Institute for
Interlaboratory Studies

Results of Proficiency Test
Crude Oil
November 2023

Organized by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

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CONTENTS

1 INTRODUCTION 3

2 SET UP 3

2.1 ACCREDITATION 3

2.2 PROTOCOL 4

2.3 CONFIDENTIALITY STATEMENT 4

2.4 SAMPLES 4

2.5 STABILITY OF THE SAMPLES 5

2.6 ANALYZES 6

3 RESULTS 6

3.1 STATISTICS 6

3.2 GRAPHICS 7

3.3 Z-SCORES 8

4 EVALUATION 8

4.1 EVALUATION PER SAMPLE AND PER TEST 9

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES 11

4.3 COMPARISON OF THE PROFICIENCY TEST OF NOVEMBER 2023 WITH PREVIOUS PTS 12

Appendices:

1. Data, statistical and graphic results 14
2. z-scores Individual Light ends and Simulated Distillation 62
3. Analytical details Total Acid Number determination 63
4. Number of participants per country 64
5. Abbreviations and literature 65

1 INTRODUCTION

Since 1998 the Institute for Interlaboratory Studies (iis) organizes a proficiency scheme for the analysis of Crude Oil every year. During the annual proficiency testing program of 2023 it was decided to continue the round robin for the analysis of Crude Oil.

In this interlaboratory study registered for participation:
- 159 laboratories in 58 countries for regular analyzes in Crude Oil iis23R01
- 37 laboratories in 23 countries on the Mercury analysis in Crude Oil iis23R01Hg

In total 163 laboratories in 60 countries registered for participation in one or both proficiency tests, see appendix 2 for the number of participants per country. In this report the results of the Crude Oil proficiency tests are presented and discussed. This report is also electronically available through the iis website www.iisnl.com.

2 SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organizer of this proficiency test (PT). Sample analyzes for fit-for-use and homogeneity testing were subcontracted to a laboratory that has performed the tests in accordance with for ISO/IEC17043 relevant requirements of ISO/IEC17025.
In this proficiency test the participants received, depending on the registration, one or two different samples of Crude Oil, see table below. A wide-neck bottle is used to enable the use of a large size diameter high speed shear mixer for homogenization.

Sample ID	PT ID	Quantity	Purpose
#23220	iis23R01	1x 1 L	Regular analyzes
#23221	iis23R01Hg	1x 50 mL vial	Mercury

Table 1: Crude Oil samples used in PTs iis23R01 and iis23R01Hg

The participants were requested to report rounded and unrounded test results. The unrounded test results were preferably used for statistical evaluation.

2.1 ACCREDITATION

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, is accredited in agreement with ISO/IEC17043:2010 (R007), since January 2000, by the Dutch Accreditation Council (Raad voor Accreditatie). This PT falls under the accredited scope. This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentiality of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

2.2 PROTOCOL

The protocol followed in the organization of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of June 2018 (iis-protocol, version 3.5). This protocol is electronically available through the iis website www.iisnl.com, from the FAQ page.

2.3 CONFIDENTIALITY STATEMENT

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

2.4 SAMPLES

For the preparation of the sample for the regular analyzes in Crude Oil a batch of approximately 200 liters of Crude Oil was obtained from a local refinery. After homogenization 180 wide-neck transparent colorless 1 L glass bottles were filled and labelled #23220. The bottles were put into red plastic bags to protect it from light.
The homogeneity of the subsamples was checked by determination of Density at 15 °C in accordance with ASTM D5002 on 8 stratified randomly selected subsamples.

	Density at 15 °C in kg/m^3
sample #23220-1	882.52
sample #23220-2	882.52
sample #23220-3	882.44
sample #23220-4	882.39
sample #23220-5	882.59
sample #23220-6	882.84
sample #23220-7	882.38
sample #23220-8	882.52

Table 2: homogeneity test results of subsamples #23220

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

	Density at 15 °C in kg/m^3
r (observed)	0.41
reference test method	ASTM D5002:22
0.3 x R (reference test method)	1.09

Table 3: evaluation of the repeatability of subsamples #23220

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

For the preparation of the sample for the Mercury determination in Crude Oil a batch of approximately 15 liters of Crude Oil was obtained from a local refinery. The batch was spiked with Mercury. After homogenization 55 vials of 50 mL were filled and labelled #23221.
The homogeneity of the subsamples was checked by the determination of Mercury in accordance with ASTM D7623 on 8 stratified randomly selected subsamples.

	Mercury as Hg in µg/kg
sample #23221-1	23
sample #23221-2	23
sample #23221-3	23
sample #23221-4	23
sample #23221-5	23
sample #23221-6	24
sample #23221-7	25
sample #23221-8	25

Table 4: homogeneity test results of subsamples #23221

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

	Mercury as Hg in µg/kg
r (observed)	3
reference method	Horwitz
0.3 x R (reference method)	6

Table 5: evaluation of the repeatability of subsamples #23221

The calculated repeatability is in agreement with 0.3 times the estimated reproducibility calculated with the Horwitz equation. Therefore, homogeneity of the subsamples was assumed.

Depending on the registration of the participant the appropriate set of PT samples was sent on October 18, 2023. An SDS was added to the sample package.

2.5 STABILITY OF THE SAMPLES

The stability of Crude Oil packed in the transparent colorless glass bottles and put into red plastic bags to protect it from light and in amber glass vials was checked. The material has been found sufficiently stable for the period of the proficiency test.

2.6 ANALYZES

The participants were requested to determine on sample #23220: Total Acid Number, API Gravity, BS&W, Density at 15 °C, Kinematic Viscosity at 40 °C, Light ends (Methane, Ethane, Propane, iso-Butane, n-Butane, iso-Pentane, n-Pentane, cyclo-Pentane, Total Hexanes and Total of all C1-C6), Average Molecular Mass, Pour Point Maximum, Salt as Chloride, Sediment (Extraction method and Membrane filtration), Total Sulfur, Water and Simulated Distillation. It was also requested to report some analytical details about Total Acid Number determination.
On sample #23221 it was requested to determine Total Mercury.

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

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

3 RESULTS

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

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

3.1 STATISTICS

The protocol followed in the organization of this proficiency test was the one as described for proficiency testing in the report ‘iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation’ of June 2018 (iis-protocol, version 3.5).

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

First, the normality of the distribution of the various data sets per determination was checked by means of the Lilliefors-test, a variant of the Kolmogorov-Smirnov test and by the calculation of skewness and kurtosis. Evaluation of the three normality indicators in combination with the visual evaluation of the graphic Kernel density plot, lead to judgement of the normality being either 'unknown', 'OK', 'suspect' or 'not OK'. After removal of outliers, this check was repeated. If a data set does not have a normal distribution, the (results of the) statistical evaluation should be used with due care.

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

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

For each assigned value the uncertainty was determined in accordance with ISO13528. Subsequently the calculated uncertainty was evaluated against the respective requirement based on the target reproducibility in accordance with ISO13528. In this PT the criterion of ISO13528, paragraph 9.2.1. was met for all evaluated tests. Therefore, the uncertainty of all assigned values may be negligible and need not be included in the PT report.

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

3.2 GRAPHICS

In order to visualize the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported test results are plotted. The corresponding laboratory numbers are on the X-axis. The straight horizontal line presents the consensus value (a trimmed mean). The four striped lines, parallel to the consensus value line, are the +3s, +2s, -2s and -3s target reproducibility limits of the selected reference test method. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle.

Furthermore, Kernel Density Graphs were made. This is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms. Also, a normal Gauss curve (dotted line) was projected over the Kernel Density Graph (smooth line) for reference. The Gauss curve is calculated from the consensus value and the corresponding standard deviation.

3.3 Z-SCORES

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

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

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

The z-scores were calculated according to:

$z_{(target)}$ = (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. Therefore, the usual interpretation of z-scores is as follows:

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

4 EVALUATION

In this proficiency test some problems were encountered with the dispatch of the samples. Therefore, the reporting time on the data entry portal was extended with another week.
For the sample for the regular analyzes twenty-seven participants reported test results after the extended reporting date and eleven other participants did not report any test results.
For the sample for the Mercury determination five participants reported the test result after the extended reporting date and ten other participants did not report any test results.
Not all participants were able to report all tests requested.

In total 150 participants reported 1265 numerical test results. Observed were 35 outlying test results, which is 2.8%. In proficiency tests outlier percentages of 3% - 7.5% are quite normal.

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

4.1 EVALUATION PER SAMPLE AND PER TEST

In this section the reported test results are discussed per sample and per test. The test methods which were used by the various laboratories were taken into account for explaining the observed differences when possible and applicable. These test methods are also in the tables together with the original data in appendix 1. The abbreviations, used in these tables, are explained in appendix 5.

In the iis PT reports ASTM test methods are referred to with a number (e.g. D2503) and an added designation for the year that the test method was adopted or revised (e.g. D2503:92). When a method has been reapproved an “R” will be added and the year of approval (e.g. D2503:92R16).

sample #23220

Total Acid Number: The group of participants may have had difficulty to meet the target requirements depending on the end point detection and volume used. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D664-A:18e2 Inflection Point 60 mL and Buffer End Point 60 mL but not with the requirements for Inflection Point 125 mL and Buffer End Point 125 mL.

API Gravity: The group of participants met the target requirements. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D287:22.

BS&W: The group of participants met the target requirements. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D4007:22.

Density at 15 °C: The group of participants met the target requirements. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D5002:22.
Some participants reported to have used test method ASTM D4052. It must be noted that in the scope of this test method it is mentioned that ASTM D5002 is intended for crude oils (see paragraph 1.3 of ASTM D4052:22).

Kinematic Viscosity at 40 °C: The group of participants met the target requirements. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D445:23.

Light ends: The group of participants had difficulty to meet the target requirements. In total eight statistical outliers were observed over ten parameters. None of the calculated reproducibilities after rejection of the statistical outliers are in agreement with the requirements of IP344:88R10.
For the evaluation of Light ends test method IP344 is used. Although IP344 is an obsolete test method the reproducibilities are given per individual component. Alternative test methods i.e. ASTM D7900 and EN15199-4 only specify a reproducibility per complete boiling range.

Average Molecular Mass: The group of participants had difficulty to meet the target requirements. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of ASTM D2503:92R16.

Pour Point Maximum: The group of participants met the target requirements. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D5853-A:17a.
Nine participants reported to have used test method ASTM D97. It must be noted that in the scope of ASTM D97 it is mentioned that ASTM D5853 is intended for crude oils (see paragraph 1.3 of ASTM D97:17bR22).

Salt as Chloride: The group of participants met the target requirements. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D3230:19.

Sediment (Extraction method): The group of participants met the target requirements. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D473:22.

Sediment (Membrane filtration): The group of participants had difficulty to meet the target requirements. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D4807:05R20.

Total Sulfur: The group of participants met the target requirements. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D4294:21.

Water: The group of participants may have had difficulty to meet the target requirements depending on the method used. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of ASTM D4377:00R11W20.
When the test results were evaluated separately for using methods by distillation and for methods by Karl Fischer Titration the calculated reproducibilities are in agreement with the requirements of respectively ASTM D4006:22 and ASTM D4377:00R11W20.

Simulated Distillation: The group of participants may have had difficulty to meet the target requirements. In total five statistical outliers were observed over eight distillation parameters. Only at 5% recovery, 10% recovery and 30% recovery the calculated reproducibilities after rejection of the statistical outliers are in agreement with the requirements of ASTM D7169:23.

sample #23221

Total Mercury: The group of participants met the target requirements. No statistical outliers were observed. The calculated reproducibility is in agreement with the estimated reproducibility calculated with the Horwitz equation.
It was decided to use the Horwitz equation to calculate an estimated target reproducibility for the calculation of the z-scores because test methods ASTM D7623 and UOP938 mention only a repeatability. Furthermore, test method UOP938, used by most of the laboratories, is not intended to use for crude oil. Also, the repeatability of UOP938 is only available for concentrations in µg/L and conversion to µg/kg may lead to extra uncertainty.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the reference test method and the reproducibility as found for the group of participating laboratories. The number of significant test results, the average, the calculated reproducibility (2.8 * standard deviation) and the target reproducibility derived from reference methods are presented in the next table.

Parameter	unit	n	average	2.8 * sd	R(lit)
Total Acid Number	mg KOH/g	74	0.153	0.082	0.086
API Gravity		106	28.7	0.3	0.5
BS&W	%V/V	67	0.045	0.070	0.115
Density at 15 °C	kg/m^3	142	882.7	1.4	3.6
Kinematic Viscosity at 40 °C	mm^2/s	85	2.712	0.164	0.229
Methane	%M/M	13	<0.01	n.a.	n.a.
Ethane	%M/M	15	<0.01	n.a.	n.a.
Propane	%M/M	17	0.104	0.046	0.022
iso-Butane	%M/M	17	0.087	0.020	0.013
n-Butane	%M/M	17	0.321	0.060	0.042
iso-Pentane	%M/M	17	1.086	1.505	(0.098)

Parameter	unit	n	average	2.8 * sd	R(lit)
n-Pentane	%M/M	15	0.422	0.066	0.044
cyclo-Pentane	%M/M	9	0.050	0.013	0.008
Total Hexanes	%M/M	10	1.069	0.949	0.450
Total of all C1 - C6	%M/M	7	3.165	2.263	(0.465)
Average Molecular Mass	g/mol	7	161	17	14
Pour Point Maximum	°C	65	-28.1	15.8	18.0
Salt as Chloride	mg/kg	81	14.7	13.5	20.9
Sediment (Extraction method)	%V/V	60	0.008	0.015	0.035
Sediment (Membrane filtration)	%M/M	44	0.017	0.022	0.015
Total Sulfur	%M/M	101	0.506	0.038	0.047
Water	%V/V	117	0.056	0.053	0.043
IBP	°C	15	<36	n.e.	n.e.
5% recovered	°C	14	96.5	14.0	19.6
10% recovered	°C	15	132.9	10.4	19.5
30% recovered	°C	16	140.6	9.7	13.1
50% recovered	°C	16	236.1	97.5	(16.4)
70% recovered	°C	16	412.7	80.0	(21.2)
90% recovered	°C	13	586.7	55.3	n.a.
FBP	°C	12	>700	n.a.	n.a.
Total Mercury	µg/kg	25	21.7	9.5	17.3

Table 6: reproducibilities of tests on samples #23220 and #23221 (Hg only)

For results between brackets no z-scores are calculated

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

4.3 COMPARISON OF THE PROFICIENCY TEST OF NOVEMBER 2023 WITH PREVIOUS PTS

	November 2023	November 2022	November 2021	November 2020	November 2019
Number of reporting laboratories	150	136	155	140	138
Number of test results	1265	1148	1281	1212	1189
Number of statistical outliers	35	49	27	44	32
Percentage of statistical outliers	2.8%	4.3%	2.1%	3.6%	2.7%

Table 7: comparison with previous proficiency tests

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

The performance of the determinations of the proficiency tests was compared to the requirements of the reference test methods. The conclusions are given in the following table.

Determination	November 2023	November 2022	November 2021	November 2020	November 2019
Total Acid Number	+/-	+/-	+	+	-
API Gravity	+	++	++	++	+
BS&W	+	+	+	+	+
Density at 15 °C	++	++	++	++	++
Kinematic Viscosity at 40 °C	+	-	-	-	-
Light Ends (C1 - C6)	--	--	--	--	--
Average Molecular Mass	-	+	-	+	+
Pour Point Maximum	+	+	+	+	+
Salt as Chloride	+	+	+	+	+
Sediment (Extraction method)	++	++	++	++	++
Sediment (Membrane filtration)	-	-	-	+/-	-
Total Sulfur	+	-	+	-	-
Water	-	+	+/-	+	+
Simulated Distillation	-	--	--	--	-
Total Mercury	+	++	+	+	+

Table 8: comparison of determinations to the reference test methods

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 Total Acid Number on sample #23220; results in mg KOH/g

lab	method	value	mark	z(targ)	remarks
52	D664-A	0.12		-1.07	
62	D664-A	0.18		0.87	
90		-----		-----	
92		-----		-----	
140	D664-A	0.1185		-1.12	
141		-----		-----	
150	D664-A	0.17		0.55	
154		-----		-----	
158	D664-A	0.15		-0.10	
159	D664-A	0.15		-0.10	
171	D664-A	0.20		1.52	
172	D664-B	0.16		0.22	
203		-----		-----	
213		-----		-----	
225		-----		-----	
231		-----		-----	
237	D664-A	0.14	C	-0.43	First reported <0.1
238		-----		-----	
273	D664	0.14		-0.43	
311		-----		-----	
314		-----		-----	
328		-----		-----	
333		-----		-----	
334	D664-A	0.14		-0.43	
335		-----		-----	
355		-----		-----	
391	D664-A	0.156		0.09	
398		-----		-----	
399		-----		-----	
442		-----		-----	
444		-----		-----	
445	D664-A	0.165		0.38	
446		-----		-----	
447	D664-A	0.2		1.52	
480		-----		-----	
494	D664-A	0.09		-2.05	
495		-----		-----	
511	D664-A	0.145		-0.26	
525		-----		-----	
529	D664	0.1012		-1.68	
541		-----		-----	
542	D664-A	0.13		-0.75	
551	D664-A	0.017	R(0.01)	-4.41	
553		-----		-----	
557		-----		-----	
562		-----		-----	
575	D664-B	0.16		0.22	
588		-----		-----	
589		-----		-----	
590		-----		-----	
593		-----		-----	
596		-----		-----	
597		-----		-----	
598	D664-A	0.18		0.87	
599		-----		-----	
600	D664-A	0.18		0.87	
603	D664-A	0.14		-0.43	
608	D664-A	0.15		-0.10	
609		-----		-----	
611	D664-A	0.12		-1.07	
612		-----		-----	
621	D664-A	0.14		-0.43	
657	D664-A	0.14		-0.43	
663	D664-A	0.148		-0.17	
710		-----		-----	
734		-----		-----	
736	D664-A	0.186		1.07	
749		-----		-----	
750		-----		-----	
752	D664-A	0.1535		0.01	
753		-----		-----	
781	D664-A	0.20		1.52	
785		-----		-----	

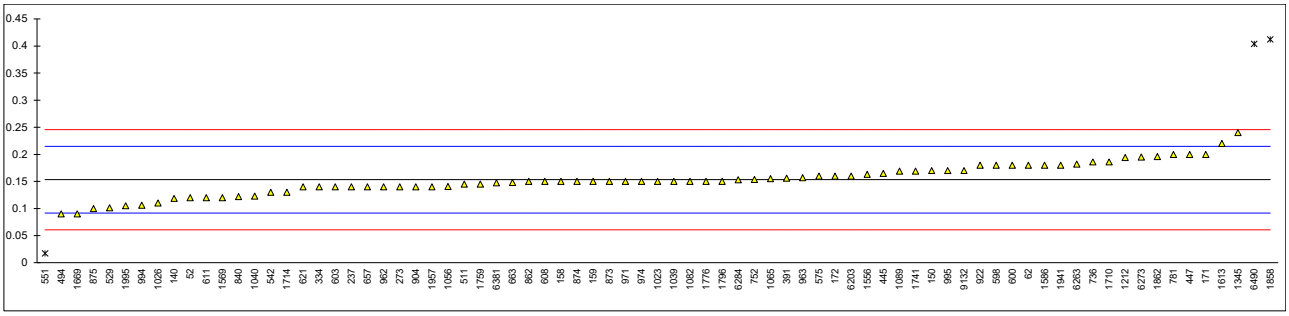
Determination of Total Acid Number on sample #23220; results in mg KOH/g

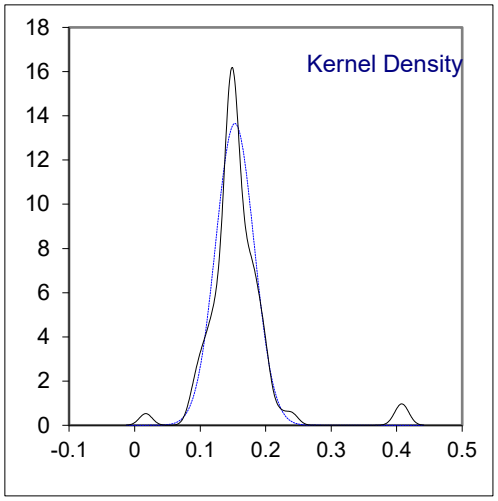
lab	method	value	mark	z(targ)	remarks
840	D664-A	0.122		-1.01	
862	D664-A	0.15	C	-0.10	First reported 0.35
873	D664-A	0.15		-0.10	
874	D664-A	0.15		-0.10	
875	D664-A	0.10		-1.72	
904	D664-A	0.14		-0.43	
914		-----		-----	
922	D664-A	0.18		0.87	
962	D664-A	0.14		-0.43	
963	D664-A	0.157		0.13	
970		-----		-----	
971	D664-A	0.15		-0.10	
974	D664-A	0.15		-0.10	
988		-----		-----	
991		-----		-----	
992		-----		-----	
994	D664-A	0.106		-1.53	
995	D664-A	0.17		0.55	
997		-----		-----	
1023	D8045Mod.	0.15		-0.10	
1026	D664-A	0.11		-1.40	
1039	D664-A	0.15		-0.10	
1040	D664-A	0.1230		-0.98	
1056	D664-A	0.1408		-0.40	
1065	D664-A	0.155		0.06	
1082	ISO6619	0.15		-0.10	
1089	D664-A	0.169		0.51	
1099		-----		-----	
1148		-----		-----	
1212	D664-A	0.194		1.33	
1236		-----		-----	
1259		-----		-----	
1345	D664-A	0.24		2.82	
1360		-----		-----	
1544		-----		-----	
1556	D664-A	0.163		0.32	
1569	D664-A	0.12		-1.07	
1586	D664-A	0.18		0.87	
1613	D664-A	0.22		2.17	
1617		-----		-----	
1631		-----		-----	
1669		0.09	C	-2.05	First reported 0.06
1710	D664-A	0.186		1.07	
1714	In house	0.13		-0.75	
1720		-----		-----	
1724		-----		-----	
1728		-----		-----	
1741	ISO6619	0.169		0.51	
1749		-----		-----	
1759	D664-A	0.145		-0.26	
1776	D664-A	0.15		-0.10	
1796	D664-A	0.15		-0.10	
1810		-----		-----	
1811		-----		-----	
1815		-----		-----	
1833		-----		-----	
1849		-----		-----	
1858	D664-A	0.4121	R(0.01)	8.40	
1862	D664-A	0.196		1.39	
1928		-----		-----	
1929		-----		-----	
1941	ISO6619	0.18		0.87	
1957	D664-A	0.14		-0.43	
1984		-----		-----	
1995	D664-A	0.105		-1.56	
6016		-----		-----	
6028		-----		-----	
6203	D664-A	0.16		0.22	
6238		-----		-----	
6263	D664-A	0.1821		0.94	
6273	D664-A	0.195		1.36	
6284	D664-A	0.153		0.00	
6290		-----		-----	
6295		-----		-----	
6296		-----		-----	
6319		-----		-----	

