----		-----	
1065		4.949		-2.20	
1066	D6729	4.822		-3.17	
1067	D5134	5.5		2.01	
1081		-----		-----	
1107	D5134	5.340		0.79	
1145		-----		-----	
1201		-----		-----	
1251		-----		-----	
1254		-----		-----	
1257		-----		-----	
1276		-----		-----	
1357		-----		-----	
1429		4.818		-3.20	
1455		-----		-----	
1556	D6729	5.26		0.18	
1585	D6729	5.3843		1.13	
1603		-----		-----	
1613	D6730	5.47		1.78	

lab	method	value	mark	z(targ)	remarks
1631		-----		-----	
1653	D5134	5.589		2.69	
1656	D5443	4.8		-3.33	
1737		-----		-----	
1741		-----		-----	
1776	D6729mod	-----	W	-----	first reported: 5.52
1788		-----		-----	
1796	D6729	5.408		1.31	
1810		-----		-----	
1823		-----		-----	
1857		-----		-----	
1858	D6729	5.2264		-0.08	
1949	D6729	5.424		1.43	
1950	D5134	5.38		1.10	
1967	D6729	5.4045		1.28	
1995	D5443	2.02	R(0.01)	-24.57	
6016	D6729	5.7172		3.67	
6090		-----		-----	
7006		-----		-----	
9054		-----		-----	
9057		-----		-----	
9058		-----		-----	
9061		-----		-----	
9090		-----		-----	

	normality	OK
	n	36
	outliers	1
	mean (n)	5.2364
	st.dev. (n)	0.27072
	R(calc.)	0.7580
	R(D5134:13)	0.3665
Compare R(Horwitz)		0.4571

Lab 1429 did remark: n-octane has a shoulder peak of t and c-dimethylcyclohexane of area 0.496% m/m.
Lab 1653 did remark: The Octane coelute with a naphthene compound, possible 1,4-dimethyl-cyclohexane. There are same naphthene compounds coelute with iso-paraffin compounds, in region of C9-C11
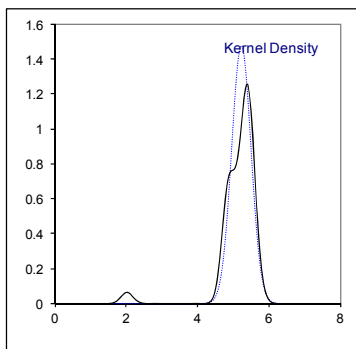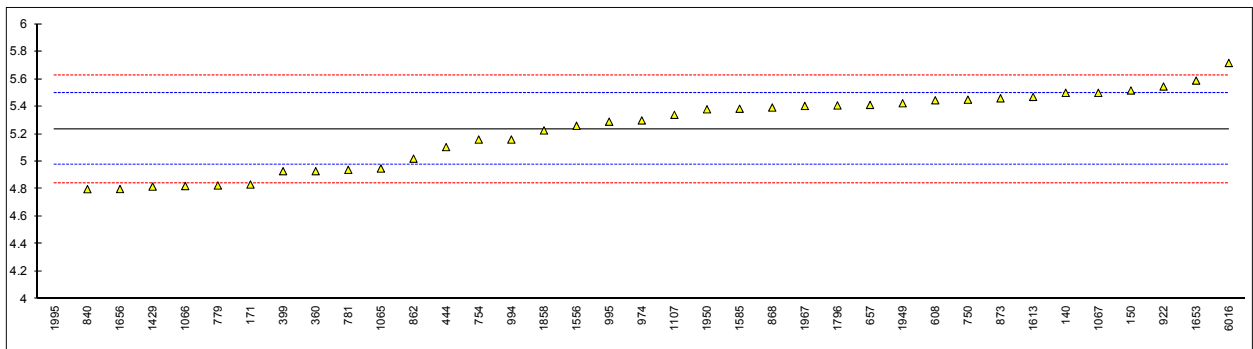
Determination of Mercury content as Hg on sample #17047 and #17048; results in µg/kg

