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2025 Quantitative Chemical (Ethanol) Proficiency Test
FTS-25-QUANT1 Summary Report

The Submission Deadline for this test was July 25, 2025

The test was manufactured by FTS at the FTS Laboratory Facility (127 Grand River Avenue, Williamston, MI 48895) and all activities were coordinated by Rebecca Smith (rsmith@forsci.com), Proficiency Test Program Manager. Ms. Smith is also authorizing the release of this report. This is the summary report issued on 8/14/25. No activities were subcontracted in regards to this test. FTS considers all reports confidential and does not release information regarding participant's results without authorization from that participant.

Summary

Test results were received in 74 of 89 tests distributed (83% response rate). Responses for UTICs p20252736 and p20252737 did not meet the requirements for statistical evaluation for Items 1 and 2, so these results were not utilized in the calculation of the test statistics. Responses for UTICs p20252702, p20252758, and p20252761 did not meet the requirements for statistical evaluation for Item 1 and will not be utilized in the statistics. Responses for UTICs p20252708 and p20252766 did not meet the requirements for statistical evaluation for Item 2 and will not be utilized in the statistics.

Summary statistics of participant's responses are as follows:

	Item 1 (27%)	Item 2 (5%)
Mean	27.65%	4.97%
Median	27.70%	4.99%
Maximum	29.10%	5.20%
Minimum	26.30%	4.63%
Robust mean (H15)	27.65%	4.97%
Robust standard deviation (H15)	0.52%	0.12%
Assigned Value (X_{pt})	27.65%	4.97%
Target standard deviation (σ_{pt})	1.94%	0.35%
Expanded uncertainty of the assigned value ($U(X_{pt})$)	0.16%	0.04%
Mean of participant's reported measurement uncertainties (k=2)	1.30%	0.24%
Median of participant's reported measurement uncertainties (k=2)	1.09%	0.20%
Participants with $|z\text{-score}|(z_i)$ <2	69 of 69 (100%)	70 of 70 (100%)
Participants with $|z\text{-score}|(z_i)$ >2 &≤3	0 of 69 (0%)	0 of 70 (0%)
Participants with $|z\text{-score}|(z_i)$ >3	0 of 69 (0%)	0 of 70 (0%)
Participants with $|E_n\text{-score}|(E_n)_i$≤1	67 of 69 (97%)	65 of 70 (93%)
Participants with $|E_n\text{-score}|(E_n)_i$>1	2 of 69 (3%)	5 of 70 (7%)

Robust statistics were calculated by utilizing an Excel Add-In provided by the Royal Society of Chemistry (http://www.rsc.org/membership/networking/interestgroups/analytical/amc/software/RobustStatistics.asp). The statistical methods, participant's responses, z-scores and E_n-scores are summarized below.

Statistical Methods

Invalid results or Extreme Outliers
Results that are identifiably invalid (e.g. expressed in the wrong units, transpositions and other gross errors) or are extreme outliers (e.g. outside the range of 3Sd of the mean of reported values) may be excluded before any statistical calculations.

Assigned Value
For this proficiency test, assigned value is calculated as the robust mean using the procedure described in "ISO 13528:2022, Statistical methods for use in proficiency testing by interlaboratory comparisons – Annex C".

Between-Laboratory Coefficient of Variation
The between-laboratory coefficient of variation is a measure of the between laboratory variation that in the judgment of the study coordinator would be expected from participants given the analyte concentration. It is important to note this is not the coefficient of variation of participant results. For the purpose of this proficiency test, this figure will be 7% for Item 1 and Item 2.

Target Standard Deviation
The target standard deviation (σ_{pt}) is the product of the assigned value (X_{pt}) and the between laboratory coefficient of variation (CV) as presented in Equation 1. This value is used for calculation of participant z-scores.
Equation 1: $\sigma_{pt} = X_{pt} * CV$

z-Score
For each participant result a z-score is calculated according to Equation 2 below:
Equation 2: $Z_i = \dfrac{(X_i - X_{pt})}{\sigma_{pt}}$
where:
z_i = z-score

X_i = participant result
X_{pt} = the study assigned value
σ_{pt} = the target standard deviation from *Equation 1*

E_n-score
The E_n-score is complementary to the z-score in assessment of laboratory performance.
En-score includes measurement uncertainty and is calculated according to Equation 3 below:

Equation 3:
$(E_n)_i = \dfrac{(X_i - X_{pt})}{\sqrt{U(X_i)^2 + U(X_{pt})^2}}$
where:
$(E_n)_i$ = En-score
X_i = participant result
X_{pt} = the study assigned value
$U(X_i)$ = the expanded uncertainty of the participant's result
$U(X_{pt})$ = the expanded uncertainty of the assigned value

The consensus of participants' results is not traceable to any external reference, so although expressed in SI units, metrological traceability has not been established.

The uncertainty is estimated as:
$u(X_{pt})$ = 1.25 x S* / $\sqrt{p}$
where:
$u(X_{pt})$ = robust mean standard uncertainty
S* = robust mean standard deviation
p = number of results

The expanded uncertainty ($U(X_{pt})$) is the standard uncertainty multiplied by a coverage factor of 2, a level of confidence of approximately 95%.

Criteria for the evaluation of performance of participants
Evaluation of participant's performance is the responsibility of the subscriber and the accreditation body (if applicable) based on comparison of the participant's result to the consensus responses. FTS does not evaluate participant's performance. Typically, z-scores and E_n-scores are evaluated using the following criteria:

z-score with absolute value ($|z_i|$):
$|z_i|$ ≤2 is satisfactory;
$|z_i|$ > 2 ≤3 is questionable;
$|z_i|$ > 3 is unsatisfactory.

E_n-score with absolute value ($|(E_n)_i|$):
$|(E_n)_i|$ ≤1 is satisfactory;
$|(E_n)_i|$ >1 is unsatisfactory.

Again, FTS does not perform this evaluation. For the convenience of subscribers, Responses with $|z_i|$ of greater than 2 or $|(E_n)_i|$ greater than 1 are highlighted in the summary report.