Determination of Total Acid Number on sample #23220; results in mg KOH/g

lab	method	value	mark	z(targ)	remarks
6362		-----		-----	
6381	D664-A	0.1474		-0.19	
6447		-----		-----	
6490	D664-A	0.404	C,R(0.01)	8.13	First reported 0.442
6509		-----		-----	
6529		-----		-----	
6545		-----		-----	
6548		-----		-----	
6564		-----		-----	
9132	D664-A	0.17	C	0.55	First reported 0.26

	normality	OK
	n	74
	outliers	3
	mean (n)	0.1531
	st.dev. (n)	0.02922
	R(calc.)	0.0818
	st.dev.(D664-A:18e2 IP 60mL)	0.03084
	R(D664-A:18e2 IP 60mL)	0.0864
compare		
	R(D664-A:18e2 IP 125mL)	0.0309
	R(D664-A:18e2 BEP 60mL)	0.0888
	R(D664-A:18e2 BEP 125mL)	0.0439





Determination of API Gravity on sample #23220;

lab	method	value	mark	z(targ)	remarks
52	D5002	28.7		-0.10	
62	D5002	28.7		-0.10	
90	D5002	28.67		-0.27	
92	D5002	28.66		-0.33	
140	D5002	28.8		0.46	
141	D4052	28.63		-0.49	
150	D287	28.9	C	1.02	First reported 29.0
154	D287	28.9		1.02	
158	D5002	28.7		-0.10	
159	D5002	28.64		-0.44	
171	D287	28.5		-1.22	
172		-----		-----	
203	Calc.	28.87		0.85	
213	Calc.	28.67	C	-0.27	First reported 28.34
225	D4052	28.8		0.46	
231	D5002	28.77		0.29	
237	D1298	28.90		1.02	
238	Calc.	28.77		0.29	
273	Calc.	28.8		0.46	
311	D5002	28.73		0.07	
314		-----		-----	
328		-----		-----	
333		-----		-----	
334	D287	28.7		-0.10	
335		-----		-----	
355	D4052	28.77		0.29	
391	D5002	28.7		-0.10	
398	D287	28.73		0.07	
399	D4052	28.74		0.12	
442	D4052	28.84		0.68	
444	D5002	28.74		0.12	
445	D5002	28.75		0.18	
446	D5002	28.73		0.07	
447	D5002	28.7		-0.10	
480		-----		-----	
494	D4052	28.70		-0.10	
495		-----		-----	
511	D1298	28.8		0.46	
525	D7042	28.6		-0.66	
529	D287	28.9		1.02	
541	D5002	28.7		-0.10	
542	D287	29		1.58	
551	D287	28.4		-1.78	
553		-----		-----	
557	D287	28.8		0.46	
562	D1298	28.75		0.18	
575	D1298	26.7	C,R(0.01)	-11.30	First reported 29.1
588	D1298	28.8		0.46	
589	D1298	28.8		0.46	
590	D1298	28.8		0.46	
593	D1298	28.8		0.46	
596		-----		-----	
597		-----		-----	
598	D5002	28.56		-0.89	
599	D5002	28.27	R(0.05)	-2.51	
600	D287	28.6		-0.66	
603	D4052	28.62		-0.55	
608	Calc.	28.70		-0.10	
609		-----		-----	
611	D5002	28.80		0.46	
612	D5002	28.48		-1.33	
621	D4052	28.9		1.02	
657	D5002	28.9		1.02	
663	D5002	28.68		-0.21	
710	Calc.	28.67		-0.27	
734	Calc.	28.68		-0.21	
736	D4052	28.64		-0.44	
749		-----		-----	
750		-----		-----	
752	D1250	28.70		-0.10	
753	D5002	28.7		-0.10	
781	D5002	28.72		0.01	
785	D287	28.44		-1.56	
840	D5002	28.67		-0.27	
862	D287	28.69		-0.16	
873	D1298	28.73		0.07	

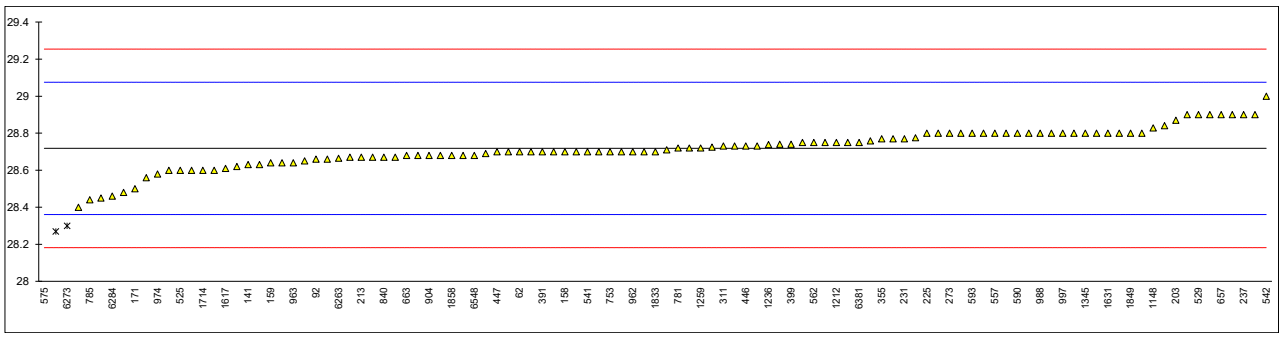
Determination of API Gravity on sample #23220;

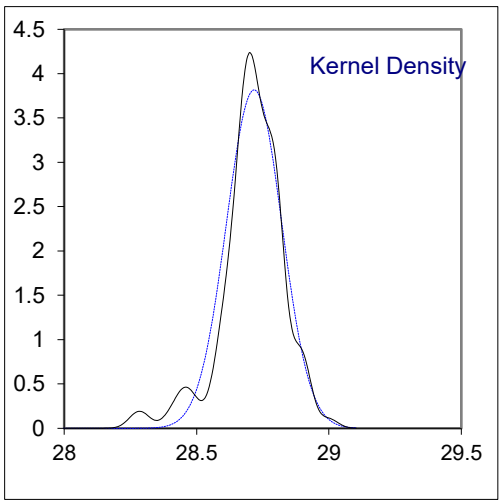
lab	method	value	mark	z(targ)	remarks
874	D5002	28.7		-0.10	
875		-----		-----	
904	D1298	28.68		-0.21	
914		-----		-----	
922	D1298	28.6		-0.66	
962	D5002	28.7		-0.10	
963	D5002	28.64		-0.44	
970		-----		-----	
971	D5002	28.68		-0.21	
974	D5002	28.58		-0.77	
988	D1298	28.8		0.46	
991		-----		-----	
992		-----		-----	
994	Calc.	28.7		-0.10	
995	D1250	28.8		0.46	
997	D1250	28.8		0.46	
1023	D287	28.8		0.46	
1026		-----		-----	
1039		-----		-----	
1040	D287	28.75		0.18	
1056	Calc.	28.7582		0.22	
1065		-----		-----	
1082		-----		-----	
1089	D5002	28.67		-0.27	
1099	D5002	28.72		0.01	
1148	Calc.	28.828		0.61	
1212	D5002	28.75		0.18	
1236	D287	28.73846		0.11	
1259	Calc.	28.72		0.01	
1345	D5002	28.8		0.46	
1360		-----		-----	
1544		-----		-----	
1556		-----		-----	
1569		-----		-----	
1586	D4052	28.8		0.46	
1613	D5002	28.775		0.32	
1617	D5002	28.61		-0.61	
1631	D4052	28.8		0.46	
1669		28.75		0.18	
1710		-----		-----	
1714	D5002	28.6		-0.66	
1720		-----		-----	
1724	D5002	28.8		0.46	
1728	D5002	28.725		0.04	
1741	D1298	28.6		-0.66	
1749		-----		-----	
1759		-----		-----	
1776		-----		-----	
1796	Calc.	28.71		-0.05	
1810		-----		-----	
1811		-----		-----	
1815		-----		-----	
1833	D5002	28.7		-0.10	
1849	D1298	28.8		0.46	
1858	D1298	28.68		-0.21	
1862	D5002	28.68		-0.21	
1928		-----		-----	
1929		-----		-----	
1941		-----		-----	
1957	D4052	28.65		-0.38	
1984		-----		-----	
1995	D5002	28.66		-0.33	
6016		-----		-----	
6028	D1298	28.45		-1.50	
6203		-----		-----	
6238		-----		-----	
6263	D4052	28.665		-0.30	
6273	D5002	28.3	R(0.05)	-2.34	
6284	D5002	28.46		-1.45	
6290		-----		-----	
6295		-----		-----	
6296		-----		-----	
6319		-----		-----	
6362		-----		-----	
6381	D5002	28.75		0.18	
6447		-----		-----	

Determination of API Gravity on sample #23220;

lab	method	value	mark	z(targ)	remarks
6490	D5002	28.63		-0.49	
6509		-----		-----	
6529		-----		-----	
6545	D5002	28.80		0.46	
6548	Calc.	28.68		-0.21	
6564	D1298	28.9		1.02	
9132		-----		-----	

normality	suspect
n	106
outliers	3
mean (n)	28.718
st.dev. (n)	0.1046
R(calc.)	0.293
st.dev.(D287:22)	0.1786
R(D287:22)	0.5





Determination of BS&W on sample #23220; results in %V/V

lab	method	value	mark	z(targ)	remarks
52	D4007	0.05		0.13	
62	D4007	0.1		1.34	
90		-----		-----	
92		-----		-----	
140	D4007	0.050		0.13	
141	D4007	<0.025		-----	
150	D4007	0.025		-0.48	
154	D4007	0.05		0.13	
158	D4007	0.05		0.13	
159	D4007	0.05		0.13	
171	D4007	0.05		0.13	
172	D4007	0.05		0.13	
203	D4007	0.05		0.13	
213	D4007	0.25	R(0.01)	4.98	
225	D4007	0.05		0.13	
231	D4007	0.025		-0.48	
237	D4007	0.05		0.13	
238	D4007	0.025		-0.48	
273		-----		-----	
311		-----		-----	
314		-----		-----	
328		-----		-----	
333		-----		-----	
334	D4007	0.20	R(0.01)	3.77	
335		-----		-----	
355		-----		-----	
391		-----		-----	
398		-----		-----	
399		-----		-----	
442		-----		-----	
444		-----		-----	
445		-----		-----	
446		-----		-----	
447		-----		-----	
480		-----		-----	
494		-----		-----	
495		-----		-----	
511	D4007	0.05		0.13	
525	D4007	0.05		0.13	
529	D4007	0.10		1.34	
541	D4007	0.10		1.34	
542	D4007	<0.05		-----	
551	D4007	0.10		1.34	
553	D4007	0		-1.08	
557	D4007	0.05		0.13	
562	D1796	0.05		0.13	
575		-----		-----	
588	D7829	0.030		-0.35	
589	D7829	0.030		-0.35	
590	D7829	0.029		-0.38	
593	D7829	0.030		-0.35	
596	D4007	<0.05		-----	
597	D4007	0.025		-0.48	
598	D4007	0.050		0.13	
599	D4007	0.05		0.13	
600	D4007	0		-1.08	
603		-----		-----	
608	D4007	<0.05		-----	
609	D4007	0.00		-1.08	
611	D4007	0.05		0.13	
612	D4007	0.05		0.13	
621	D4007	<0.05		-----	
657	D4007	0		-1.08	
663	D4007	0.025		-0.48	
710		-----		-----	
734		-----		-----	
736	D4007	0.025		-0.48	
749		-----		-----	
750		-----		-----	
752		-----		-----	
753		-----		-----	
781	D4007	0.025		-0.48	
785		-----		-----	
840	D4007	0.05		0.13	
862		-----		-----	
873		-----		-----	

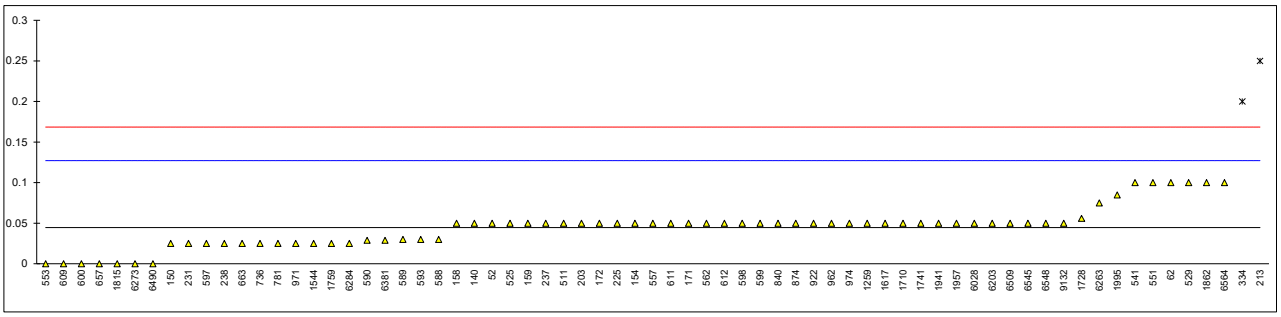
Determination of BS&W on sample #23220; results in %V/V

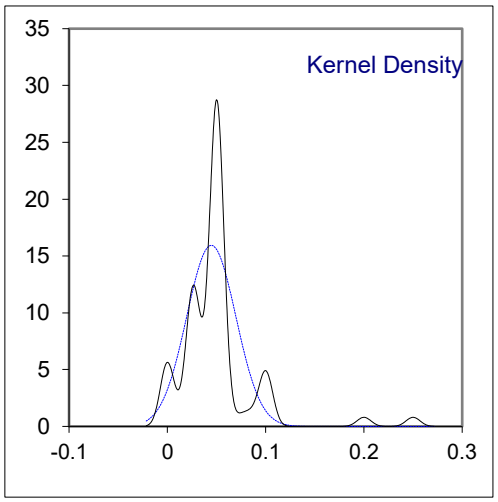
lab	method	value	mark	z(targ)	remarks
874	D4007	0.05		0.13	
875		-----		-----	
904		-----		-----	
914		-----		-----	
922	D4007	0.05		0.13	
962	D4007	0.05		0.13	
963	D4007	<0.1		-----	
970		-----		-----	
971	D4007	0.025		-0.48	
974	D4007	0.05		0.13	
988		-----		-----	
991		-----		-----	
992		-----		-----	
994		-----		-----	
995		-----		-----	
997		-----		-----	
1023		-----		-----	
1026		-----		-----	
1039		-----		-----	
1040		-----		-----	
1056		-----		-----	
1065		-----		-----	
1082		-----		-----	
1089		-----		-----	
1099		-----		-----	
1148		-----		-----	
1212		-----		-----	
1236		-----		-----	
1259	ISO9030	0.05		0.13	
1345		-----		-----	
1360		-----		-----	
1544	D4007	0.0250		-0.48	
1556		-----		-----	
1569		-----		-----	
1586	D4007	<0.05		-----	
1613	D4007	< 0.05		-----	
1617	D4007	0.05		0.13	
1631		-----		-----	
1669		<0.05	C	-----	First reported 0.20
1710	D4007	0.05		0.13	
1714		-----		-----	
1720		-----		-----	
1724		-----		-----	
1728		0.056		0.28	
1741	ISO9030	0.05		0.13	
1749		-----		-----	
1759	ISO9030	0.025		-0.48	
1776		-----		-----	
1796		-----		-----	
1810		-----		-----	
1811		-----		-----	
1815	D4007	0		-1.08	
1833		-----		-----	
1849		-----		-----	
1858		-----		-----	
1862	D4007	0.100		1.34	
1928		-----		-----	
1929		-----		-----	
1941	ISO9030	0.05		0.13	
1957	D4007	0.05		0.13	
1984		-----		-----	
1995	D4007	0.085		0.98	
6016		-----		-----	
6028	D4007	0.05		0.13	
6203	ISO9030	0.05		0.13	
6238		-----		-----	
6263	D4007	0.075		0.74	
6273	D4007	0.00		-1.08	
6284	D4007	0.025		-0.48	
6290		-----		-----	
6295		-----		-----	
6296		-----		-----	
6319		-----		-----	
6362		-----		-----	
6381	D7829	0.029		-0.38	
6447		-----		-----	

Determination of BS&W on sample #23220; results in %V/V

lab	method	value	mark	z(targ)	remarks
6490	D4007	0.00		-1.08	
6509	D4007	0.05		0.13	
6529		-----		-----	
6545	D4007	0.05		0.13	
6548	D4007	0.05		0.13	
6564	D4007	0.1		1.34	
9132	D4007	0.05		0.13	

normality	OK
n	67
outliers	2
mean (n)	0.0446
st.dev. (n)	0.02504
R(calc.)	0.0701
st.dev.(D4007:22)	0.04125
R(D4007:22)	0.1155





Determination of Density at 15 °C on sample #23220; results in kg/m³

lab	method	value	mark	z(targ)	remarks
52	D5002	882.7		0.00	
62	D5002	882.6		-0.08	
90	D5002	882.9		0.15	
92	D5002	882.5		-0.16	
140	D5002	882.0	C	-0.54	First reported 0.8820 kg/m³
141	D5002	882.93		0.18	
150	D4052	881.7	C	-0.77	First reported 0.8819 kg/m³
154	D1298	881.7		-0.77	
158		-----		-----	
159	D5002	883.1		0.31	
171	D5002	883.7		0.77	
172	D5002	882.8		0.08	
203	D5002	881.79		-0.70	
213	INH-2023	883.1		0.31	
225	D5002	882.3		-0.31	
231	D5002	882.4		-0.23	
237	D1298	881.9	C	-0.62	First reported 0.8819 kg/m³
238	D5002	882.4		-0.23	
273	D5002	882.3		-0.31	
311	D5002	882.6		-0.08	
314	D5002	882.6		-0.08	
328	D5002	883.1		0.31	
333	D5002	882.7		0.00	
334	D5002	882.6		-0.08	
335	D5002	882.7		0.00	
355	D4052	882.4		-0.23	
391	D5002	882.6		-0.08	
398	ISO12185	882.6		-0.08	
399	D4052	882.6		-0.08	
442	IP365	882.4		-0.23	
444	D5002	882.3		-0.31	
445	D5002	882.5		-0.16	
446	D5002	882.6		-0.08	
447	D5002	882.9		0.15	
480	ISO12185	882.6		-0.08	
494	D4052	882.7		0.00	
495	ISO12185	882.63		-0.06	
511		-----		-----	
525	D5002	883.3		0.46	
529	D5002	882.75	C	0.04	Reported 0.88275 kg/m³
541	D5002	882.7		0.00	
542	D5002	883.0	C	0.23	First reported 0.8830 kg/m³
551	D5002	884.3		1.23	
553	D4052	882.3		-0.31	
557	D5002	882.26		-0.34	
562	D1298	882.75		0.04	
575	D4052	893.1	C,R(0.01)	8.01	First reported 880.03
588	D1298	882.21		-0.38	
589	D1298	882.21		-0.38	
590	D1298	882.21		-0.38	
593	D1298	882.21		-0.38	
596	D5002	882.4		-0.23	
597	D1298	882.4		-0.23	
598	D5002	883.2		0.38	
599	D5002	884.8		1.62	
600	D5002	883.5		0.61	
603	D4052	882.9		0.15	
608	D5002	883.7		0.77	
609	D5002	883.6		0.69	
611	D5002	882.3		-0.31	
612	D5002	884.0		1.00	
621	D4052	881.7		-0.77	
657	D5002	882.0		-0.54	
663	D5002	882.87		0.13	
710	ISO12185	882.9		0.15	
734	D4052	882.9		0.15	
736	D5002	883.1		0.31	
749		-----		-----	
750		-----		-----	
752	D5002	882.8		0.08	
753	D5002	882.9		0.15	
781	D5002	882.7		0.00	
785	D5002	884.2		1.15	
840	D5002	882.94		0.18	
862	D5002	882.9		0.15	
873	D5002	882.6		-0.08	

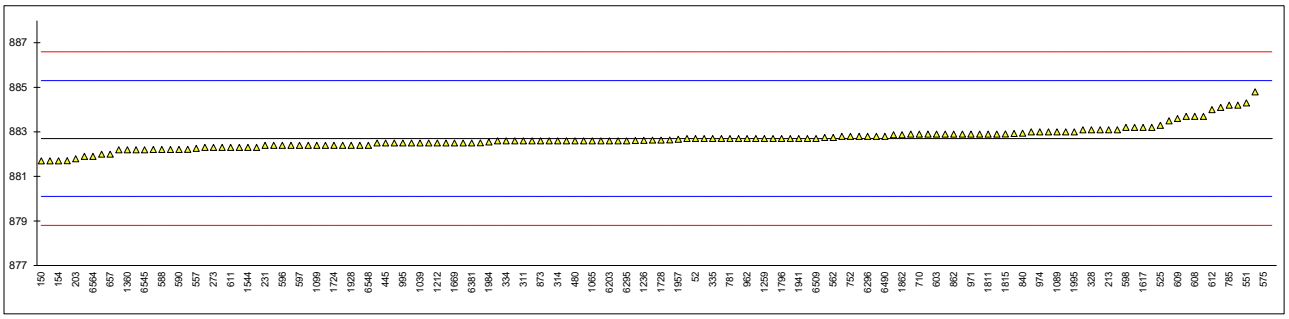
Determination of Density at 15 °C on sample #23220; results in kg/m³