Lab	method	#17047	mark	z(targ)	#17048	mark	z(targ)	remarks
140		-----		-----	-----		-----	
171	UOP938	16.2		0.00	36.8		0.41	
311	UOP938	14.0		-0.46	25.0		-0.92	
317	INH-003	13		-0.67	24		-1.03	
323	UOP938	18		0.37	33		-0.02	
333	EPA7423	20		0.79	42		1.00	
334	INH-9003	16		-0.04	46		1.45	
349	UOP938	13		-0.67	30		-0.36	
444	UOP938	15.65		-0.12	37.15		0.45	
541	INH-244	14.0		-0.46	27.8		-0.60	
608		-----		-----	-----		-----	
609		-----		-----	-----		-----	
657	UOP938	15.4		-0.17	34.9		0.20	
663	UOP938	16.1		-0.02	31.9		-0.14	
754	UOP938	14.4		-0.38	31.6		-0.17	
824	UOP938	18.1		0.39	33.3		0.02	
840	EPA7471B	18.4		0.45	26.8		-0.72	
862	UOP938	15.9		-0.06	32.7		-0.05	
868	UOP938	16.4		0.04	35.7		0.29	
873		-----		-----	-----		-----	
874		-----		-----	-----		-----	
875		-----		-----	-----		-----	
912		-----		-----	-----		-----	
922	INH-001	17.4		0.25	30.2		-0.33	
963		-----		-----	-----		-----	
974	UOP938	18.5		0.47	38.9		0.65	
1066	In house	14		-0.46	32		-0.13	
1081		15.7		-0.11	35.6		0.28	
1088	D6350	15.417		-0.16	32.437		-0.08	
1107		-----		-----	-----		-----	
1145	UOP938	14.70		-0.31	31.80		-0.15	
1201	UOP938	16.2		0.00	34.7		0.18	
1357	UOP938	14.1		-0.44	25.9		-0.82	
1397	In house	14.71		-0.31	27.48		-0.64	
1429		19.97		0.78	34.23		0.12	
1455		-----		-----	-----		-----	
1603	In house	17.2		0.21	35.8		0.30	
1656	UOP938	22	C	1.20	31		-0.24	f.r. 2
1800	UOP938	14.75		-0.30	33.13		0.00	
1857	UOP938	15.50		-0.15	34.54		0.16	
1950	UOP938	15.72		-0.10	35.68		0.29	
1960	ISO6978	13.5	C	-0.56	33.0	C	-0.02	f.r. 11; 22 (ISO19739)
1995		-----		-----	17	R(0.05)	-1.82	
2124	UOP938	17.534		0.27	35.624		0.28	
6016		-----		-----	-----		-----	
9054	UOP938	16.8140		0.13	32.1663		-0.11	
9057	In house	17.26		0.22	35.48		0.26	
9061	EPA200.7/200.8Mod.	18		0.37	35		0.21	

|								
	normality	OK			suspect			
	n	36			36			
	outliers	0		spike	recovery	1	spike	recovery	
	mean (n)	16.209		25	<65%	33.148	34	<97%	
	st.dev. (n)	2.0525			4.4439			
	R(calc.)	5.747			12.443			
	R(Horwitz)	13.505			24.799			

