Results of Proficiency Test
Natural Gas Analysis
April 2017

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

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1 INTRODUCTION

Since 2009, the Institute for Interlaboratory Studies (iis) organizes proficiency tests for the analysis of Natural Gas (composition only) every year. In the annual proficiency testing program of 2016/2017, it was decided to continue the proficiency test for the analysis of Natural Gas.
Because iis has limited gas-handling facilities in place to prepare gas samples, a co-operation with EffecTech (Uttoxeter, United Kingdom) was set up. This company is fully equipped and has experience in the preparation of synthetic natural gas samples for PT purposes. EffecTech maintains an ISO17043 accreditation for the preparation of PT samples in homogeneous and stable batches and an ISO17025 accreditation for the calibration and assignment of reference values for these samples.
In the interlaboratory study for Natural Gas 60 laboratories from 30 different countries registered for participation. See appendix 2 for the number of participants per country. In this report, the results of the proficiency test Natural Gas 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 organiser of this proficiency test (PT). To optimise the costs for the participating laboratories, it was decided to prepare one natural gas mixture. Samples were divided over a batch of 65 cylinders. The cylinder size is a cost-effective one-litre cylinder. Each cylinder was uniquely numbered. The limited cylinder size is chosen to optimise transport and handling costs. The analyses of the samples for fit-for-use and homogeneity testing were subcontracted to an accredited laboratory. Participants were requested to report rounded and unrounded test results. The unrounded test results were preferably used for statistical evaluation.

2.1 QUALITY SYSTEM

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, has implemented a quality system based on ISO/IEC17043:2010. This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentiality of participant's data. Feedback from participants on the reported data is encouraged and customer's satisfaction is measured on a regular basis by sending out questionnaires.
EffecTech is an accredited provider of proficiency testing schemes under the requirements of ISO/IEC17043:2010 by UKAS (no. 4719).

2.2 PROTOCOL

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

In this proficiency test one gas sample was used. The necessary one litre cylinders with artificial natural gas mixture was prepared and tested for homogeneity by EffecTech (Uttoxeter, United Kingdom) in conformance with ISO Guide 35: 2006 and ISO/IEC17043:2010.
One batch of 65 cylinders was prepared (job 17/0125) starting in January, 2017. Each cylinder was uniquely numbered. Every cylinder in the batch was analysed using replicate measurements. The within bottle and between bottle variations were then assessed in accordance with ISO Guide 35:2006 (Annex A.1). This procedure showed that the between bottle variations were all small compared to the uncertainties on the reference values on each component. Hence, a single reference value could be safely assigned to the entire batch of samples.
The repeatability values (r) were calculated per component by multiplication of the respective standard deviation by 2.8. Subsequently, the calculated repeatabilities were compared with 0.3 times the reproducibility of the reference method in agreement with the procedure of ISO 13528, Annex B2 in the next table:

Parameter	r (abs, observed) in %mol/mol	0.3xR (abs, ISO6974-3) in %mol/mol
Methane	0.0053	0.0559
Ethane	0.0024	0.0270
Propane	0.0021	0.0136
iso-Butane	0.0007	0.0036
n-Butane	0.0012	0.0054
Carbon dioxide	0.0008	0.0054
Nitrogen	0.0028	0.0136

Table 1: evaluation of homogeneity test results against ISO6974-3 requirements

From the above table it is clear that all observed repeatabilities are far less than 0.3 times the respective reproducibilities of the reference method ISO6974-3.
Therefore, the homogeneity of the prepared cylinders was assumed.

To each of the participating laboratories one 1L gas cylinder, labelled #17040 was sent on March 15, 2017. An SDS was added to the sample package.

2.5 STABILITY OF THE SAMPLES

EffecTech (Uttoxeter, United Kingdom) declares that the prepared gas cylinders have a shelf life of at least 6 months. This is sufficient for the proficiency testing purposes.

2.6 ANALYSES

The participants were requested to determine on sample #17040: Methane, Ethane, Propane, n-Butane, iso-Butane, Carbon dioxide, Nitrogen, Carbon content, Caloric Value (superior and inferior), Density, Relative Density and Wobbe index.

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 more, but report as much significant figures as possible. It was also requested not to report ‘less than’ test results, which are above the detection limit, because such test results cannot be used for meaningful statistical 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 that will be used during the evaluation. The detailed report form and the letter of instructions are both made available on the data entry portal www.kpmd.co.uk/sgs-iis/. The participating laboratories are also requested to confirm the sample receipt on this data entry portal. The letter of instructions can also be downloaded from the iis website www.iisnl.com.

3 RESULTS

During five weeks after sample dispatch, the test results of the individual laboratories were gathered via the data entry portal www.kpmd.co.uk/sgs-iis/. The reported test results are tabulated per determination in appendix 1 of this report. The laboratories are presented by their code numbers.
Directly after the deadline, a reminder was sent to those laboratories that had not reported test results at that moment.
Shortly after the deadline, the available test results were screened for suspect data. A test result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data were asked to check the reported test results (no reanalysis). Additional or corrected test results are used for data analysis and the original test results are placed under the test result tables in appendix 1.
Test results that came in after the deadline were not taken into account in this screening for suspect data and thus these participants were not requested for checks.

3.1 STATISTICS

The protocol followed in the organisation of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of March 2017 (iis-protocol, version 3.4).
For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded test results. Test results reported as '<...' or '>...' were not used in the statistical evaluation.

First, the normality of the distribution of the various data sets per determination was checked by means of the Lilliefors-test, a variant of the Kolmogorov-Smirnov test and by the calculation of skewness and kurtosis. Evaluation of the three normality indicators in combination with the visual evaluation of the graphic Kernel density plot, lead to judgement of the normality being either 'unknown', 'OK', 'suspect' or 'not OK'. After removal of outliers, this check was repeated. If a data set does not have a normal distribution, the results of the statistical evaluation should be used with due care.
In accordance to ISO 5725 the original test results per determination were submitted subsequently to Dixon's, Grubbs' and or Rosner's outlier tests. Outliers are marked by D(0.01) for the Dixon's test, by G(0.01) or DG(0.01) for the Grubbs' test and by R(0.01) for the Rosner's test. Stragglers are marked by D(0.05) for the Dixon's test, by G(0.05) or DG(0.05) for the Grubbs' test and by R(0.05) for the Rosner's test. Both outliers and stragglers were not included in the calculations of averages and standard deviations.

For each assigned value the uncertainty was determined in accordance with ISO13528. Subsequently the calculated uncertainty was evaluated against the respective requirement based on the target reproducibility in accordance with ISO13528. When the uncertainty passed the evaluation no remarks are made in the report. However, when the uncertainty failed the evaluation it is mentioned in the report and it will have significant consequences for the evaluation of the test results.
Finally, the reproducibilities were calculated from the standard deviations by multiplying them with a factor of 2.8.

3.2 GRAPHICS

In order to visualise the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported analysis 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 standard. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle. Furthermore, Kernel Density Graphs were made. The Kernel Density Graph is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms. Also a normal Gauss curve was projected over the Kernel Density Graph for reference.

3.3 Z-SCORES

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

The target standard deviation was calculated from the target reproducibility (preferably taken from a standardized test method) by division with 2.8. In case no literature reproducibility was available, other target values were used. In some cases, a reproducibility based on former iis proficiency tests could be used

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

The z-scores were calculated in accordance with:

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

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

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

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

4 EVALUATION

In this proficiency test several problems were encountered with the dispatch of the samples, therefore, it was decided to extend the final reporting date to provide the participants the opportunity to report their test results. Laboratories in Australia, Brazil, Cote D'Ivoire, Ecuador, Portugal, Saudi Arabia, Turkey, United Kingdom and Vietnam did receive the samples late or not at all due to several reasons.
Finally, five participants reported the test results after the final reporting date and four participants did not report any test results at all. In total 56 participants reported 650 numerical test results. Observed were 41 outlying test results, which is 6.3% of the numerical test results. In proficiency studies outlier percentages of
3% - 7.5% are quite normal.

4.1 EVALUATION PER TEST

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

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

Two laboratories reported deviating results for many of the gas composition test results. At least three of the seven test results were statistical outliers for each of the laboratories 323 and 593. As the seven test results are not independent, it was decided not to use any of the reported results of these laboratories for the statistical evaluation. Also the reported results of these two laboratories were excluded for the statistical evaluation of the Carbon content, Caloric Value (sup), Caloric Value (inf), Density, Relative Density and Wobbe index, since these values were calculated from the measured gas composition.

Methane: This determination of this component was problematic. Two statistical outliers were observed and one test result was excluded. The calculated reproducibility after rejection of the suspect test results is not in agreement with the requirements of ISO6974-3:00, nor with the requirements of ASTM D1945:14.

Ethane: This determination of this component was not problematic. Two statistical outliers were observed and one test result was excluded. However, the calculated reproducibility after rejection of the suspect data is in full agreement with the requirements of ISO6974-3:00 and/or ASTM D1945:14.

Propane: This determination of this component may be problematic depending on the test method used as reference method. Two statistical outliers were observed and one test result was excluded. The calculated reproducibility after rejection of the suspect data is not in agreement with the requirements of ISO6974-3:00, but it is in agreement with the requirements of ASTM D1945:14.

i-Butane: This determination of this component was not problematic. One statistical outlier was observed and one test result was excluded. However, the calculated reproducibility after rejection of the suspect data is in full agreement with the requirements of ISO6974-3:00 and also with the requirements of ASTM D1945:14.

n-Butane: This determination of this component was not problematic. Two statistical outliers were observed and one test result was excluded. However, the calculated reproducibility after rejection of the suspect data is in full agreement with the requirements of ISO6974-3:00 and also with the requirements of ASTM D1945:14.

Carbon Dioxide: This determination of this component may be problematic depending on the test method used as reference method. Four statistical outliers were observed and one test result was excluded. The calculated reproducibility after rejection of the suspect data is not in agreement with the requirements of ISO6974-3:00, but it is in agreement with the requirements of ASTM D1945:14.

Nitrogen: This determination of this component was problematic. Five statistical outliers were observed and one test result was excluded. The calculated reproducibility after rejection of the suspect data is not in agreement with the requirements of ISO6974-3:00, nor in agreement with the requirements of ASTM D1945:14.

Carbon content: This determination of this component was not problematic. One statistical outlier was observed and one test result was excluded. However, the calculated reproducibility after rejection of the suspect test results is in agreement with the requirements of EN15984:11.

Calculated parameters, general remark:

In this PT, the calculated parameters were reported for two combustion temperatures (15°C and 25°C) for real gas. The number of participants with test results for 15°C and 25°C varied between 9 and 34.

Caloric Value (Sup.): The calculation at combustion temperature 25°C/metering temperature 0°C may be problematic for a number of laboratories. Three statistical outliers were found and one test result was excluded.
The variation for real gas was large compared to the previously observed variation in iis16S01M.

The calculation at combustion temperature 15°C/metering temperature 15°C may be problematic for a number of laboratories. Three statistical outliers were found and one test result was excluded. The variation for real gas was small compared to the previously observed variation in iis16S01M.

Caloric Value (Inf.): The calculation at combustion temperature 25°C/metering temperature 0°C may be problematic for a number of laboratories. Two statistical outliers were found and one test result was excluded.
The uncertainty (%) for real gas was small compared to the uncertainty of Caloric Value Superior.

The calculation at combustion temperature 15°C/metering temperature 15°C may be problematic for a number of laboratories. Five statistical outliers were found. However, the uncertainty (%) for real gas was about equal compared to the uncertainty of Caloric Value Superior.

Density: The calculation at combustion temperature 25°C/metering temperature 0°C may be problematic for a number of laboratories. Three statistical outliers were found and one test result was excluded. The variation for real gas was large compared to the previously observed variation in iis16S01M.

The calculation at combustion temperature 15°C/metering temperature 15°C may not be problematic. No statistical outliers were found and one test result was excluded. The variation for real gas was smaller than the previously observed variation in iis16S01M.

Relative density: The calculation at combustion temperature 25°C/metering temperature 0°C may not be problematic. No statistical outliers were found and one test result was excluded. The variation for real gas was large compared to the previously observed variation in iis16S01M.

The calculation at combustion temperature 15°C/metering temperature 15°C may not be problematic. No statistical outliers were found and one test result was excluded. The variation for real gas was about equal compared to the previously observed variation in iis16S01M.

Wobbe index: The calculation at combustion temperature 25°C/metering temperature 0°C may be problematic for a number of laboratories. Four statistical outliers were found. The variation for real gas was small compared to the previously observed variation in iis16S01M.

The calculation at combustion temperature 15°C/metering temperature 15°C may be problematic for a number of laboratories. Two statistical outliers were found.. The variation for real gas was smaller than the previously observed variation in iis16S01M.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the relevant reference test method and the reproducibility as found for the group of participating laboratories. The consensus value per component, calculated reproducibilities and reproducibilities derived from ISO6974-3 and ASTM D1945 are compared in the next table.

	unit	n	cons. value	2.8 * sd	R(ISO6974-3)	R(D1945)
Methane	%mol/mol	53	93.175	0.211	0.186	0.15
Ethane	%mol/mol	52	3.008	0.085	0.090	0.10
Propane	%mol/mol	52	1.511	0.050	0.045	0.10
iso-Butane	%mol/mol	53	0.201	0.011	0.012	0.07
n-Butane	%mol/mol	52	0.302	0.019	0.018	0.07
Carbon dioxide	%mol/mol	51	0.299	0.024	0.018	0.07
Nitrogen	%mol/mol	49	1.514	0.114	0.045	0.10
Carbon content	g/100g	10	73.31	0.11	1.61	R(EN15984)

Table 2: performance of the group in comparison with the target reproducibilities

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

The average results per calculation for the real gas, observed reproducibilities are compared in table 3 and 4.

Combustion temperature 25°C, metering temperature 0°C, real gas				
Property	unit	n	cons. value	2.8 * sd
Caloric Value (Sup)	MJ/m^3	21	41.38	0.20
Caloric Value (Inf)	kJ/100g	6	4805	16
Density	kg/m^3	20	0.7768	0.0018
Relative Density		23	0.6008	0.0015
Wobbe Index	MJ/m^3	18	53.37	0.06

Table 3: performance of the group for combustion temperature of 25°C, real gas

Combustion temperature 15°C, metering temperature 15°C, real gas				
Property	unit	n	cons. value	2.8 * sd
Caloric Value (Sup)	MJ/m^3	30	39.23	0.10
Caloric Value (Inf)	kJ/100g	10	4806	11
Density	kg/m^3	32	0.7362	0.0017
Relative Density		32	0.6008	0.0014
Wobbe Index	MJ/m^3	30	50.62	0.09

Table 4: performance of the group for combustion temperature of 15°C, real gas

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

	April 2017	April 2016	April 2015	April 2014
Total Number of reporting labs	56	60	47	38
Number of results reported	650	691	533	600
Statistical outliers	41	50	33	38
Percentage outliers	6.3%	7.2%	6.2%	6.5%

Table 5: comparison with previous proficiency tests.