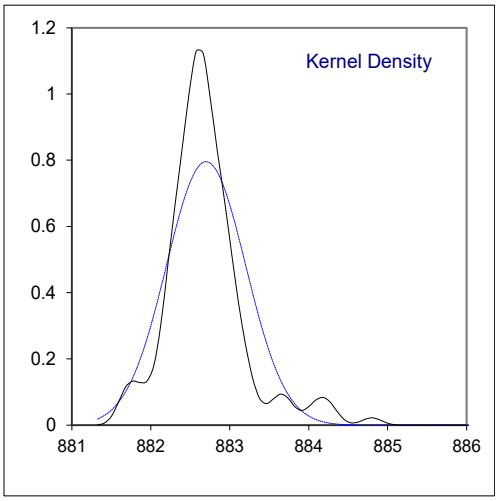
lab	method	value	mark	z(targ)	remarks
874	D5002	882.6		-0.08	
875	D5002	882.7		0.00	
904	D1298	882.5		-0.16	
914		-----		-----	
922	D1298	883.2		0.38	
962	D4052	882.7		0.00	
963	D5002	883.1		0.31	
970		-----		-----	
971	D5002	882.9		0.15	
974	D5002	883.0		0.23	
988	D1298	882.7	C	0.00	First reported 0.8827 kg/m³
991		-----		-----	
992		-----		-----	
994	D5002	882.9		0.15	
995	D5002	882.5		-0.16	
997	D5002	882.5		-0.16	
1023	D5002	882.51		-0.15	
1026		-----		-----	
1039	ISO12185	882.5		-0.16	
1040	ISO12185	883.00		0.23	
1056	D5002	882.5		-0.16	
1065	D4052	882.6		-0.08	
1082	D5002	882.64		-0.05	
1089	D5002	883.0		0.23	
1099	D5002	882.4		-0.23	
1148	ISO12185	881.705		-0.77	
1212	D5002	882.5		-0.16	
1236	D5002	882.62		-0.06	
1259	ISO12185	882.7		0.00	
1345	D5002	882.2		-0.39	
1360	ISO12185	882.2		-0.39	
1544	D5002	882.30		-0.31	
1556	ISO12185	882.61		-0.07	
1569	D4052	882.8		0.08	
1586	D5002	882.5		-0.16	
1613	D5002	882.4		-0.23	
1617	D5002	883.2		0.38	
1631	D4052	882.2		-0.39	
1669		882.5	C	-0.16	First reported 0.8825 kg/m³
1710	ISO12185	882.6		-0.08	
1714	D5002	883.2		0.38	
1720		-----		-----	
1724	D5002	882.4		-0.23	
1728	D5002	882.63		-0.06	
1741	ISO3675	882.5		-0.16	
1749	ISO3675	882.3		-0.31	
1759	ISO3675	882.7		0.00	
1776	ISO12185	883.0		0.23	
1796	D1298	882.7		0.00	
1810	ISO12185	882.7		0.00	
1811	D5002	882.9		0.15	
1815	ISO12185	882.91		0.16	
1833	D5002	882.4		-0.23	
1849	ISO12185	882.22		-0.37	
1858	D1298	882.9		0.15	
1862	D5002	882.87		0.13	
1928	ISO12185	882.4		-0.23	
1929	ISO12185	882.4		-0.23	
1941	ISO12185	882.7		0.00	
1957	D5002	882.67		-0.02	
1984	D5002	882.55		-0.12	
1995	D5002	883.0		0.23	
6016		-----		-----	
6028	ISO3675	884.2		1.15	
6203	D4052	882.6		-0.08	
6238		-----		-----	
6263	D4052	882.6		-0.08	
6273	D5002	882.7		0.00	
6284	D5002	884.1		1.08	
6290		-----		-----	
6295	D5002	882.6		-0.08	
6296	D5002	882.8		0.08	
6319		-----		-----	
6362	D5002	882.8		0.08	
6381	D5002	882.50		-0.16	
6447		-----		-----	

Determination of Density at 15 °C on sample #23220; results in kg/m³

lab	method	value	mark	z(targ)	remarks
6490	D5002	882.8	C	0.08	First reported 0.8828 kg/m³
6509	ISO12185	882.7		0.00	
6529	SH/T0604	903.70	R(0.01)	16.17	
6545	D5002	882.2		-0.39	
6548	D1298	882.4		-0.23	
6564	D1298	881.9		-0.62	
9132	D5002	883.7	C	0.77	First reported 879.5

normality	not OK
n	142
outliers	2
mean (n)	882.702
st.dev. (n)	0.5015
R(calc.)	1.404
st.dev.(D5002:22)	1.2988
R(D5002:22)	3.637





Determination of Kinematic Viscosity at 40 °C on sample #23220; results in mm²/s

lab	method	value	mark	z(targ)	remarks
52	D445	2.701		-0.13	
62	D445	2.701		-0.13	
90		-----		-----	
92		-----		-----	
140	D445	2.7801		0.83	
141	D7042	2.673		-0.47	
150	D445	2.817		1.28	
154		-----		-----	
158	D445	2.765		0.65	
159	D445	2.673	C	-0.47	First reported 4.043
171	D445	2.813		1.23	
172	D445	2.822		1.34	
203	D445	2.767		0.67	
213	D7042	3.3185	R(0.01)	7.40	
225	D445	2.644		-0.83	
231	D445	2.728		0.20	
237	D445	2.747		0.43	
238		-----		-----	
273	D445	2.807		1.16	
311		-----		-----	
314		-----		-----	
328		-----		-----	
333		-----		-----	
334	D445	2.66		-0.63	
335		-----		-----	
355		-----		-----	
391		-----		-----	
398		-----		-----	
399		-----		-----	
442		-----		-----	
444		-----		-----	
445	D445	2.8113		1.21	
446		-----		-----	
447	D445	2.712		0.00	
480		-----		-----	
494	D445	2.7427		0.38	
495	ISO3104	2.84022		1.57	
511	D445	2.65		-0.76	
525	D7042	2.6742		-0.46	
529		-----		-----	
541		-----		-----	
542	D7042	2.678		-0.41	
551	D445	2.747		0.43	
553		-----		-----	
557	D445	2.720071		0.10	
562		-----		-----	
575	D445	2.832	C	1.47	First reported 3.842
588	D445	2.700	C	-0.15	First reported 3.243
589	D445	2.680		-0.39	
590	D445	2.700		-0.15	
593	D445	2.690	C	-0.27	First reported 3.089
596		-----		-----	
597		-----		-----	
598	D7042	2.781		0.84	
599		-----		-----	
600	D445	2.784		0.88	
603	D445	2.262	R(0.01)	-5.49	
608	D445	2.630		-1.00	
609		-----		-----	
611	D445	2.692		-0.24	
612	D7042	2.7305		0.23	
621	D445	2.648		-0.78	
657	D445	2.699		-0.16	
663	D445	2.6718		-0.49	
710	D445	2.7738		0.76	
734		-----		-----	
736	D445	2.773		0.75	
749		-----		-----	
750		-----		-----	
752	D445	2.716		0.05	
753		-----		-----	
781	D445	2.6293		-1.01	
785	D445	2.669		-0.52	
840	D7042	2.7813		0.85	
862	D445	2.646		-0.80	
873	D445	2.676		-0.44	

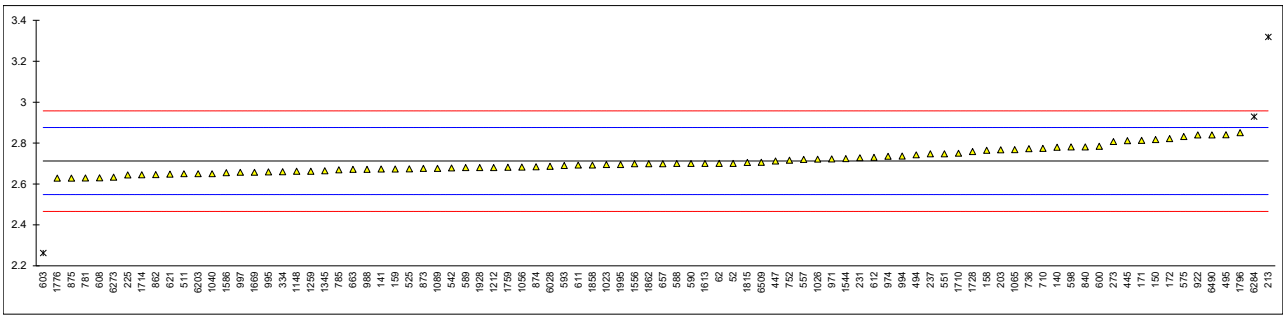
Determination of Kinematic Viscosity at 40 °C on sample #23220; results in mm²/s

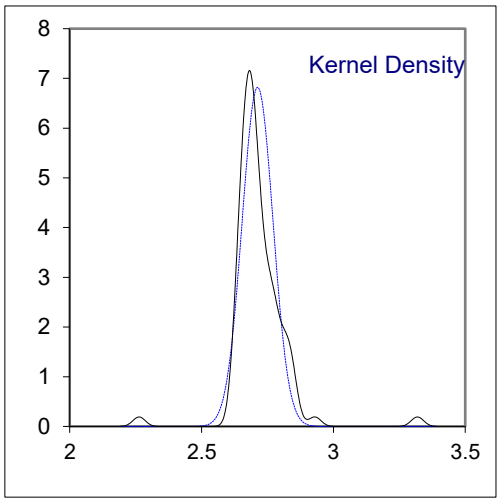
lab	method	value	mark	z(targ)	remarks
874	D445	2.684		-0.34	
875	D445	2.629		-1.01	
904		-----		-----	
914		-----		-----	
922	D445	2.840		1.56	
962		-----		-----	
963		-----		-----	
970		-----		-----	
971	D445	2.723		0.14	
974	D445	2.735		0.28	
988	D445	2.672		-0.49	
991		-----		-----	
992		-----		-----	
994	D445	2.737		0.31	
995	D445	2.659		-0.65	
997	D445	2.657		-0.67	
1023	D445	2.695	C	-0.21	First reported 2.308
1026	D445	2.721		0.11	
1039		-----		-----	
1040	D445	2.6503		-0.75	
1056	D7042	2.6825		-0.36	
1065	D445	2.768		0.68	
1082		-----		-----	
1089	D445	2.676		-0.44	
1099		-----		-----	
1148	DIN51659-2	2.6620		-0.61	
1212	D7042	2.6803		-0.39	
1236		-----		-----	
1259	D7042	2.662		-0.61	
1345	D445	2.665		-0.57	
1360		-----		-----	
1544	D445	2.7241		0.15	
1556	ISO3104	2.69860		-0.16	
1569		-----		-----	
1586	D445	2.655		-0.69	
1613	D445	2.700		-0.15	
1617		-----		-----	
1631		-----		-----	
1669		2.657		-0.67	
1710	D7042	2.750		0.47	
1714	D7042	2.645		-0.82	
1720		-----		-----	
1724		-----		-----	
1728	ISO3104	2.7583		0.57	
1741		-----		-----	
1749		-----		-----	
1759	In house	2.6815		-0.37	
1776	D7042	2.6286		-1.02	
1796	D445	2.851	C	1.70	First reported 3.138
1810		-----		-----	
1811		-----		-----	
1815	ISO3104	2.7052		-0.08	
1833		-----		-----	
1849		-----		-----	
1858	ISO3104	2.6925		-0.24	
1862	D445	2.6988		-0.16	
1928	D7042	2.680		-0.39	
1929		-----		-----	
1941		-----		-----	
1957		-----		-----	
1984		-----		-----	
1995	D445	2.695		-0.21	
6016		-----		-----	
6028	ISO3104	2.687		-0.30	
6203	D7042	2.650		-0.76	
6238		-----		-----	
6263		-----		-----	
6273	D7042	2.633		-0.96	
6284	D445	2.929	R(0.05)	2.65	
6290		-----		-----	
6295		-----		-----	
6296		-----		-----	
6319		-----		-----	
6362		-----		-----	
6381		-----		-----	
6447		-----		-----	

Determination of Kinematic Viscosity at 40 °C on sample #23220; results in mm²/s

lab	method	value	mark	z(targ)	remarks
6490	D445	2.840		1.56	
6509	D7042	2.706		-0.07	
6529		-----		-----	
6545		-----		-----	
6548		-----		-----	
6564		-----		-----	
9132		-----		-----	

normality	OK
n	85
outliers	3
mean (n)	2.7119
st.dev. (n)	0.05851
R(calc.)	0.1638
st.dev.(D445:23)	0.08195
R(D445:23)	0.2295





Determination of individual Light ends on sample #23220; results in %M/M

lab	method	Methane	Ethane	Propane	i-Butane	n-Butane	i-Pentane	n-Pentane	cyc-Pentane	Hexanes
52		-----	-----	-----	-----	-----	-----	-----	-----	-----
62		-----	-----	-----	-----	-----	-----	-----	-----	-----
90		-----	-----	-----	-----	-----	-----	-----	-----	-----
92		-----	-----	-----	-----	-----	-----	-----	-----	-----
140		-----	-----	-----	-----	-----	-----	-----	-----	-----
141		0.00004	0.00475	0.09866	0.08458	0.31447	1.33538	0.43337	0.05291	0.78311
150		-----	-----	-----	-----	-----	-----	-----	-----	-----
154		-----	-----	-----	-----	-----	-----	-----	-----	-----
158		-----	-----	-----	-----	-----	-----	-----	-----	-----
159		-----	-----	-----	-----	-----	-----	-----	-----	-----
171	D7900	<0.01	<0.01	0.08	0.08	0.29	1.18	0.40	0.05	0.41
172		-----	-----	-----	-----	-----	-----	-----	-----	-----
203		-----	-----	-----	-----	-----	-----	-----	-----	-----
213		-----	-----	-----	-----	-----	-----	-----	-----	-----
225		-----	-----	-----	-----	-----	-----	-----	-----	-----
231		-----	-----	-----	-----	-----	-----	-----	-----	-----
237		-----	-----	-----	-----	-----	-----	-----	-----	-----
238		-----	-----	-----	-----	-----	-----	-----	-----	-----
273		-----	-----	-----	-----	-----	-----	-----	-----	-----
311		-----	-----	-----	-----	-----	-----	-----	-----	-----
314		-----	-----	-----	-----	-----	-----	-----	-----	-----
328		-----	-----	-----	-----	-----	-----	-----	-----	-----
333		-----	-----	-----	-----	-----	-----	-----	-----	-----
334		-----	-----	-----	-----	-----	-----	-----	-----	-----
335		-----	-----	-----	-----	-----	-----	-----	-----	-----
355		-----	-----	-----	-----	-----	-----	-----	-----	-----
391		-----	-----	-----	-----	-----	-----	-----	-----	-----
398		-----	-----	-----	-----	-----	-----	-----	-----	-----
399		-----	-----	-----	-----	-----	-----	-----	-----	-----
442		-----	-----	-----	-----	-----	-----	-----	-----	-----
444		-----	-----	-----	-----	-----	-----	-----	-----	-----
445	IP344	<0.0001	<0.0001	0.0787	0.0768	0.3023	1.2124	0.4202	0.0537	1.0762
446		-----	-----	-----	-----	-----	-----	-----	-----	-----
447		-----	-----	-----	-----	-----	-----	-----	-----	-----
480		-----	-----	-----	-----	-----	-----	-----	-----	-----
494		-----	-----	-----	-----	-----	-----	-----	-----	-----
495	D7900	<0.01	<0.01	0.0963	0.0779	0.2914	1.3905	0.3781	0.0448	1.568
511		-----	-----	-----	-----	-----	-----	-----	-----	-----
525		-----	-----	-----	-----	-----	-----	-----	-----	-----
529		-----	-----	-----	-----	-----	-----	-----	-----	-----
541		-----	-----	-----	-----	-----	-----	-----	-----	-----
542		-----	-----	-----	-----	-----	-----	-----	-----	-----
551		-----	-----	-----	-----	-----	-----	-----	-----	-----
553		-----	-----	-----	-----	-----	-----	-----	-----	-----
557		-----	-----	-----	-----	-----	-----	-----	-----	-----
562		-----	-----	-----	-----	-----	-----	-----	-----	-----
575		-----	-----	-----	-----	-----	-----	-----	-----	-----
588		-----	-----	-----	-----	-----	-----	-----	-----	-----
589		-----	-----	-----	-----	-----	-----	-----	-----	-----
590		-----	-----	-----	-----	-----	-----	-----	-----	-----
593		-----	-----	-----	-----	-----	-----	-----	-----	-----
596	GPA2186	0.000	0.004	0.095	0.081	0.305	1.505	0.413	-----	-----
597		-----	-----	-----	-----	-----	-----	-----	-----	-----
598		-----	-----	-----	-----	-----	-----	-----	-----	-----
599		-----	-----	-----	-----	-----	-----	-----	-----	-----
600	GPA2186	0	0.006	0.116	0.099	0.360	1.642	0.515 G(5)	-----	-----
603		-----	-----	-----	-----	-----	-----	----	-----	-----
608	GPA2186	0.000	0.005	0.101	0.084	0.314	1.530	0.417	-----	-----
609	IP344	<0.01	0.007	0.117	0.092	0.335	1.632	0.440	-----	-----
611	GPA2186	0	0.0042	0.0903	0.0802	0.2987	1.5106	0.4664	-----	-----
612		-----	-----	-----	-----	-----	-----	-----	-----	-----
621		-----	-----	-----	-----	-----	-----	-----	-----	-----
657		-----	-----	-----	-----	-----	-----	-----	-----	-----
663		-----	-----	-----	-----	-----	-----	-----	-----	-----
710		-----	-----	-----	-----	-----	-----	-----	-----	-----
734		-----	-----	-----	-----	-----	-----	-----	-----	-----
736		-----	-----	-----	-----	-----	-----	-----	-----	-----
749		-----	-----	-----	-----	-----	-----	-----	-----	-----
750		-----	-----	-----	-----	-----	-----	-----	-----	-----
752		-----	-----	-----	-----	-----	-----	-----	-----	-----
753		-----	-----	-----	-----	-----	-----	-----	-----	-----
781		-----	-----	-----	-----	-----	-----	-----	-----	-----
785		-----	-----	-----	-----	-----	-----	-----	-----	-----
840		-----	-----	-----	-----	-----	-----	-----	-----	-----
862		-----	-----	-----	-----	-----	-----	-----	-----	-----
873		-----	-----	-----	-----	-----	-----	-----	-----	-----

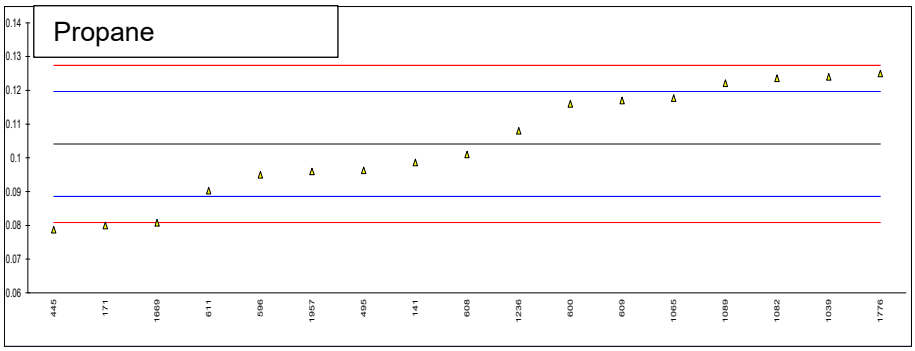
Determination of individual Light ends on sample #23220; results in %M/M