In general terms, the z-score provides a measure of how close the reported value is to the assigned value, with no relation to the reported uncertainty. The E_n-score provides a measure of how close the reported value is to the assigned value, considering the reported uncertainty. A participant that has a satisfactory z-score but an unsatisfactory En-score should evaluate whether their reported measurement uncertainty is sufficient.
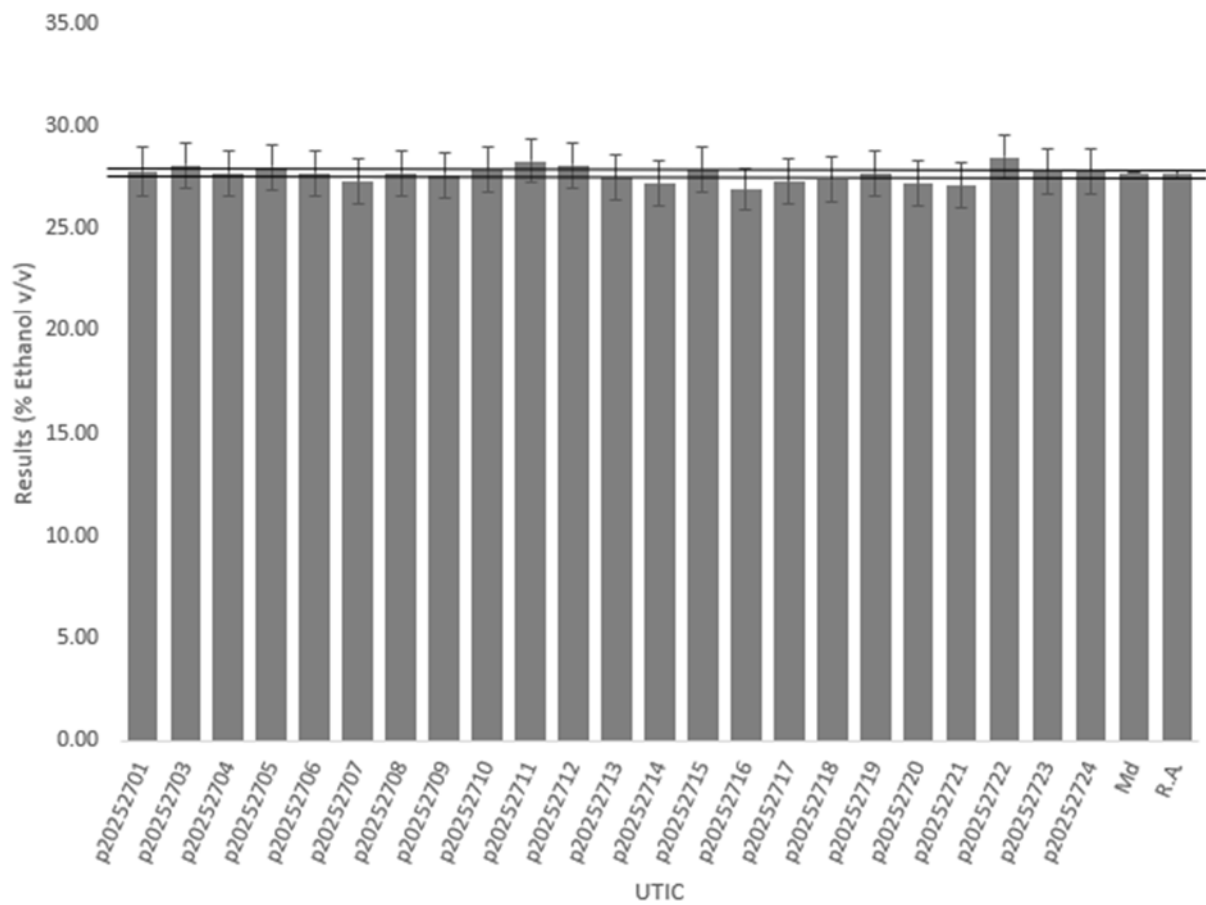
Summary of Participant's Responses: Formatted for Statistical Analysis (Uncertainties Recalculated to k=2):

UTIC	Webcode	Item 1 reported %	Item 1 Uncert. (% @ k=2)	Item 1: Z-score (zi)	Item 1: |En|score (En)i	Item 2 reported %	Item 2 Uncert. (% @ k=2)	Item 2: Z-score (zi)	Item 2: |En|score (En)i
p20252701	W049	27.80	1.20	0.08	0.12	5.00	0.60	0.09	0.05
p20252702	W163	N/A	N/A	N/A	N/A	5.10	0.00	0.37	2.91
p20252703	W088	28.10	1.09	0.23	0.41	5.09	0.19	0.34	0.60
p20252704	W088	27.70	1.09	0.03	0.05	5.01	0.19	0.11	0.20
p20252705	W088	28.00	1.09	0.18	0.32	5.00	0.19	0.09	0.15
p20252706	W088	27.70	1.09	0.03	0.05	4.99	0.19	0.06	0.10
p20252707	W088	27.30	1.09	-0.18	0.32	5.09	0.19	0.34	0.60
p20252708	W088	27.70	1.09	0.03	0.05	N/A	N/A	N/A	N/A
p20252709	W088	27.60	1.09	-0.03	0.05	4.89	0.19	-0.23	0.42
p20252710	W088	27.90	1.09	0.13	0.23	5.04	0.19	0.20	0.35
p20252711	W088	28.30	1.09	0.34	0.59	5.08	0.19	0.31	0.55
p20252712	W088	28.10	1.09	0.23	0.41	4.95	0.19	-0.06	0.10
p20252713	W088	27.50	1.09	-0.08	0.14	4.95	0.19	-0.06	0.10
p20252714	W088	27.20	1.09	-0.23	0.41	4.85	0.19	-0.34	0.63
p20252715	W088	27.90	1.09	0.13	0.23	4.98	0.19	0.03	0.05
p20252716	W088	26.90	1.01	-0.39	0.73	4.85	0.19	-0.34	0.63
p20252717	W088	27.30	1.09	-0.18	0.32	4.94	0.19	-0.09	0.15
p20252718	W088	27.40	1.09	-0.13	0.23	4.89	0.19	-0.23	0.42
p20252719	W088	27.70	1.09	0.03	0.05	4.95	0.19	-0.06	0.10
p20252720	W088	27.20	1.09	-0.23	0.41	4.90	0.19	-0.20	0.35
p20252721	W088	27.10	1.09	-0.28	0.50	4.63	0.18	-0.97	1.85
p20252722	W088	28.50	1.09	0.44	0.77	5.13	0.20	0.46	0.77
p20252723	W088	27.80	1.09	0.08	0.14	5.05	0.19	0.23	0.40
p20252724	W088	27.80	1.09	0.08	0.14	5.00	0.19	0.09	0.15
p20252725	W088	27.50	1.09	-0.08	0.14	5.06	0.19	0.26	0.45
p20252726	W088	27.50	1.09	-0.08	0.14	4.98	0.19	0.03	0.05
p20252727	W088	27.90	1.09	0.13	0.23	5.07	0.19	0.29	0.50
p20252728	W088	28.30	1.09	0.34	0.59	5.16	0.20	0.54	0.92
p20252733	W092	27.20	1.10	-0.23	0.40	5.00	0.20	0.09	0.15
p20252735	W031	26.87	1.67	-0.40	0.46	4.89	0.31	-0.23	0.26
p20252738	W044	26.30	2.27	-0.70	0.59	4.97	0.43	0.00	0.00
p20252739	W114	27.30	1.47	-0.18	0.24	5.00	0.33	0.09	0.09
p20252740	W114	27.60	1.47	-0.03	0.03	4.90	0.27	-0.20	0.26
p20252741	W114	29.10	1.53	0.75	0.94	4.90	0.27	-0.20	0.26
p20252742	W114	28.00	1.47	0.18	0.24	4.90	0.27	-0.20	0.26
p20252743	W114	28.70	1.53	0.54	0.68	4.90	0.27	-0.20	0.26
p20252744	W114	27.30	1.47	-0.18	0.24	4.80	0.27	-0.49	0.63