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

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

	2017 ISO6974-3	2017 D1945	2016 ISO6974-3	2016 D1945	2015 ISO6974-3	2015 D1945	2014 ISO6974-3	2014 D1945
Methane	-	-	--	--	--	--	--	--
Ethane	+/-	+	+/-	-	+/-	+	++	+
Propane	-	++	-	++	-	++	-	++
iso-Butane	+/-	++	+/-	++	+/-	++	++	++
n-Butane	+/-	++	-	++	+/-	++	+/-	++
Carbon dioxide	-	++	--	+/-	--	++	--	--
Nitrogen	--	-	--	--	--	--	--	--

Table 6: comparison of observed precision with precision of ISO6974-3 / ASTM D1945

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

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

5 DISCUSSION

Most of the observed reproducibilities are in agreement with the reproducibility requirements of ISO6974-3 and therefore it had to be concluded that an improvement was observed since the 2010 PT for Natural Gas and that the majority of the participants has no problem with the determination of the composition of Natural Gas in the 2017 PT iis17S01M.

The consensus values as determined in this PT are compared with the average values from the homogeneity testing by the supplier EffecTech in the following table.

Parameter	Average values by EffecTech in %mol/mol	Consensus values from participants results in %mol/mol	Absolute differences in %mol/mol
Methane	93.1710	93.1751	0.0041
Ethane	3.0043	3.0077	0.0034
Propane	1.5144	1.5115	-0.0029
iso-Butane	0.2003	0.2011	0.0008
n-Butane	0.3007	0.3020	0.0013
Carbon dioxide	0.2972	0.2991	0.0019
Nitrogen	1.5120	1.5139	0.0019

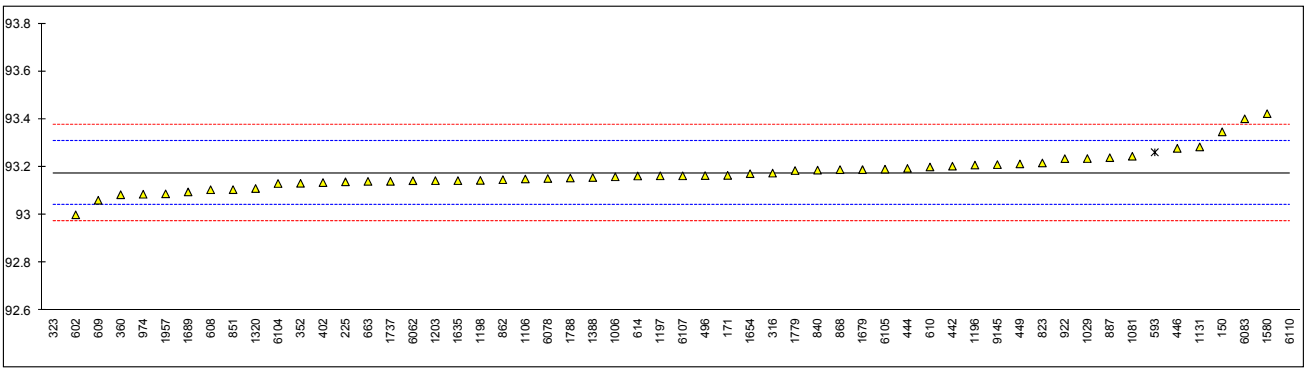
Table 7: comparison of consensus values with values determined by the supplier EffecTech

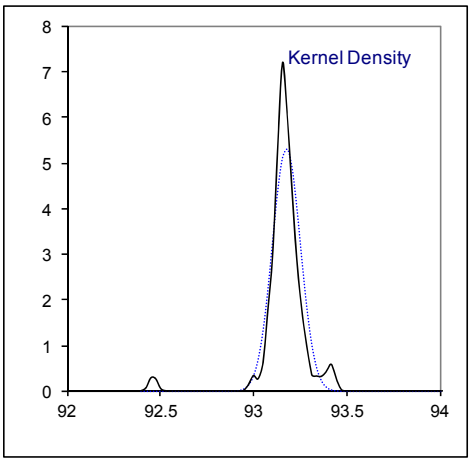
From the comparison in table 7 it is clear that the consensus values as determined in this PT are all very well in line with the values as determined during the preparation of the gas cylinders.

APPENDIX 1

Determination of Methane on sample #17040; results in %mol/mol

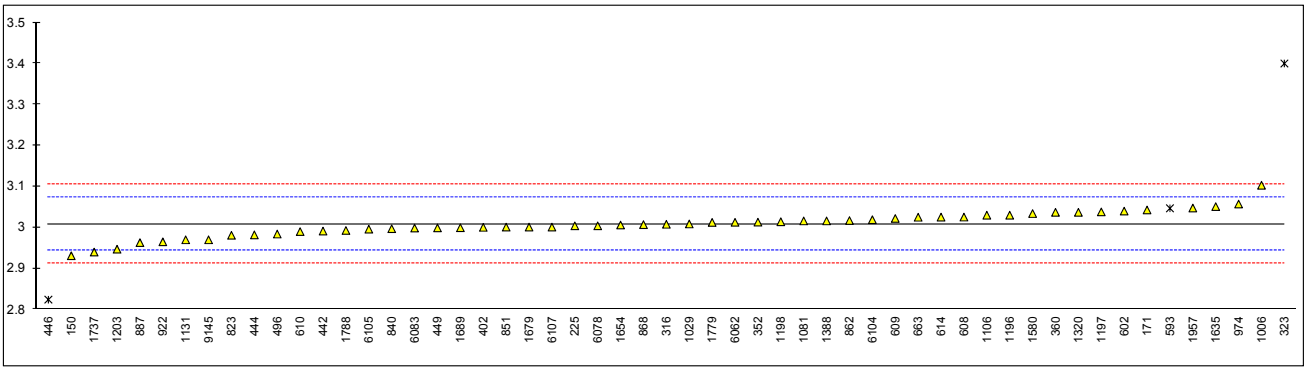
lab	method	value	mark	z(targ)	remarks
150	D1945	93.347		2.58	
171	D7833	93.1649		-0.15	
225	D1945	93.138		-0.56	
316	ISO6974-3	93.1744		-0.01	
323	EN15984	92.46	R(0.01)	-10.74	
352	ISO6974-3	93.1319		-0.65	
360	ISO6974-3	93.084		-1.37	
402	ISO6975	93.1348		-0.60	
442	D1945	93.2035		0.43	
444	D1945	93.194		0.28	
446	EN15984	93.278		1.55	
449	D1945	93.2128		0.57	
496	EN15984	93.164		-0.17	
552		-----		-----	
593	D1945	93.2615	ex	1.30	Result excluded: see §4.1
602	GPA2261	93.00		-2.63	
608	GPA2261	93.1048		-1.06	
609	GPA2261	93.061		-1.71	
610	GPA2261	93.20		0.37	
614	GPA2261	93.1624		-0.19	
663	D1945	93.140		-0.53	
823	GPA2261	93.217		0.63	
840	D1945	93.187		0.18	
851	GPA2261	93.1053		-1.05	
862	GPA2261	93.147		-0.42	
868	GPA2261	93.189		0.21	
887	D1945	93.239		0.96	
922	GPA2261	93.235		0.90	
963		-----		-----	
974	ISO6974-5	93.0861		-1.34	
1006	D1945	93.159		-0.24	
1029	D1945	93.2353		0.91	
1081	In house	93.245		1.05	
1095		-----		-----	
1106	GPA2286	93.150		-0.38	
1131	EN15984	93.284		1.64	
1196	GPA2261	93.208		0.49	
1197	D1945	93.163	C	-0.18	First reported 93.291
1198	D1945	93.144		-0.47	
1203	ISO6975	93.143		-0.48	
1320	D1945	93.110		-0.98	
1388	GPA2261	93.156		-0.29	
1580	D1945	93.423	C	3.73	First reported 93.771
1635	D1945	93.143		-0.48	
1654	D1945	93.172		-0.05	
1679	ISO6974-3	93.189		0.21	
1689	GB/T3610:2014	93.0957		-1.19	
1737	In house	93.14		-0.53	
1779	GPA2261	93.1851		0.15	
1788	D7833	93.1538		-0.32	
1864		-----		-----	
1957	GPA2261	93.0876		-1.31	
6062	ISO6974-3	93.1425		-0.49	
6078	ISO6974-3	93.152		-0.35	
6083	D1945	93.401491		3.40	
6104	GPA2261	93.131		-0.66	
6105	GPA2261	93.191		0.24	
6107	D1945	93.163		-0.18	
6110	In house	99.00	C,R(0.01)	87.52	First reported 90.3263
9145	GPA2261	93.21		0.53	
	normality	not OK			
	n	53			
	outliers	2 (+1 ex)			
	mean (n)	93.1751			
	st.dev. (n)	0.07520			
	R(calc.)	0.2105			
	R(ISO6974-3:00)	0.1864			Compare R(D1945:14) = 0.15

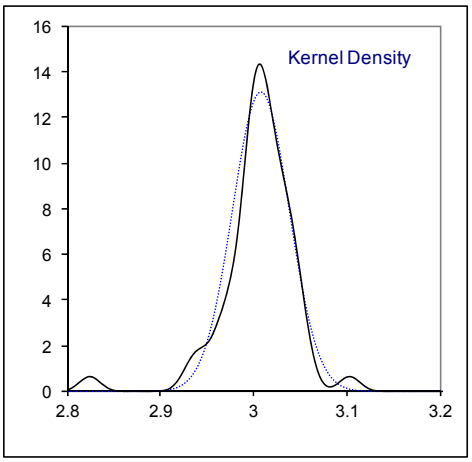

93.8
93.6
93.4
93.2
93
92.8
92.6
323 602 609 360 974 1957 1689 608 851 1320 6104 352 402 225 663 1737 6062 1203 1635 1198 862 1106 6078 1788 1388 1006 614 1197 6107 496 171 1654 316 1779 840 868 1679 6105 444 610 442 1196 9145 449 823 922 1029 887 1081 593 446 1131 150 6083 1580 6110


Kernel Density
8
7
6
5
4
3
2
1
0
92
92.5
93
93.5
94

Determination of Ethane on sample #17040; results in %mol/mol

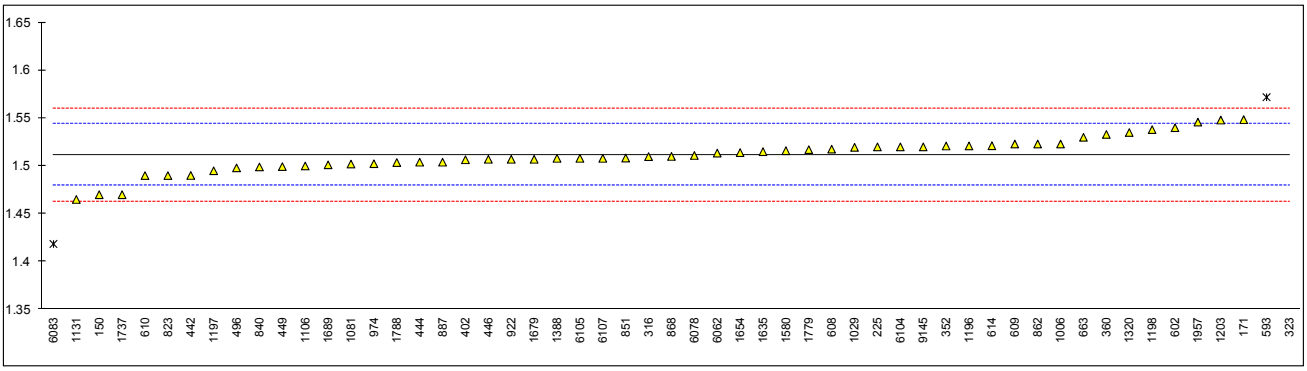
lab	method	value	mark	z(targ)	remarks
150	D1945	2.931		-2.38	
171	D7833	3.0428		1.09	
225	D1945	3.004		-0.12	
316	ISO6974-3	3.0078		0.00	
323	EN15984	3.40	R(0.01)	12.17	
352	ISO6974-3	3.0130		0.16	
360	ISO6974-3	3.037		0.91	
402	ISO6975	3.0004		-0.23	
442	D1945	2.9913		-0.51	
444	D1945	2.982		-0.80	
446	EN15984	2.824	R(0.01)	-5.70	
449	D1945	2.9990		-0.27	
496	EN15984	2.984		-0.74	
552		-----		-----	
593	D1945	3.0468	ex	1.21	Result excluded: see §4.1
602	GPA2261	3.04		1.00	
608	GPA2261	3.0254		0.55	
609	GPA2261	3.022		0.44	
610	GPA2261	2.99		-0.55	
614	GPA2261	3.0253		0.54	
663	D1945	3.025		0.54	
823	GPA2261	2.981		-0.83	
840	D1945	2.997		-0.33	
851	GPA2261	3.0009		-0.21	
862	GPA2261	3.017		0.29	
868	GPA2261	3.007		-0.02	
887	D1945	2.963		-1.39	
922	GPA2261	2.965		-1.33	
963		-----		-----	
974	ISO6974-5	3.0572		1.53	
1006	D1945	3.103		2.96	
1029	D1945	3.0086		0.03	
1081	In house	3.016		0.26	
1095		-----		-----	
1106	GPA2286	3.030		0.69	
1131	EN15984	2.970		-1.17	
1196	GPA2261	3.030		0.69	
1197	D1945	3.038	C	0.94	First reported 3.045
1198	D1945	3.014		0.19	
1203	ISO6975	2.947		-1.89	
1320	D1945	3.037		0.91	
1388	GPA2261	3.016		0.26	
1580	D1945	3.034	C	0.81	First reported 3.045
1635	D1945	3.051		1.34	
1654	D1945	3.006		-0.05	
1679	ISO6974-3	3.001		-0.21	
1689	GB/T3610:2014	2.9993		-0.26	
1737	In house	2.94		-2.10	
1779	GPA2261	3.0124		0.14	
1788	D7833	2.9928		-0.46	
1864		-----		-----	
1957	GPA2261	3.0475		1.23	
6062	ISO6974-3	3.0127		0.15	
6078	ISO6974-3	3.004		-0.12	
6083	D1945	2.998616		-0.28	
6104	GPA2261	3.019		0.35	
6105	GPA2261	2.996		-0.36	
6107	D1945	3.001		-0.21	
6110		-----		-----	
9145	GPA2261	2.97		-1.17	
	normality	suspect			
	n	52			
	outliers	2 (+1 ex)			
	mean (n)	3.0077			
	st.dev. (n)	0.03050			
	R(calc.)	0.0854			
	R(ISO6974-3:00)	0.0902			Compare R(D1945:14) = 0.10