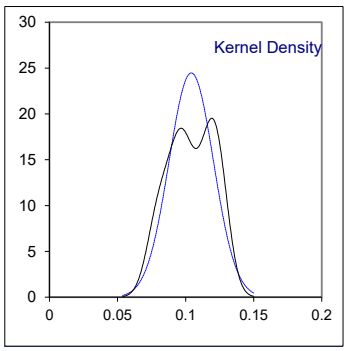
lab	method	Methane	Ethane	Propane	i-Butane	n-Butane	i-Pentane	n-Pentane	cyc-Pentane	Hexanes
874		-----	-----	-----	-----	-----	-----	-----	-----	-----
875		-----	-----	-----	-----	-----	-----	-----	-----	-----
904		-----	-----	-----	-----	-----	-----	-----	-----	-----
914		-----	-----	-----	-----	-----	-----	-----	-----	-----
922		-----	-----	-----	-----	-----	-----	-----	-----	-----
962		-----	-----	-----	-----	-----	-----	-----	-----	-----
963		-----	-----	-----	-----	-----	-----	-----	-----	-----
970		-----	-----	-----	-----	-----	-----	-----	-----	-----
971		-----	-----	-----	-----	-----	-----	-----	-----	-----
974		-----	-----	-----	-----	-----	-----	-----	-----	-----
988		-----	-----	-----	-----	-----	-----	-----	-----	-----
991		-----	-----	-----	-----	-----	-----	-----	-----	-----
992		-----	-----	-----	-----	-----	-----	-----	-----	-----
994		-----	-----	-----	-----	-----	-----	-----	-----	-----
995		-----	-----	-----	-----	-----	-----	-----	-----	-----
997		-----	-----	-----	-----	-----	-----	-----	-----	-----
1023		-----	-----	-----	-----	-----	-----	-----	-----	-----
1026		-----	-----	-----	-----	-----	-----	-----	-----	-----
1039	D6729	<0.01	0.007	0.124	0.096	0.344	-----	-----	-----	-----
1040		-----	-----	-----	-----	-----	-----	-----	-----	-----
1056		-----	-----	-----	-----	-----	-----	-----	-----	-----
1065		-----	0.0074	0.1177	0.0895	0.3240	1.4804	0.3914	0.046	1.2017
1082		-----	0.0080	0.1236	0.0933	0.3460	0.6181	0.4330	0.0430	1.0372
1089	D5134	0.0000	0.0079	0.1221	0.0934	0.3377	0.3390	0.4185	0.0530	0.7805
1099		-----	-----	-----	-----	-----	-----	-----	-----	-----
1148		-----	-----	-----	-----	-----	-----	-----	-----	-----
1212		-----	-----	-----	-----	-----	-----	-----	-----	-----
1236	D5134	0	0.006	0.108	0.086	0.316	0.339	0.405	0.053	1.306
1259		-----	-----	-----	-----	-----	-----	-----	-----	-----
1345		-----	-----	-----	-----	-----	-----	-----	-----	-----
1360		-----	-----	-----	-----	-----	-----	-----	-----	-----
1544		-----	-----	-----	-----	-----	-----	-----	-----	-----
1556		-----	-----	-----	-----	-----	-----	-----	-----	-----
1569		-----	-----	-----	-----	-----	-----	-----	-----	-----
1586		-----	-----	-----	-----	-----	-----	-----	-----	-----
1613		-----	-----	-----	-----	-----	-----	-----	-----	-----
1617		-----	-----	-----	-----	-----	-----	-----	-----	-----
1631		-----	-----	-----	-----	-----	-----	-----	-----	-----
1669		0.0433	<0.05 C	0.0808 C	0.0840 C	0.3136 C	1.5989	0.4560 C	0.2357 C,G(1)	1.1282
1710		-----	-----	-----	-----	-----	-----	-----	-----	-----
1714		-----	-----	-----	0.196 G(1)	0.689 G(1)	0.525	0.961 G(1)	0.091 G(1)	3.333 G(1)
1720		-----	-----	-----	-----	-----	-----	-----	-----	-----
1724		-----	-----	-----	-----	-----	-----	-----	-----	-----
1728		-----	-----	-----	-----	-----	-----	-----	-----	-----
1741		-----	-----	-----	-----	-----	-----	-----	-----	-----
1749		-----	-----	-----	-----	-----	-----	-----	-----	-----
1759		-----	-----	-----	-----	-----	-----	-----	-----	-----
1776		-----	-----	0.1250	0.0983	0.3516	0.3313	0.4409	-----	-----
1796		-----	-----	-----	-----	-----	-----	-----	-----	-----
1810		-----	-----	-----	-----	-----	-----	-----	-----	-----
1811		-----	-----	-----	-----	-----	-----	-----	-----	-----
1815		-----	-----	-----	-----	-----	-----	-----	-----	-----
1833		-----	-----	-----	-----	-----	-----	-----	-----	-----
1849		-----	-----	-----	-----	-----	-----	-----	-----	-----
1858		-----	-----	-----	-----	-----	-----	-----	-----	-----
1862		-----	-----	-----	-----	-----	-----	-----	-----	-----
1928		-----	-----	-----	-----	-----	-----	-----	-----	-----
1929		-----	-----	-----	-----	-----	-----	-----	-----	-----
1941		-----	-----	-----	-----	-----	-----	-----	-----	-----
1957		0.000023	0.004583	0.095953	0.081888	0.309832	0.284508	0.422267	0.056145	1.3953
1984		-----	-----	-----	-----	-----	-----	-----	-----	-----
1995		-----	-----	-----	-----	-----	-----	-----	-----	-----
6016		-----	-----	-----	-----	-----	-----	-----	-----	-----
6028		-----	-----	-----	-----	-----	-----	-----	-----	-----
6203		-----	-----	-----	-----	-----	-----	-----	-----	-----
6238		-----	-----	-----	-----	-----	-----	-----	-----	-----
6263		-----	-----	-----	-----	-----	-----	-----	-----	-----
6273		-----	-----	-----	-----	-----	-----	-----	-----	-----
6284		-----	-----	-----	-----	-----	-----	-----	-----	-----
6290		-----	-----	-----	-----	-----	-----	-----	-----	-----
6295		-----	-----	-----	-----	-----	-----	-----	-----	-----
6296		-----	-----	-----	-----	-----	-----	-----	-----	-----
6319		-----	-----	-----	-----	-----	-----	-----	-----	-----
6362		-----	-----	-----	-----	-----	-----	-----	-----	-----
6381		-----	-----	-----	-----	-----	-----	-----	-----	-----
6447		-----	-----	-----	-----	-----	-----	-----	-----	-----

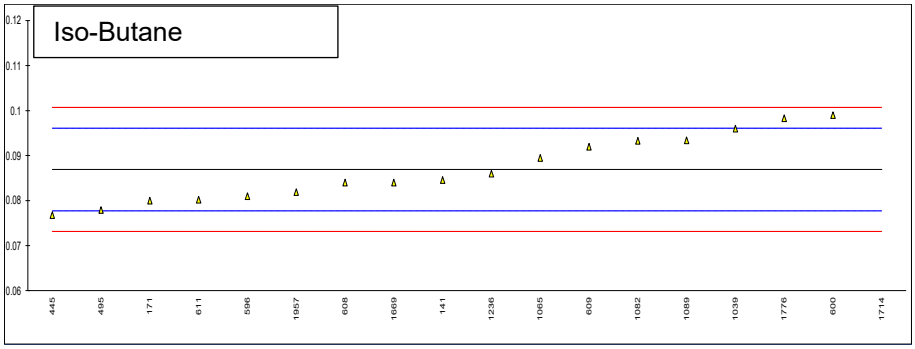
Determination of individual Light ends on sample #23220; results in %M/M

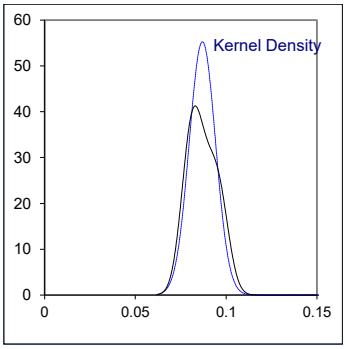
lab	method	Methane	Ethane	Propane	i-Butane	n-Butane	i-Pentane	n-Pentane	cyc-Pentane	Hexanes
6490		-----	-----	-----	-----	-----	-----	-----	-----	-----
6509		-----	-----	-----	-----	-----	-----	-----	-----	-----
6529		-----	-----	-----	-----	-----	-----	-----	-----	-----
6545		-----	-----	-----	-----	-----	-----	-----	-----	-----
6548		-----	-----	-----	-----	-----	-----	-----	-----	-----
6564		-----	-----	-----	-----	-----	-----	-----	-----	-----
9132		-----	-----	-----	-----	-----	-----	-----	-----	-----
	normality	not OK	OK	OK	OK	OK	OK	OK	OK	OK
	n	13	15	17	17	17	17	15	9	10
	outliers	n.a.	n.a.	0	1	1	0	2	2	1
	mean (n)	<0.01	<0.01	0.1041	0.0869	0.3208	1.0855	0.4223	0.0503	1.0686
	st.dev. (n)	n.a.	n.a.	0.01631	0.00722	0.02141	0.53737	0.02363	0.00460	0.33880
	R(calc.)	n.a.	n.a.	0.0457	0.0202	0.0599	1.5046	0.0662	0.0129	0.9486
	st.dev.(IP344:88R10)	n.a.	n.a.	0.00777	0.00460	0.01512	(0.03489)	0.01554	0.00282	0.16071
	R(IP344:88R10)	n.a.	n.a.	0.0218	0.0129	0.0423	(0.0977)	0.0435	0.0079	0.4500

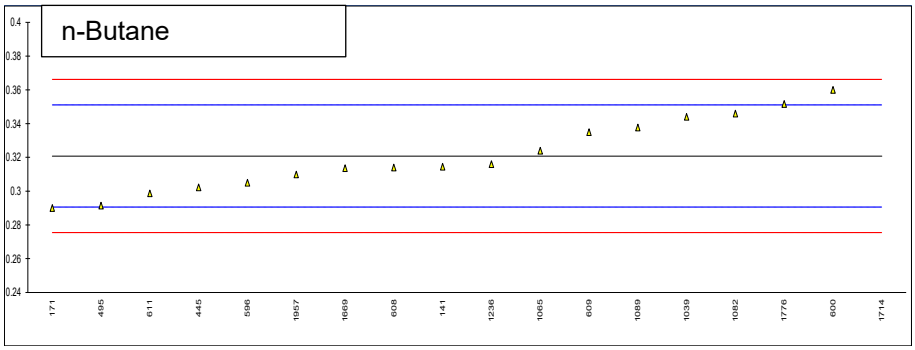
Lab 1669 first reported for Ethane 0.0178, for Propane 0.2326, for i-Butane 0.2211, for i-Pentane 0.4565, for n-Pentane 0.6054 and for cyclo-Pentane 0.2150 respectively

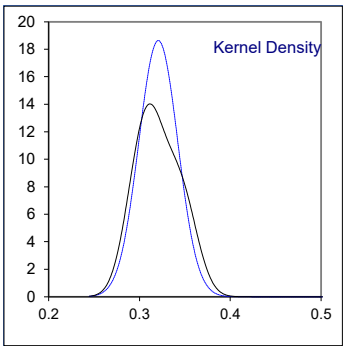


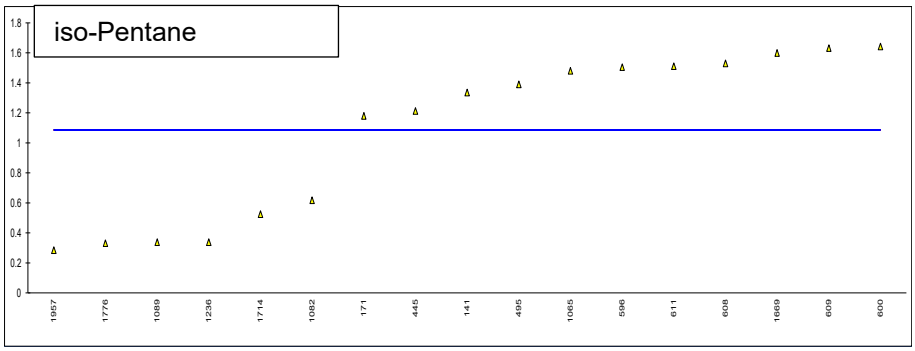


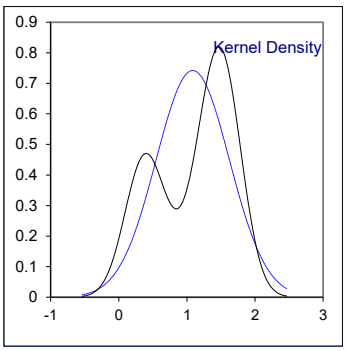


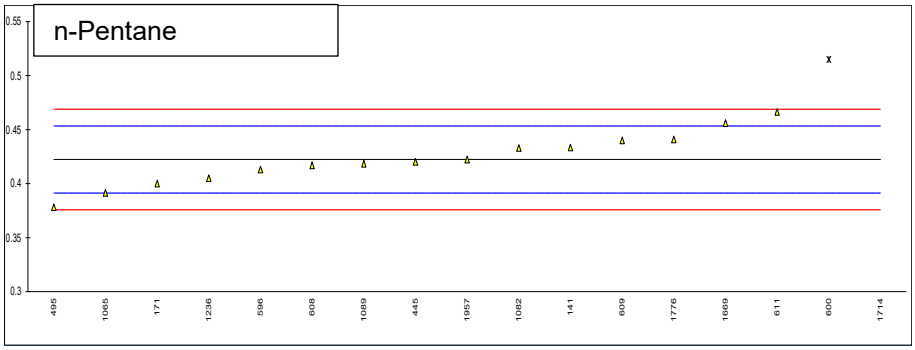


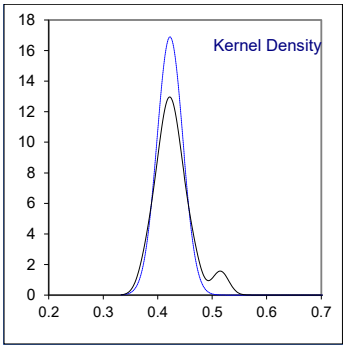


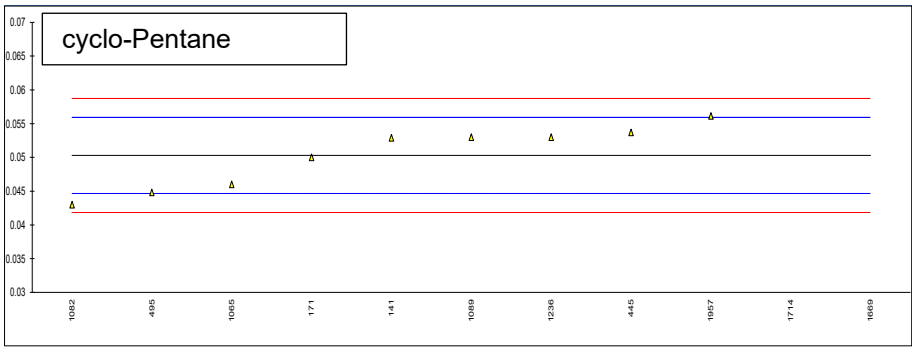


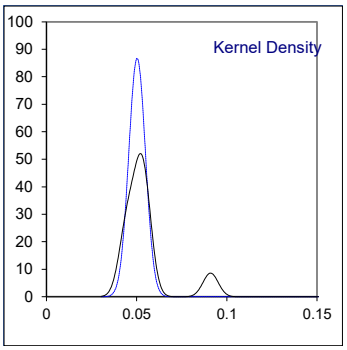

iso-Pentane

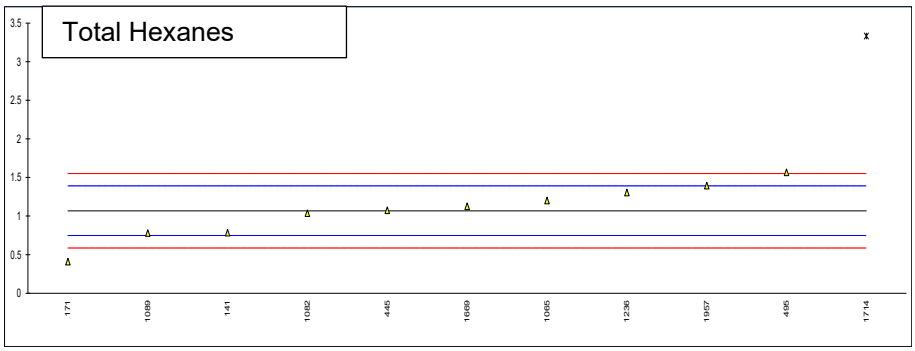

Kernel Density

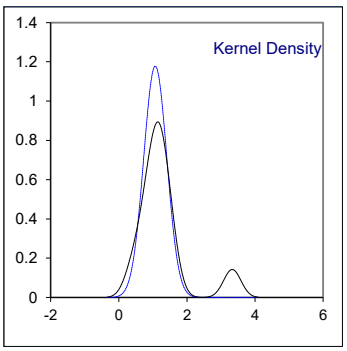

n-Pentane


Kernel Density


cyclo-Pentane


Kernel Density


Total Hexanes


Kernel Density

Determination of Total of all C1 – C6 on sample #23220; results in %M/M

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
62		-----		-----	
90		-----		-----	
92		-----		-----	
140		-----		-----	
141		3.05435		-----	
150		-----		-----	
154		-----		-----	
158		-----		-----	
159		-----		-----	
171		-----		-----	
172		-----		-----	
203		-----		-----	
213		-----		-----	
225		-----		-----	
231		-----		-----	
237		-----		-----	
238		-----		-----	
273		-----		-----	
311		-----		-----	
314		-----		-----	
328		-----		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
355		-----		-----	
391		-----		-----	
398		-----		-----	
399		-----		-----	
442		-----		-----	
444		-----		-----	
445	IP344	3.3131		-----	
446		-----		-----	
447		-----		-----	
480		-----		-----	
494		-----		-----	
495	D7900	3.847		-----	
511		-----		-----	
525		-----		-----	
529		-----		-----	
541		-----		-----	
542		-----		-----	
551		-----		-----	
553		-----		-----	
557		-----		-----	
562		-----		-----	
575		-----		-----	
588		-----		-----	
589		-----		-----	
590		-----		-----	
593		-----		-----	
596		-----		-----	
597		-----		-----	
598		-----		-----	
599		-----		-----	
600		-----		-----	
603		-----		-----	
608		-----		-----	
609		-----		-----	
611		-----		-----	
612		-----		-----	
621		-----		-----	
657		-----		-----	
663		-----		-----	
710		-----		-----	
734		-----		-----	
736		-----		-----	
749		-----		-----	
750		-----		-----	
752		-----		-----	
753		-----		-----	
781		-----		-----	
785		-----		-----	
840		-----		-----	
862		-----		-----	
873		-----		-----	

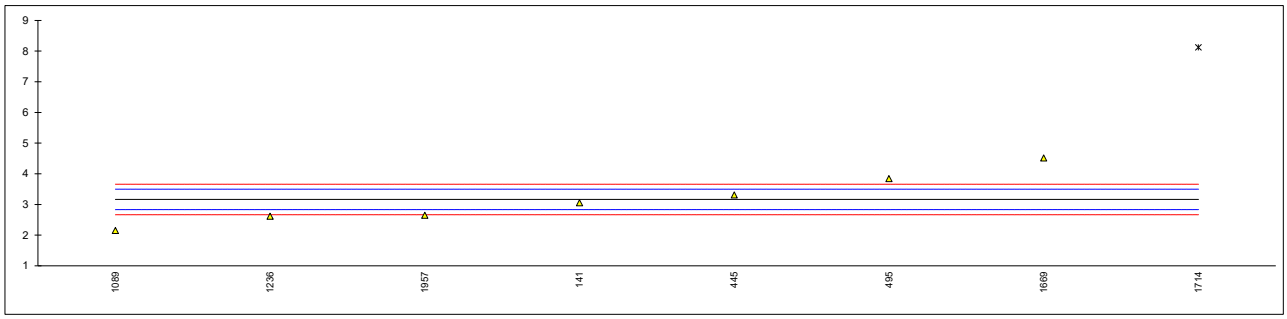
Determination of Total of all C1 – C6 on sample #23220; results in %M/M

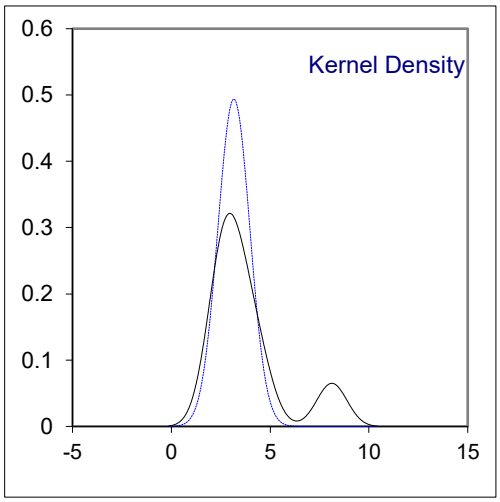
lab	method	value	mark	z(targ)	remarks
874		-----		-----	
875		-----		-----	
904		-----		-----	
914		-----		-----	
922		-----		-----	
962		-----		-----	
963		-----		-----	
970		-----		-----	
971		-----		-----	
974		-----		-----	
988		-----		-----	
991		-----		-----	
992		-----		-----	
994		-----		-----	
995		-----		-----	
997		-----		-----	
1023		-----		-----	
1026		-----		-----	
1039		-----		-----	
1040		-----		-----	
1056		-----		-----	
1065		-----		-----	
1082		-----		-----	
1089	D5134	2.1521		-----	
1099		-----		-----	
1148		-----		-----	
1212		-----		-----	
1236	D5134	2.619		-----	
1259		-----		-----	
1345		-----		-----	
1360		-----		-----	
1544		-----		-----	
1556		-----		-----	
1569		-----		-----	
1586		-----		-----	
1613		-----		-----	
1617		-----		-----	
1631		-----		-----	
1669		4.5187		-----	
1710		-----		-----	
1714	In house	8.121	G(0.01)	-----	
1720		-----		-----	
1724		-----		-----	
1728		-----		-----	
1741		-----		-----	
1749		-----		-----	
1759		-----		-----	
1776		-----		-----	
1796		-----		-----	
1810		-----		-----	
1811		-----		-----	
1815		-----		-----	
1833		-----		-----	
1849		-----		-----	
1858		-----		-----	
1862		-----		-----	
1928		-----		-----	
1929		-----		-----	
1941		-----		-----	
1957		2.6505		-----	
1984		-----		-----	
1995		-----		-----	
6016		-----		-----	
6028		-----		-----	
6203		-----		-----	
6238		-----		-----	
6263		-----		-----	
6273		-----		-----	
6284		-----		-----	
6290		-----		-----	
6295		-----		-----	
6296		-----		-----	
6319		-----		-----	
6362		-----		-----	
6381		-----		-----	
6447		-----		-----	

Determination of Total of all C1 – C6 on sample #23220; results in %M/M

lab	method	value	mark	z(targ)	remarks
6490		-----		-----	
6509		-----		-----	
6529		-----		-----	
6545		-----		-----	
6548		-----		-----	
6564		-----		-----	
9132		-----		-----	

normality	unknown
n	7
outliers	1
mean (n)	3.1650
st.dev. (n)	0.80835
R(calc.)	2.2634
st.dev.(IP344:88R10)	(0.16615)
R(IP344:88R10)	(0.4652)





Determination of Average Molecular Mass on sample #23220; results in g/mol

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
62		-----		-----	
90		-----		-----	
92		-----		-----	
140		-----		-----	
141	In house	159.80		-0.34	
150		-----		-----	
154		-----		-----	
158		-----		-----	
159		-----		-----	
171		-----		-----	
172		-----		-----	
203		-----		-----	
213	INH-2001	174.9		2.68	
225		-----		-----	
231		-----		-----	
237		-----		-----	
238		-----		-----	
273		-----		-----	
311		-----		-----	
314		-----		-----	
328		-----		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
355		-----		-----	
391		-----		-----	
398		-----		-----	
399		-----		-----	
442		-----		-----	
444		-----		-----	
445		-----		-----	
446		-----		-----	
447		-----		-----	
480		-----		-----	
494		-----		-----	
495	In house	196.36	G(0.05)	6.97	
511		-----		-----	
525	In house	158.3		-0.64	
529		-----		-----	
541		-----		-----	
542		-----		-----	
551		-----		-----	
553		-----		-----	
557		-----		-----	
562		-----		-----	
575		-----		-----	
588		-----		-----	
589		-----		-----	
590		-----		-----	
593		-----		-----	
596	INH-2001	160.71		-0.16	
597		-----		-----	
598		-----		-----	
599		-----		-----	
600		-----		-----	
603		-----		-----	
608		-----		-----	
609	INH-006	158		-0.70	
611		-----		-----	
612		-----		-----	
621		-----		-----	
657		-----		-----	
663		-----		-----	
710		-----		-----	
734		-----		-----	
736		-----		-----	
749		-----		-----	
750		-----		-----	
752		-----		-----	
753		-----		-----	
781		-----		-----	
785		-----		-----	
840		-----		-----	
862		-----		-----	
873		-----		-----	