Sample #17047
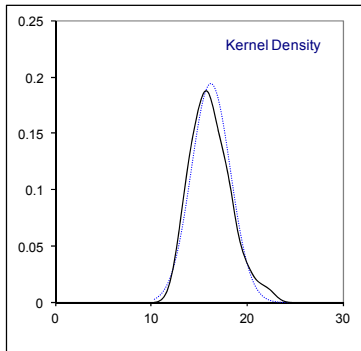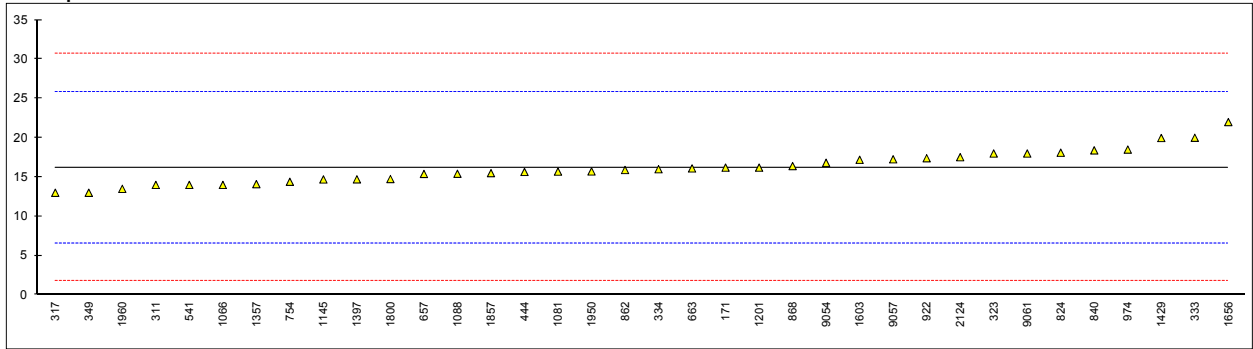
Sample #17048
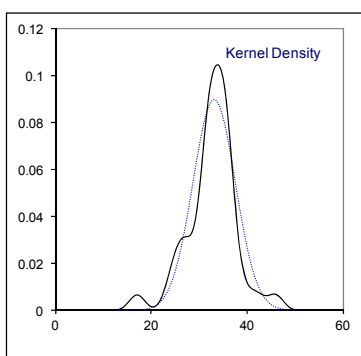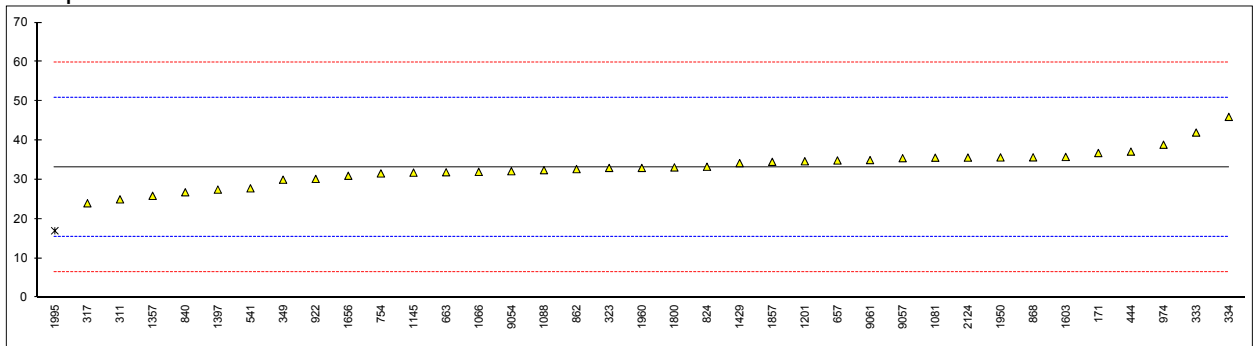
Determination of Arsenic content as As on sample #17049 and #17050; results in µg/kg

lab	method	#17049	mark	z(targ)	#17050	mark	z(targ)	remarks
140		-----		-----	-----		-----	
150		-----		-----	-----		-----	
171	INH-014	<5		-----	<5		-----	
311	INH-006	<10		-----	25		0.28	
322		-----		-----	-----		-----	
323		-----		-----	-----		-----	
349	INH-9312	2.2		-----	1	ex	-3.39	excluded see § 4.1
360		-----		-----	-----		-----	
444		-----		-----	-----		-----	
445		-----		-----	-----		-----	
608		-----		-----	-----		-----	
754		-----		-----	-----		-----	
781	UOP946	12.3		-----	16.2		-1.06	
824		-----		-----	-----		-----	
840		-----		-----	-----		-----	
855		-----		-----	-----		-----	
862		-----		-----	-----		-----	
864		-----		-----	-----		-----	
868		-----		-----	-----		-----	
874	UOP946	17		-----	23		-0.02	
875		-----		-----	-----		-----	
912		-----		-----	-----		-----	
922		-----		-----	-----		-----	
963		-----		-----	-----		-----	
1066		-----		-----	-----		-----	
1067	In house	< 10		-----	< 10		-----	
1081		-----		-----	-----		-----	
1107		-----		-----	-----		-----	
1145		-----		-----	-----		-----	
1201		-----		-----	-----		-----	
1357		-----		-----	-----		-----	
1429		-----		-----	-----		-----	
1603	In house	<1		-----	<1		<-3.39	possibly F-?
1857	In house	10		-----	20		-0.48	
1949	UOP946	5.6		-----	31.5		1.28	
1950		-----		-----	-----		-----	
1995		-----		-----	-----		-----	

|							
normality	unknown			unknown			
n	5			5			
outliers	0	spike	recovery	0+1ex	spike	recovery	
mean (n)	9.42	19	<50%	23.140	31	<75%	
st.dev. (n)	5.762			5.7313			
R(calc.)	16.13			16.048			
R(Horwitz)	(8.52)			18.274			