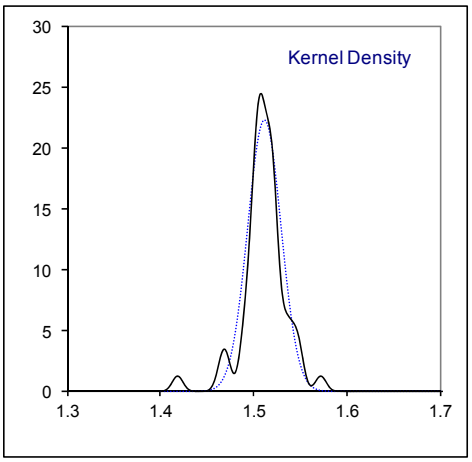

3.5
3.4
3.3
3.2
3.1
3
2.9
2.8
446 150 1737 1203 887 922 1131 9145 823 444 496 610 442 1788 6105 840 6083 449 1689 402 851 1679 6107 225 6078 1654 868 316 1029 1779 6062 352 1198 1081 1388 862 6104 609 663 614 608 1106 1196 1580 360 1320 1197 602 171 593 1957 1635 974 1006 323


Kernel Density
16
14
12
10
8
6
4
2
0
2.8
2.9
3
3.1
3.2

Determination of Propane on sample #17040; results in %mol/mol

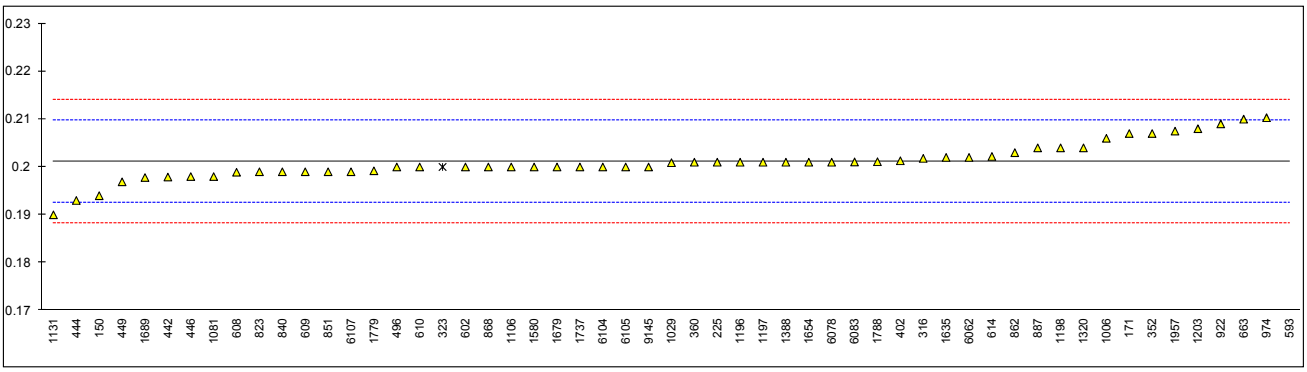
lab	method	value	mark	z(targ)	remarks
150	D1945	1.47	C	-2.56	First reported 1.443
171	D7833	1.5485		2.29	
225	D1945	1.520		0.53	
316	ISO6974-3	1.5098		-0.10	
323	EN15984	1.78	R(0.01)	16.58	
352	ISO6974-3	1.5209		0.58	
360	ISO6974-3	1.533		1.33	
402	ISO6975	1.5065		-0.31	
442	D1945	1.4901		-1.32	
444	D1945	1.504		-0.46	
446	EN15984	1.507		-0.28	
449	D1945	1.4994		-0.75	
496	EN15984	1.498		-0.83	
552		-----		-----	
593	D1945	1.5719	ex	3.73	Result excluded: see §4.1
602	GPA2261	1.54		1.76	
608	GPA2261	1.5176		0.38	
609	GPA2261	1.523		0.71	
610	GPA2261	1.49		-1.33	
614	GPA2261	1.5212		0.60	
663	D1945	1.530		1.14	
823	GPA2261	1.490		-1.33	
840	D1945	1.499		-0.77	
851	GPA2261	1.5083		-0.20	
862	GPA2261	1.523		0.71	
868	GPA2261	1.510		-0.09	
887	D1945	1.504		-0.46	
922	GPA2261	1.507		-0.28	
963		-----		-----	
974	ISO6974-5	1.5024	C	-0.56	First reported 1.5757
1006	D1945	1.523		0.71	
1029	D1945	1.5195		0.49	
1081	In house	1.502		-0.59	
1095		-----		-----	
1106	GPA2286	1.500		-0.71	
1131	EN15984	1.465		-2.87	
1196	GPA2261	1.521		0.59	
1197	D1945	1.495	C	-1.02	First reported 1.489
1198	D1945	1.538		1.64	
1203	ISO6975	1.548		2.25	
1320	D1945	1.535		1.45	
1388	GPA2261	1.508		-0.22	
1580	D1945	1.516	C	0.28	First reported 1.522
1635	D1945	1.515		0.22	
1654	D1945	1.514		0.15	
1679	ISO6974-3	1.507		-0.28	
1689	GB/T3610:2014	1.5012		-0.64	
1737	In house	1.47		-2.56	
1779	GPA2261	1.5171		0.35	
1788	D7833	1.5036		-0.49	
1864		-----		-----	
1957	GPA2261	1.5459		2.12	
6062	ISO6974-3	1.5135		0.12	
6078	ISO6974-3	1.511		-0.03	
6083	D1945	1.418473	R(0.01)	-5.74	
6104	GPA2261	1.520		0.53	
6105	GPA2261	1.508		-0.22	
6107	D1945	1.508		-0.22	
6110		-----		-----	
9145	GPA2261	1.52		0.53	
	normality	OK			
	n	52			
	outliers	2 (+1 ex)			
	mean (n)	1.5115			
	st.dev. (n)	0.01787			
	R(calc.)	0.0500			
	R(ISO6974-3:00)	0.0453			Compare R(D1945:14) = 0.10

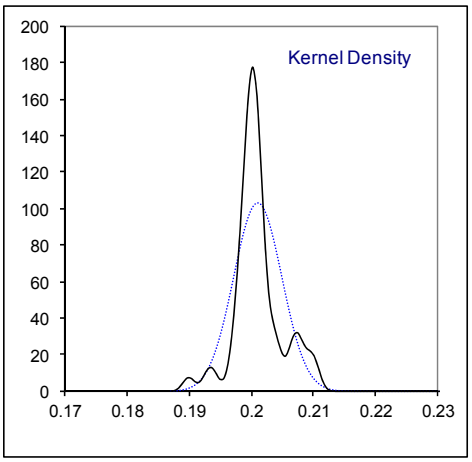

1.65
1.6
1.55
1.5
1.45
1.4
1.35
6083 1131 150 1737 610 823 442 1197 496 840 449 1106 1688 1081 974 1788 444 887 402 446 922 1679 1388 6105 6107 851 316 868 6078 6062 1654 1635 1580 1779 608 1029 225 6104 9145 352 1196 614 609 862 1006 663 360 1320 1198 602 1957 1203 171 593 323


Kernel Density
30
25
20
15
10
5
0
1.3
1.4
1.5
1.6
1.7

Determination of iso-Butane on sample #17040; results in %mol/mol

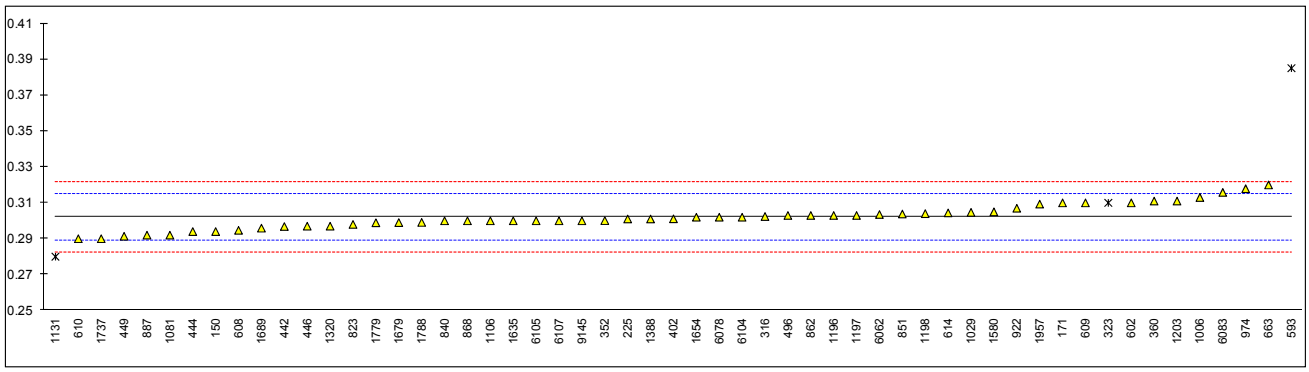
lab	method	value	mark	z(targ)	remarks
150	D1945	0.194		-1.65	
171	D7833	0.2070		1.37	
225	D1945	0.201		-0.02	
316	ISO6974-3	0.2018		0.16	
323	EN15984	0.20	ex	-0.25	Result excluded: see §4.1
352	ISO6974-3	0.2070		1.37	
360	ISO6974-3	0.201		-0.02	
402	ISO6975	0.2013		0.05	
442	D1945	0.1979		-0.74	
444	D1945	0.193		-1.88	
446	EN15984	0.198		-0.72	
449	D1945	0.1969		-0.97	
496	EN15984	0.200		-0.25	
552		-----		-----	
593	D1945	0.3520	R(0.01)	35.02	
602	GPA2261	0.20		-0.25	
608	GPA2261	0.1989		-0.51	
609	GPA2261	0.199		-0.49	
610	GPA2261	0.20		-0.25	
614	GPA2261	0.2022		0.26	
663	D1945	0.210		2.07	
823	GPA2261	0.199		-0.49	
840	D1945	0.199		-0.49	
851	GPA2261	0.1990		-0.49	
862	GPA2261	0.203		0.44	
868	GPA2261	0.200		-0.25	
887	D1945	0.204		0.67	
922	GPA2261	0.209		1.84	
963		-----		-----	
974	ISO6974-5	0.2103		2.14	
1006	D1945	0.206	C	1.14	First reported 0.313
1029	D1945	0.2009		-0.04	
1081	In house	0.198		-0.72	
1095		-----		-----	
1106	GPA2286	0.200		-0.25	
1131	EN15984	0.190		-2.57	
1196	GPA2261	0.201		-0.02	
1197	D1945	0.201		-0.02	
1198	D1945	0.204		0.67	
1203	ISO6975	0.208		1.60	
1320	D1945	0.204		0.67	
1388	GPA2261	0.201		-0.02	
1580	D1945	0.200	C	-0.25	First reported 0.201
1635	D1945	0.202		0.21	
1654	D1945	0.201		-0.02	
1679	ISO6974-3	0.200		-0.25	
1689	GB/T3610:2014	0.1978		-0.76	
1737	In house	0.20		-0.25	
1779	GPA2261	0.1992		-0.44	
1788	D7833	0.2011		0.00	
1864		-----		-----	
1957	GPA2261	0.2075		1.49	
6062	ISO6974-3	0.2020		0.21	
6078	ISO6974-3	0.201		-0.02	
6083	D1945	0.201057		-0.01	
6104	GPA2261	0.200		-0.25	
6105	GPA2261	0.200		-0.25	
6107	D1945	0.199		-0.49	
6110		-----		-----	
9145	GPA2261	0.20		-0.25	
	normality	suspect			
	n	53			
	outliers	1 (+1 ex)			
	mean (n)	0.2011			
	st.dev. (n)	0.00388			
	R(calc.)	0.0109			
	R(ISO6974-3:00)	0.0121			Compare R(D1945:14) = 0.07

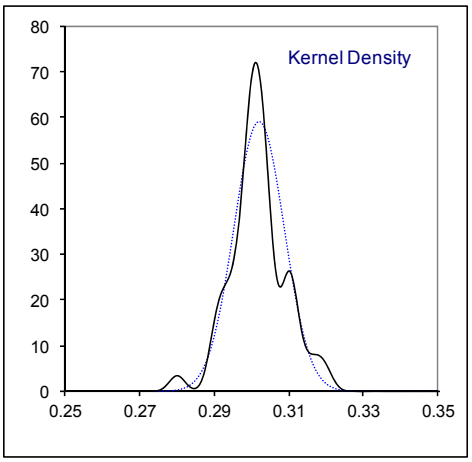

0.23
0.22
0.21
0.2
0.19
0.18
0.17
1131 444 150 449 1688 442 446 1081 608 823 840 609 851 6107 1779 496 610 323 602 868 1106 1580 1679 1737 6104 6105 9145 1029 360 225 1196 1197 1388 1654 6078 6083 1788 402 316 1635 6062 614 862 887 1198 1320 1006 171 352 1957 1203 922 663 974 593


Kernel Density
200
180
160
140
120
100
80
60
40
20
0
0.17 0.18 0.19 0.2 0.21 0.22 0.23