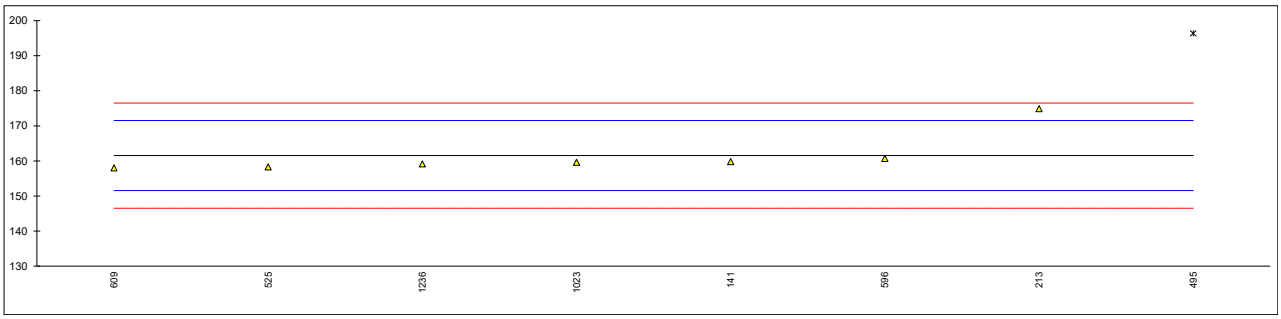
Determination of Average Molecular Mass on sample #23220; results in g/mol

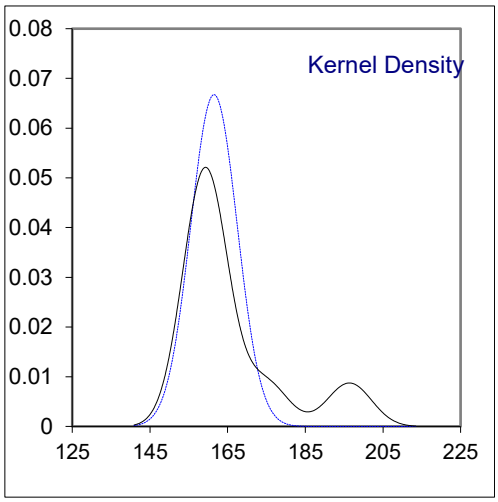
lab	method	value	mark	z(targ)	remarks
874		-----		-----	
875		-----		-----	
904		-----		-----	
914		-----		-----	
922		-----		-----	
962		-----		-----	
963		-----		-----	
970		-----		-----	
971		-----		-----	
974		-----		-----	
988		-----		-----	
991		-----		-----	
992		-----		-----	
994		-----		-----	
995		-----		-----	
997		-----		-----	
1023		159.63		-0.37	
1026		-----		-----	
1039		-----		-----	
1040		-----		-----	
1056		-----		-----	
1065		-----		-----	
1082		-----		-----	
1089		-----		-----	
1099		-----		-----	
1148		-----		-----	
1212		-----		-----	
1236	In house	159.1490952		-0.47	
1259		-----		-----	
1345		-----		-----	
1360		-----		-----	
1544		-----		-----	
1556		-----		-----	
1569		-----		-----	
1586		-----		-----	
1613		-----		-----	
1617		-----		-----	
1631		-----		-----	
1669		-----		-----	
1710		-----		-----	
1714		-----		-----	
1720		-----		-----	
1724		-----		-----	
1728		-----		-----	
1741		-----		-----	
1749		-----		-----	
1759		-----		-----	
1776		-----		-----	
1796		-----		-----	
1810		-----		-----	
1811		-----		-----	
1815		-----		-----	
1833		-----		-----	
1849		-----		-----	
1858		-----		-----	
1862		-----		-----	
1928		-----		-----	
1929		-----		-----	
1941		-----		-----	
1957		-----		-----	
1984		-----		-----	
1995		-----		-----	
6016		-----		-----	
6028		-----		-----	
6203		-----		-----	
6238		-----		-----	
6263		-----		-----	
6273		-----		-----	
6284		-----		-----	
6290		-----		-----	
6295		-----		-----	
6296		-----		-----	
6319		-----		-----	
6362		-----		-----	
6381		-----		-----	
6447		-----		-----	

Determination of Average Molecular Mass on sample #23220; results in g/mol

lab	method	value	mark	z(targ)	remarks
6490		-----		-----	
6509		-----		-----	
6529		-----		-----	
6545		-----		-----	
6548		-----		-----	
6564		-----		-----	
9132		-----		-----	

normality	unknown
n	7
outliers	1
mean (n)	161.50
st.dev. (n)	5.980
R(calc.)	16.74
st.dev.(D2503:92R16)	5
R(D2503:92R16)	14





Determination of Pour Point Maximum on sample #23220; results in °C

lab	method	value	mark	z(targ)	remarks
52	D5853-A	<-36		-----	
62	D97	-24		0.64	
90	D97	-24		0.64	
92	D5853-A	<-24		-----	
140	D97	-36.0		-1.23	
141		-----		-----	
150		-----		-----	
154	D97	<-24		-----	
158	D97	<-21		-----	
159		-----		-----	
171	D5853-A	-33		-0.76	
172		-----		-----	
203	D5853-A	-26		0.33	
213		-----		-----	
225	D5853-A	< -36		-----	
231	D5853-A	<-21		-----	
237	D5853-A	<-21		-----	
238	D5853-A	-24		0.64	
273		-----		-----	
311		-----		-----	
314		-----		-----	
328	D5853-A	-27		0.17	
333		-----		-----	
334	D5853-A	-30		-0.29	
335	NF60105	-30		-0.29	
355		-----		-----	
391	D5853-A	-36		-1.23	
398		-----		-----	
399	D5853-A	-30		-0.29	
442		-----		-----	
444		-----		-----	
445	D5853-A	-30		-0.29	
446		-----		-----	
447	D5853-A	-33		-0.76	
480		-----		-----	
494	D5853-A	-39		-1.69	
495	D5853-A	-33		-0.76	
511		-----		-----	
525		-----		-----	
529		-----		-----	
541		-----		-----	
542		-----		-----	
551		-----		-----	
553		-----		-----	
557		-----		-----	
562	D97	-27		0.17	
575		-----		-----	
588		-----		-----	
589		-----		-----	
590		-----		-----	
593		-----		-----	
596		-----		-----	
597		-----		-----	
598	D5853-A	-24		0.64	
599		-----		-----	
600	D5853-A	-18		1.57	
603	D97	-33		-0.76	
608		-----		-----	
609		-----		-----	
611		-----		-----	
612		-----		-----	
621	D5853-A	< -30		-----	
657	D5853-A	-36		-1.23	
663	D5853-A	-24		0.64	
710	D5853-A	-18		1.57	
734		-----		-----	
736	D5853-A	-18		1.57	
749		-----		-----	
750		-----		-----	
752	D5853-A	-30		-0.29	
753	D5853-A	-33		-0.76	
781	D5853-A	-33		-0.76	
785		-----		-----	
840	D5853-A	-30		-0.29	
862	D5853-A	-24		0.64	
873	D5853-A	-27		0.17	

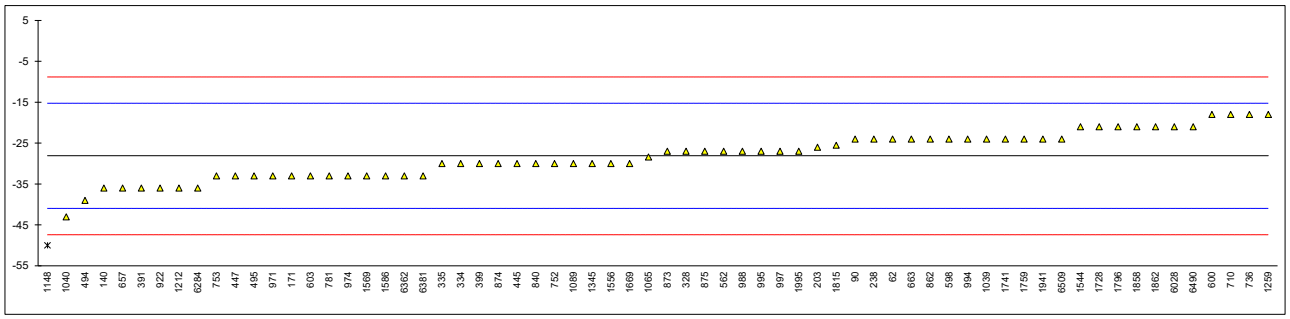
Determination of Pour Point Maximum on sample #23220; results in °C

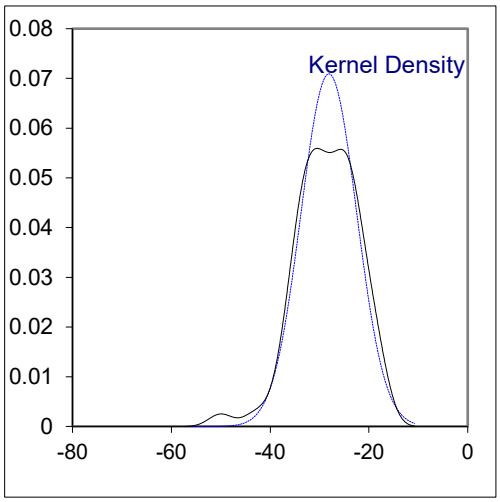
lab	method	value	mark	z(targ)	remarks
874	D5853-A	-30		-0.29	
875	D5853-A	-27		0.17	
904	D5853-A	<-36		-----	
914		-----		-----	
922	D97	-36		-1.23	
962		-----		-----	
963		-----		-----	
970		-----		-----	
971	D5853-A	-33		-0.76	
974	D5853-A	-33		-0.76	
988	D5853-A	-27		0.17	
991		-----		-----	
992		-----		-----	
994	D5853-A	-24		0.64	
995	D5853	-27		0.17	
997	D5853-A	-27		0.17	
1023	D5853-A	<-36		-----	
1026		-----		-----	
1039	D5853-A	-24		0.64	
1040	D5853-A	-43.0		-2.32	
1056		-----		-----	
1065	D5950	-28.4		-0.05	
1082		-----		-----	
1089	D5853-A	-30		-0.29	
1099		-----		-----	
1148	ISO3016	-50	R(0.05)	-3.41	
1212	D5853-A	-36		-1.23	
1236		-----		-----	
1259	D5853-A	-18		1.57	
1345	D5853-A	-30		-0.29	
1360		-----		-----	
1544	D5853-A	-21.0		1.11	
1556	D5853-A	-30		-0.29	
1569	D5950	-33		-0.76	
1586	D5853-A	-33		-0.76	
1613	D5853-A	< -24		-----	
1617		-----		-----	
1631		-----		-----	
1669	D97	-30		-0.29	
1710		-----		-----	
1714	D5853-A	<-36		-----	
1720		-----		-----	
1724		-----		-----	
1728	D5853-A	-21		1.11	
1741	D5853-A	-24		0.64	
1749		-----		-----	
1759	D5853-A	-24		0.64	
1776		-----		-----	
1796	D5853-A	-21		1.11	
1810		-----		-----	
1811		-----		-----	
1815	D5853-A	-25.5		0.41	
1833		-----		-----	
1849		-----		-----	
1858	D5853-A	-21		1.11	
1862	D5853-A	-21		1.11	
1928		-----		-----	
1929		-----		-----	
1941	ISO3016	-24		0.64	
1957		-----		-----	
1984		-----		-----	
1995	D5950	-27		0.17	
6016		-----		-----	
6028		-21		1.11	
6203		-----		-----	
6238		-----		-----	
6263		-----		-----	
6273		-----		-----	
6284		-36		-1.23	
6290		-----		-----	
6295		-----		-----	
6296		-----		-----	
6319		-----		-----	
6362	D5853-A	-33		-0.76	
6381	D5853-A	-33.0		-0.76	
6447		-----		-----	

Determination of Pour Point Maximum on sample #23220; results in °C

lab	method	value	mark	z(targ)	remarks
6490	D5853-A	-21		1.11	
6509		-24		0.64	
6529		-----		-----	
6545		-----		-----	
6548		-----		-----	
6564		-----		-----	
9132		-----		-----	

normality	OK
n	65
outliers	1
mean (n)	-28.11
st.dev. (n)	5.627
R(calc.)	15.76
st.dev.(D5853-A:17a)	6.429
R(D5853-A:17a)	18.0





Determination of Salt as Chloride on sample #23220; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
62		-----		-----	
90		-----		-----	
92		-----		-----	
140	D3230	7.2		-1.01	
141		-----		-----	
150	D3230	18		0.44	
154		-----		-----	
158	D3230	9		-0.77	
159		-----		-----	
171	D3230	16		0.17	
172		-----		-----	
203		-----		-----	
213		-----		-----	
225		-----		-----	
231	D3230	17.85		0.42	
237		-----		-----	
238		-----		-----	
273		-----		-----	
311	D3230	5.5	C	-1.24	First reported 55
314		-----		-----	
328		-----		-----	
333	D3230	14		-0.10	
334		-----		-----	
335		-----		-----	
355	D3230	16.66		0.26	
391		-----		-----	
398		-----		-----	
399		-----		-----	
442		-----		-----	
444		-----		-----	
445	IP265	-----		-----	Reported 6.2 mg/L
446		-----		-----	
447		-----		-----	
480	D3230	11.90		-0.38	
494		-----		-----	
495	D3230	7.0		-1.03	
511		-----		-----	
525		-----		-----	
529	D3230	15.3		0.08	
541		-----		-----	
542	D3230	13.6		-0.15	
551	D3230	27		1.65	
553		-----		-----	
557		-----		-----	
562		-----		-----	
575	D3230	4.137		-1.42	
588		-----		-----	
589		-----		-----	
590		-----		-----	
593		-----		-----	
596		-----		-----	
597		-----		-----	
598	D3230	20.2		0.74	
599		-----		-----	
600	D3230	19		0.57	
603		-----		-----	
608	D3230	22.5		1.04	
609		-----		-----	
611		-----		-----	
612		-----		-----	
621	D3230	16.3		0.21	
657	D3230	10.82		-0.52	
663		-----		-----	
710	GOST21534-A	20.8		0.82	
734	GOST21534-A	21.3		0.88	
736	D3230	22.26		1.01	
749		-----		-----	
750		-----		-----	
752	D3230	10.99		-0.50	
753		-----		-----	
781	D3230	14.54		-0.02	
785	D3230	10.0		-0.63	
840	D6470	6.2		-1.14	
862		-----		-----	
873	D3230	13		-0.23	

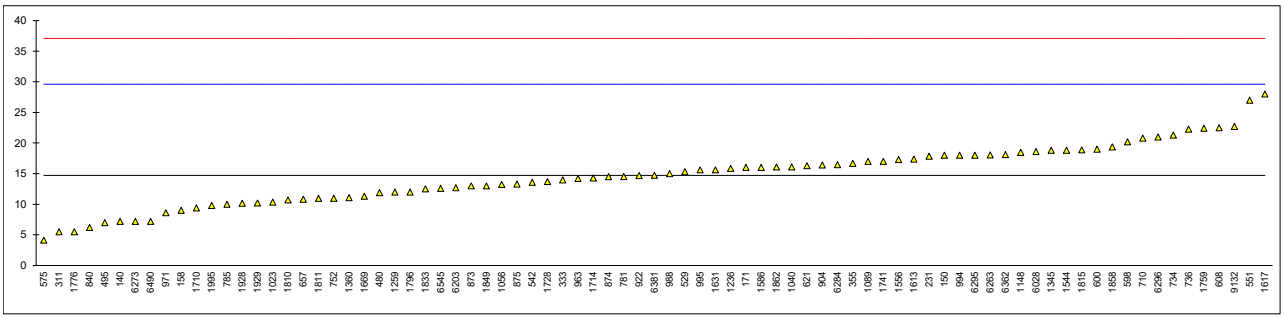
Determination of Salt as Chloride on sample #23220; results in mg/kg

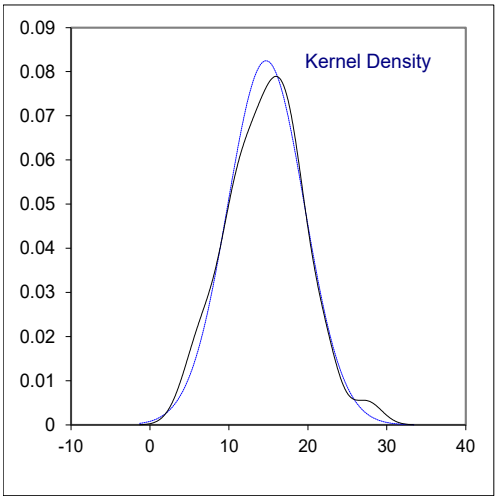
lab	method	value	mark	z(targ)	remarks
874	D3230	14.5		-0.03	
875	D3230	13.3		-0.19	
904	D3230	16.4		0.23	
914		-----		-----	
922	D3230	14.7		0.00	
962		-----		-----	
963	D3230	14.2		-0.07	
970		-----		-----	
971	D3230	8.6		-0.82	
974		-----		-----	
988	D3230	15		0.04	
991		-----		-----	
992		-----		-----	
994	D3230	18		0.44	
995	D3230	15.6		0.12	
997		-----		-----	
1023	D3230	10.34		-0.59	
1026		-----		-----	
1039		-----		-----	
1040	D3230	16.1		0.19	
1056	D3230	13.2375		-0.20	
1065		-----		-----	
1082		-----		-----	
1089	D3230	17.0		0.31	
1099		-----		-----	
1148	D3230	18.48		0.50	
1212		-----		-----	
1236	D3230	15.8388661		0.15	
1259	D3230	12		-0.36	
1345	D3230	18.8		0.55	
1360		11.07		-0.49	
1544	D3230	18.8		0.55	
1556	D3230	17.3		0.35	
1569		-----		-----	
1586	D3230	16		0.17	
1613	D3230	17.385		0.36	
1617	D3230	28.0		1.78	
1631	D3230	15.6		0.12	
1669		11.3		-0.46	
1710	D3230	9.4		-0.71	
1714	D6470	14.3		-0.06	
1720		-----		-----	
1724		-----		-----	
1728		13.7		-0.14	
1741	D3230	17		0.31	
1749		-----		-----	
1759	In house	22.43		1.03	
1776	D3230	5.5		-1.24	
1796		12		-0.36	
1810	D3230	10.7		-0.54	
1811	D3230	10.98		-0.50	
1815	D3230	18.89		0.56	
1833	D3230	12.5		-0.30	
1849	D3230	13.0		-0.23	
1858	D3230	19.38		0.63	
1862	D3230	16.09		0.18	
1928		10.15		-0.61	
1929		10.21		-0.60	
1941		-----		-----	
1957		-----		-----	
1984		-----		-----	
1995	D3230	9.8		-0.66	
6016		-----		-----	
6028	D3230	18.6		0.52	
6203	D3230	12.7		-0.27	
6238		-----		-----	
6263	D3230	18.06		0.45	
6273	D3230	7.2		-1.01	
6284	D3230	16.45		0.23	
6290		-----		-----	
6295	GOST R21534	18.0		0.44	
6296	D3230	21.0		0.84	
6319		-----		-----	
6362	D3230	18.1		0.45	
6381	D3230	14.75		0.00	
6447		-----		-----	

Determination of Salt as Chloride on sample #23220; results in mg/kg

lab	method	value	mark	z(targ)	remarks
6490	D3230	7.2		-1.01	
6509		-----		-----	
6529		-----		-----	
6545	D3230	12.6		-0.28	
6548		-----		-----	
6564		-----		-----	
9132	D3230	22.7072		1.07	

normality	OK
n	81
outliers	0
mean (n)	14.716
st.dev. (n)	4.8371
R(calc.)	13.544
st.dev.(D3230:19)	7.4607
R(D3230:19)	20.890





Determination of Sediment (Extraction method) on sample #23220; results in %V/V

lab	method	value	mark	z(targ)	remarks
52	D473	<0.01		-----	
62		-----		-----	
90		-----		-----	
92		-----		-----	
140	D473	0.01		0.14	
141		-----		-----	
150	D473	0.01		0.14	
154	D473	0		-0.66	
158	D473	0.01		0.14	
159	D473	0.00		-0.66	
171	D473	0.01		0.14	
172	D473	0.01		0.14	
203		-----		-----	
213		-----		-----	
225		-----		-----	
231	D473	0.004		-0.34	
237	D473	0.005		-0.26	
238	D473	0.010		0.14	
273	D473	0.017		0.70	
311	D473	<0.01		-----	
314		-----		-----	
328	D473	<0.01		-----	
333	D473	<0.01		-----	
334		-----		-----	
335	D473	< 0.01		-----	
355	D473	0.009		0.06	
391	D473	0.01		0.14	
398		-----		-----	
399		-----		-----	
442		-----		-----	
444		-----		-----	
445	D473	<0.01		-----	
446	D473	0		-0.66	
447	D473	0.25	R(0.01)	19.29	
480	ISO3735	0.0077		-0.04	
494	D473	0.01		0.14	
495		-----		-----	
511		-----		-----	
525		-----		-----	
529	D473	0.0049		-0.27	
541	D473	0.01		0.14	
542		-----		-----	
551	D473	0.18	R(0.01)	13.70	
553		-----		-----	
557	D473	0.039408	R(0.01)	2.49	
562	D473	0.01		0.14	
575	D473	0.0057		-0.20	
588	D473	0.005		-0.26	
589	D473	0.005		-0.26	
590	D473	0.004		-0.34	
593	D473	0.005		-0.26	
596		-----		-----	
597		-----		-----	
598		-----		-----	
599		-----		-----	
600		-----		-----	
603	D473	<0.01		-----	
608		-----		-----	
609	D473	0.02		0.94	
611		-----		-----	
612		-----		-----	
621	D473	<0.01		-----	
657	D473	0		-0.66	
663		-----		-----	
710	D473	0.010		0.14	
734		-----		-----	
736	D473	0.024		1.26	
749		-----		-----	
750		-----		-----	
752	D473	0.01		0.14	
753		-----		-----	
781	D473	0.004		-0.34	
785	D473	0.02		0.94	
840	D473	0.0047		-0.28	
862		-----		-----	
873	D473	0.014		0.46	