UTIC	Webcode	Item 1 reported %	Item 1 Uncert. (% @ k=2)	Item 1: Z-score (zi)	Item 1: |En|score (En)i	Item 2 reported %	Item 2 Uncert. (% @ k=2)	Item 2: Z-score (zi)	Item 2: |En|score (En)i
p20252745	W114	27.80	1.47	0.08	0.10	4.80	0.27	-0.49	0.63
p20252746	W114	27.30	1.47	-0.18	0.24	5.00	0.33	0.09	0.09
p20252747	W114	27.70	1.47	0.03	0.03	4.80	0.27	-0.49	0.63
p20252749	W190	27.70	1.47	0.03	0.03	4.90	0.27	-0.20	0.26
p20252750	W190	27.10	1.47	-0.28	0.37	4.90	0.27	-0.20	0.26
p20252751	W190	27.70	1.47	0.03	0.03	5.10	0.33	0.37	0.39
p20252752	W190	27.30	1.47	-0.18	0.24	4.90	0.27	-0.20	0.26
p20252753	W190	28.20	1.47	0.28	0.37	5.00	0.40	0.09	0.07
p20252754	W190	27.20	1.47	-0.23	0.30	4.90	0.27	-0.20	0.26
p20252755	W190	27.10	1.47	-0.28	0.37	4.80	0.27	-0.49	0.63
p20252756	W190	27.30	1.47	-0.18	0.24	4.80	0.27	-0.49	0.63
p20252757	W190	27.20	1.47	-0.23	0.30	5.00	0.33	0.09	0.09
p20252758	W002	N/A	N/A	N/A	N/A	4.90	0.20	-0.20	0.34
p20252761	W110	N/A	N/A	N/A	N/A	5.20	0.27	0.66	0.85
p20252762	W110	28.00	1.33	0.18	0.26	5.00	0.27	0.09	0.11
p20252766	W110	27.90	1.33	0.13	0.19	N/A	N/A	N/A	N/A
p20252769	W110	26.50	1.27	-0.59	0.90	4.80	0.27	-0.49	0.63
p20252770	W082	27.50	2.00	-0.08	0.07	5.10	0.40	0.37	0.32
p20252771	W172	27.00	3.00	-0.34	0.22	4.70	0.50	-0.77	0.54
p20252772	W096	27.80	0.98	0.08	0.15	5.05	0.17	0.23	0.47
p20252775	W206	26.30	2.10	-0.70	0.64	4.70	0.30	-0.77	0.89
p20252776	W116	27.50	1.73	-0.08	0.09	5.10	0.33	0.37	0.39
p20252777	W116	28.30	1.80	0.34	0.36	4.90	0.33	-0.20	0.21
p20252778	W025	26.70	0.20	-0.49	3.70	4.70	0.07	-0.77	3.36
p20252779	W256	28.20	0.00	0.28	3.41	5.00	0.00	0.09	0.67
p20252780	W070	28.10	0.93	0.23	0.48	5.10	0.20	0.37	0.63
p20252781	W070	27.60	0.87	-0.03	0.06	5.10	0.13	0.37	0.92
p20252782	W070	28.20	0.93	0.28	0.58	5.00	0.20	0.09	0.15
p20252783	W070	27.40	0.87	-0.13	0.28	5.00	0.13	0.09	0.21
p20252784	W055	28.70	1.90	0.54	0.55	4.99	0.33	0.06	0.06
p20252785	W055	27.40	1.80	-0.13	0.14	5.01	0.33	0.11	0.12
p20252786	W055	29.10	1.90	0.75	0.76	4.88	0.32	-0.26	0.28
p20252787	W055	28.70	1.90	0.54	0.55	5.03	0.33	0.17	0.18
p20252788	W004	28.00	1.00	0.18	0.35	5.10	0.10	0.37	1.19
p20252789	W037	27.94	1.09	0.15	0.26	5.19	0.20	0.63	1.07