Determination of n-Butane on sample #17040; results in %mol/mol

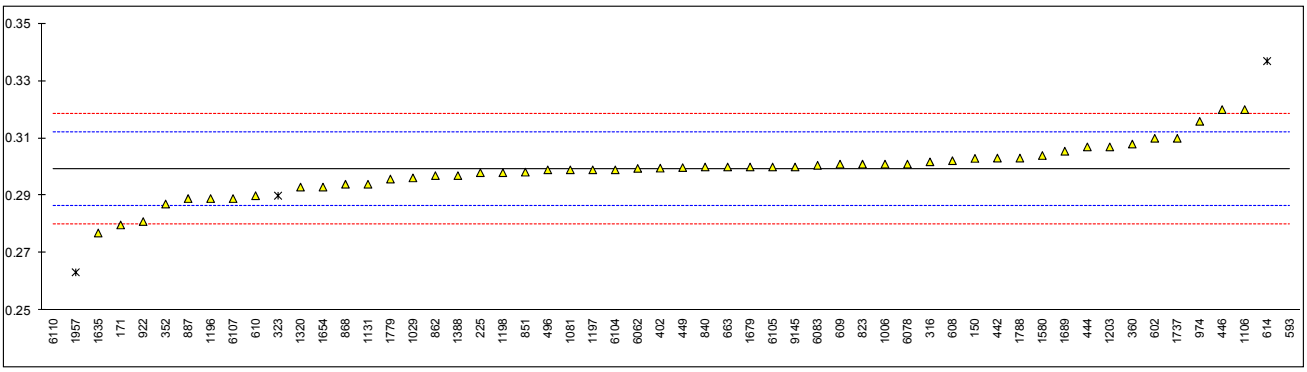
lab	method	value	mark	z(targ)	remarks
150	D1945	0.294		-1.24	
171	D7833	0.3100		1.24	
225	D1945	0.301		-0.15	
316	ISO6974-3	0.3024		0.06	
323	EN15984	0.31	ex	1.24	Result excluded: see §4.1
352	ISO6974-3	0.3001		-0.29	
360	ISO6974-3	0.311		1.39	
402	ISO6975	0.3011		-0.14	
442	D1945	0.2968		-0.80	
444	D1945	0.294		-1.24	
446	EN15984	0.297		-0.77	
449	D1945	0.2914		-1.64	
496	EN15984	0.303		0.15	
552		-----		-----	
593	D1945	0.3851	R(0.01)	12.84	
602	ISO6974-3	0.31		1.24	
608	GPA2261	0.2947		-1.13	
609	GPA2261	0.310		1.24	
610	GPA2261	0.29		-1.85	
614	GPA2261	0.3044		0.37	
663	D1945	0.320		2.78	
823	GPA2261	0.298		-0.62	
840	D1945	0.300		-0.31	
851	GPA2261	0.3038		0.28	
862	GPA2261	0.303		0.15	
868	GPA2261	0.300		-0.31	
887	D1945	0.292		-1.54	
922	GPA2261	0.307		0.77	
963		-----		-----	
974	ISO6974-5	0.3179		2.46	
1006	D1945	0.313	C	1.70	First reported 0.206
1029	D1945	0.3047		0.42	
1081	In house	0.292		-1.54	
1095		-----		-----	
1106	GPA2286	0.300		-0.31	
1131	EN15984	0.280	R(0.05)	-3.40	
1196	GPA2261	0.303		0.15	
1197	D1945	0.303	C	0.15	First reported 0.301
1198	D1945	0.304		0.31	
1203	ISO6975	0.311		1.39	
1320	D1945	0.297		-0.77	
1388	GPA2261	0.301		-0.15	
1580	D1945	0.305	C	0.46	First reported 0.306
1635	D1945	0.300		-0.31	
1654	D1945	0.302		0.00	
1679	ISO6974-3	0.299		-0.46	
1689	GB/T3610:2014	0.2959		-0.94	
1737	In house	0.29		-1.85	
1779	GPA2261	0.2989		-0.48	
1788	D7833	0.2991		-0.45	
1864		-----		-----	
1957	GPA2261	0.3093	C	1.13	First reported 0.3269
6062	ISO6974-3	0.3035	C	0.23	First reported 0.03035
6078	ISO6974-3	0.302		0.00	
6083	D1945	0.315841		2.14	
6104	GPA2261	0.302		0.00	
6105	GPA2261	0.300		-0.31	
6107	D1945	0.300		-0.31	
6110		-----		-----	
9145	GPA2261	0.30		-0.31	
	normality	OK			
	n	52			
	outliers	2 (+1 ex)			
	mean (n)	0.3020			
	st.dev. (n)	0.00676			
	R(calc.)	0.0189			
	R(ISO6974-3:00)	0.0181			Compare R(D1945:14) = 0.07

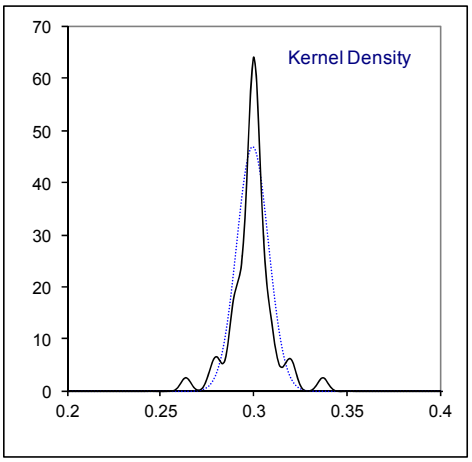

0.41
0.39
0.37
0.35
0.33
0.31
0.29
0.27
0.25
1131 610 1737 449 887 1081 444 150 608 1689 442 446 1320 823 1779 1679 1788 840 868 1106 1635 6105 6107 9145 352 225 1388 402 1654 6078 6104 316 496 862 1196 1197 6062 851 1198 614 1029 1580 922 1957 171 609 323 602 360 1203 1006 6083 974 663 593


Kernel Density
80
70
60
50
40
30
20
10
0
0.25
0.27
0.29
0.31
0.33
0.35

Determination of Carbon Dioxide on sample #17040; results in %mol/mol

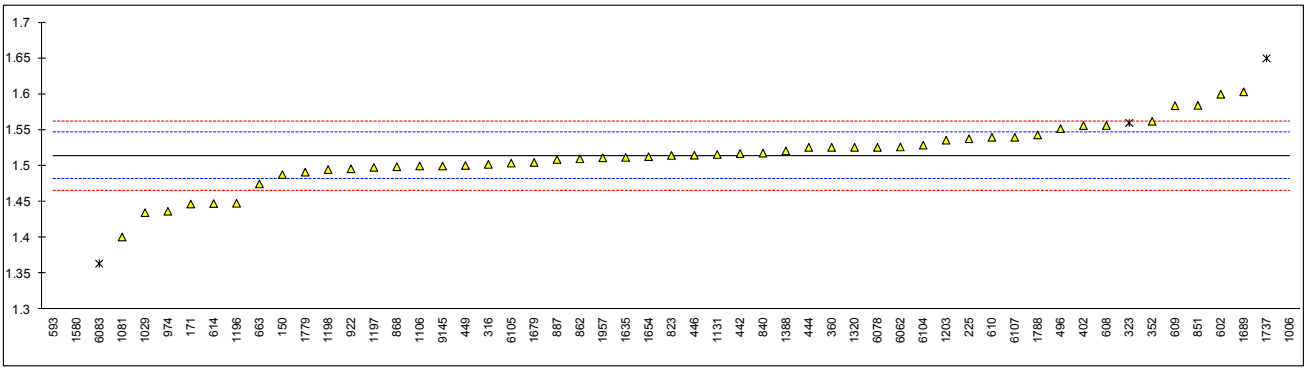
lab	method	value	mark	z(targ)	remarks
150	D1945	0.303		0.60	
171	D7833	0.2798		-3.02	
225	D1945	0.298		-0.18	
316	ISO6974-3	0.3018		0.41	
323	EN15984	0.29	ex	-1.43	Result excluded: see §4.1
352	ISO6974-3	0.2871	C	-1.88	First reported 0.2649
360	ISO6974-3	0.308		1.38	
402	ISO6975	0.2996		0.07	
442	D1945	0.3031		0.62	
444	D1945	0.307		1.23	
446	EN15984	0.320		3.25	
449	D1945	0.2998		0.10	
496	EN15984	0.299		-0.02	
552		-----		-----	
593	D1945	0.4515	R(0.01)	23.77	
602	GPA2261	0.31		1.69	
608	GPA2261	0.3022		0.48	
609	GPA2261	0.301		0.29	
610	GPA2261	0.29		-1.43	
614	GPA2261	0.3369	R(0.01)	5.89	
663	D1945	0.300		0.13	
823	GPA2261	0.301		0.29	
840	D1945	0.300		0.13	
851	GPA2261	0.2982		-0.15	
862	GPA2261	0.297		-0.33	
868	GPA2261	0.294		-0.80	
887	D1945	0.289		-1.58	
922	GPA2261	0.281		-2.83	
963		-----		-----	
974	ISO6974-5	0.3159		2.61	
1006	D1945	0.301		0.29	
1029	D1945	0.2962		-0.46	
1081	In house	0.299		-0.02	
1095		-----		-----	
1106	GPA2286	0.320		3.25	
1131	EN15984	0.294		-0.80	
1196	GPA2261	0.289		-1.58	
1197	D1945	0.299	C	-0.02	First reported 0.294
1198	D1945	0.298		-0.18	
1203	ISO6975	0.307		1.23	
1320	D1945	0.293		-0.96	
1388	GPA2261	0.297		-0.33	
1580	D1945	0.304	C	0.76	First reported 0.305
1635	D1945	0.277		-3.45	
1654	D1945	0.293		-0.96	
1679	ISO6974-3	0.300		0.13	
1689	GB/T3610:2014	0.3055		0.99	
1737	In house	0.31		1.69	
1779	GPA2261	0.2958		-0.52	
1788	D7833	0.3031		0.62	
1864		-----		-----	
1957	GPA2261	0.2633	C,R(0.01)	-5.59	First reported 0.2730
6062	ISO6974-3	0.2995		0.06	
6078	ISO6974-3	0.301		0.29	
6083	D1945	0.300595		0.23	
6104	GPA2261	0.299		-0.02	
6105	GPA2261	0.300		0.13	
6107	D1945	0.289		-1.58	
6110	In house	0.11	C,R(0.01)	-29.51	First reported 2.3740
9145	GPA2261	0.30		0.13	
	normality	suspect			
	n	51			
	outliers	4 (+1 ex)			
	mean (n)	0.2991			
	st.dev. (n)	0.00852			
	R(calc.)	0.0238			
	R(ISO6974-3:00)	0.0179			Compare R(D1945:14) = 0.07

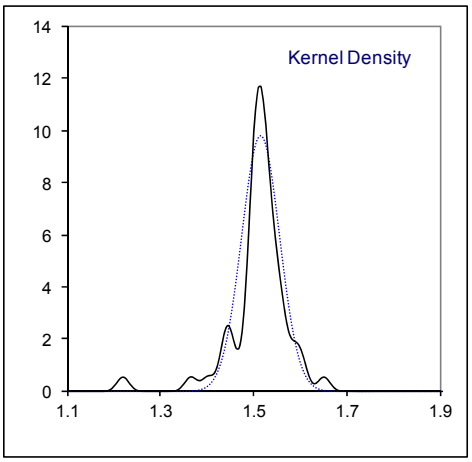

0.35
0.33
0.31
0.29
0.27
0.25
6110 1957 1635 171 922 352 887 1196 6107 610 323 1320 1654 868 1131 1779 1029 862 1388 225 1198 851 496 1081 1197 6104 6062 402 449 840 663 1679 6105 9145 6083 609 823 1006 6078 316 608 150 442 1788 1580 1689 444 1203 360 602 1737 974 446 1106 614 593


Kernel Density
70
60
50
40
30
20
10
0
0.2
0.25
0.3
0.35
0.4

Determination of Nitrogen on sample #17040; results in %mol/mol

lab	method	value	mark	z(targ)	remarks
150	D1945	1.488		-1.60	
171	D7833	1.4470		-4.13	
225	D1945	1.538		1.48	
316	ISO6974-3	1.5022		-0.72	
323	EN15984	1.56	ex	2.84	Result excluded: see §4.1
352	ISO6974-3	1.5623		2.98	
360	ISO6974-3	1.526		0.74	
402	ISO6975	1.5563		2.61	
442	D1945	1.5173		0.21	
444	D1945	1.526		0.74	
446	EN15984	1.515		0.07	
449	D1945	1.5007		-0.82	
496	EN15984	1.552		2.35	
552		-----		-----	
593	D1945	0.9312	R(0.01)	-35.93	
602	GPA2261	1.60		5.31	
608	GPA2261	1.5564		2.62	
609	GPA2261	1.584		4.32	
610	GPA2261	1.54		1.61	
614	GPA2261	1.4476		-4.09	
663	D1945	1.475		-2.40	
823	GPA2261	1.5147		0.05	
840	D1945	1.518		0.25	
851	GPA2261	1.5845		4.35	
862	GPA2261	1.510		-0.24	
868	GPA2261	1.499		-0.92	
887	D1945	1.509		-0.30	
922	GPA2261	1.496		-1.11	
963		-----		-----	
974	ISO6974-5	1.4369		-4.75	
1006	D1945	2.351	C,R(0.01)	51.60	First reported 1.395
1029	D1945	1.4349		-4.87	
1081	In house	1.401		-6.96	
1095		-----		-----	
1106	GPA2286	1.500		-0.86	
1131	EN15984	1.516		0.13	
1196	GPA2261	1.448		-4.06	
1197	D1945	1.498	C	-0.98	First reported 1.375
1198	D1945	1.495		-1.17	
1203	ISO6975	1.536		1.36	
1320	D1945	1.526		0.74	
1388	GPA2261	1.521		0.44	
1580	D1945	1.218	C,R(0.01)	-18.24	First reported 1.223
1635	D1945	1.512		-0.12	
1654	D1945	1.513		-0.06	
1679	ISO6974-3	1.505		-0.55	
1689	GB/T3610:2014	1.6034		5.52	
1737	In house	1.65	R(0.05)	8.39	
1779	GPA2261	1.4914		-1.39	
1788	D7833	1.5433		1.81	
1864		-----		-----	
1957	GPA2261	1.5115		-0.15	
6062	ISO6974-3	1.5265		0.77	
6078	ISO6974-3	1.526		0.74	
6083	D1945	1.363927	R(0.05)	-9.25	
6104	GPA2261	1.529		0.93	
6105	GPA2261	1.504		-0.61	
6107	D1945	1.540		1.61	
6110		-----		-----	
9145	GPA2261	1.50		-0.86	
	normality	OK			
	n	49			
	outliers	5 (+1 ex)			
	mean (n)	1.5139			
	st.dev. (n)	0.04082			
	R(calc.)	0.1143			
	R(ISO6974-3:00)	0.0454			Compare R(D1945:14) = 0.10