Sample #17049
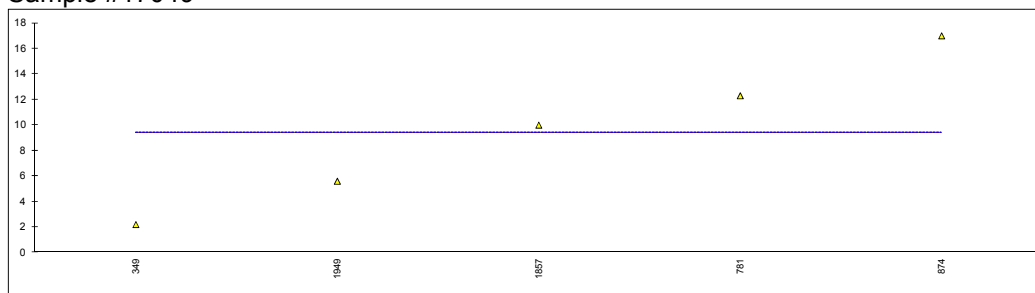
Sample #17050
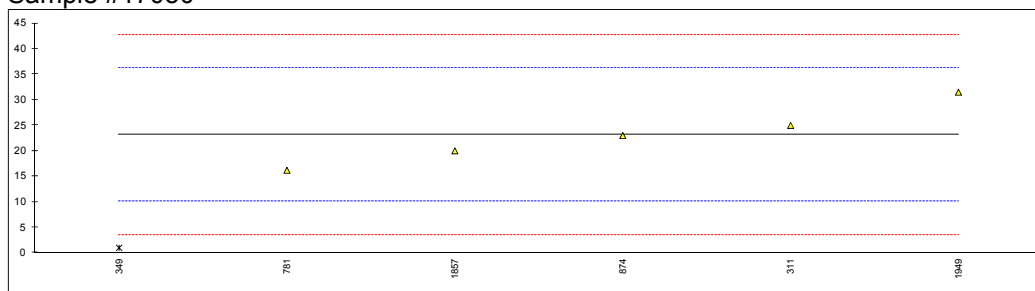
Determination of Lead content as Pb on sample #17049 and #17050; results in µg/kg

| lab	method	#17049	mark	z(targ)	#17050	mark	z(targ)	remarks
140		-----		-----	-----		-----	
150	UOP952	61.2		-0.52	40.9		-0.46	
171	INH-014	71		0.07	51		0.40	
311	INH-003	110		2.40	50		0.32	
322		-----		-----	-----		-----	
323		-----		-----	-----		-----	
349	UOP952	46		-1.43	32		-1.21	
360	In house	76.98	C	0.42	46.12	C	-0.01	f.r. 153.96; 92.23
444	UOP952	88.52		1.11	59.9		1.16	
445		-----		-----	-----		-----	
608		-----		-----	-----		-----	
754	UOP952	53.6		-0.98	40.2		-0.52	
781	UOP952	51.1		-1.13	34.4		-1.01	
824	UOP952	50		-1.19	98	R(0.05)	4.40	
840		-----		-----	-----		-----	
855	SH/T0242	86		0.96	64		1.51	
862	UOP952	89.4		1.17	61.5		1.29	
864	UOP952	87.6		1.06	60.0		1.17	
868	UOP952	79.4		0.57	57.5		0.95	
874		-----		-----	-----		-----	
875	UOP952	46.215		-1.42	33.533		-1.08	
912		-----		-----	-----		-----	
922		-----		-----	-----		-----	
963		-----		-----	-----		-----	
1066		-----		-----	-----		-----	
1067	In house	104		2.04	74		2.36	
1081		-----		-----	-----		-----	
1107		-----		-----	-----		-----	
1145	INH-9406	57.224		-0.76	43.606		-0.23	
1201		-----		-----	-----		-----	
1357	UOP952	26.5	R(0.05)	-2.60	20.86		-2.16	
1429		-----		-----	-----		-----	
1603	In house	74.3		0.26	27.7		-1.58	
1857	UOP952	60		-0.59	42		-0.36	
1949	UOP952	55.7		-0.85	42.5		-0.32	
1950	UOP952	50		-1.19	44		-0.19	
1995		-----		-----	-----		-----	
	normality	OK			OK			
	n	20			20			
	outliers	1	spike	recovery	1	spike	recovery	
	mean (n)	69.912	66	<106%	46.286	53	<87%	
	st.dev. (n)	19.6155			13.4939			
	R(calc.)	54.923			37.783			
	R(Horwitz)	46.746			32.930			