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Item 1: Ethanol (27%)- Graph 1   **Assigned Value =27.65% +/- 0.16% (k=2)**
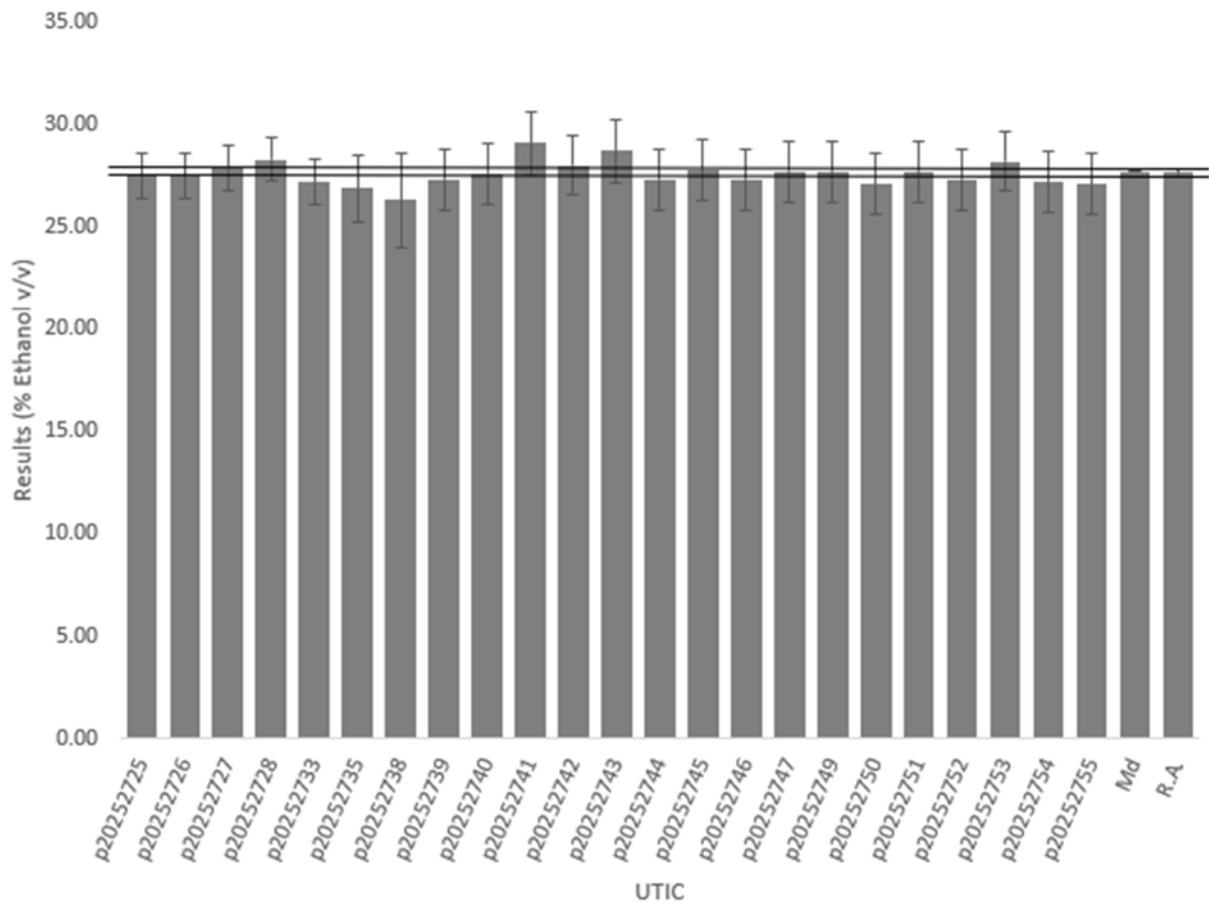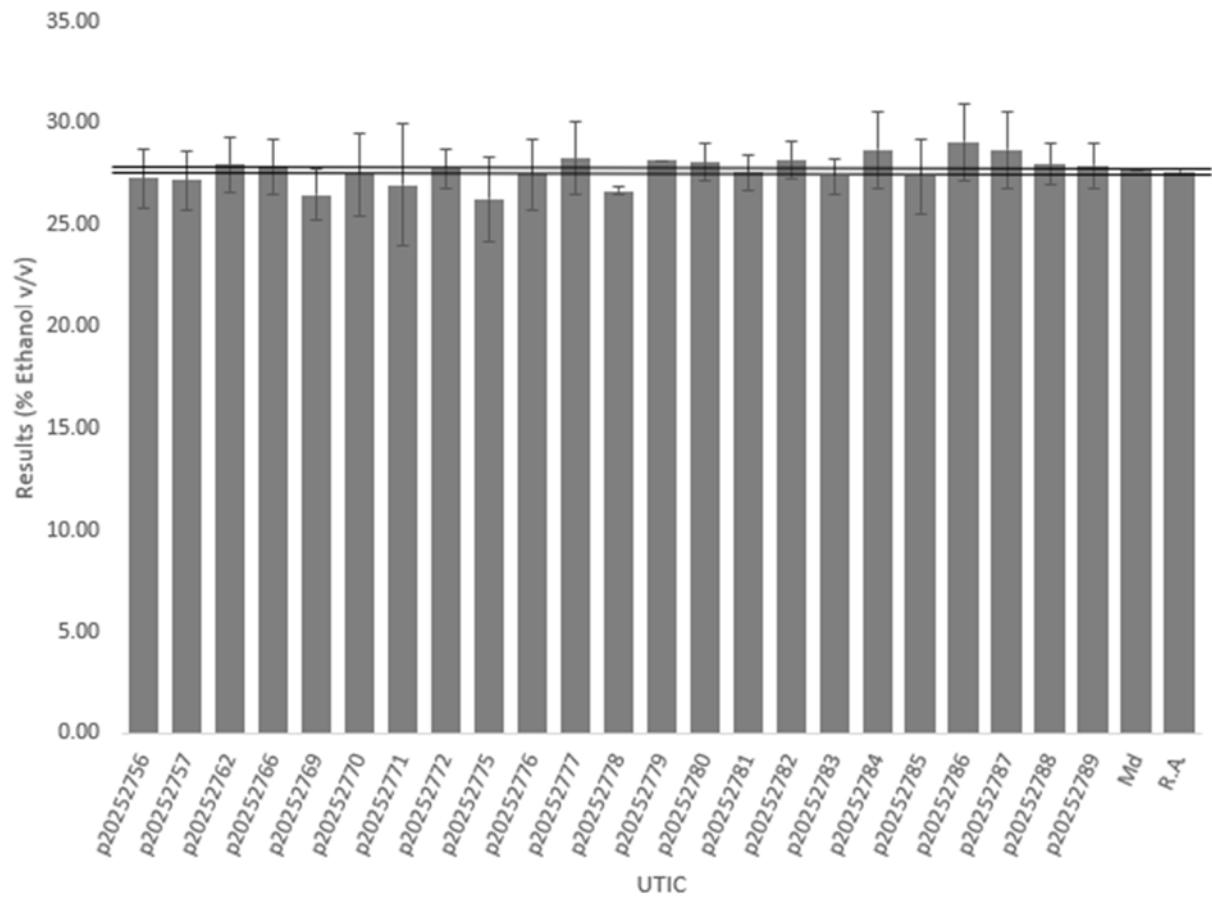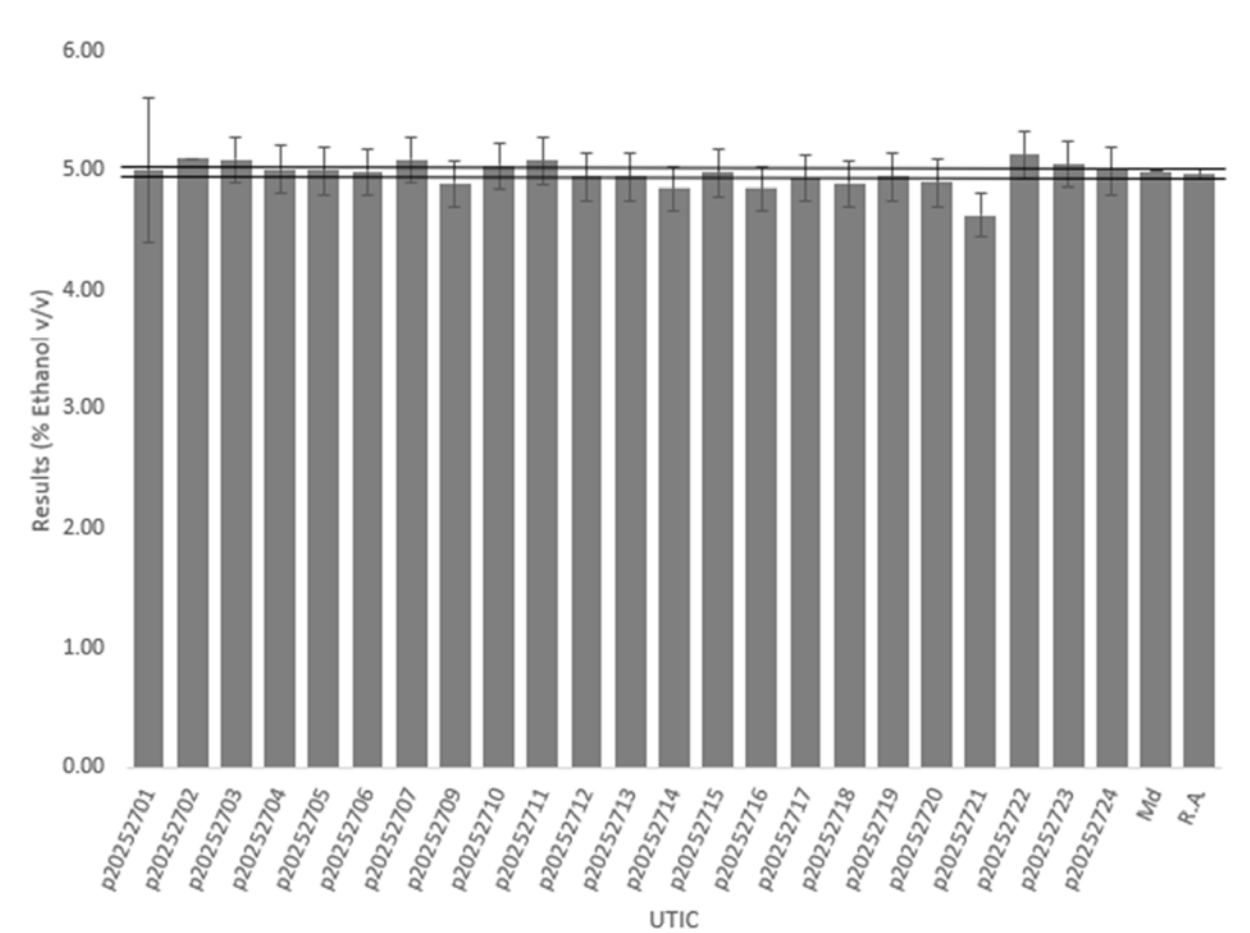

Error bars represent participant's stated uncertainty (k=2).

Independent estimates of analyte concentration with associated uncertainties (k=2):
Md = Robust Median
R.A. = Robust Average

Item 1: Ethanol (27%)- Graph 2   **Assigned Value = 27.65% +/- 0.16% (k=2)**

Error bars represent participant's stated uncertainty (k=2).

Independent estimates of analyte concentration with associated uncertainties (k=2):
Md = Robust Median
R.A. = Robust Average