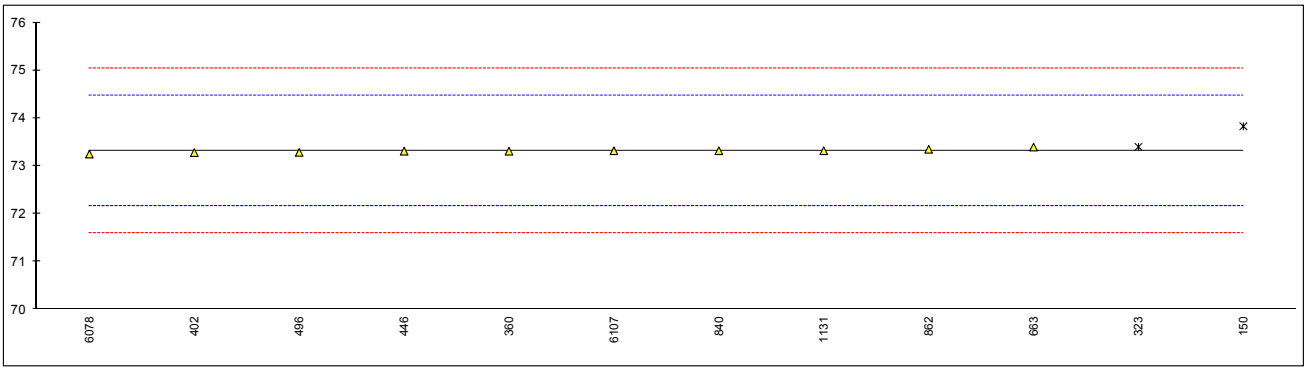

1.7
1.65
1.6
1.55
1.5
1.45
1.4
1.35
1.3
593 1580 6083 1081 1029 974 171 614 1196 663 150 1779 1198 922 1197 868 1106 9145 449 316 6105 1679 887 862 1957 1635 1654 823 446 1131 442 840 1388 444 360 1320 6078 6062 6104 1203 225 610 6107 1788 496 402 608 323 352 609 851 602 1689 1737 1006

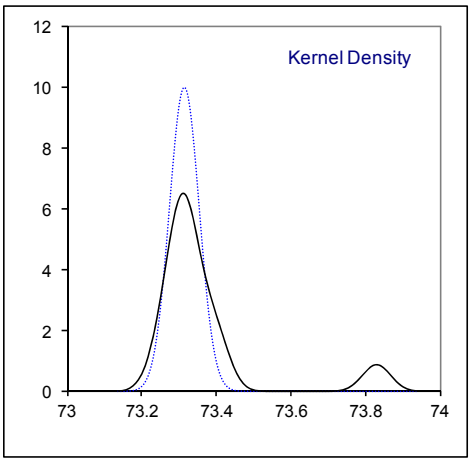

Kernel Density
14
12
10
8
6
4
2
0
1.1
1.3
1.5
1.7
1.9

Determination of Carbon content on sample #17040; results in g/100g

lab	method	value	mark	z(targ)	remarks
150	EN15984	73.83	G(0.01)	0.90	
171		-----		-----	
225		-----		-----	
316		-----		-----	
323	EN15984	73.40	ex	0.15	Result excluded: see §4.1
352		-----		-----	
360	EN15984	73.31		-0.01	
402	EN15984	73.28		-0.06	
442		-----		-----	
444		-----		-----	
446	EN15984	73.31		-0.01	
449		-----		-----	
496		73.285		-0.05	
552		-----		-----	
593		-----		-----	
602		-----		-----	
608		-----		-----	
609		-----		-----	
610		-----		-----	
614		-----		-----	
663	EN15984	73.395		0.14	
823		-----		-----	
840	EN15984	73.319		0.01	
851		-----		-----	
862	GPA2261	73.35		0.06	
868		-----		-----	
887		-----		-----	
922		-----		-----	
963		-----		-----	
974		-----		-----	
1006		-----		-----	
1029		-----		-----	
1081		-----		-----	
1095		-----		-----	
1106		-----		-----	
1131	EN15984	73.32		0.01	
1196		-----		-----	
1197		-----		-----	
1198		-----		-----	
1203		-----		-----	
1320		-----		-----	
1388		-----		-----	
1580		-----		-----	
1635		-----		-----	
1654		-----		-----	
1679		-----		-----	
1689		-----		-----	
1737		-----		-----	
1779		-----		-----	
1788		-----		-----	
1864		-----		-----	
1957		-----		-----	
6062		-----		-----	
6078		73.248		-0.11	
6083		-----		-----	
6104		-----		-----	
6105		-----		-----	
6107	EN15984	73.318		0.01	
6110		-----		-----	
9145		-----		-----	

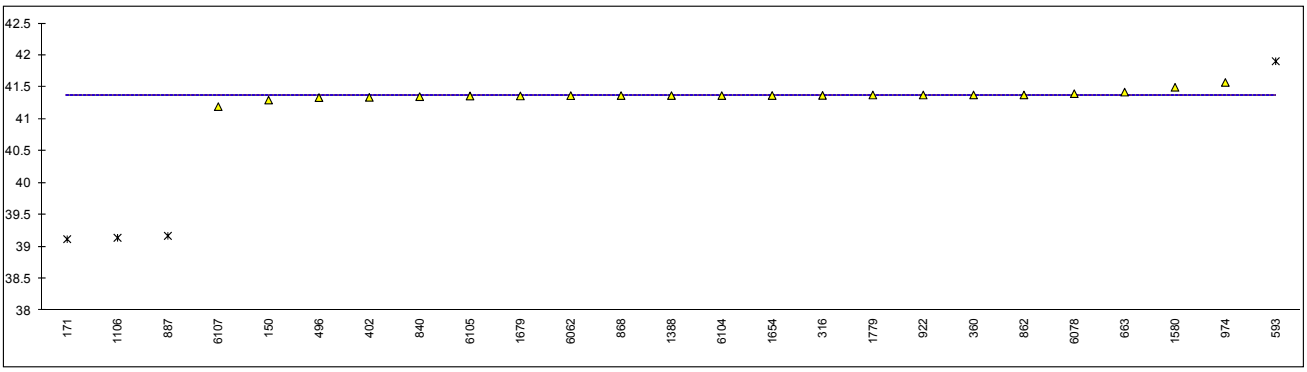
normality	suspect
n	10
outliers	1 (+1 ex)
mean (n)	73.313
st.dev. (n)	0.0399
R(calc.)	0.112
R(EN15984:11)	1.613

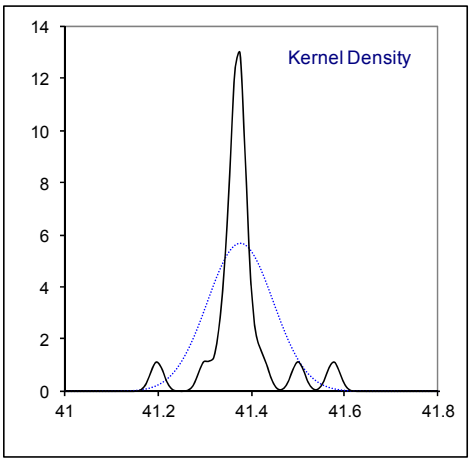

76
75
74
73
72
71
70
6078
402
496
446
360
6107
840
1131
862
663
323
150


Kernel Density
12
10
8
6
4
2
0
73
73.2
73.4
73.6
73.8
74

Determination of Caloric Value Superior (101.325 kPa, comb. temp. 25°C, metering temp 0°C) on sample #17040; results in MJ/m^3 (real gas)

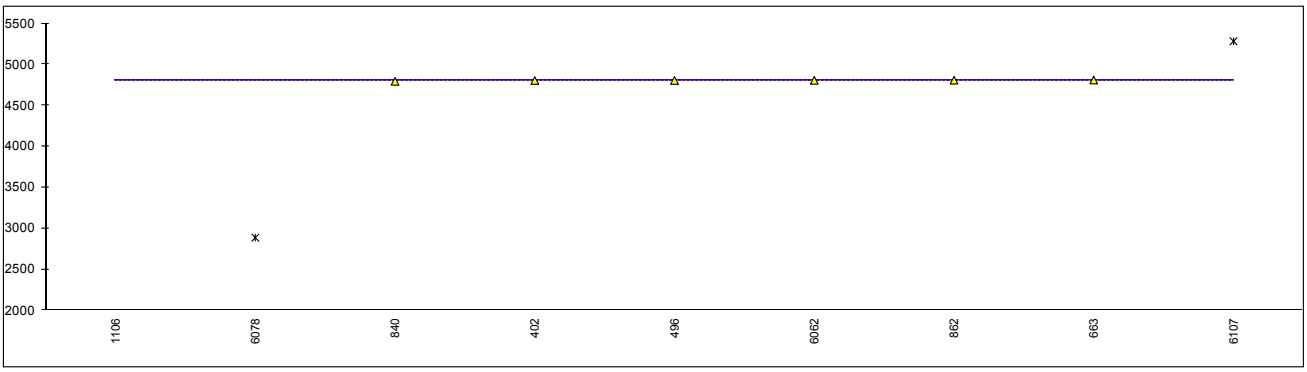
lab	method	value	mark	z(targ)	remarks
150	ISO6976	41.300		-----	
171	D7833	39.118	DG(0.01),E	-----	iis calculated 41.449
225		-----		-----	
316	ISO6976	41.373		-----	
323		-----		-----	
352		-----		-----	
360	ISO6976	41.38		-----	
402	ISO6976	41.3418		-----	
442		-----		-----	
444		-----		-----	
446		-----		-----	
449		-----		-----	
496	DIN51857	41.3382		-----	
552		-----		-----	
593	ISO6976	41.908	Ex,E	-----	Result excluded: see §4.1, iis calculated 41.798
602		-----		-----	
608		-----		-----	
609		-----		-----	
610		-----		-----	
614		-----		-----	
663	ISO6976	41.424		-----	
823		-----		-----	
840	ISO6976	41.353		-----	
851		-----		-----	
862	ISO6976	41.38		-----	
868	ISO6976	41.37		-----	
887	D3588	39.17	DG(0.05)	-----	Reported deviating conditions = 60F and 14.696 psi
922	ISO6976	41.3792		-----	
963		-----		-----	
974	GPA2172	41.576	E	-----	iis calculated 41.396
1006		-----		-----	
1029		-----		-----	
1081		-----		-----	
1095		-----		-----	
1106	ISO6976	39.14	DG(0.01),E	-----	iis calculated 41.363
1131		-----		-----	
1196		-----		-----	
1197		-----		-----	
1198		-----		-----	
1203		-----		-----	
1320		-----		-----	
1388	ISO6976	41.37		-----	
1580	ISO6976	41.500		-----	
1635		-----		-----	
1654	ISO6976	41.371		-----	
1679	ISO6976	41.364		-----	
1689		-----		-----	
1737		-----		-----	
1779	ISO6976	41.3787		-----	
1788		-----		-----	
1864		-----		-----	
1957		-----		-----	
6062	ISO6976	41.369		-----	
6078	ISO6976	41.400	E	-----	iis calculated 41.361
6083		-----		-----	
6104	ISO6976	41.37		-----	
6105	ISO6976	41.3635		-----	
6107	D3588	41.197	C,E	-----	First reported 37.826, iis calculated 41.355
6110		-----		-----	
9145		-----		-----	
	normality	not OK			
	n	21			
	outliers	3 (+1 ex)			
	mean (n)	41.3761			
	st.dev. (n)	0.07062			
	R(calc.)	0.1977			Compare R(iis16S01M) = 0.1365

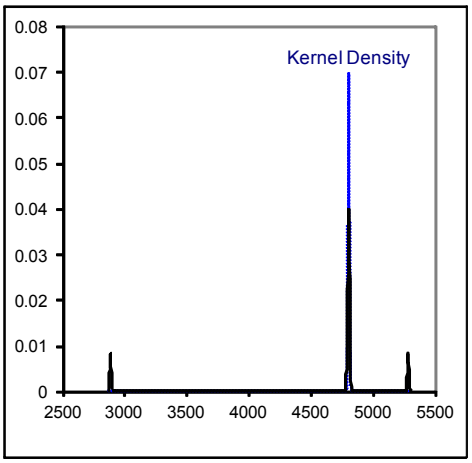

42.5
42
41.5
41
40.5
40
39.5
39
38.5
38
171
1106
887
6107
150
496
402
840
6105
1679
6062
868
1388
6104
1654
316
1779
922
360
862
6078
663
1580
974
593


Kernel Density
14
12
10
8
6
4
2
0
41
41.2
41.4
41.6
41.8

Determination of Caloric Value Inferior (101.325 kPa, comb. temp. 25°C, metering temp 0°C) on sample #17040; results in kJ/100g (real gas)

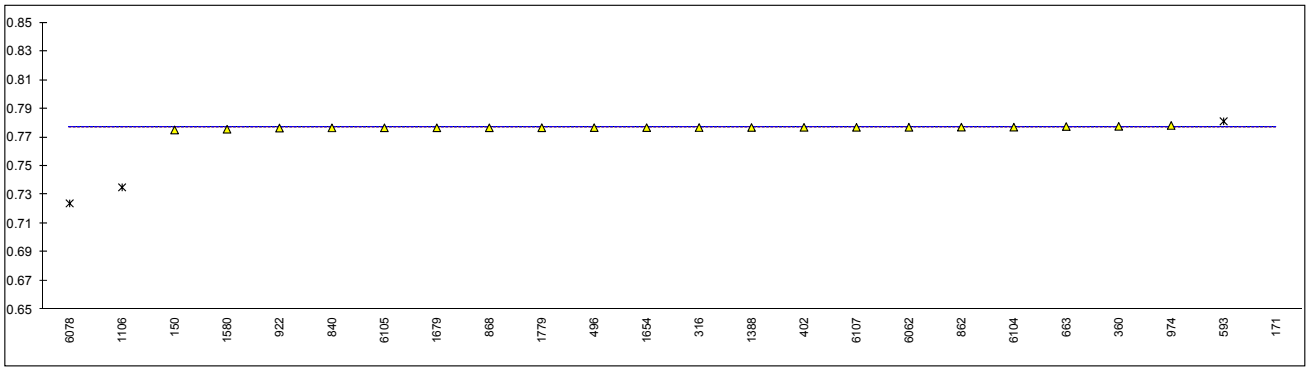
lab	method	value	mark	z(targ)	remarks
150		-----		-----	
171		-----		-----	
225		-----		-----	
316		-----		-----	
323		-----		-----	
352		-----		-----	
360		-----		-----	
402	EN15984	4804.75		-----	
442		-----		-----	
444		-----		-----	
446		-----		-----	
449		-----		-----	
496	DIN51857	4805.1704		-----	
552		-----		-----	
593		-----		-----	
602		-----		-----	
608		-----		-----	
609		-----		-----	
610		-----		-----	
614		-----		-----	
663	ISO6976	4810.590		-----	
823		-----		-----	
840	ISO6976	4794.3	E	-----	iis calculated 4807.757
851		-----		-----	
862	ISO6976	4808.56		-----	
868		-----		-----	
887		-----		-----	
922		-----		-----	
963		-----		-----	
974		-----		-----	
1006		-----		-----	
1029		-----		-----	
1081		-----		-----	
1095		-----		-----	
1106	ISO6976	35.31	Ex	-----	Result excluded: see §4.1, reported in a different unit, MJ/m^3?
1131		-----		-----	
1196		-----		-----	
1197		-----		-----	
1198		-----		-----	
1203		-----		-----	
1320		-----		-----	
1388		-----		-----	
1580		-----		-----	
1635		-----		-----	
1654		-----		-----	
1679		-----		-----	
1689		-----		-----	
1737		-----		-----	
1779		-----		-----	
1788		-----		-----	
1864		-----		-----	
1957		-----		-----	
6062		4807.03		-----	
6078	EN15984	2888	C,D(0.01),E	-----	Reported 2.888 KJ/100g, first reported 37.392, iis calculated 4806.859
6083		-----		-----	
6104		-----		-----	
6105		-----		-----	
6107	D3588	5283.571	C,D(0.05),E	-----	First reported 5319.186, iis calculated 4807.304
6110		-----		-----	
9145		-----		-----	
	normality	not OK			
	n	6			
	outliers	2 (+1 ex)			
	mean (n)	4805.067			
	st.dev. (n)	5.7026			
	R(calc.)	15.967			Compare R(iis16S01M) = 4.193