Sample #17049
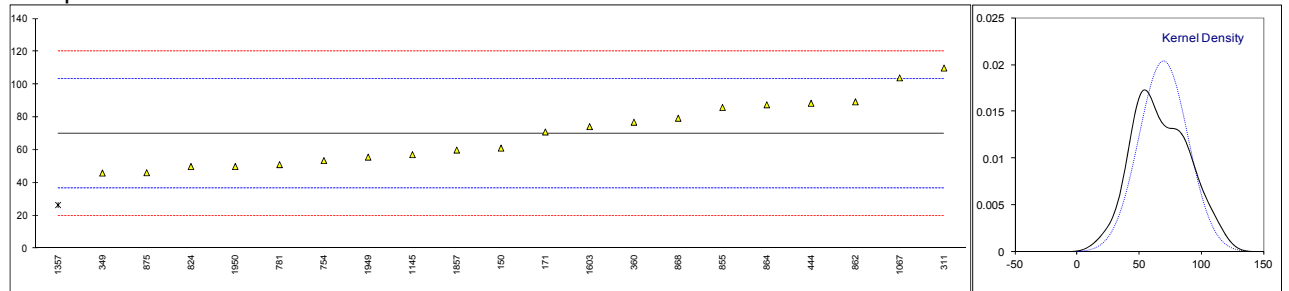
Sample #17050
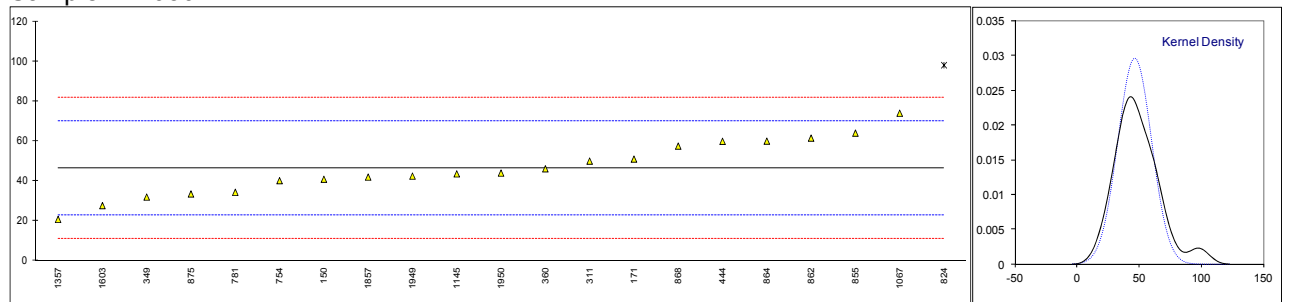
Determination of Total Vapour Pressure on sample #17051; results in psi