Item 1: Ethanol (27%)- Graph 3   **Assigned Value = 27.65% +/- 0.16% (k=2)**
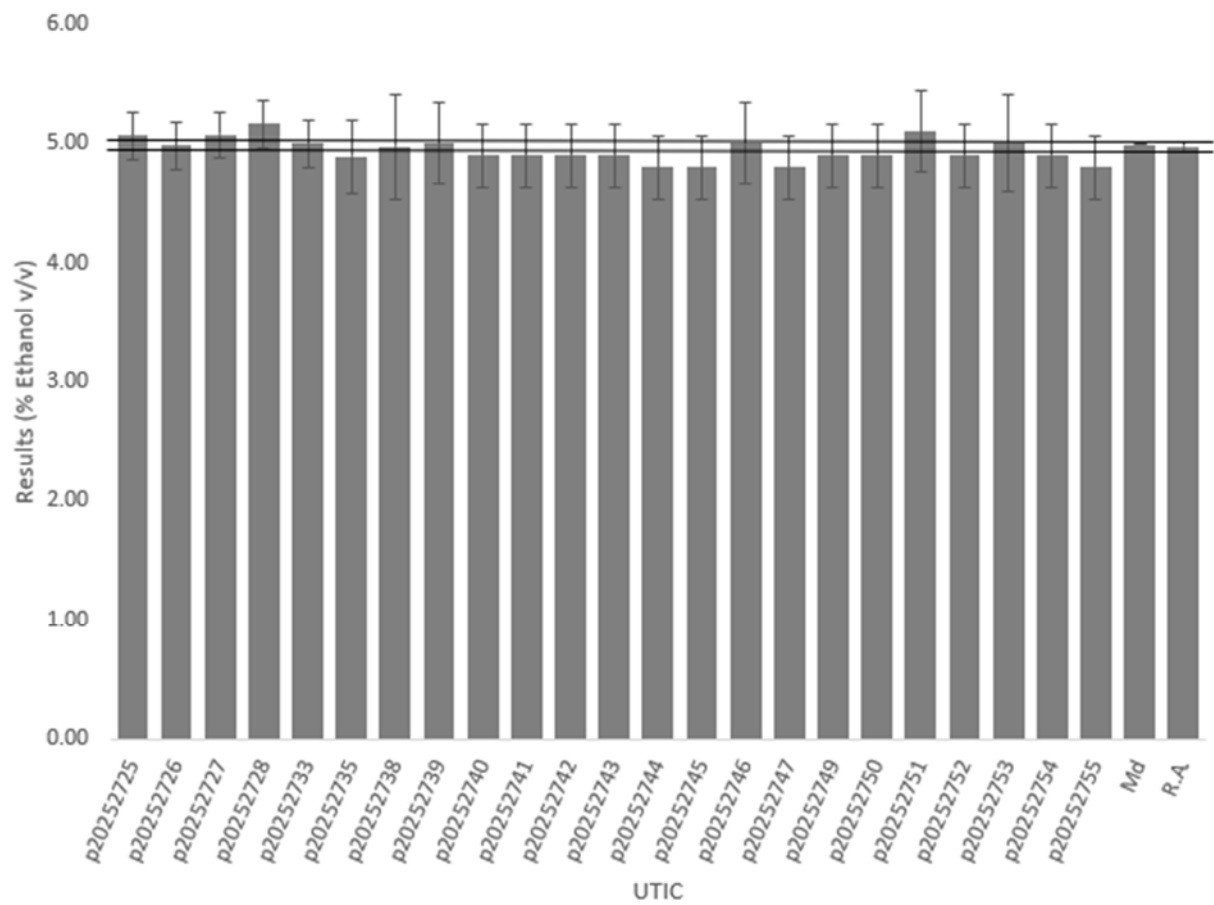

Error bars represent participant's stated uncertainty (k=2).

Independent estimates of analyte concentration with associated uncertainties (k=2):
Md = Robust Median
R.A. = Robust Average

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Item 2: Ethanol (5%)- Graph 1   **Assigned Value = 4.97% +/- 0.04% (k=2)**
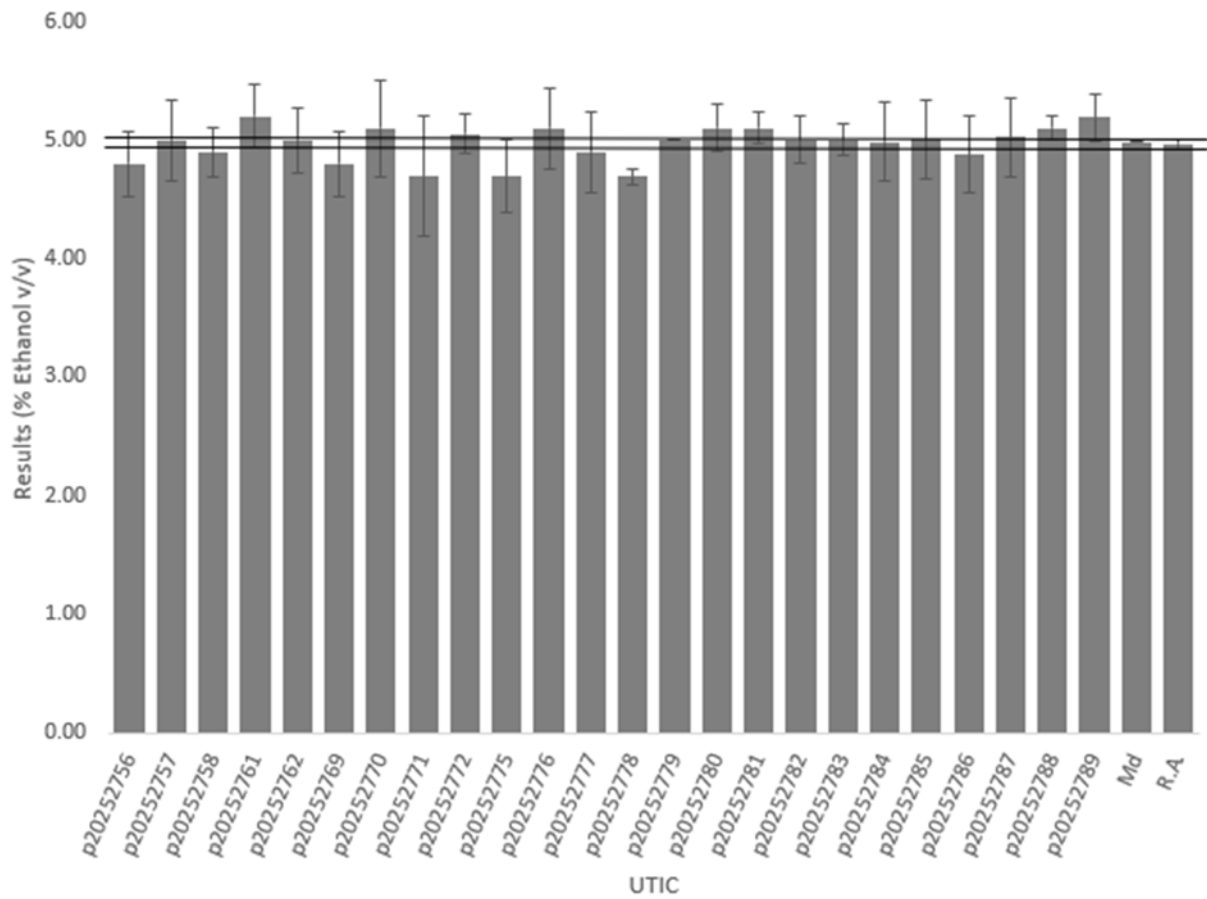

Error bars represent participant's stated uncertainty (k=2).

Independent estimates of analyte concentration with associated uncertainties (k=2):
Md = Robust Median
R.A. = Robust Average

Item 2: Ethanol (5%)- Graph 2   **Assigned Value = 4.97% +/- 0.04% (k=2)**

Error bars represent participant's stated uncertainty (k=2).

Independent estimates of analyte concentration with associated uncertainties (k=2):
Md = Robust Median
R.A. = Robust Average

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Item 2: Ethanol (5%)- Graph 3   **Assigned Value = 4.97% +/- 0.04% (k=2)**

Error bars represent participant's stated uncertainty (k=2).

Independent estimates of analyte concentration with associated uncertainties (k=2):
Md = Robust Median
R.A. = Robust Average

Manufacturer's Information

An ethanol stock solution was prepared by weighing 0.0370 gram of Anhydrous Caffeine (Powder City, Lot #CAFAH20160215) on a calibrated Mettler AE163 balance. The caffeine was added to the contents of a sealed 500ml bottle of 200 proof Ethyl Alcohol (Calbiochem OmniPur, Batch 61271), mixed, and allowed to dissolve completely. This stock solution was utilized for Item 1. The caffeine was added for internal QA/QC purposes.