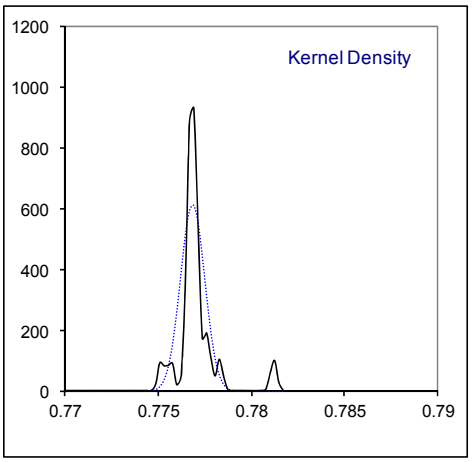

5500
5000
4500
4000
3500
3000
2500
2000
1106
6078
840
402
496
6062
862
663
6107


Kernel Density
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
2500
3000
3500
4000
4500
5000
5500

Determination of Density (101.325 kPa, comb. 25°C, metering temp. 0°C) on sample #17040; results in kg/m^3 (real gas)

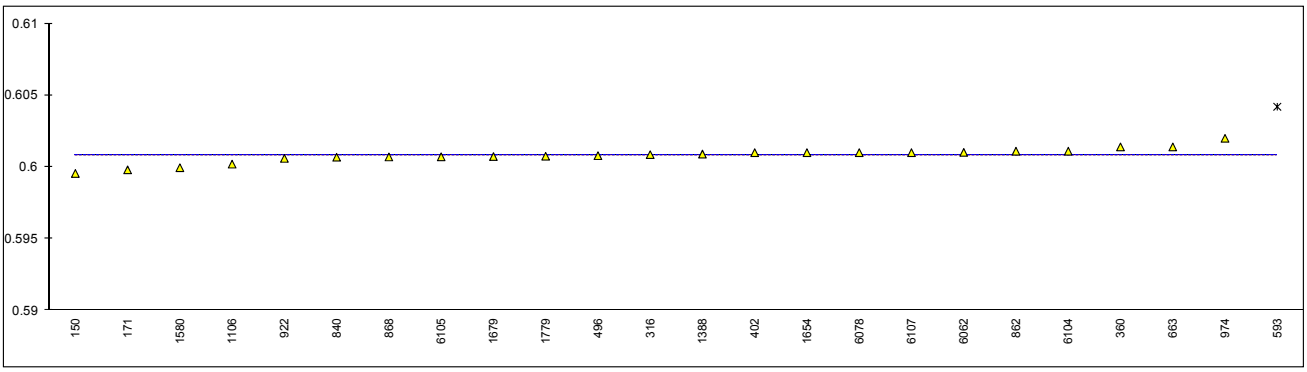
lab	method	value	mark	z(targ)	remarks
150	ISO6976	0.77517		-----	
171	D7833	307.59444	R(0.01)	-----	Probably reported in a different unit?
225		-----		-----	
316	ISO6976	0.77686		-----	
323		-----		-----	
352		-----		-----	
360	ISO6976	0.7777		-----	
402	ISO6976	0.7770		-----	
442		-----		-----	
444		-----		-----	
446		-----		-----	
449		-----		-----	
496	DIN51857	0.776775		-----	
552		-----		-----	
593	ISO6976	0.7812	Ex	-----	Result excluded: see §4.1
602		-----		-----	
608		-----		-----	
609		-----		-----	
610		-----		-----	
614		-----		-----	
663	ISO6976	0.77756		-----	
823		-----		-----	
840	ISO6976	0.77663		-----	
851		-----		-----	
862	ISO6976	0.7771		-----	
868	ISO6976	0.7767		-----	
887		-----		-----	
922	ISO6976	0.7765		-----	
963		-----		-----	
974	GPA2172	0.7783	E	-----	iis calculated 0.77684
1006		-----		-----	
1029		-----		-----	
1081		-----		-----	
1095		-----		-----	
1106	ISO6976	0.7352	R(0.05),E	-----	iis calculated 0.77702
1131		-----		-----	
1196		-----		-----	
1197		-----		-----	
1198		-----		-----	
1203		-----		-----	
1320		-----		-----	
1388	ISO6976	0.7769		-----	
1580	ISO6976	0.77568		-----	
1635		-----		-----	
1654	ISO6976	0.7768		-----	
1679	ISO6976	0.77669		-----	
1689		-----		-----	
1737		-----		-----	
1779	ISO6976	0.77673		-----	
1788		-----		-----	
1864		-----		-----	
1957		-----		-----	
6062	ISO6976	0.77707		-----	
6078	ISO6976	0.724	R(0.01),E	-----	iis calculated 0.77693
6083		-----		-----	
6104	ISO6976	0.7771		-----	
6105	ISO6976	0.77667		-----	
6107	D3588	0.777	C	-----	First reported 0.711
6110		-----		-----	
9145		-----		-----	
	normality	not OK			
	n	20			
	outliers	3 (+1 ex)			
	mean (n)	0.77685			
	st.dev. (n)	0.000649			
	R(calc.)	0.00182			Compare R(iis16S01M) = 0.00126

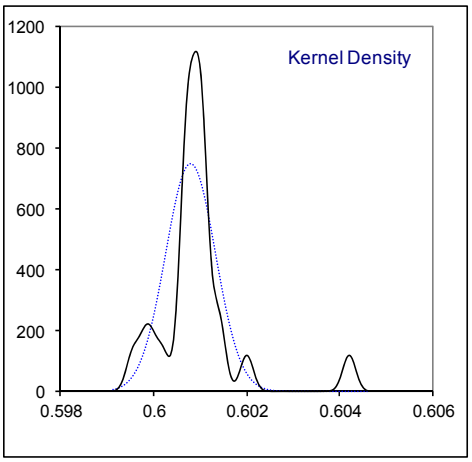

0.85
0.83
0.81
0.79
0.77
0.75
0.73
0.71
0.69
0.67
0.65
6078
1106
150
1580
922
840
6105
1679
868
1779
496
1654
316
1388
402
6107
6062
862
6104
663
360
974
593
171


Kernel Density
1200
1000
800
600
400
200
0
0.77
0.775
0.78
0.785
0.79

Determination of Relative Density (101.325 kPa, comb. temp. 25°C, metering temp. 0°C) on sample #17040; results have no unit (real gas)

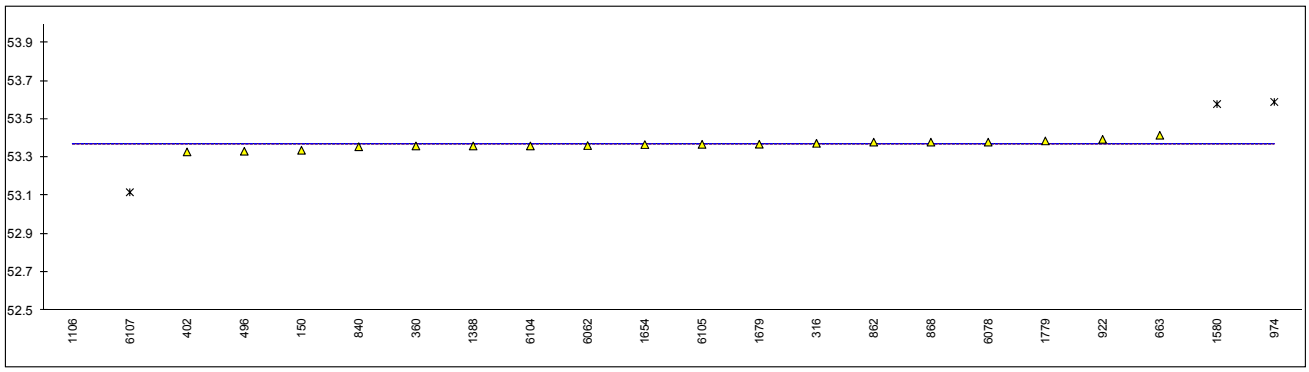
lab	method	value	mark	z(targ)	remarks
150	ISO6976	0.59955		-----	
171	D7833	0.5998	E	-----	iis calculated 0.60116
225		-----		-----	
316	ISO6976	0.60086		-----	
323		-----		-----	
352		-----		-----	
360	ISO6976	0.6014		-----	
402	ISO6976	0.6010		-----	
442		-----		-----	
444		-----		-----	
446		-----		-----	
449		-----		-----	
496	DIN51857	0.600790		-----	
552		-----		-----	
593	ISO6976	0.6042	ex	-----	Result excluded: see §4.1
602		-----		-----	
608		-----		-----	
609		-----		-----	
610		-----		-----	
614		-----		-----	
663	ISO6976	0.60140		-----	
823		-----		-----	
840	ISO6976	0.60068		-----	
851		-----		-----	
862	ISO6976	0.6011		-----	
868	ISO6976	0.6007		-----	
887		-----		-----	
922	ISO6976	0.6006		-----	
963		-----		-----	
974	GPA2172	0.6020	E	-----	iis calculated 0.60084
1006		-----		-----	
1029		-----		-----	
1081		-----		-----	
1095		-----		-----	
1106	ISO6976	0.6002		-----	
1131		-----		-----	
1196		-----		-----	
1197		-----		-----	
1198		-----		-----	
1203		-----		-----	
1320		-----		-----	
1388	ISO6976	0.6009		-----	
1580	ISO6976	0.59995		-----	
1635		-----		-----	
1654	ISO6976	0.601		-----	
1679	ISO6976	0.60073		-----	
1689		-----		-----	
1737		-----		-----	
1779	ISO6976	0.60075		-----	
1788		-----		-----	
1864		-----		-----	
1957		-----		-----	
6062	ISO6976	0.60102		-----	
6078	ISO6976	0.601		-----	
6083		-----		-----	
6104	ISO6976	0.6011		-----	
6105	ISO6976	0.60071		-----	
6107	D3588	0.601		-----	
6110		-----		-----	
9145		-----		-----	
	normality	suspect			
	n	23			
	outliers	0 (+1 ex)			
	mean (n)	0.60079			
	st.dev. (n)	0.000535			
	R(calc.)	0.00150			Compare R(iis16S01M) = 0.00097

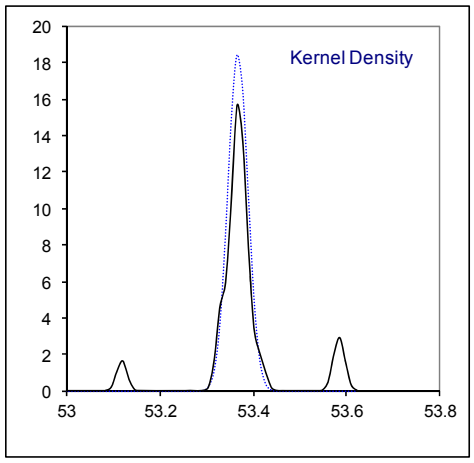

0.61
0.605
0.6
0.595
0.59
150
171
1580
1106
922
840
868
6105
1679
1779
496
316
1388
402
1654
6078
6107
6062
862
6104
360
663
974
593


Kernel Density
1200
1000
800
600
400
200
0
0.598
0.6
0.602
0.604
0.606

Determination of Wobbe Index (101.325 kPa , combustion temp. 25°C, metering temp. 0°C) on sample #17040; results in MJ/m^3 (real gas)