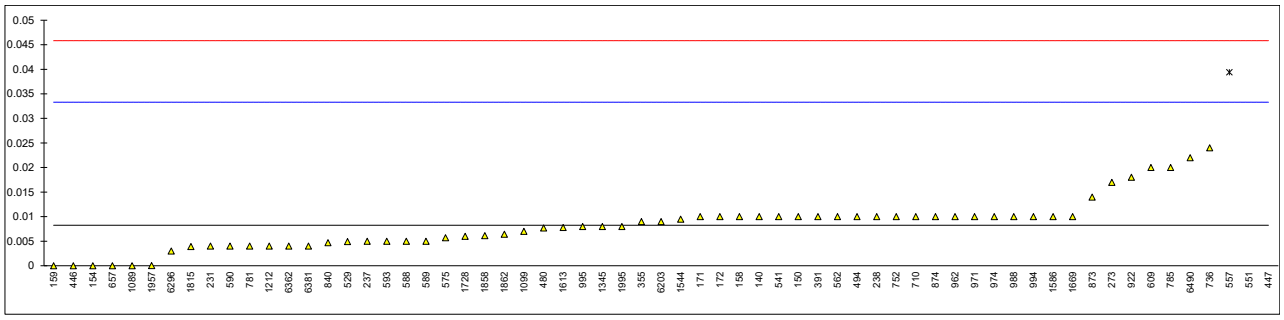
Determination of Sediment (Extraction method) on sample #23220; results in %V/V

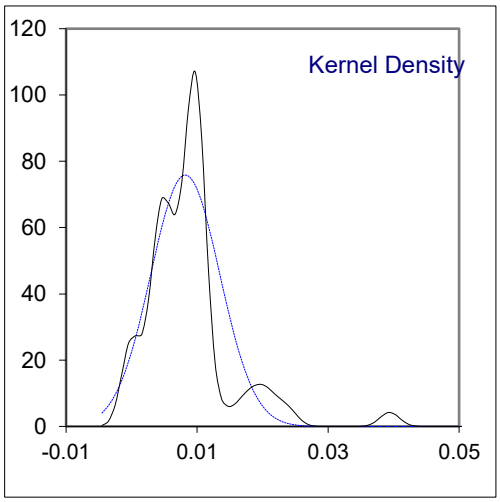
lab	method	value	mark	z(targ)	remarks
874	D473	0.01		0.14	
875		-----		-----	
904		-----		-----	
914		-----		-----	
922	D473	0.018		0.78	
962	D473	0.01		0.14	
963		-----		-----	
970		-----		-----	
971	D473	0.01		0.14	
974	D473	0.01		0.14	
988	D473	0.01		0.14	
991		-----		-----	
992		-----		-----	
994	D473	0.01		0.14	
995	D473	0.008		-0.02	
997		-----		-----	
1023		-----		-----	
1026		-----		-----	
1039		-----		-----	
1040		-----		-----	
1056		-----		-----	
1065		-----		-----	
1082		-----		-----	
1089	D473	0.00		-0.66	
1099	D473	0.007		-0.10	
1148		-----		-----	
1212	D473	0.004		-0.34	
1236		-----		-----	
1259		-----		-----	
1345	D473	0.008		-0.02	
1360		-----		-----	
1544	D473	0.0095		0.10	
1556		-----		-----	
1569		-----		-----	
1586	D473	0.01		0.14	
1613	D473	0.0078		-0.03	
1617		-----		-----	
1631		-----		-----	
1669		0.01		0.14	
1710		-----		-----	
1714		-----		-----	
1720		-----		-----	
1724		-----		-----	
1728	D473	0.006		-0.18	
1741		-----		-----	
1749		-----		-----	
1759		-----		-----	
1776		-----		-----	
1796		-----		-----	
1810		-----		-----	
1811		-----		-----	
1815	ISO3735	0.0039		-0.35	
1833		-----		-----	
1849		-----		-----	
1858	D473	0.0061		-0.17	
1862	D473	0.0064		-0.15	
1928		-----		-----	
1929		-----		-----	
1941		-----		-----	
1957	D473	0.000021		-0.65	
1984		-----		-----	
1995	D473	0.008		-0.02	
6016		-----		-----	
6028		-----		-----	
6203	D473	0.009		0.06	
6238		-----		-----	
6263		-----		-----	
6273		-----		-----	
6284		-----		-----	
6290		-----		-----	
6295		-----		-----	
6296	D473	0.003		-0.42	
6319		-----		-----	
6362	D473	0.004		-0.34	
6381	D473	0.004		-0.34	
6447		-----		-----	

Determination of Sediment (Extraction method) on sample #23220; results in %V/V

lab	method	value	mark	z(targ)	remarks
6490	D473	0.022	C	1.10	First reported 0.052
6509		-----		-----	
6529		-----		-----	
6545		-----		-----	
6548		-----		-----	
6564		-----		-----	
9132		-----		-----	

normality	suspect
n	60
outliers	3
mean (n)	0.00823
st.dev. (n)	0.005260
R(calc.)	0.01473
st.dev.(D473:22)	0.012535
R(D473:22)	0.03510





Determination of Sediment (Membrane filtration) on sample #23220; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D4807	0.025		1.39	
62	D4807	0.0193		0.36	
90	D4807	0.0104		-1.25	
92	D4807	0.018		0.13	
140	D4807	0.01		-1.32	
141		-----		-----	
150	D4807	0.022		0.85	
154		-----		-----	
158		-----		-----	
159	D4807	0.034914		3.19	
171	D4807	0.028		1.94	
172		-----		-----	
203	D4807	0.0288		2.08	
213		-----		-----	
225		-----		-----	
231		-----		-----	
237		-----		-----	
238		-----		-----	
273		-----		-----	
311		-----		-----	
314		-----		-----	
328		-----		-----	
333		-----		-----	
334	D4807	>0.15	f+?	>24.02	Possibly a false positive test result?
335		-----		-----	
355		-----		-----	
391	D4807	0.01		-1.32	
398		-----		-----	
399	D4807	0.02		0.49	
442		-----		-----	
444		-----		-----	
445		-----		-----	
446	D4807	0.035		3.20	
447	D4807	0.048	R(0.05)	5.56	
480		-----		-----	
494	D4807	0.013		-0.78	
495		-----		-----	
511		-----		-----	
525		-----		-----	
529	D4807	0.020		0.49	
541	D4807	0.02		0.49	
542	D4807	0.026		1.57	
551		-----		-----	
553		-----		-----	
557	D4807	0.003088		-2.57	
562		-----		-----	
575		-----		-----	
588		-----		-----	
589		-----		-----	
590		-----		-----	
593		-----		-----	
596		-----		-----	
597		-----		-----	
598		-----		-----	
599		-----		-----	
600	D4807	0.018		0.13	
603		-----		-----	
608		-----		-----	
609	D4807	0.017		-0.05	
611	D4807	0.0112		-1.10	
612		-----		-----	
621	D4807	0.021		0.67	
657	D4807	0.024		1.21	
663	D4807	0.0308		2.44	
710	D4807	0.021		0.67	
734	GOST6370	0.015		-0.42	
736		-----		-----	
749		-----		-----	
750		-----		-----	
752		-----		-----	
753		-----		-----	
781	D4807	0.0122		-0.92	
785		-----		-----	
840	D4807	0.0139		-0.62	
862		-----		-----	
873		-----		-----	

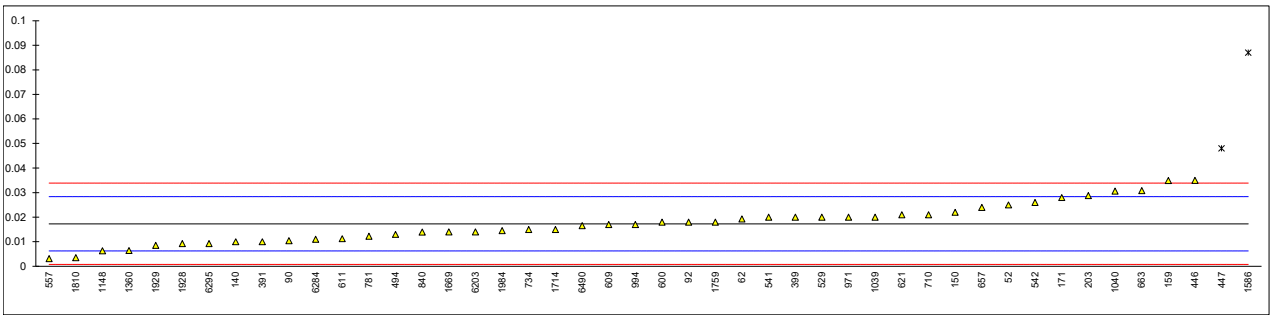
Determination of Sediment (Membrane filtration) on sample #23220; results in %M/M

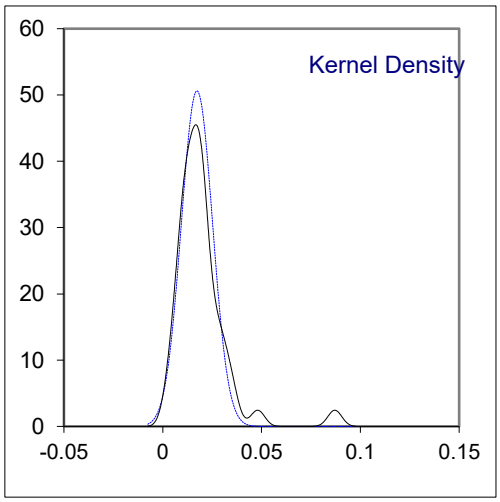
lab	method	value	mark	z(targ)	remarks
874		-----		-----	
875		-----		-----	
904		-----		-----	
914		-----		-----	
922		-----		-----	
962		-----		-----	
963		-----		-----	
970		-----		-----	
971	D4807	0.02		0.49	
974		-----		-----	
988		-----		-----	
991		-----		-----	
992		-----		-----	
994	D4807	0.017		-0.05	
995		-----		-----	
997		-----		-----	
1023		-----		-----	
1026		-----		-----	
1039	D4807	0.020		0.49	
1040	D4807	0.0306		2.41	
1056		-----		-----	
1065		-----		-----	
1082		-----		-----	
1089		-----		-----	
1099		-----		-----	
1148	D4807	0.006269		-2.00	
1212		-----		-----	
1236		-----		-----	
1259		-----		-----	
1345		-----		-----	
1360		0.0064		-1.97	
1544		-----		-----	
1556		-----		-----	
1569		-----		-----	
1586	D4807	0.087	R(0.01)	12.62	
1613		-----		-----	
1617		-----		-----	
1631		-----		-----	
1669		0.0140	C	-0.60	First reported 99
1710		-----		-----	
1714	D4807	0.015		-0.42	
1720		-----		-----	
1724		-----		-----	
1728		-----		-----	
1741		-----		-----	
1749		-----		-----	
1759	D4807	0.018		0.13	
1776		-----		-----	
1796		-----		-----	
1810	D4807	0.0035		-2.50	
1811		-----		-----	
1815		-----		-----	
1833		-----		-----	
1849		-----		-----	
1858		-----		-----	
1862		-----		-----	
1928		0.0092		-1.47	
1929		0.0085		-1.59	
1941		-----		-----	
1957		-----		-----	
1984	D4807	0.0145		-0.51	
1995		-----		-----	
6016		-----		-----	
6028		-----		-----	
6203	D4807	0.014		-0.60	
6238		-----		-----	
6263		-----		-----	
6273		-----		-----	
6284	D4807	0.011		-1.14	
6290		-----		-----	
6295	GOST R6370	0.0092		-1.47	
6296		-----		-----	
6319		-----		-----	
6362		-----		-----	
6381		-----		-----	
6447		-----		-----	

Determination of Sediment (Membrane filtration) on sample #23220; results in %M/M

lab	method	value	mark	z(targ)	remarks
6490	D4807	0.0165		-0.15	
6509		-----		-----	
6529		-----		-----	
6545		-----		-----	
6548		-----		-----	
6564		-----		-----	
9132		-----		-----	

normality	OK
n	44
outliers	2
mean (n)	0.01730
st.dev. (n)	0.007881
R(calc.)	0.02207
st.dev.(D4807:05R20)	0.005524
R(D4807:05R20)	0.01547





Determination of Total Sulfur on sample #23220; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D4294	0.516		0.58	
62	D4294	0.532		1.54	
90	D4294	0.5313		1.49	
92	D4294	0.5368		1.82	
140	D4294	0.5209		0.87	
141		-----		-----	
150	D4294	0.536		1.78	
154	D4294	0.505		-0.08	
158		-----		-----	
159	D4294	0.522305		0.96	
171	D4294	0.528		1.30	
172	D4294	0.528		1.30	
203	D4294	0.5320		1.54	
213		-----		-----	
225	D4294	0.486		-1.21	
231	D4294	0.502		-0.26	
237	D4294	0.501		-0.32	
238	D4294	0.515		0.52	
273	D4294	0.55		2.61	
311	ISO8754	0.50		-0.38	
314		-----		-----	
328		-----		-----	
333		-----		-----	
334	D4294	0.496		-0.62	
335	D4294	0.482		-1.45	
355		-----		-----	
391	D4294	0.512		0.34	
398		-----		-----	
399	D4294	0.53		1.42	
442		-----		-----	
444		-----		-----	
445	D4294	0.527		1.24	
446		-----		-----	
447	IP336	0.50		-0.38	
480	ISO8754	0.5083		0.12	
494	ISO8754	0.507		0.04	
495	ISO8754	0.4971		-0.55	
511		-----		-----	
525		-----		-----	
529	D4294	0.526		1.18	
541		-----		-----	
542	D4294	0.505		-0.08	
551	D4294	0.368	R(0.01)	-8.26	
553		-----		-----	
557	D4294	0.51425		0.48	
562		-----		-----	
575		-----		-----	
588		-----		-----	
589		-----		-----	
590		-----		-----	
593	D4294	0.500		-0.38	
596		-----		-----	
597		-----		-----	
598		-----		-----	
599		-----		-----	
600		-----		-----	
603	D4294	0.498		-0.50	
608	D4294	0.501		-0.32	
609		-----		-----	
611		-----		-----	
612		-----		-----	
621	D4294	0.496		-0.62	
657	D4294	0.506		-0.02	
663		-----		-----	
710	D4294	0.490		-0.97	
734		-----		-----	
736	D4294	0.498		-0.50	
749		-----		-----	
750		-----		-----	
752	D4294	0.490		-0.97	
753	D4294	0.506		-0.02	
781	D4294	0.513		0.40	
785	D4294	0.478		-1.69	
840	D4294	0.5219		0.93	
862		-----		-----	
873	D4294	0.499		-0.44	

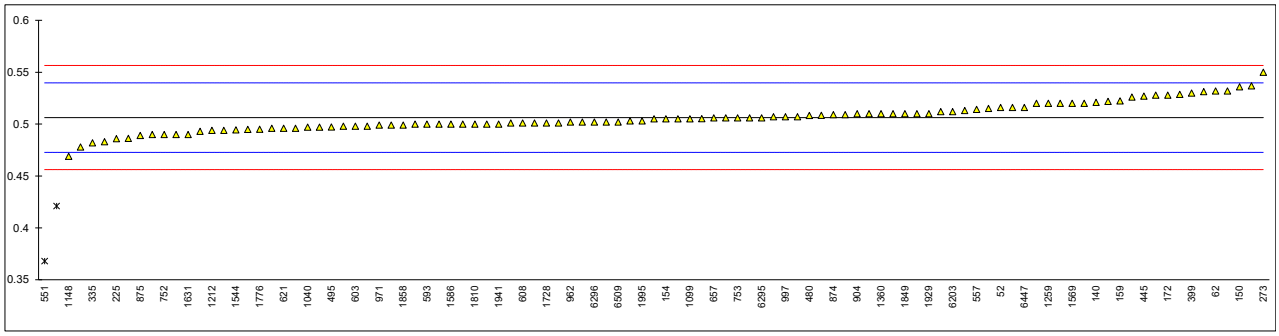
Determination of Total Sulfur on sample #23220; results in %M/M

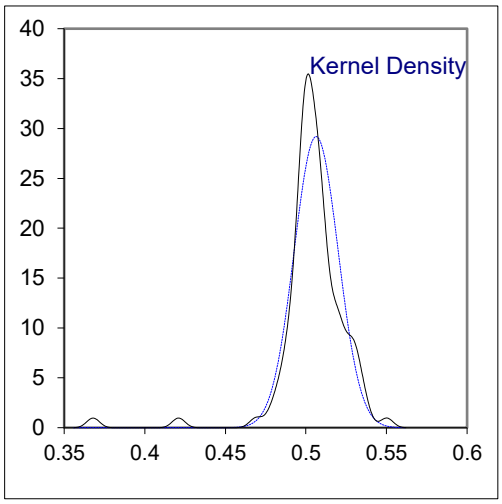
lab	method	value	mark	z(targ)	remarks
874	D4294	0.509		0.16	
875	D4294	0.489		-1.03	
904	D4294	0.51		0.22	
914		-----		-----	
922	D4294	0.506		-0.02	
962	D4294	0.502		-0.26	
963	D4294	0.503		-0.20	
970		-----		-----	
971	D4294	0.499		-0.44	
974	D4294	0.498		-0.50	
988	D4294	0.516		0.58	
991		-----		-----	
992		-----		-----	
994	D4294	0.506		-0.02	
995	D4294	0.509		0.16	
997	D4294	0.507		0.04	
1023	D4294	0.520		0.82	
1026	D2622	0.49		-0.97	
1039	D2622	0.493		-0.79	
1040	ISO8754	0.497		-0.56	
1056	D4294	0.505		-0.08	
1065	D4294	0.51		0.22	
1082	ISO8754	0.483		-1.39	
1089	D4294	0.496	C	-0.62	First reported 2.676
1099	D4294	0.505		-0.08	
1148	In house	0.469		-2.23	
1212	D4294	0.494		-0.73	
1236		-----		-----	
1259	D4294	0.52		0.82	
1345	D4294	0.52		0.82	
1360	ISO8754	0.51		0.22	
1544	D4294	0.4945		-0.70	
1556	ISO8754	0.5286		1.33	
1569	ISO8754	0.52		0.82	
1586	D4294	0.500		-0.38	
1613	D4294	0.501		-0.32	
1617		-----		-----	
1631	ISO8754	0.49		-0.97	
1669		0.507		0.04	
1710	ISO8754	0.497		-0.56	
1714	D2622	0.5085		0.13	
1720		-----		-----	
1724	D4294	0.50		-0.38	
1728	D4294	0.501		-0.32	
1741	ISO8754	0.494		-0.73	
1749		-----		-----	
1759		-----		-----	
1776	ISO8754	0.495		-0.68	
1796	D4294	0.510		0.22	
1810	D4294	0.50		-0.38	
1811	D4294	0.50		-0.38	
1815	D7039	0.4863		-1.19	
1833	IP336	0.501		-0.32	
1849	ISO8754	0.51		0.22	
1858	D4294	0.499		-0.44	
1862	D4294	0.4949		-0.68	
1928	ISO8754	0.51		0.22	
1929	ISO8754	0.51		0.22	
1941	ISO8754	0.50		-0.38	
1957		-----		-----	
1984		-----		-----	
1995	D4294	0.503		-0.20	
6016		-----		-----	
6028	ISO8754	0.52		0.82	
6203	D2622	0.512		0.34	
6238		-----		-----	
6263		-----		-----	
6273		-----		-----	
6284		-----		-----	
6290		-----		-----	
6295	D4294	0.506		-0.02	
6296	D4294	0.502		-0.26	
6319		-----		-----	
6362	D4294	0.502		-0.26	
6381	D4294	0.5052		-0.07	
6447	D2622	0.516		0.58	

Determination of Total Sulfur on sample #23220; results in %M/M

lab	method	value	mark	z(targ)	remarks
6490	D2622	0.421	R(0.01)	-5.10	
6509	ISO8754	0.502		-0.26	
6529		-----		-----	
6545		-----		-----	
6548		-----		-----	
6564		-----		-----	
9132		-----		-----	

normality	OK
n	101
outliers	2
mean (n)	0.50630
st.dev. (n)	0.013670
R(calc.)	0.03828
st.dev.(D4294:21)	0.016734
R(D4294:21)	0.04685