A second ethanol stock solution was prepared by weighing 0.0374 gram of Anhydrous Caffeine (Powder City, Lot #CAFAH20160215) on a calibrated Mettler AE163 balance. The caffeine was added to the contents of a sealed 500ml bottle of 200 proof Ethyl Alcohol (Sigma Aldrich, Batch SHBS1883), mixed, and allowed to dissolve completely. This stock solution was utilized for Item 2. The caffeine was added for internal QA/QC purposes.

Item 1 (~27% solution) was prepared by combining 486mL of the Ethyl Alcohol stock solution to 1314mL distilled water. The volumes were measured using Class A volumetric flasks and pipettes. The solution was mixed and packaged into Qorpak 4 dram Glass Vials (15 mL), (12112015144, GLC-00993; Lot 01092025144, GLC-00993).

Item 2 (~5% solution) was prepared by combining 90mL of the Ethyl Alcohol stock solution to 1710mL distilled water. The volumes were measured using Class A volumetric flasks and pipettes. The solution was mixed and packaged into Qorpak 4 dram Glass Vials (15 mL), (Lot 01092025144, GLC-00993).

After homogeneity testing, the glass vials were labeled with a UTIC number, taped around the cap with packaging tape, and wrapped in tri-fold paper towel. The Items were packaged into a 125 mL Wide Mouth Sample Vial (Berlin Packaging, Item 1181126) and labeled per FTS guidelines.

Both items with matching UTICs were packaged together in a cardboard box, sealed and labeled per FTS guidelines.

Homogeneity & Stability Quality Control Testing

Homogeneity testing was performed after the samples were packaged in glass vials, hand labeled in fill order. Ten of the vials for Items 1 and 2 were selected by random sampling throughout the fill sequence by selection of the hand labeled fill number with computer random number generation software (Ablebits Random Number Generator, Add-in Express, Ltd., Belarus, BY).

Each selected sample was homogenized, and then two approximately 5 ml test portions were taken from each. The test portions were labeled as "15A", "15B", "36A", "36B" etc. and quantitated via UV-VIS (Thermo Evolution 600) in the FTS laboratory facility. The samples were quantitated at 274.0 nm based on a four-point caffeine standard calibration curve that ranged from 27%-3.375%.

Stability was not tested as the samples are not reasonably expected to change when sealed in glass vials. Tests will be shipped in boxes with 'Refrigerate Upon Arrival' stickers to prevent damage and evaporation.

Statistical Analysis of Homogeneity Data:

Table 1: Item 1 Duplicated results for ten distribution units and intermediate stages of calculation in Cochran's test

Item 1 Sample	A (%)	B (%)	D=A-B	S=A+B	$D^2=(A-B)^2$
15	26.851	27.013	-0.162	53.864	0.0262
36	26.775	26.828	-0.053	53.603	0.0028
45	26.983	26.783	0.200	53.766	0.0400
87	26.797	27.025	-0.228	53.822	0.0520
106	26.766	26.771	-0.005	53.537	0.0000
20	26.744	26.684	0.060	53.428	0.0036
42	26.735	26.900	-0.165	53.635	0.0272
55	26.955	26.786	0.169	53.741	0.0286
81	26.703	26.702	0.001	53.405	0.0000
115	26.725	26.933	-0.208	53.658	0.0433

Cochran's Test:

Analytical outliers should be deleted from the data before one-way analysis of variance (ANOVA) is carried out; Cochran's test is suitable.

Calculate the test statistic (C):

$$C = \frac{D_{MAX}^2}{\sum D_i^2}$$

$$= \frac{0.0520}{0.2237} = 0.232$$

Where   C=Cochran's statistic test
D$_{MAX}$=the largest difference between duplicates
D$_i$=difference of each pair of duplicates

Table 2: Critical Values for the Cochran test statistic for duplicates

m^1	95%
10	0.602
11	0.570
12	0.541
13	0.515

Where m^1 = number of samples that have been measured in duplicate.

The 5% critical value for ten samples from Table 2 is 0.602.
In the data from Table 1, no analytical outliers were identified.

Estimate of Analytical and Sampling Variances:

One-way ANOVA is used to estimate the analytical and sampling variance and is performed in Excel.

Table 3: Item 1 One-way ANOVA Output

Source of Variation	SS	df	MS	F	P-Value	F crit
Between Groups	0.110762	9	0.012307	1.100244	0.438469	3.020383
Within Groups	0.111856	10	0.011186			

So $\qquad S^2_{an} = MS_{within} = 0.011186$

where $\quad S^2_{an}$ = the analytical variance

and $\qquad S^2_{sam} = \frac{MS\ between - MS\ within}{2}$

$$= \frac{0.012307 - 0.011186}{2} = 0.00056$$

where $\quad S^2_{sam}$ = the between sample variance

Test for Sufficient Analytical Precision:

The target standard deviation (σ_{pt}) is the product of the mean of all duplicate results (χ) and the between-laboratory coefficient of variation (CV) which is established by the study coordinator.

$\sigma_{pt} = \chi * CV$
   = 26.823 (0.07)
   = 1.88 %

The analytical standard deviation (S_{an}) is the square root of the analytical variance estimated from ANOVA above.
S_{an}/σ_{pt} = 0.106/1.88 = 0.056

This is less than the critical value of 0.5. The method is precise enough to detect significant inhomogeneity.

Test for Acceptable Between Sample Variance:

Calculate the allowable sampling variance (σ^2_{all}) as
$\sigma^2_{all} = (0.3 \times \sigma_{pt})^2$
     = $(0.3 \times 1.88)^2$
     = 0.318
Where σ_{pt} = target standard deviation

The critical value is:
c = F_1 (σ^2_{all}) + F_2 (S^2_{an})
  = 1.88 (0.318) + 1.01 (0.011186)
  = 0.61

The values for factors F_1 and F_2 are presented in Table 4.

Table 4: Factors F_1 and F_2 for use in testing for sufficient homogeneity

m^1	13	12	11	10
F_1	1.75	1.79	1.83	1.88
F_2	0.80	0.86	0.93	1.01

Where m^1 = number of samples that have been measured in duplicate.

Compare the sampling variance S_{sam}^2 with the critical value.

The sampling variance (S_{sam}^2 = 0.00056) is less than the critical value (0.61). The samples are sufficiently homogenous.

The results of the sufficient homogeneity testing are summarized in Table 5.

Table 5: Item 1 Homogeneity test results

Item 1	Value	Critical	Result
Cochran	0.232	0.602	Pass
S_{an}/σ_{pt}	0.056	0.50	Pass
S_{sam}^2	0.00056	0.61	Pass

Table 6: Item 2 Duplicated results for ten distribution units and intermediate stages of calculation in Cochran's test

Item 2 Sample	A (%)	B (%)	D=A-B	S=A+B	$D^2=(A-B)^2$
23	4.868	4.870	-0.002	9.738	0.0000
97	4.956	4.927	0.029	9.883	0.0008
120	4.869	4.882	-0.013	9.751	0.0002
10	4.915	4.939	-0.024	9.854	0.0006
82	4.864	4.909	-0.045	9.773	0.0020
112	4.927	4.915	0.012	9.842	0.0001
86	4.857	4.868	-0.011	9.725	0.0001
21	4.903	4.908	-0.005	9.811	0.0000
92	4.864	4.874	-0.010	9.738	0.0001
27	4.906	4.908	-0.002	9.814	0.0000

Cochran's Test:

Analytical outliers should be deleted from the data before one-way analysis of variance (ANOVA) is carried out; Cochran's test is suitable.

Calculate the test statistic (C):

$$C = \frac{D_{MAX}^2}{\sum D_i^2}$$

$$C = \frac{0.0020}{0.039} = 0.05$$

Where   C=Cochran's statistic test
D_{MAX}=the largest difference between duplicates
D_i=difference of each pair of duplicates

The 5% critical value for ten samples from Table 2 is 0.602.
In the data from Table 6, no analytical outliers were identified.