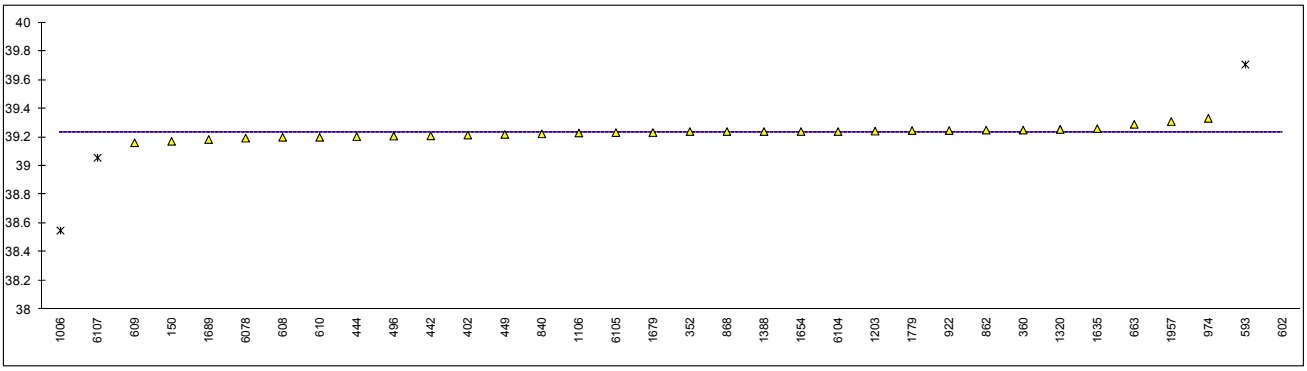
lab	method	value	mark	z(targ)	remarks
150	ISO6976	53.3376	E	-----	iis calculated 53.3546
171		-----		-----	
225		-----		-----	
316	ISO6976	53.3736		-----	
323		-----		-----	
352		-----		-----	
360	ISO6976	53.36		-----	
402	ISO6976	53.3290		-----	
442		-----		-----	
444		-----		-----	
446		-----		-----	
449		-----		-----	
496	DIN51857	53.3323		-----	
552		-----		-----	
593		-----		-----	
602		-----		-----	
608		-----		-----	
609		-----		-----	
610		-----		-----	
614		-----		-----	
663	ISO6976	53.416		-----	
823		-----		-----	
840	ISO6976	53.356		-----	
851		-----		-----	
862	ISO6976	53.38		-----	
868	ISO6976	53.38		-----	
887		-----		-----	
922	ISO6976	53.3945		-----	
963		-----		-----	
974	GPA2172	53.59	G(0.05),E	-----	iis calculated 53.4041
1006		-----		-----	
1029		-----		-----	
1081		-----		-----	
1095		-----		-----	
1106	ISO6976	50.53	G(0.01),E	-----	iis calculated 53.3562
1131		-----		-----	
1196		-----		-----	
1197		-----		-----	
1198		-----		-----	
1203		-----		-----	
1320		-----		-----	
1388	ISO6976	53.36		-----	
1580	ISO6976	53.579	G(0.05)	-----	
1635		-----		-----	
1654	ISO6976	53.367		-----	
1679	ISO6976	53.369		-----	
1689		-----		-----	
1737		-----		-----	
1779	ISO6976	53.3862		-----	
1788		-----		-----	
1864		-----		-----	
1957		-----		-----	
6062	ISO6976	53.362		-----	
6078	ISO6976	53.38	E	-----	iis calculated 53.3558
6083		-----		-----	
6104	ISO6976	53.36		-----	
6105	ISO6976	53.3685		-----	
6107	D3588	53.118	C,G(0.05),E	-----	First reported 48.202, iis calculated 53.3546
6110		-----		-----	
9145		-----		-----	
	normality	OK			
	n	18			
	outliers	4			
	mean (n)	53.3673			
	st.dev. (n)	0.02154			
	R(calc.)	0.0603			Compare R(iis16S01M) = 0.1017

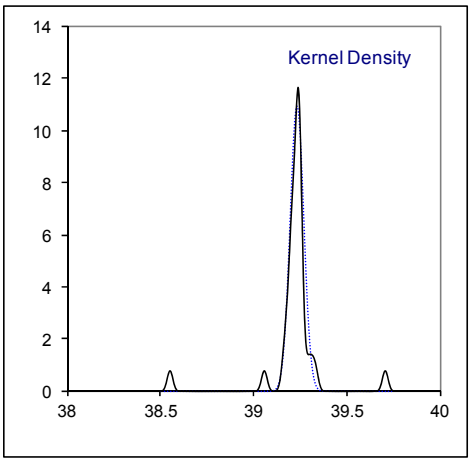

53.9
53.7
53.5
53.3
53.1
52.9
52.7
52.5
1106
6107
402
496
150
840
360
1388
6104
6062
1654
6105
1679
316
862
868
6078
1779
922
663
1580
974


Kernel Density
20
18
16
14
12
10
8
6
4
2
0
53
53.2
53.4
53.6
53.8

Determination of Caloric Value Superior (101.325 kPa, comb. temp. 15°C, metering temp 15°C) on sample #17040; results in MJ/m^3 (real gas)

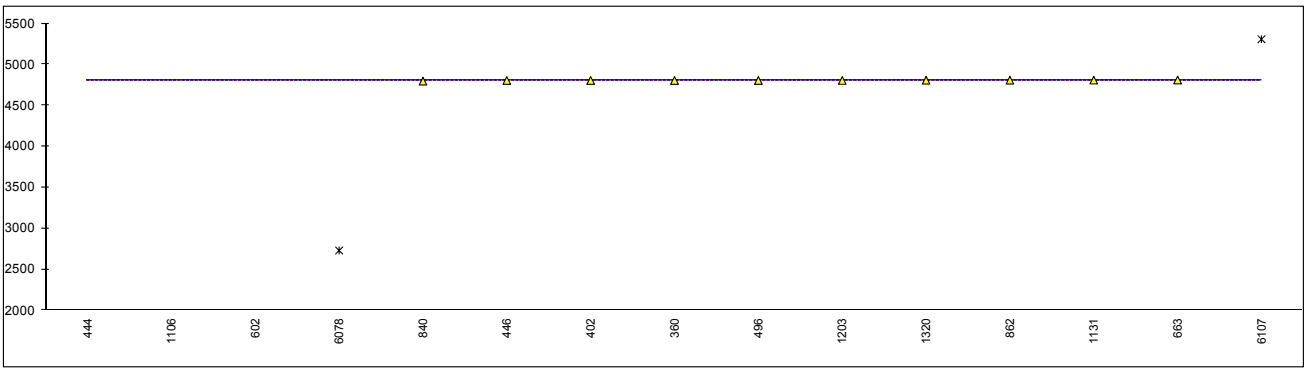
lab	method	value	mark	z(targ)	remarks
150	ISO6976	39.172	E	-----	iis calculated 39.198
171		-----		-----	
225		-----		-----	
316		-----		-----	
323		-----		-----	
352	ISO6976	39.24		-----	
360	ISO6976	39.25		-----	
402	ISO6976	39.2157		-----	
442	ISO6976	39.21		-----	
444	ISO6976	39.205		-----	
446		-----		-----	
449	ISO6976	39.22		-----	
496	DIN51857	39.2084		-----	
552		-----		-----	
593	ISO6976	39.707	ex,E	-----	Result excluded: see §4.1, iis calculated 39.644
602	GPA2172	1050.84	R(0.01)	-----	Reported unit = btu/ft3
608	ISO6976	39.20	E	-----	iis calculated 39.221
609	ISO6976	39.162	E	-----	iis calculated 39.226
610	ISO6976	39.20		-----	
614		-----		-----	
663	ISO6976	39.290		-----	
823		-----		-----	
840	ISO6976	39.224		-----	
851		-----		-----	
862	ISO6976	39.25		-----	
868	ISO6976	39.24		-----	
887		-----		-----	
922	ISO6976	39.2473		-----	
963		-----		-----	
974	GPA2172	39.332	E	-----	iis calculated 39.263
1006	D3588	38.55	R(0.01),E	-----	iis calculated 39.330
1029		-----		-----	
1081		-----		-----	
1095		-----		-----	
1106		39.23		-----	
1131		-----		-----	
1196		-----		-----	
1197		-----		-----	
1198		-----		-----	
1203	ISO6976	39.243		-----	
1320	ISO6976	39.255		-----	
1388	ISO6976	39.24		-----	
1580		-----		-----	
1635	ISO6976	39.260		-----	
1654	ISO6976	39.240		-----	
1679	ISO6976	39.233		-----	
1689	GB/T11062	39.1846		-----	
1737		-----		-----	
1779	ISO6976	39.2471		-----	
1788		-----		-----	
1864		-----		-----	
1957	ISO6976	39.31	E	-----	iis calculated 39.284
6062		-----		-----	
6078	ISO6976	39.194	E	-----	iis calculated 39.230
6083		-----		-----	
6104	ISO6976	39.24		-----	
6105	ISO6976	39.2326		-----	
6107	D3588	39.057	R(0.01),E	-----	iis calculated 39.224
6110		-----		-----	
9145		-----		-----	
	normality	suspect			
	n	30			
	outliers	3 (+1 ex)			
	mean (n)	39.2325			
	st.dev. (n)	0.03657			
	R(calc.)	0.1024			Compare R(iis16S01M) = 0.1402

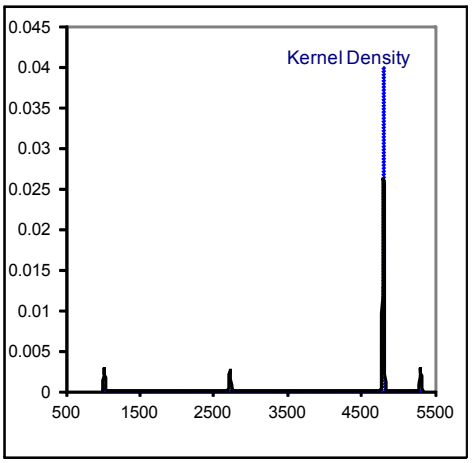

40
39.8
39.6
39.4
39.2
39
38.8
38.6
38.4
38.2
38
1006
6107
609
150
1689
6078
608
610
444
496
442
402
449
840
1106
6105
1679
352
868
1388
1654
6104
1203
1779
922
862
360
1320
1635
663
1957
974
593
602


Kernel Density
14
12
10
8
6
4
2
0
38
38.5
39
39.5
40

Determination of Caloric Value Inferior (101.325 kPa, comb. temp. 15°C, metering temp 15°C) on sample #17040; results in kJ/100g (real gas)

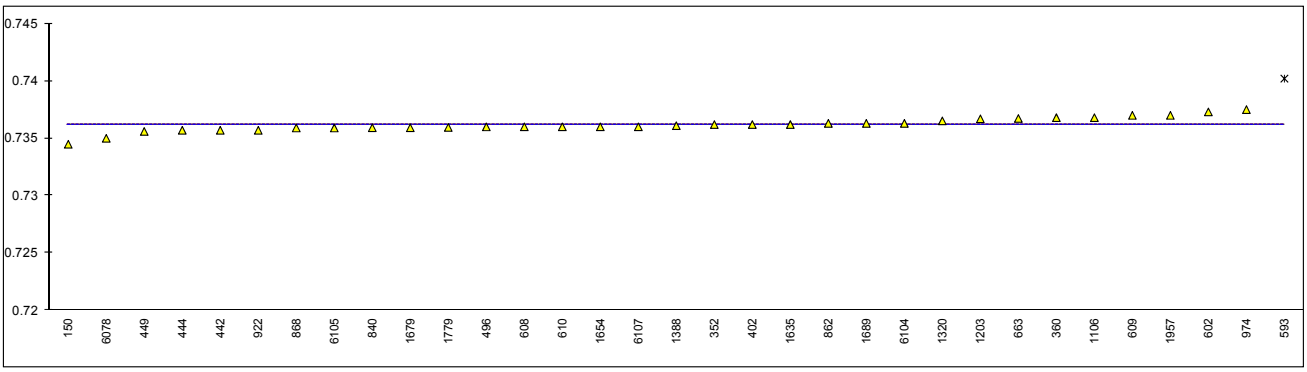
lab	method	value	mark	z(targ)	remarks
150		-----		-----	
171		-----		-----	
225		-----		-----	
316		-----		-----	
323		-----		-----	
352		-----		-----	
360	EN15984	4805.41		-----	
402	EN15984	4805.23		-----	
442		-----		-----	
444	ISO6976	35.366	DG(0.05)	-----	Reported unit = MJ/m^3
446	EN15984	4805.15	E	-----	iis calculated 4806.428
449		-----		-----	
496	EN15984	4805.4246		-----	
552		-----		-----	
593		-----		-----	
602	GPA2172	1032.9	DG(0.05)	-----	Reported unit = btu/ft3
608		-----		-----	
609		-----		-----	
610		-----		-----	
614		-----		-----	
663	EN15984	4810.854		-----	
823		-----		-----	
840	ISO6976	4797.3	E	-----	iis calculated 4808.306
851		-----		-----	
862	ISO6976	4809.13		-----	
868		-----		-----	
887		-----		-----	
922		-----		-----	
963		-----		-----	
974		-----		-----	
1006		-----		-----	
1029		-----		-----	
1081		-----		-----	
1095		-----		-----	
1106	EN15984	35.39	DG(0.05),E	-----	iis calculated 4807.153
1131	EN15984	4809.55		-----	
1196		-----		-----	
1197		-----		-----	
1198		-----		-----	
1203	ISO6976	4805.6		-----	
1320	EN15984	4808.2		-----	
1388		-----		-----	
1580		-----		-----	
1635		-----		-----	
1654		-----		-----	
1679		-----		-----	
1689		-----		-----	
1737		-----		-----	
1779		-----		-----	
1788		-----		-----	
1864		-----		-----	
1957		-----		-----	
6062		-----		-----	
6078	EN15984	2731	C,DG(0.05),E	-----	Reported 2.731 KJ/100g, first reported 35.358, iis calculated 4807.407
6083		-----		-----	
6104		-----		-----	
6105		-----		-----	
6107	D3588	5308.521	DG(0.05),E	-----	iis calculated 4807.852
6110		-----		-----	
9145		-----		-----	
	normality	not OK			
	n	10			
	outliers	5			
	mean (n)	4806.185			
	st.dev. (n)	3.7757			
	R(calc.)	10.572			Compare R(iis16S01M) = 125.72

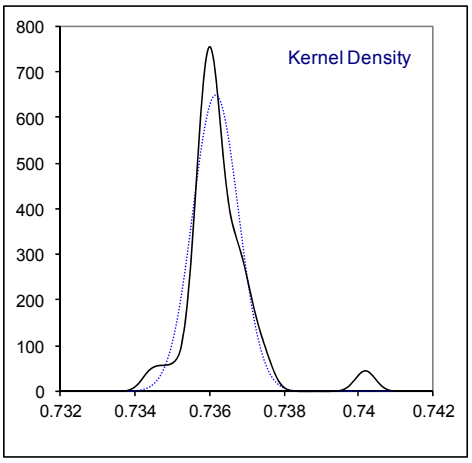

5500
5000
4500
4000
3500
3000
2500
2000
444
1106
602
6078
840
446
402
360
496
1203
1320
862
1131
663
6107


Kernel Density
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
500
1500
2500
3500
4500
5500

Determination of Density (101.325 kPa, combustion temp. 15°C, metering temp. 15°C) on sample #17040; results in kg/m^3 (real gas)