lab	method	value	mark	z(targ)	remarks
120	D5191	6.28		-0.05	
140	D5191	6.31		0.16	
150	D5191	6.29		0.02	
158		-----		-----	
171	D5191	6.32		0.23	
237	D5191	6.2777	C	-0.07	first reported: 6.864
238		-----		-----	
311	D5191	6.29		0.02	
317	D5191	6.19		-0.68	
322	D5191	5.94	R(0.01)	-2.43	
323	D5191	6.31		0.16	
334	D5191	6.37		0.58	
336	D5191	6.35		0.44	
360	D5191	6.38		0.65	
399	D5191	6.27		-0.12	
445	D5191	6.32		0.23	
494	D5191	6.35		0.44	
541		-----		-----	
557		-----		-----	
608		-----		-----	
657	D5191	6.54	R(0.05)	1.77	
753	D5191	6.28		-0.05	
754	D5191	6.40		0.79	
759	D5191	6.34		0.37	
779	D5191	6.29		0.02	
785	D5191	6.08		-1.45	
824	D5191	6.32		0.23	
855	D5191	6.29		0.02	
862	D5191	6.36		0.51	
864	D5191	6.23		-0.40	
868	D5191	6.24		-0.33	
873	D5191	6.28		-0.05	
875	D5191	6.19		-0.68	
963		-----		-----	
974	D5191	6.62	R(0.01)	2.33	
1016	D5191	6.28		-0.05	
1066		-----		-----	
1067	D5191	6.38		0.65	
1081	D5191	6.37		0.58	
1145		-----		-----	
1161	EN13016-1	6.96	R(0.01)	4.71	
1201	D5191	6.38		0.65	
1254	D5191	6.28		-0.05	
1257	D5191	6.25		-0.26	
1357	D5191	6.37		0.58	
1455	D5191	6.31		0.16	
1585	D5191	6.193		-0.66	
1603		-----		-----	
1613	D5191	6.40		0.79	
1631		-----		-----	
1653		-----		-----	
1776	EN13016-1	6.28		-0.05	
1788	D5191	6.26		-0.19	
1796	D5191	6.19		-0.68	
1857	D5191	6.22		-0.47	
1858	D5191	6.22		-0.47	
1949	D5191	6.24		-0.33	
1950	D5191	6.23		-0.40	
1960		-----		-----	
1995		-----		-----	
2124	D5191	6.31		0.16	
6016	D5191	6.18	C	-0.75	first reported: 5.82
9054		-----		-----	
9058		-----		-----	
9061	D5191	6.29		0.02	
9090		-----		-----	
9153		-----		-----	

	normality	OK	
	n	46	
	outliers	4	
	mean (n)	6.288	
	st.dev. (n)	0.0679	
	R(calc.)	0.190	
	R(D5191:15)	0.40	

Kernel Density
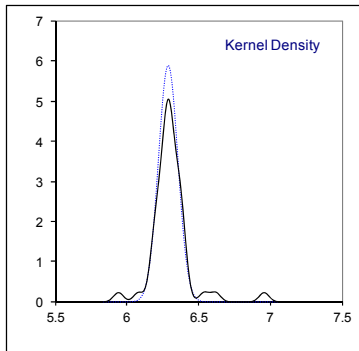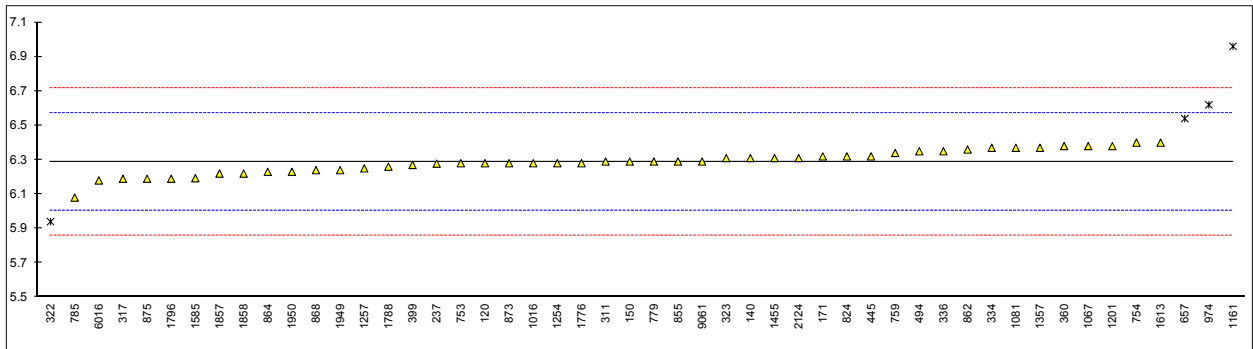
Determination of DVPE acc. D5191 on sample #17051; results in psi