Estimate of Analytical and Sampling Variances:

One-way ANOVA is used to estimate the analytical and sampling variance and is performed in Excel.

Table 7: Item 2 One-way ANOVA Output

Source of Variation	SS	df	MS	F	P-Value	F crit
Between Groups	0.013912	9	0.001546	7.711787	0.00184	3.020383
Within Groups	0.002005	10	0.0002			

So $S^2_{an} = MS_{within} = 0.0002$

where $S^2_{an} = $ the analytical variance

and $S^2_{sam} = \frac{MS\ between - MS\ within}{2}$

$$= \frac{0.001546 - 0.0002}{2} = 0.00067$$

where $S^2_{sam} = $ the between sample variance

Test for Sufficient Analytical Precision:

The target standard deviation (σ_{pt}) is the product of the mean of all duplicate results (χ) and the between-laboratory coefficient of variation (CV) which is established by the study coordinator.

$\sigma_{pt} = \chi$ (CV)
  = 4.897 (0.07)
  = 0.34 %

The analytical standard deviation (S_{an}) is the square root of the analytical variance estimated from ANOVA above.
$S_{an}/\sigma_{pt} = 0.014/0.34 = 0.041$

This is less than the critical value of 0.5. The method is precise enough to detect significant inhomogeneity.

Test for Acceptable Between Sample Variance:

Calculate the allowable sampling variance (σ_{all}^2) as
$\sigma_{all}^2 = (0.3 \times \sigma_{pt})^2$
$\quad = (0.3 \times 0.34)^2$
$\quad = 0.0104$
Where σ_{pt} = target standard deviation

The critical value is:
c = $F_1 (\sigma_{all}^2) + F_2 (S_{an}^2)$
$\quad = 1.88 (0.0104) + 1.01 (0.0002)$
$\quad = 0.0198$

The values for factors F_1 and F_2 are presented in Table 4.

Compare the sampling variance S_{sam}^2 with the critical value.

The sampling variance (S_{sam}^2 = 0.00067) is less than the critical value (0.0198). The samples are sufficiently homogenous.

The results of the sufficient homogeneity testing are summarized in Table 8.

Table 8: Item 2 Homogeneity test results

Item 2	Value	Critical	Result
Cochran	0.05	0.602	Pass
S_{an}/σ_{pt}	0.041	0.50	Pass
S_{sam}^2	0.00067	0.0198	Pass

Please quantitate the following items containing Ethanol.

Items Submitted

Item 1: Sample of liquid that contains Ethanol.
Item 2: Sample of liquid that contains Ethanol.

3) Indicate the Method and Parameters Used for Quantitation:

Example: GC-FID: column: SGE 12 m x 0.22 mm (F/N054046). 4-point calibration: 0 - 1.25 mg/mL. Internal standard: Tetracosane, Solvent: Methanol.

UTIC	Webcode	Indicate the Method and Parameters Used for Quantitation
p20252701	W049	HSS-GC/MS-FID, column: DB-ALC 123-9134, 30 m x 0.320 mm x 1.80 um, 4-point calibration, 0.020 to 0.500 g/100 mL. Internal standard: n-propanol, Solvent/diluent: deionized water. FID is used for ethanol retention time identification and quantitation, MS is used for ethanol spectral comparison. Calibration is linear regression with inverse weighing. Calibrator response factors before and after samples are averaged.
p20252702	W163	GC-FID Dual Column System. 6 Point Calibration: 10 - 400 mg%. ISTD n-propanol.
p20252703	W088	Instrument: HS-GC/MS-FID Column: Agilent DB-ALCI 0.32m 6 Point Calibrator Curve: 0.010-0.400 g/dL Internal Standard: n-propanol
p20252704	W088	Method parameters: Instrument: HS-GC-FID Column: Agilent DB-ALCI 0.32 mm 6 point calibration curve: 0.010-0.400 g/dL Internal std: n-propanol
p20252705	W088	1. Instrument: HS-GC/MS-FID 2. Column: Agilent DB-ALC 1 0.32mm. 3. 6 point calibration: 0.010 - 0.400 g/dL 4. Internal Standard: n-propanol
p20252706	W088	Instrument: HS-GC-FID Column: Agilent DB5-ALCI 0.32mm 6-point calibration curve: 0.010 - 0.400 g/dL Internal Standard: n-propanol

UTIC	Webcode	Indicate the Method and Parameters Used for Quantitation
p20252707	W088	The instrument used for testing was a Headspace GC-FID/MS. The column used was an Agilent 123-9134 with the dimension of 30 m x 320 μm x 1.8 μm. A 6-point calibration curve was utilized, which ranges from 0 - 0.40 g/100 mL. Lastly, the internal standard used was a 0.02 g% solution of n-propanol in DI water.
p20252708	W088	GC-FID Column: Agilent DB-Alc1 0.32 id 30m 6-point Calibration: 0.10-0.40 g/dL Internal Std: 0.02g/dL n-propanol
p20252709	W088	Instrument: HS-GC-FID Column: Agilent DB-ALCI 0.32 mm 6 point calibration curve: 0.010-0.400 g/dL Internal std: n-propanol
p20252710	W088	Instrument: HS-GC-MS Column: Agilent DB-ALC1 0.32 mm Calibration: 6-point calibration curve 0.010 - 0.400 g/dL Internal Standard: n-propanol
p20252711	W088	Instrument: HS-GC-FID Column: Agilent DB-ALCI 0.32 mm 6 point calibration curve: 0.010-0.400 g/dL Internal std: n-propanol
p20252712	W088	a. Instrument: HS-GC/MS-FID b. Column: Agilent DB-ALC1 0.32 mm c. 6 points calibrator curve: 0.010 - 0.400 g/dL d. Internal Standard: n-propanol
p20252713	W088	Instrument: HS GCMS FID Column: DB ALC1 0.32mm 6 point calibration 0.01-0.40g/dL internal standard n-propanol
p20252714	W088	HS-GC/MS-FID: column: Agilent DB-ALC1 0.32m. 6-point calibration curve 0.010-0.400 g/dL. Internal standard: n-propanol (0.02g/dL)
p20252715	W088	Instrument: HS-GC-FID Column: Agilent DB-ALCI 0.32mm 6 point calibration curve: 0.010-0.400 g/dL Internal Standard: n-propanol
p20252716	W088	Instrument: HS-GC-FID Column: Agilent DB-ALCI 0.32mm 6 point calibration curve: 0.010-0.400 g/dL Internal Standard: n-propanol

UTIC	Webcode	Indicate the Method and Parameters Used for Quantitation
p20252717	W088	HS-GC-FID a. Instrument: HS-GC/MS-FID b. Column: Agilent DB-ALCI 0.32mm c. 6 point calibration curve: 0.010-0.400 g/dL d. Internal standard: n-propanol
p20252718	W088	HSGC-FID column: Agilent DB Alc1 0.32mm - 6 point calibration: 0.010 - 0.400 g/100mL internal standard: 1-propanol
p20252719	W088	instrument: HS-GC-FID Column: DB-ALCI 0.32 mm 6 point calibration curve: 0.010 - 0.400 g/dL internal standard: n-propanol
p20252720	W088	Instrument: HS-GC-FID Column: Agilent DB-ALCI 0.32mm 6 point calibration curve: 0.010-0.400 g/dL Internal standard: n-propanol
p20252721	W088	HS-GC-FID-MS. Agilent DB-ALC1 0.32mm column, 6 point calibration: 0.010-0.400 g/100mL. internal standard: n-propanol
p20252722	W088	HS-GC-FID Column: Agilent DB-ALCI 0.32 mm 6-point calibration curve: 0.010-0.400 g/dL internal standard: n-propanol
p20252723	W088	Instrument: HS-GC-FID Column: Agilent DB-ALCI 0.32 mm 6-point calibration curve: 0.010-0.400 g/dL Internal std: n-propanol
p20252724	W088	Instrument: HS-GC-FID/MS Column: Agilent DB-ALCI 0.32 mm 6-point calibration curve: 0.010-0.400 g/dL Internal std: n-propanol
p20252725	W088	Instrument: HS-GC-FID Column: Agilent DB-ALCI 0.32 mm 6-point calibration curve: 0.010-0.400 g/dL Internal std: n-propanol