Determination of Water on sample #23220; results in %V/V

lab	Method	value	mark	z(targ)	remarks
52	D4928	0.07	C	0.90	First reported 0.11
62	D4928	0.06		0.24	
90	D4928	0.062		0.38	
92	D4377	0.064		0.51	
140	D4928	0.0507		-0.37	
141	D4928	0.039		-1.14	
150	D4928	0.06		0.24	
154	D4928	0.05		-0.41	
158	D4928	0.06		0.24	
159	D4928	0.05715		0.06	
171		-----		-----	
172		-----		-----	
203	D4928	0.0498		-0.43	
213	INH-2063	0.07321		1.11	
225	D4006	0.025		-2.06	
231	D95	<0.05		-----	
237	D4006	0.025		-2.06	
238	D4006	0.025		-2.06	
273	D4928	0.0696		0.88	
311	D4928	0.06		0.24	
314	D4928	0.06		0.24	
328	ISO10337	0.053		-0.22	
333	D4377	0.07		0.90	
334	D4377	0.06		0.24	
335	D4377	0.055		-0.08	
355	D4006	0.077		1.36	
391	D4377	0.075		1.23	
398	D4377	0.073		1.10	
399	D4006	0.025		-2.06	
442	IP386	0.0643		0.53	
444		-----		-----	
445	D4928	0.071		0.97	
446	D4928	0.06		0.24	
447	IP386	0.068		0.77	
480	D4006	0.0614		0.34	
494	D4377	0.072		1.03	
495	D6304	0.04		-1.07	
511		-----		-----	
525		-----		-----	
529	D4928	0.0605		0.28	
541	D4928	0.06		0.24	
542		-----		-----	
551	D4377	0.076		1.30	
553	E2023	0.0865		1.99	
557	D4377	0.049806		-0.43	
562	D4377	0.0326		-1.56	
575	D4928	0.06		0.24	
588	D4006	0.025		-2.06	
589	D4006	0.025		-2.06	
590	D4006	0.025		-2.06	
593	D4006	0.025		-2.06	
596	D4928	0.055		-0.08	
597		-----		-----	
598	D4928	0.059		0.18	
599		-----		-----	
600	D4928	0.07		0.90	
603		-----		-----	
608	D4928	0.05		-0.41	
609		-----		-----	
611	D4928	0.0564		0.01	
612		-----		-----	
621	D4928	0.064		0.51	
657	D4377	0.07		0.90	
663	D4928	0.062		0.38	
710	D4006	0.025		-2.06	
734	D4006	0.025		-2.06	
736	D4006	0.025		-2.06	
749		-----		-----	
750		-----		-----	
752	D4006	0.044		-0.81	
753	D4006	0.025		-2.06	
781	D4928	0.013		-2.85	
785	D4006	<0.025		-----	
840	D4928	0.057		0.05	
862	D4006	0.050		-0.41	
873	D4006	0.025		-2.06	

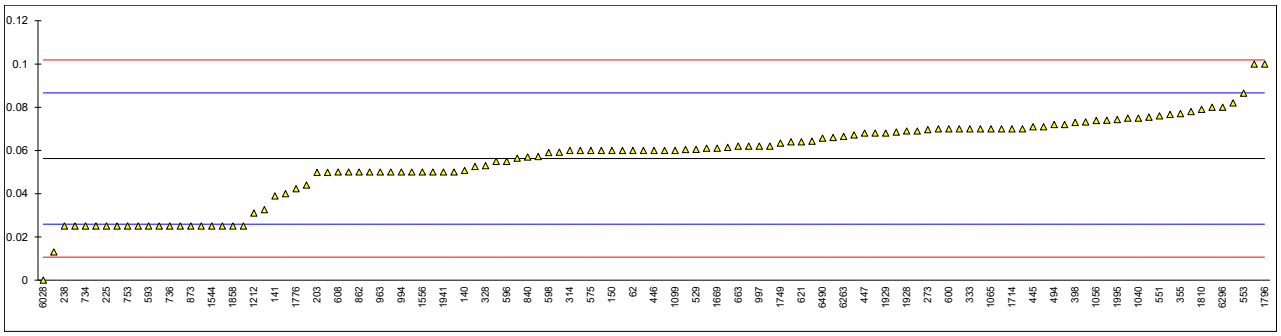
Determination of Water on sample #23220; results in %V/V

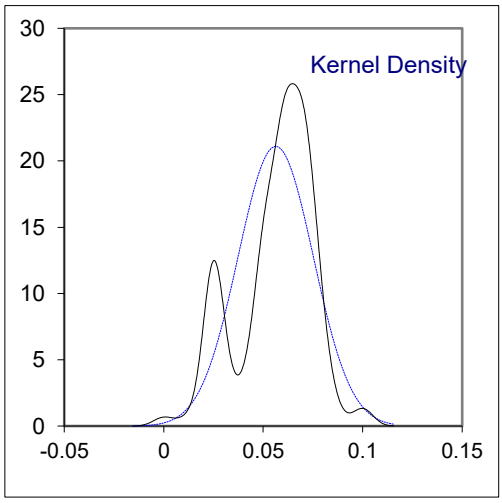
lab	Method	value	mark	z(targ)	remarks
874	D4006	0.025		-2.06	
875		-----		-----	
904	D4928	0.078		1.43	
914		-----		-----	
922	D4928	0.06		0.24	
962	D4377	0.05		-0.41	
963	D4928	0.05		-0.41	
970		-----		-----	
971	D4006	<0.025		-----	
974		-----		-----	
988	D4006	0.05		-0.41	
991		-----		-----	
992		-----		-----	
994	D4006	0.05		-0.41	
995	D4377	0.061		0.31	
997	D4377	0.062		0.38	
1023	D4928	0.0604		0.27	
1026		-----		-----	
1039	D4928	0.07		0.90	
1040	DIN51777	0.075		1.23	
1056	D4928	0.0739		1.16	
1065	D6304	0.0700		0.90	
1082	ISO10336	0.068		0.77	
1089	D4377	0.070		0.90	
1099	D4006	0.060		0.24	
1148	DIN51777	0.082		1.69	
1212	D6304	0.031		-1.66	
1236	D4928	0.05916		0.19	
1259	D4006	0.05		-0.41	
1345	D4928	0.066		0.64	
1360	D4377	0.071		0.97	
1544	D4006	0.025		-2.06	
1556	D6304	0.05		-0.41	
1569	D95	<0.10		-----	
1586	D4006	<0.025		-----	
1613	D4006	< 0.05		-----	
1617		-----		-----	
1631	D4377	0.062		0.38	
1669	D6304	0.061		0.31	
1710		-----		-----	
1714	D6304	0.07		0.90	
1720		-----		-----	
1724	D4377	0.07669		1.34	
1728	D4006	0.05		-0.41	
1741	ISO9029	0.10		2.88	
1749	ISO12923	0.0634		0.47	
1759	D4006	0.025		-2.06	
1776	D6304	0.0423		-0.92	
1796	D4006	0.100		2.88	
1810	D4377	0.0790		1.50	
1811	D4377	0.072		1.03	
1815	D4377	0.0526		-0.24	
1833	D4377	0.074		1.17	
1849	D4928	0.0672		0.72	
1858	D4006	0.025		-2.06	
1862	D4377	0.0754		1.26	
1928	D4377	0.069		0.84	
1929	D4377	0.068		0.77	
1941	ISO9029	0.05	C	-0.41	First reported 0.15
1957	D4377	0.069		0.84	
1984	D4377	0.0685		0.80	
1995	D4928	0.0743		1.19	
6016		-----		-----	
6028	D95	0		-3.70	
6203	ISO9029	0.05		-0.41	
6238		-----		-----	
6263	D6304	0.06651		0.67	
6273		-----		-----	
6284		-----		-----	
6290		-----		-----	
6295	GOST2477	0.08		1.56	
6296	GOST R2477	0.08		1.56	
6319		-----		-----	
6362	D4928	0.07		0.90	
6381	D4006	0.025		-2.06	
6447		-----		-----	

Determination of Water on sample #23220; results in %V/V

lab	Method	value	mark	z(targ)	remarks
6490	D4928	0.0657		0.62	
6509		-----		-----	
6529		-----		-----	
6545		-----		-----	
6548		-----		-----	
6564		-----		-----	
9132		-----		-----	

			Distillation methods only	Karl Fischer methods only
	normality	OK	suspect	not OK
	n	117	34	81
	outliers	0	0	0
	mean (n)	0.05628	0.04125	0.06230
	st.dev. (n)	0.018900	0.023957	0.012012
	R(calc.)	0.05292	0.06708	0.03363
	st.dev.(D4377:00R11W20)	0.015192	-----	0.015715
	R(D4377:00R11W20)	0.04254	-----	0.04400
compare				
	R(D4006:22)	-----	0.091	-----





Determination of Simulated Distillation on sample #23220; results in °C

lab	method	IBP	5% rec	10% rec	30% rec	50% rec	70% rec	90% rec	FBP	tot rec. (%M/M)
52		-----	-----	-----	-----	-----	-----	-----	-----	-----
62		-----	-----	-----	-----	-----	-----	-----	-----	-----
90		-----	-----	-----	-----	-----	-----	-----	-----	-----
92		-----	-----	-----	-----	-----	-----	-----	-----	-----
140		-----	-----	-----	-----	-----	-----	-----	-----	-----
141		-----	-----	-----	-----	-----	-----	-----	-----	-----
150	D7169	<36.0	99.5	135.0	140.5	238.0	412.5	610.0	>720.0	96.35
154		-----	-----	-----	-----	-----	-----	-----	-----	-----
158		-----	-----	-----	-----	-----	-----	-----	-----	-----
159		-----	-----	-----	-----	-----	-----	-----	-----	-----
171	D7169	34.5	86.0	132.5	137.5	210.0	386.0	561.5	707.5	100.00
172		-----	-----	-----	-----	-----	-----	-----	-----	-----
203		-----	-----	-----	-----	-----	-----	-----	-----	-----
213		-----	-----	-----	-----	-----	-----	-----	-----	-----
225		-----	-----	-----	-----	-----	-----	-----	-----	-----
231		-----	-----	-----	-----	-----	-----	-----	-----	-----
237		-----	-----	-----	-----	-----	-----	-----	-----	-----
238		-----	-----	-----	-----	-----	-----	-----	-----	-----
273		-----	-----	-----	-----	-----	-----	-----	-----	-----
311	D7169	<36.0	98.0	133.5	139.0	232.5	411.0	615.0	>720.0	96.7
314		-----	-----	-----	-----	-----	-----	-----	-----	-----
328		-----	-----	-----	-----	-----	-----	-----	-----	-----
333		-----	-----	-----	-----	-----	-----	-----	-----	-----
334		-----	-----	-----	-----	-----	-----	-----	-----	-----
335		-----	-----	-----	-----	-----	-----	-----	-----	-----
355		-----	-----	-----	-----	-----	-----	-----	-----	-----
391		-----	-----	-----	-----	-----	-----	-----	-----	-----
398		-----	-----	-----	-----	-----	-----	-----	-----	-----
399		-----	-----	-----	-----	-----	-----	-----	-----	-----
442		-----	-----	-----	-----	-----	-----	-----	-----	-----
444		-----	-----	-----	-----	-----	-----	-----	-----	-----
445	D7169	24.7	91.8	136.0	138.4	226.8	395.6	564.6	708.2	100
446		-----	-----	-----	-----	-----	-----	-----	-----	-----
447		-----	-----	-----	-----	-----	-----	-----	-----	-----
480		-----	-----	-----	-----	-----	-----	-----	-----	-----
494		-----	-----	-----	-----	-----	-----	-----	-----	-----
495	D7500	27.8	98.4	117.4 G(5)	148.2	285.2	447.3	690.5 C,DG(1)	739.8	92.52
511		-----	-----	-----	-----	-----	-----	-----	-----	-----
525		-----	-----	-----	-----	-----	-----	-----	-----	-----
529		-----	-----	-----	-----	-----	-----	-----	-----	-----
541		-----	-----	-----	-----	-----	-----	-----	-----	-----
542	D7169	35.03	94.30	131.38	141.62	227.30	441.43	617.00	712.13	86.83
551		-----	-----	-----	-----	-----	-----	-----	-----	-----
553		-----	-----	-----	-----	-----	-----	-----	-----	-----
557		-----	-----	-----	-----	-----	-----	-----	-----	-----
562		-----	-----	-----	-----	-----	-----	-----	-----	-----
575		-----	-----	-----	-----	-----	-----	-----	-----	-----
588		-----	-----	-----	-----	-----	-----	-----	-----	-----
589		-----	-----	-----	-----	-----	-----	-----	-----	-----
590		-----	-----	-----	-----	-----	-----	-----	-----	-----
593		-----	-----	-----	-----	-----	-----	-----	-----	-----
596		-----	-----	-----	-----	-----	-----	-----	-----	-----
597		-----	-----	-----	-----	-----	-----	-----	-----	-----
598		-----	-----	-----	-----	-----	-----	-----	-----	-----
599		-----	-----	-----	-----	-----	-----	-----	-----	-----
600		-----	-----	-----	-----	-----	-----	-----	-----	-----
603		-----	-----	-----	-----	-----	-----	-----	-----	-----
608		-----	-----	-----	-----	-----	-----	-----	-----	-----
609		-----	-----	-----	-----	-----	-----	-----	-----	-----
611		-----	-----	-----	-----	-----	-----	-----	-----	-----
612		-----	-----	-----	-----	-----	-----	-----	-----	-----
621		-----	-----	-----	-----	-----	-----	-----	-----	-----
657	D7169	<36	108.0	134.6	138.8	210.2	391.4	577.1	708.8	98.8
663		-----	-----	-----	-----	-----	-----	-----	-----	-----
710		-----	-----	-----	-----	-----	-----	-----	-----	-----
734		-----	-----	-----	-----	-----	-----	-----	-----	-----
736		-----	-----	-----	-----	-----	-----	-----	-----	-----
749		-----	-----	-----	-----	-----	-----	-----	-----	-----
750		-----	-----	-----	-----	-----	-----	-----	-----	-----
752		-----	-----	-----	-----	-----	-----	-----	-----	-----
753		-----	-----	-----	-----	-----	-----	-----	-----	-----
781		-----	-----	-----	-----	-----	-----	-----	-----	-----
785		-----	-----	-----	-----	-----	-----	-----	-----	-----
840		-----	-----	-----	-----	-----	-----	-----	-----	-----
862		-----	-----	-----	-----	-----	-----	-----	-----	-----

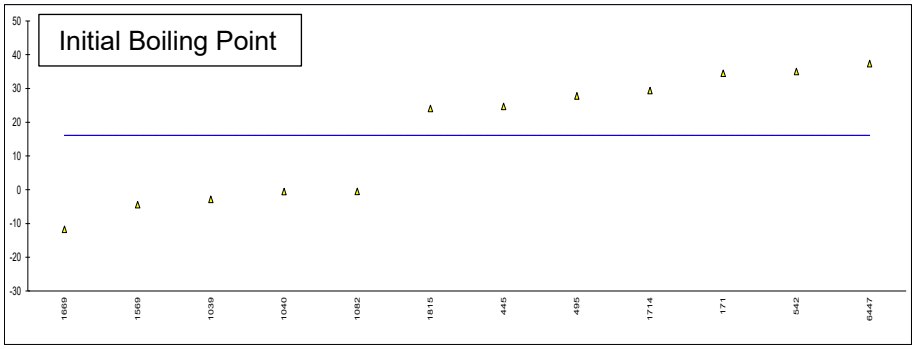
Determination of Simulated Distillation on sample #23220; results in °C

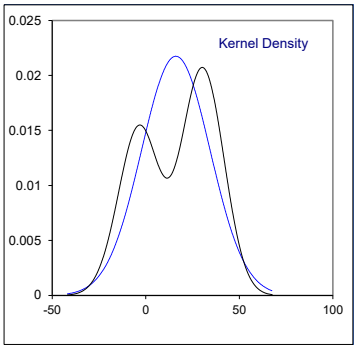
lab	method	IBP	5% rec	10% rec	30% rec	50% rec	70% rec	90% rec	FBP	tot rec. (%M/M)
873		-----	-----	-----	-----	-----	-----	-----	-----	-----
874		-----	-----	-----	-----	-----	-----	-----	-----	-----
875		-----	-----	-----	-----	-----	-----	-----	-----	-----
904		-----	-----	-----	-----	-----	-----	-----	-----	-----
914		-----	-----	-----	-----	-----	-----	-----	-----	-----
922		-----	-----	-----	-----	-----	-----	-----	-----	-----
962		-----	-----	-----	-----	-----	-----	-----	-----	-----
963		-----	-----	-----	-----	-----	-----	-----	-----	-----
970		-----	-----	-----	-----	-----	-----	-----	-----	-----
971	D7169	<40	100.3	126.5	141.0	197.5	389.0	580.0	>720	98.4
974		-----	-----	-----	-----	-----	-----	-----	-----	-----
988		-----	-----	-----	-----	-----	-----	-----	-----	-----
991		-----	-----	-----	-----	-----	-----	-----	-----	-----
992		-----	-----	-----	-----	-----	-----	-----	-----	-----
994		-----	-----	-----	-----	-----	-----	-----	-----	-----
995		-----	-----	-----	-----	-----	-----	-----	-----	-----
997		-----	-----	-----	-----	-----	-----	-----	-----	-----
1023		-----	-----	-----	-----	-----	-----	-----	-----	-----
1026		-----	-----	-----	-----	-----	-----	-----	-----	-----
1039	ISO15199-3	-2.8	96.4	135.4	144.3	238.2	412.0	611.1	-----	96.6
1040	D7169	-0.5	94	136	138	272	445	688 DG(1)	not detec	93.9
1056		-----	-----	-----	-----	-----	-----	-----	-----	-----
1065		-----	-----	-----	-----	-----	-----	-----	-----	-----
1082	EN15199-3	-0.4900	98.3800	136.2000	144.4000	297.1193	478.8628	-----	-----	-----
1089		-----	-----	-----	-----	-----	-----	-----	-----	-----
1099		-----	-----	-----	-----	-----	-----	-----	-----	-----
1148		-----	-----	-----	-----	-----	-----	-----	-----	-----
1212		-----	-----	-----	-----	-----	-----	-----	-----	-----
1236		-----	-----	-----	-----	-----	-----	-----	-----	-----
1259		-----	-----	-----	-----	-----	-----	-----	-----	-----
1345		-----	-----	-----	-----	-----	-----	-----	-----	-----
1360		-----	-----	-----	-----	-----	-----	-----	-----	-----
1544		-----	-----	-----	-----	-----	-----	-----	-----	-----
1556		-----	-----	-----	-----	-----	-----	-----	-----	-----
1569	EN15199	-4.4	93.6	136.0	138.4	200.2	379.4	575.0	>727.8	100
1586		-----	-----	-----	-----	-----	-----	-----	-----	-----
1613		-----	-----	-----	-----	-----	-----	-----	-----	-----
1617		-----	-----	-----	-----	-----	-----	-----	-----	-----
1631		-----	-----	-----	-----	-----	-----	-----	-----	-----
1669		-11.7	94.20 C	130.96	146.59	304.41	434.63	579.88	699.17	91.81
1710		-----	-----	-----	-----	-----	-----	-----	-----	-----
1714	D7169	29.4	65.1 G(1)	130.1	137.9	216.8	390.6	568.4	731.5	99.90
1720		-----	-----	-----	-----	-----	-----	-----	-----	-----
1724		-----	-----	-----	-----	-----	-----	-----	-----	-----
1728		-----	-----	-----	-----	-----	-----	-----	-----	-----
1741		-----	-----	-----	-----	-----	-----	-----	-----	-----
1749		-----	-----	-----	-----	-----	-----	-----	-----	-----
1759		-----	-----	-----	-----	-----	-----	-----	-----	-----
1776		-----	-----	-----	-----	-----	-----	-----	-----	-----
1796		-----	-----	-----	-----	-----	-----	-----	-----	-----
1810		-----	-----	-----	-----	-----	-----	-----	-----	-----
1811		-----	-----	-----	-----	-----	-----	-----	-----	-----
1815	D7169	24.1	98.4	135.0	138.4	203.6	392.35	587.75	720.1	100.0
1833		-----	-----	-----	-----	-----	-----	-----	-----	-----
1849		-----	-----	-----	-----	-----	-----	-----	-----	-----
1858		-----	-----	-----	-----	-----	-----	-----	-----	-----
1862		-----	-----	-----	-----	-----	-----	-----	-----	-----
1928		-----	-----	-----	-----	-----	-----	-----	-----	-----
1929		-----	-----	-----	-----	-----	-----	-----	-----	-----
1941		-----	-----	-----	-----	-----	-----	-----	-----	-----
1957		-----	-----	-----	-----	-----	-----	-----	-----	-----
1984		-----	-----	-----	-----	-----	-----	-----	-----	-----
1995		-----	-----	-----	-----	-----	-----	-----	-----	-----
6016		-----	-----	-----	-----	-----	-----	-----	-----	-----
6028		-----	-----	-----	-----	-----	-----	-----	-----	-----
6203		-----	-----	-----	-----	-----	-----	-----	-----	-----
6238		-----	-----	-----	-----	-----	-----	-----	-----	-----
6263		-----	-----	-----	-----	-----	-----	-----	-----	-----
6273		-----	-----	-----	-----	-----	-----	-----	-----	-----
6284		-----	-----	-----	-----	-----	-----	-----	-----	-----
6290		-----	-----	-----	-----	-----	-----	-----	-----	-----
6295		-----	-----	-----	-----	-----	-----	-----	-----	-----
6296		-----	-----	-----	-----	-----	-----	-----	-----	-----
6319		-----	-----	-----	-----	-----	-----	-----	-----	-----
6362		-----	-----	-----	-----	-----	-----	-----	-----	-----

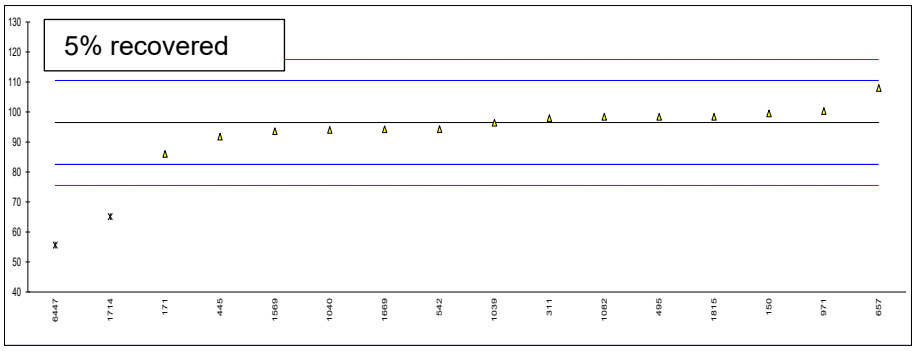
Determination of Simulated Distillation on sample #23220; results in °C

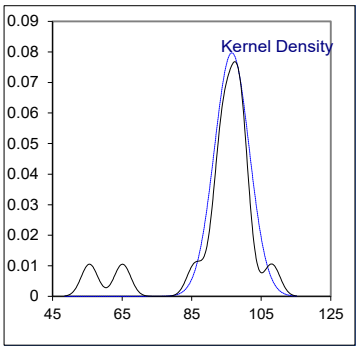
lab	method	IBP	5% rec	10% rec	30% rec	50% rec	70% rec	90% rec	FBP	tot rec. (%M/M)
6381		-----	-----	-----	-----	-----	-----	-----	-----	-----
6447	D7169	37.4	55.6 G(5)	123.9	137.2	217	395.6	579.9	750	99.5
6490		-----	-----	-----	-----	-----	-----	-----	-----	-----
6509		-----	-----	-----	-----	-----	-----	-----	-----	-----
6529		-----	-----	-----	-----	-----	-----	-----	-----	-----
6545		-----	-----	-----	-----	-----	-----	-----	-----	-----
6548		-----	-----	-----	-----	-----	-----	-----	-----	-----
6564		-----	-----	-----	-----	-----	-----	-----	-----	-----
9132		-----	-----	-----	-----	-----	-----	-----	-----	-----
	normality	OK	not OK	suspect	suspect	OK	OK	OK	OK	
	n	15	14	15	16	16	16	13	12	
	outliers	n.a.	2	1	0	0	0	2	0	
	mean (n)	<36	96.52	132.87	140.64	236.05	412.67	586.71	>700	
	st.dev. (n)	n.e.	5.006	3.723	3.450	34.831	28.580	19.756	n.a.	
	R(calc.)	n.e.	14.02	10.42	9.66	97.53	80.02	55.32	n.a.	
	st.dev.(D7169:23)	n.e.	7.000	6.964	4.679	(5.857)	(7.571)	n.a.	n.a.	
	R(D7169:23)	n.e.	19.6	19.5	13.1	(16.4)	(21.2)	n.a.	n.a.	