lab	method	value	mark	z(targ)	remarks
120	D5191	5.65		0.89	
140	D5191	5.54		0.12	
150	D5191	5.52		-0.02	
158		-----		-----	
171	D5191	5.55		0.19	
237	D5191	5.51	C	-0.09	first reported: 6.0755
238	D5191	5.38		-1.00	
311	D5191	5.53		0.05	
317	D5191	5.44		-0.58	
322	D5191	5.19	R(0.05)	-2.33	
323	D5191	5.54		0.12	
334	D5191	5.60		0.54	
336	D5191	5.58		0.40	
360	D5191	5.61		0.61	
399	D5191	5.51		-0.09	
445	D5191	5.55		0.19	
494	D5191	5.58		0.40	
541	D6378	5.44		-0.58	D6378 correlated to D5191
557		-----		-----	
608		-----		-----	
657	D5191	5.76		1.66	
753	D5191	5.52		-0.02	
754	D5191	5.62		0.68	
759	D5191	5.57		0.33	
779	D5191	5.52		-0.02	
785	D5191	5.31		-1.49	
824	D5191	5.55		0.19	
855	D5191	5.52		-0.02	
862	D5191	5.59		0.47	
864	D5191	5.40		-0.86	
868	D5191	5.47		-0.37	
873	D5191	5.51		-0.09	
875	D5191	5.42		-0.72	
963		-----		-----	
974	D5191	5.84	R(0.05)	2.22	
1016	D5191	5.51		-0.09	
1066		-----		-----	
1067	D5191	5.63		0.75	
1081	D5191	5.60		0.54	
1145	D5191	5.30		-1.56	
1161	EN13016-1	6.24	R(0.01)	5.02	
1201	D5191	5.58		0.40	
1254	D5191	5.51		-0.09	
1257	D5191	5.49		-0.23	
1357	D5191	5.60		0.54	
1455	D5191	5.54		0.12	
1585	D5191	5.424		-0.69	
1603		-----		-----	
1613	D5191	5.63		0.75	
1631		-----		-----	
1653		-----		-----	
1776	EN13016-1	5.51		-0.09	
1788	D5191	5.49		-0.23	
1796	D5191	5.42		-0.72	
1857	D5191	5.45		-0.51	
1858	D5191	5.45		-0.51	
1949	D5191	5.47		-0.37	
1950	D5191	5.46		-0.44	
1960	D6377	6.09	R(0.01)	3.97	
1995	D5191	5.46		-0.44	
2124	D5191	5.54		0.12	
6016	D5191	5.42	C	-0.72	first reported: 5.06
9054	D5191	5.72		1.38	
9058	D5191	5.5825		0.42	
9061	D5191	5.53		0.05	
9090	D5191	6.21	R(0.01)	4.81	
9153	D5191	5.642		0.83	

	normality	OK			
	n	54			
	outliers	5			
	mean (n)	5.523			
	st.dev. (n)	0.0890			
	R(calc.)	0.249			
	R(D5191:15)	0.40			
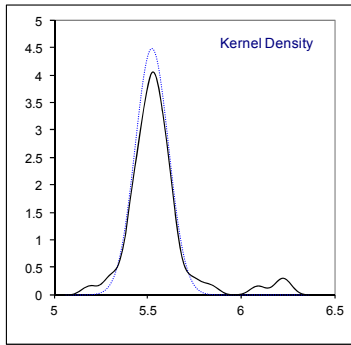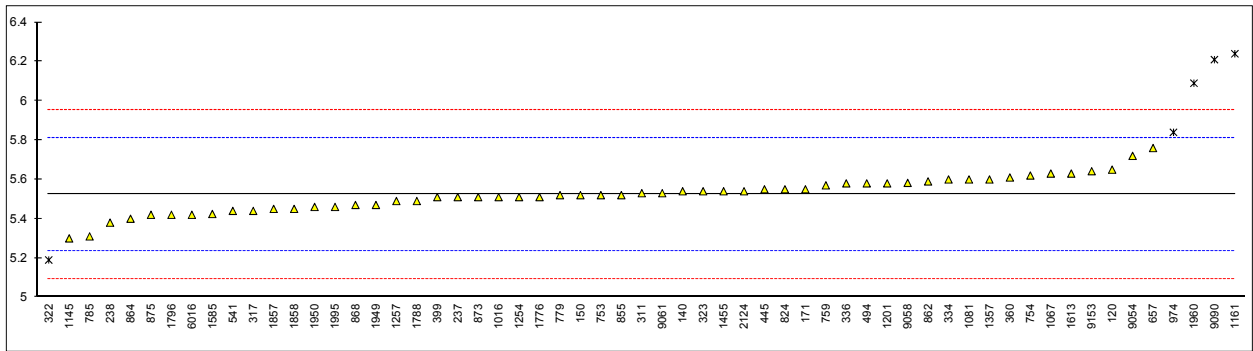
APPENDIX 2 Number of participants per country