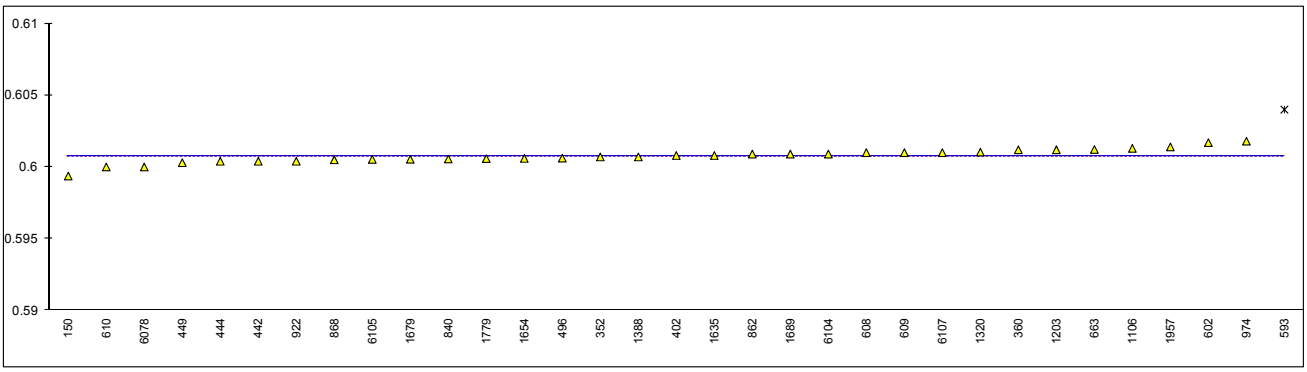
lab	method	value	mark	z(targ)	remarks
150	ISO6976	0.73448		-----	
171		-----		-----	
225		-----		-----	
316		-----		-----	
323		-----		-----	
352	ISO6976	0.7362		-----	
360	ISO6976	0.7368		-----	
402	ISO6976	0.7362		-----	
442	ISO6976	0.7357		-----	
444	ISO6976	0.7357		-----	
446		-----		-----	
449	ISO6976	0.7356		-----	
496	DIN51857	0.735997		-----	
552		-----		-----	
593	ISO6976	0.7402	ex	-----	Result excluded: see §4.1
602	GPA2172	0.7373		-----	
608	ISO6976	0.736		-----	
609	ISO6976	0.7370		-----	
610	ISO6976	0.736		-----	
614		-----		-----	
663	ISO6976	0.73673		-----	
823		-----		-----	
840	ISO6976	0.73592		-----	
851		-----		-----	
862	ISO6976	0.7363		-----	
868	ISO6976	0.7359		-----	
887		-----		-----	
922	ISO6976	0.7357		-----	
963		-----		-----	
974	GPA2172	0.7375	E	-----	iis calculated 0.73606
1006		-----		-----	
1029		-----		-----	
1081		-----		-----	
1095		-----		-----	
1106		0.7368		-----	
1131		-----		-----	
1196		-----		-----	
1197		-----		-----	
1198		-----		-----	
1203	ISO6976	0.7367		-----	
1320	ISO6976	0.73652		-----	
1388	ISO6976	0.7361		-----	
1580		-----		-----	
1635	ISO6976	0.7362		-----	
1654	ISO6976	0.736		-----	
1679	ISO6976	0.73592		-----	
1689	GB/T11062	0.7363		-----	
1737		-----		-----	
1779	ISO6976	0.73595		-----	
1788		-----		-----	
1864		-----		-----	
1957	ISO6976	0.7370		-----	
6062		-----		-----	
6078	ISO6976	0.735	E	-----	iis calculated 0.73615
6083		-----		-----	
6104	ISO6976	0.7363		-----	
6105	ISO6976	0.73590		-----	
6107	D3588	0.736		-----	
6110		-----		-----	
9145		-----		-----	
	normality	suspect			
	n	32			
	outliers	0 (+1 ex)			
	mean (n)	0.73618			
	st.dev. (n)	0.000613			
	R(calc.)	0.00172			Compare R(iis16S01M) = 0.00319

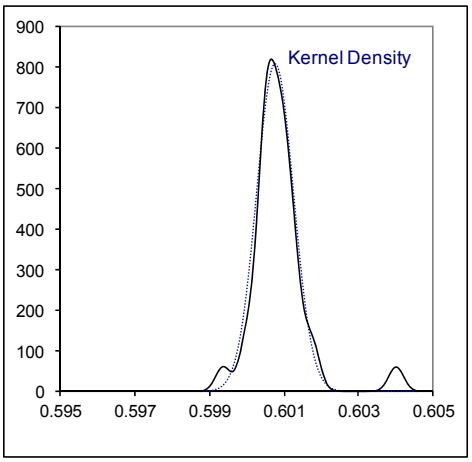

0.745
0.74
0.735
0.73
0.725
0.72
150
6078
449
444
442
922
868
6105
840
1679
1779
496
608
610
1654
6107
1388
352
402
1635
862
1689
6104
1320
1203
663
360
1106
609
1957
602
974
593


Kernel Density
800
700
600
500
400
300
200
100
0
0.732
0.734
0.736
0.738
0.74
0.742

Determination of Relative Density (101.325 kPa, comb. temp. 15°C, metering temp. 15°C) on sample #17040; results have no unit (real gas)

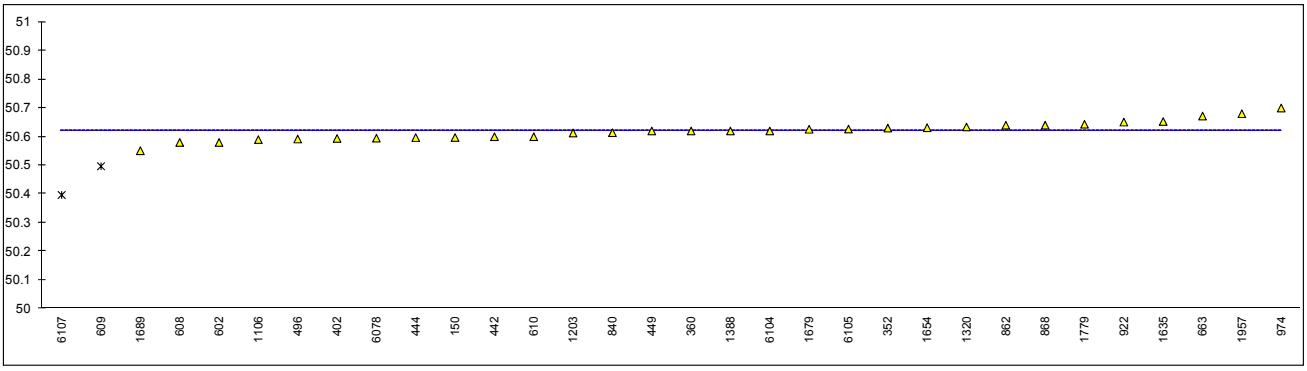
lab	method	value	mark	z(targ)	remarks
150	ISO6976	0.59937		-----	
171		-----		-----	
225		-----		-----	
316		-----		-----	
323		-----		-----	
352	ISO6976	0.6007		-----	
360	ISO6976	0.6012		-----	
402	ISO6976	0.6008		-----	
442	ISO6976	0.6004		-----	
444	ISO6976	0.6004		-----	
446		-----		-----	
449	ISO6976	0.6003		-----	
496	DIN51857	0.600613		-----	
552		-----		-----	
593	ISO6976	0.6040	ex	-----	Result excluded: see §4.1
602	GPA2172	0.6017		-----	
608	ISO6976	0.601		-----	
609	ISO6976	0.601		-----	
610	ISO6976	0.600		-----	
614		-----		-----	
663	ISO6976	0.60122		-----	
823		-----		-----	
840	ISO6976	0.60056		-----	
851		-----		-----	
862	ISO6976	0.6009		-----	
868	ISO6976	0.6005		-----	
887		-----		-----	
922	ISO6976	0.6004		-----	
963		-----		-----	
974	GPA2172	0.6018	E	-----	iis calculated 0.60066
1006		-----		-----	
1029		-----		-----	
1081		-----		-----	
1095		-----		-----	
1106		0.6013		-----	
1131		-----		-----	
1196		-----		-----	
1197		-----		-----	
1198		-----		-----	
1203	ISO6976	0.6012		-----	
1320	ISO6976	0.60104		-----	
1388	ISO6976	0.6007		-----	
1580		-----		-----	
1635	ISO6976	0.6008		-----	
1654	ISO6976	0.6006		-----	
1679	ISO6976	0.60054		-----	
1689	GB/T11062	0.6009		-----	
1737		-----		-----	
1779	ISO6976	0.60058		-----	
1788		-----		-----	
1864		-----		-----	
1957	ISO6976	0.6014		-----	
6062		-----		-----	
6078	ISO6976	0.600		-----	
6083		-----		-----	
6104	ISO6976	0.6009		-----	
6105	ISO6976	0.60053		-----	
6107	D3588	0.601		-----	
6110		-----		-----	
9145		-----		-----	
	normality	suspect			
	n	32			
	outliers	0 (+1 ex)			
	mean (n)	0.60076			
	st.dev. (n)	0.000494			
	R(calc.)	0.00138			Compare R(iis16S01M) = 0.00127

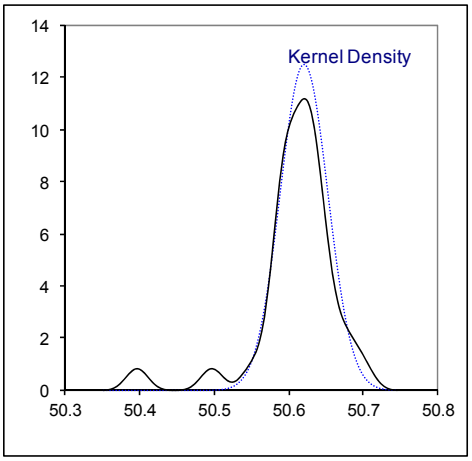

0.61
0.605
0.6
0.595
0.59
150
610
6078
449
444
442
922
868
6105
1679
840
1779
1654
496
352
1388
402
1635
862
1689
6104
608
609
6107
1320
360
1203
663
1106
1957
602
974
593


Kernel Density
900
800
700
600
500
400
300
200
100
0
0.595
0.597
0.599
0.601
0.603
0.605

Determination of Wobbe Index (101.325 kPa, combustion temp. 15°C, metering temp. 15°C) on sample #17040; results in MJ/m^3

lab	method	value	mark	z(targ)	remarks
150	ISO6976	50.5971	E	-----	iis calculated 50.6131
171		-----		-----	
225		-----		-----	
316		-----		-----	
323		-----		-----	
352	ISO6976	50.63	E	-----	iis calculated 50.6157
360	ISO6976	50.62		-----	
402	ISO6976	50.5939		-----	
442	ISO6976	50.60		-----	
444	ISO6976	50.597		-----	
446		-----		-----	
449	ISO6976	50.62		-----	
496	DIN51857	50.5919		-----	
552		-----		-----	
593		-----		-----	
602	ISO6976	50.58		-----	
608	ISO6976	50.58	E	-----	iis calculated 50.5950
609	ISO6976	50.497	R(0.05),E	-----	iis calculated 50.5863
610	ISO6976	50.60		-----	
614		-----		-----	
663	ISO6976	50.672		-----	
823		-----		-----	
840	ISO6976	50.614		-----	
851		-----		-----	
862	ISO6976	50.64		-----	
868	ISO6976	50.64		-----	
887		-----		-----	
922	ISO6976	50.6510		-----	
963		-----		-----	
974	GPA2172	50.70	E	-----	iis calculated 50.6600
1006		-----		-----	
1029		-----		-----	
1081		-----		-----	
1095		-----		-----	
1106		50.59	E	-----	iis calculated 50.6146
1131		-----		-----	
1196		-----		-----	
1197		-----		-----	
1198		-----		-----	
1203	ISO6976	50.613		-----	
1320	ISO6976	50.634		-----	
1388	ISO6976	50.62		-----	
1580		-----		-----	
1635	ISO6976	50.653		-----	
1654	ISO6976	50.6314		-----	
1679	ISO6976	50.626		-----	
1689	GB/T11062	50.5511		-----	
1737		-----		-----	
1779	ISO6976	50.6434		-----	
1788		-----		-----	
1864		-----		-----	
1957	ISO6976	50.68		-----	
6062		-----		-----	
6078	ISO6976	50.595	E	-----	iis calculated 50.6143
6083		-----		-----	
6104	ISO6976	50.62		-----	
6105	ISO6976	50.6266		-----	
6107	D3588	50.397	R(0.01),E	-----	iis calculated 50.6131
6110		-----		-----	
9145		-----		-----	
	normality	OK			
	n	30			
	outliers	2			
	mean (n)	50.6203			
	st.dev. (n)	0.03189			
	R(calc.)	0.0893			Compare R(iis16S01M) = 0.1735


51
50.9
50.8
50.7
50.6
50.5
50.4
50.3
50.2
50.1
50
6107
609
1689
608
602
1106
496
402
6078
444
150
442
610
1203
840
449
360
1388
6104
1679
6105
352
1654
1320
862
868
1779
922
1635
663
1957
974


Kernel Density
14
12
10
8
6
4
2
0
50.3
50.4
50.5
50.6
50.7
50.8

APPENDIX 2

Number of participants in the Natural Gas PT

1 lab in AUSTRALIA
1 lab in BELGIUM
1 lab in BRAZIL
1 lab in BRUNEI
1 lab in BULGARIA
1 lab in CANADA
8 labs in CHINA, People's Republic
1 lab in COTE D'IVOIRE
1 lab in CROATIA
2 labs in ECUADOR
1 lab in FRANCE
2 labs in GERMANY
1 lab in HONG KONG
1 lab in HUNGARY
1 lab in LITHUANIA
10 labs in MALAYSIA
2 labs in NETHERLANDS
1 lab in PAKISTAN
3 labs in PORTUGAL
2 labs in ROMANIA
1 lab in SAUDI ARABIA
2 labs in SLOVAKIA
1 lab in SOUTH KOREA
2 labs in TAIWAN
2 labs in THAILAND
2 labs in TURKEY
1 lab in UNITED ARAB EMIRATES
4 labs in UNITED KINGDOM
2 labs in UNITED STATES OF AMERICA
1 lab in VIETNAM

APPENDIX 3

Abbreviations:

C	= final test result after checking of first reported suspect test result
D(0.01)	= outlier in Dixon's outlier test
D(0.05)	= straggler in Dixon's outlier test
G(0.01)	= outlier in Grubbs' outlier test
G(0.05)	= straggler in Grubbs' outlier test
DG(0.01)	= outlier in Double Grubbs' outlier test
DG(0.05)	= straggler in Double Grubbs' outlier test
R(0.01)	= outlier in Rosner's outlier test
R(0.05)	= straggler in Rosner's outlier test
E	= probably an error in calculations
U	= test result probably reported in a different unit
W	= test result withdrawn on request of participant
ex	= test result excluded from the statistical evaluation
n.a.	= not applicable
n.e.	= not evaluated
n.d.	= not detected
fr.	= first reported
SDS	= Safety Data Sheet

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