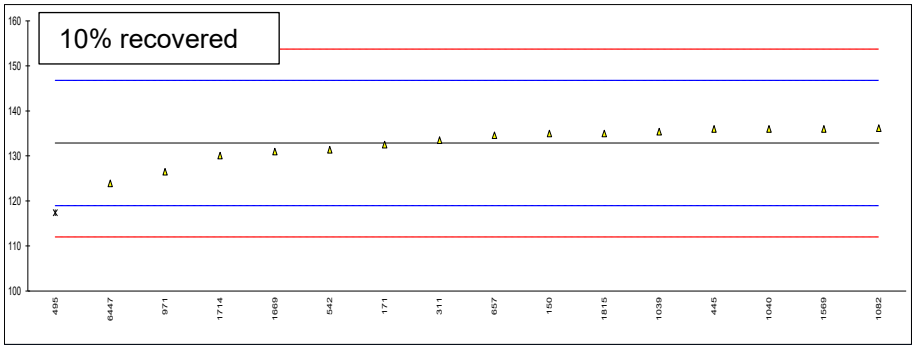
Lab 495 first reported 674.5 for 90% recovered
Lab 1669 first reported 79.19 for 5% recovered

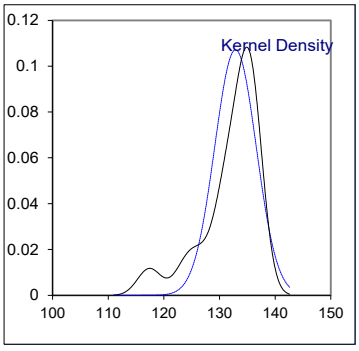


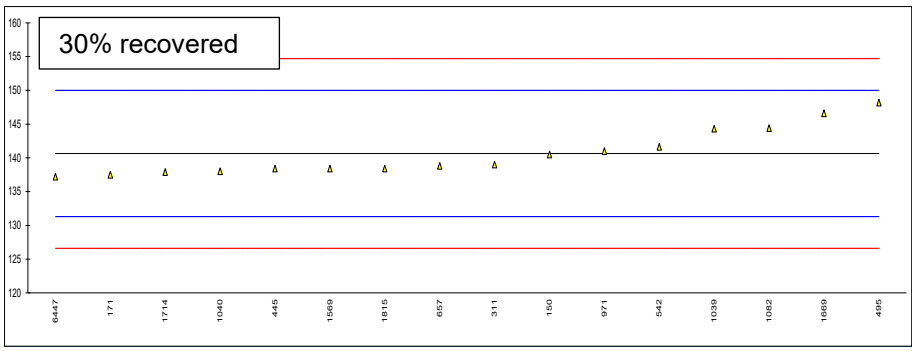


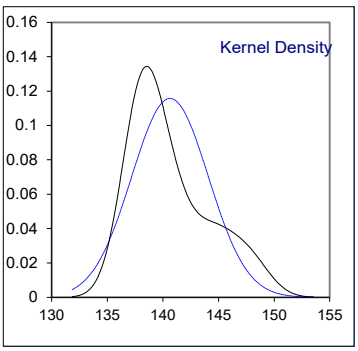


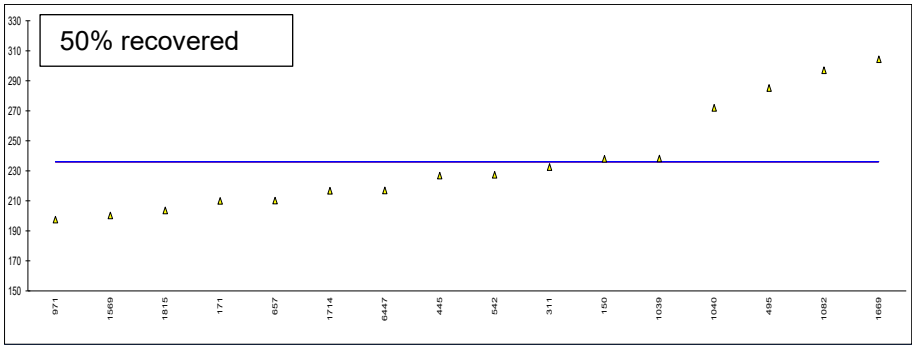


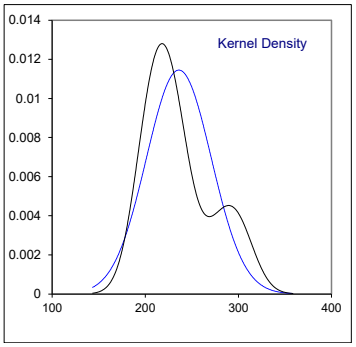


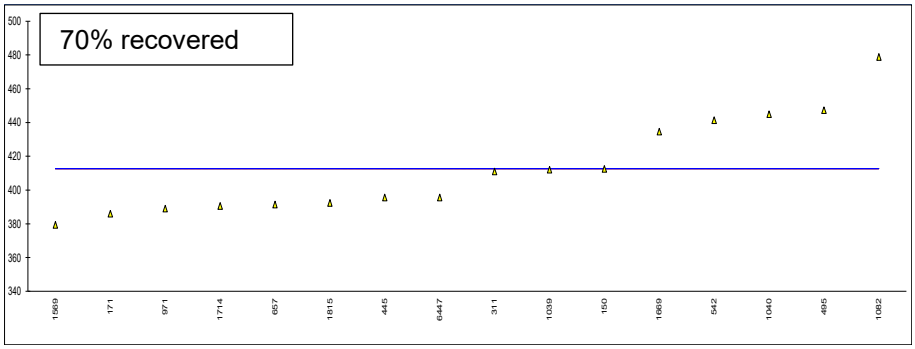


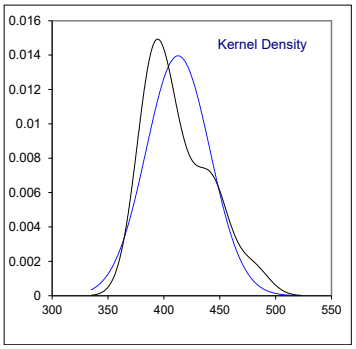

30% recovered

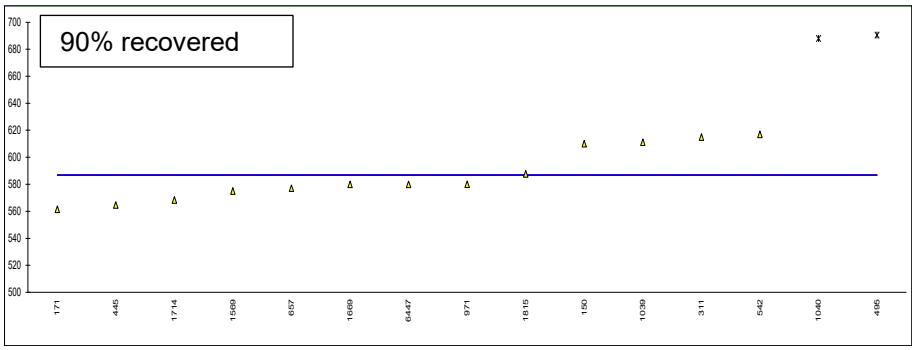

Kernel Density

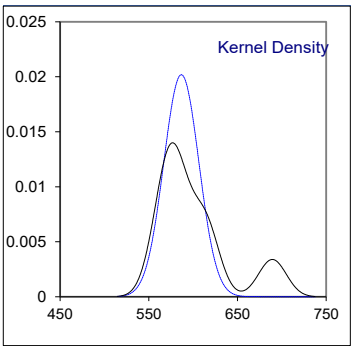

50% recovered

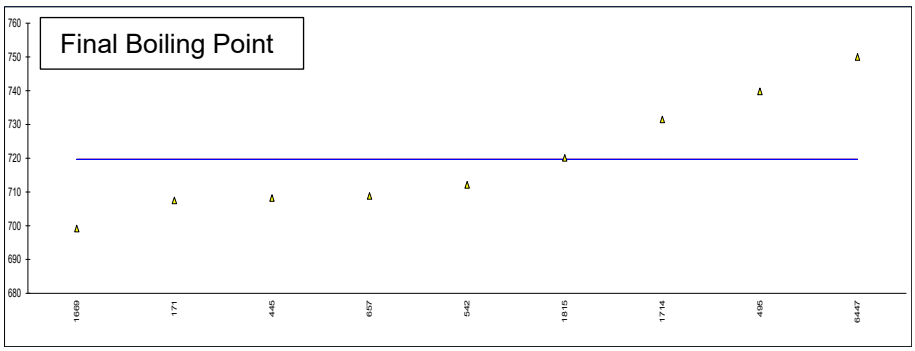

Kernel Density

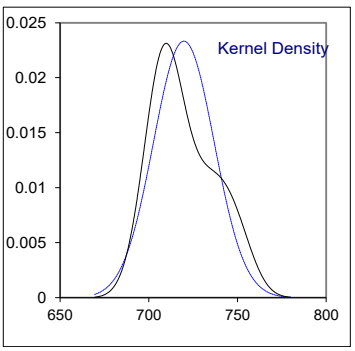

70% recovered


Kernel Density


90% recovered


Kernel Density

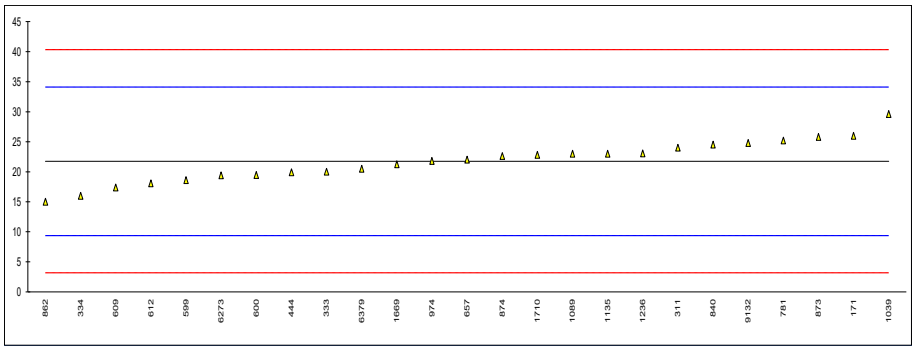

Final Boiling Point

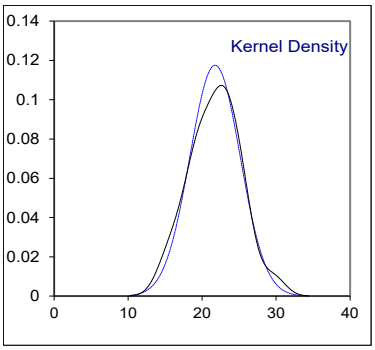

Kernel Density

Determination of Total Mercury on sample #23221 results in µg/kg

lab	method	value	mark	z(targ)	remarks
140		-----		-----	
150	UOP938	<0.5	C	<-3.43	First reported 0.31, possibly a false negative test result?
171	UOP938	26.0		0.69	
311	UOP938	24		0.36	
333	INH-9003	20		-0.28	
334	INH-9003	16		-0.93	
444	UOP938	19.906		-0.30	
598		-----		-----	
599	D7622	18.60		-0.51	
600	D7622	19.45		-0.37	
609	D7622	17.4		-0.70	
612	D7622	18.08		-0.59	
657	UOP938	22		0.04	
663		-----		-----	
750		-----		-----	
781	UOP938	25.2		0.56	
840	UOP938	24.51		0.45	
862	UOP938	15		-1.09	
873	UOP938-B	25.8		0.65	
874	UOP938	22.6		0.14	
914		-----		-----	
963		-----		-----	
974	UOP938	21.8		0.01	
1039	UOP938	29.6		1.27	
1088		-----		-----	
1089	D7623	23.0		0.20	
1135	UOP938	23		0.20	
1148	In house	<5.0		-----	
1212		-----		-----	
1236	UOP938	23.03927		0.21	
1586		-----		-----	
1669		21.26		-0.08	
1710	UOP938	22.8		0.17	
2124		-----		-----	
6273	UOP938	19.4		-0.38	
6379	In house	20.5		-0.20	
9132	D7623	24.8		0.49	

normality	OK
n	25
outliers	0
mean (n)	21.750
st.dev. (n)	3.3953
R(calc.)	9.507
st.dev.(Horwitz)	6.1917
R(Horwitz)	17.337





APPENDIX 2

z-scores of the determination of individual Light ends on sample #23220

lab	Methane	Ethane	Propane	i-Butane	n-Butane	i-Pentane	n-Pentane	cyc-Pentane	Hexanes
141	-----	-----	-0.70	-0.51	-0.42	-----	0.71	0.93	-1.78
171	-----	-----	-3.10	-1.51	-2.04	-----	-1.44	-0.10	-4.10
445	-----	-----	-3.27	-2.21	-1.22	-----	-0.14	1.21	0.05
495	-----	-----	-1.01	-1.97	-1.94	-----	-2.85	-1.94	3.11
596	-----	-----	-1.17	-1.29	-1.04	-----	-0.60	-----	-----
600	-----	-----	1.53	2.63	2.59	-----	5.96	-----	-----
608	-----	-----	-0.40	-0.64	-0.45	-----	-0.34	-----	-----
609	-----	-----	1.66	1.10	0.94	-----	1.14	-----	-----
611	-----	-----	-1.78	-1.47	-1.46	-----	2.84	-----	-----
1039	-----	-----	2.56	1.97	1.53	-----	-----	-----	-----
1065	-----	-----	1.75	0.56	0.21	-----	-1.99	-1.52	0.83
1082	-----	-----	2.51	1.39	1.67	-----	0.69	-2.58	-0.20
1089	-----	-----	2.31	1.41	1.12	-----	-0.25	0.96	-1.79
1236	-----	-----	0.50	-0.20	-0.32	-----	-1.12	0.96	1.48
1669	-----	-----	-3.00	-0.64	-0.48	-----	2.17	65.76	0.37
1714	-----	-----	-----	23.74	24.35	-----	34.67	14.44	14.09
1776	-----	-----	2.69	2.47	2.04	-----	1.19	-----	-----
1957	-----	-----	-1.05	-1.10	-0.73	-----	0.00	2.08	2.03

Please note: the table in this appendix only shows participants that reported test results

z-scores of the determination of Simulated Distillation on sample #23221

lab	IBP	5% rec	10% rec	30% rec	50% rec	70% rec	90% rec	FBP
150	-----	0.43	0.31	-0.03	-----	-----	-----	-----
171	-----	-1.50	-0.05	-0.67	-----	-----	-----	-----
311	-----	0.21	0.09	-0.35	-----	-----	-----	-----
445	-----	-0.67	0.45	-0.48	-----	-----	-----	-----
495	-----	0.27	-2.22	1.62	-----	-----	-----	-----
542	-----	-0.32	-0.21	0.21	-----	-----	-----	-----
657	-----	1.64	0.25	-0.39	-----	-----	-----	-----
971	-----	0.54	-0.91	0.08	-----	-----	-----	-----
1039	-----	-0.02	0.36	0.78	-----	-----	-----	-----
1040	-----	-0.36	0.45	-0.56	-----	-----	-----	-----
1082	-----	0.27	0.48	0.80	-----	-----	-----	-----
1569	-----	-0.42	0.45	-0.48	-----	-----	-----	-----
1669	-----	-0.33	-0.27	1.27	-----	-----	-----	-----
1714	-----	-4.49	-0.40	-0.59	-----	-----	-----	-----
1815	-----	0.27	0.31	-0.48	-----	-----	-----	-----
6447	-----	-5.85	-1.29	-0.73	-----	-----	-----	-----

Please note: the table in this appendix only shows participants that reported test results

APPENDIX 3

Analytical details Total Acid Number determination

lab	determination of end point	volume of titration solvent
140	60 mL	Inflection Point
150	125 mL	Inflection Point
158	125 mL	Inflection Point
159	60 mL	Inflection Point
172	60 mL	Inflection Point
213	60 mL	Inflection Point
237	125 mL	Inflection Point
334	125 mL	Inflection Point
445	60 mL	Inflection Point
447	125 mL	Inflection Point
494	60 mL	Buffer End Point pH 10
529	60 mL	Inflection Point
551	125 mL	Inflection Point
575	60 mL	Buffer End Point pH 10
598	125 mL	Inflection Point
600	125 mL	Inflection Point
603	125 mL	Inflection Point
608	125 mL	Inflection Point
611	60 mL	Inflection Point
621	125 mL	Inflection Point
657	125 mL	Inflection Point
663	125 mL	Inflection Point
736	125 mL	Inflection Point
752	60 mL	Inflection Point
781	125 mL	Inflection Point
840	60 mL	Inflection Point
862	---	Inflection Point
873	125 mL	Inflection Point
874	125 mL	Buffer End Point pH10
904	125 mL	Inflection Point
922	125 mL	Inflection Point
971	125 mL	Inflection Point
994	60 mL	Inflection Point
995	125 mL	Inflection Point
1026	125 mL	Buffer End Point pH 11
1039	125 mL	Inflection Point
1040	60 mL	Inflection Point
1056	60 mL	Inflection Point
1089	125 mL	Buffer End Point pH 10
1212	125 mL	Inflection Point
1345	125 mL	Inflection Point
1556	125 mL	Buffer End Point pH 10
1569	125 mL	Inflection Point
1586	125 mL	Inflection Point
1613	125 mL	Inflection Point
1710	125 mL	Inflection Point
1759	60 mL	Buffer End Point pH 11
1776	125 mL	Buffer End Point pH 10
1796	125 mL	Inflection Point
1858	125 mL	---
1862	125 mL	Buffer End Point pH 11
1941	60 mL	Buffer End Point pH 11
1957	125 mL	Buffer End Point pH 10
1995	125 mL	Inflection Point
6203	125 mL	Inflection Point
6263	60 mL	Inflection Point
6273	125 mL	Inflection Point
6284	60 mL	Buffer End Point pH 11
6381	60 mL	Buffer End Point pH 10
6490	60 mL	Buffer End Point pH 10
9132	60 mL	Inflection Point

Please note: the table in this appendix only shows participants that reported analytical details

APPENDIX 4

Number of participants per country

1 lab in ALBANIA
1 lab in ALGERIA
2 labs in ARGENTINA
1 lab in AUSTRALIA
1 lab in AZERBAIJAN
1 lab in BELGIUM
3 labs in BRAZIL
1 lab in BULGARIA
4 labs in CANADA
1 lab in CHILE
2 labs in CHINA, People's Republic
1 lab in COLOMBIA
1 lab in CONGO Brazzaville
1 lab in COTE D'IVOIRE
1 lab in CROATIA
2 labs in CZECH REPUBLIC
5 labs in ECUADOR
2 labs in EGYPT
2 labs in FINLAND
5 labs in FRANCE
3 labs in GEORGIA
4 labs in GERMANY
2 labs in HUNGARY
1 lab in INDIA
1 lab in INDONESIA
1 lab in ISRAEL
3 labs in ITALY
1 lab in JORDAN
5 labs in KAZAKHSTAN
1 lab in LATVIA
1 lab in LIBERIA
14 labs in MALAYSIA
1 lab in MALTA
2 labs in MEXICO
6 labs in NETHERLANDS
2 labs in NIGERIA
5 labs in NORWAY
4 labs in OMAN
1 lab in PAKISTAN
1 lab in PERU
7 labs in POLAND
2 labs in QATAR
2 labs in ROMANIA
13 labs in RUSSIAN FEDERATION
2 labs in SAUDI ARABIA
3 labs in SERBIA
1 lab in SINGAPORE
3 labs in SLOVAKIA
1 lab in SOUTH AFRICA
2 labs in SPAIN
1 lab in SUDAN
3 labs in SWEDEN
1 lab in THAILAND
1 lab in TUNISIA
5 labs in TURKEY
3 labs in TURKMENISTAN
2 labs in UNITED ARAB EMIRATES
5 labs in UNITED KINGDOM
8 labs in UNITED STATES OF AMERICA
1 lab in VIETNAM

APPENDIX 5

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)/G(1)	= outlier in Grubbs' outlier test
G(0.05)/G(5)	= straggler in Grubbs' outlier test
DG(0.01)	= outlier in Double Grubbs' outlier test
DG(0.05)	= straggler in Double Grubbs' outlier test
R(0.01)	= outlier in Rosner's outlier test
R(0.05)	= straggler in Rosner's outlier test
E	= calculation difference between reported test result and result calculated by iis
W	= test result withdrawn on request of participant
ex	= test result excluded from statistical evaluation
n.a.	= not applicable
n.e.	= not evaluated
n.d.	= not detected
fr.	= first reported
f+?	= possibly a false positive test result?
f-?	= possibly a false negative test result?
SDS	= Safety Data Sheet

Literature

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