iis17N01 &PIONA
1 lab in AFGHANISTAN
1 lab in ARGENTINA
1 lab in AZERBAIJAN
3 labs in BELGIUM
2 labs in BRAZIL
1 lab in BULGARIA
5 labs in CHINA, People's Republic
1 lab in COTE D'IVOIRE
1 lab in CZECH REPUBLIC
1 lab in EGYPT
5 labs in FRANCE
1 lab in GEORGIA
2 labs in GERMANY
1 lab in INDIA
2 labs in IRAN, Islamic Republic of
1 lab in ISRAEL
1 lab in ITALY
1 lab in JORDAN
1 lab in KAZAKHSTAN
1 lab in KOSOVO
1 lab in LATVIA
1 lab in MALAYSIA
1 lab in MEXICO
12 labs in NETHERLANDS
3 labs in NIGERIA
1 lab in NORWAY
1 lab in OMAN
1 lab in PAKISTAN
1 lab in PORTUGAL
1 lab in QATAR
19 labs in RUSSIAN FEDERATION
1 lab in SAUDI ARABIA
1 lab in SERBIA
1 lab in SINGAPORE
1 lab in SOUTH KOREA
1 lab in SPAIN
2 labs in SWEDEN
2 labs in THAILAND
2 labs in TURKEY
2 labs in UNITED ARAB EMIRATES
5 labs in UNITED KINGDOM
5 labs in UNITED STATES OF AMERICA
1 lab in VIETNAM

iis17N01AsPb
2 labs in BELGIUM
1 lab in BULGARIA
4 labs in CHINA, People's Republic
1 lab in EGYPT
1 lab in GERMANY
1 lab in INDIA
1 lab in MALAYSIA
6 labs in NETHERLANDS
1 lab in OMAN
1 lab in PAKISTAN
7 labs in RUSSIAN FEDERATION
1 lab in SAUDI ARABIA
1 lab in SOUTH KOREA
1 lab in SPAIN
1 lab in THAILAND
3 labs in UNITED KINGDOM
3 labs in UNITED STATES OF AMERICA
1 lab in VIETNAM

iis17N01Hg
1 lab in ARGENTINA
2 labs in AUSTRALIA
2 labs in BELGIUM
2 labs in CHINA, People's Republic
1 lab in CROATIA
1 lab in EGYPT
2 labs in FRANCE
1 lab in GERMANY
1 lab in INDIA
1 lab in KAZAKHSTAN
2 labs in MALAYSIA
7 labs in NETHERLANDS
2 labs in NORWAY
1 lab in OMAN
1 lab in PAKISTAN
6 labs in RUSSIAN FEDERATION
1 lab in SAUDI ARABIA
1 lab in SINGAPORE
1 lab in SOUTH KOREA
1 lab in SPAIN
2 labs in THAILAND
1 lab in UNITED ARAB EMIRATES
5 labs in UNITED KINGDOM
2 labs in UNITED STATES OF AMERICA
1 lab in VIETNAM

iis17N01DVPE
1 lab in ARGENTINA
2 labs in AUSTRALIA
1 lab in BELGIUM
2 labs in BRAZIL
1 lab in BULGARIA
4 labs in CHINA, People's Republic
1 lab in EGYPT
2 labs in FRANCE
2 labs in GERMANY
1 lab in ITALY
1 lab in JORDAN
1 lab in KAZAKHSTAN
1 lab in LATVIA
1 lab in MALAYSIA
10 labs in NETHERLANDS
2 labs in NIGERIA
1 lab in NORWAY
1 lab in OMAN
1 lab in PORTUGAL
1 lab in QATAR
13 labs in RUSSIAN FEDERATION
1 lab in SAUDI ARABIA
1 lab in SINGAPORE
1 lab in SOUTH KOREA
1 lab in SWEDEN
1 lab in THAILAND
2 labs in TURKEY
2 labs in UNITED ARAB EMIRATES
3 labs in UNITED KINGDOM
5 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	= probably an error in calculations
U	= test result probably reported in a different unit
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
SDS	= Safety Data Sheet

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