UTIC	Webcode	Indicate the Method and Parameters Used for Quantitation
p20252726	W088	Instrument: HS-GC-FID Column: Agilent DB-ALCI 0.32 mm 6-point calibration curve: 0.010-0.400 g/dL Internal std: n-propanol
p20252727	W088	Instrument: HS-GC-FID Column: Agilent DB-ALCI 0.32 mm 6-point calibration curve: 0.010-0.400 g/dL Internal std: n-propanol
p20252728	W088	Instrument: HS-GC-FID Column: Agilent DB-ALCI 0.32 mm 6-point calibration curve: 0.010-0.400 g/dL Internal std: n-propanol
p20252733	W092	GC-FID: dual columns: DB-BAC 1 (30m, 0.32mm ID FT, 1.2µm) and DB-BAC 2 (30m, 0.32mm ID FT, 1.8µm) respectively coupled with two independent flame ionization detectors. 5-point calibration: 1-50% v/v. Internal standard: n-Propyl alcohol Solvent: D.I. water
p20252735	W031	GC-FID Column A: Restek Rtx-BAC PLUS 1 (30 m, 0.32 mm ID, 1.80 µm) (Serial # 110094, Cat # 18006) Column B: Restek Rtx-BAC PLUS 2 (30 m, 0.32 mm ID, 0.6 µm) (Serial #1104092, Cat # 18004) 3-point calibration: 0 - 400 mg/dL Internal Standard: N-propanol (Sigma-Aldrich Lot# SHBM7906) Solvent: deionized water
p20252736	W079	GC-FID Glass packed column: 80/120 Carbopack B/5% CARBOWAX 20M (1.8m x 6.35mm) Semi-Quant Solvent: Deionized water
p20252737	W079	GC-FID Glass packed column: 80/120 Carbopack B/5% CARBOWAX 20M (1.8m x 6.35mm) Semi-Quant Solvent: Deionized water
p20252738	W044	GC-FID Column 1: 30 m Rtx-BAC Plus 1 (30 m x 320 µm x 1.8 µm) Column 2: 30 m Rtx-BAC Plus 2 (30 m x 320 µm x 0.6 µm) 7-point calibration: 0.01-0.500 g/100 mL Internal Standard: N-Propanol

UTIC	Webcode	Indicate the Method and Parameters Used for Quantitation
p20252739	W114	a. GC-FID b. Columns: DB-ALC1 and DB-ALC2 c. 5-point calibration: 0.01-0.4 g/dL d. Internal standard: n-Propanol
p20252740	W114	GC-FID: columns: DB-ALC1 and DB-ALC2. 5-point calibration: 0.01-0.4 g/dL. Internal Standard: n-Propanol
p20252741	W114	GC-FID: columns: DB-ALC1 and DB-ALC2. 5-point calibration: 0.01-0.4 g/dL. Internal standard: n-Propanol.
p20252742	W114	GC-FID Columns: DB-ALC1 and DB-ALC2 5-point calibration: 0.01 - 0.4 g/dL Internal standard: n-Propanol
p20252743	W114	GC-FID Columns: DB-ALC1 and DB-ALC2 5-point clibration: 0.01-0.4 g/dL Internal standard: n-propanol
p20252744	W114	GC-FID 5-point calibration: 0.01 - 0.4 g/dL Columns: DB-ALC1 and DB-ALC2 Internal standard: n-Propanol
p20252745	W114	a. GC-FID b. Columns: DB-ALC1 and DB-ALC2 c. 5-point calibration: 0.01-0.4 g/dL d. Internal Standard: n-Propanol
p20252746	W114	GC-FID Columns: DB-ALC1 and DB-ALC2 5-point calibration: 0.01 - 0.4 g/dL Internal standard: n-Propanol
p20252747	W114	GC-FID, columns DB-ALC1 and DB-ALC2, five point calibration curve:0.01 g/dL to 0.40 g/dL. Internal standard: n-propanol
p20252749	W190	GC-FID Columns: DB-ALC1 and DB-ALC2 5-point calibration: 0.01 - 0.4 g/dL Internal standard: n-Propanol
p20252750	W190	GC-FID Columns: DB-ALC1 and DB-ALC2 5-point calibration: 0.01-0.4 g/dL Internal standard: n-Propanol
p20252751	W190	GC-FID Columns: DB-ALC1 and DB-ALC2 5-point calibration: 0.01 - 0.4 g/dL Internal standard: n-Propanol

UTIC	Webcode	Indicate the Method and Parameters Used for Quantitation
p20252752	W190	a. GC-FID b. Columns: DB-ALC1 and DB-ALC2 c. 5-point calibration: 0.01-0.4 g/dL d. Internal standard: n-Propanol
p20252753	W190	5-point calibration: 0.01 - 0.4 g/dL GC-FID Columns: DB-ALC1 and DB-ALC2 Internal standard: n-propanol
p20252754	W190	GC-FID: column: DB-ALC1 and DB-ALC2, 5-point calibration:0.01-0.4 g/dL. Internal standard: N-propanol
p20252755	W190	GC-FID Columns: DB-ALC1 and DB-ALC2 5 point calibration 0.01-0.4 g/dL Internal standard: n-propanol
p20252756	W190	Instrument: GC-FID Columns: DB-ALC1 & DB-ALC2 5-point calibration: 0.01-0.4 g/dL Internal Standard: n-Propanol
p20252757	W190	a. GC-FID b. Columns: DB-ALC1 and DB-ALC2 c. 5-point calibration: 0.01-0.4 g/dL d. Internal standard: n-Propanol
p20252758	W002	7697A Headspace Agilent auto-sampler to Intuvo 900 GC System with dual columns DB-BAC1 and DB-BAC2 (UI: 30m, 0.32mm, 1.2um). 6-point calibration from 20 mg/dL to 500 mg/dL.
p20252761	W110	HS-GC-FID: 30m x 0.32 mm ID, 1.8 df, Rtx-BAC1 capillary column. 4-point calibration: 0.040, 0.100, 0.200, 0.400 g/100mL. Internal Standard: n-Propanol.
p20252762	W110	HS-GC-FID: 30 m x 0.32 mm ID, 1.8 df, Rtx-BAC1 capillary column. 4-point calibration: 0.040, 0.100, 0.200 and 0.400 %. Internal standard: n-Propanol.
p20252766	W110	H-GC-FID: 30m x 0.32mm ID, 1.8 df, Rtx-BAX1 capillary column, 4-point calibration: 0.040, 0.100, 0.200, and 0.400%. Internal standard n-Propanol.
p20252769	W110	HS-GC-FID: L 30m x 0.32mm ID, 1.8 df, Rtx-BAC1 capillary column, 4-point calibration: 0.040%, 0.100%, 0.200%, 0.400%. Internal Standard n-propanol.
p20252770	W082	GC-FID: column: BAC+1 / BAC+2, 4-point calibration (linear, not forced to zero): 0.010 - 0.400 g/dL. Internal standard: n-propanol
p20252771	W172	Head space GC FID and Head space GC MS/FID

UTIC	Webcode	Indicate the Method and Parameters Used for Quantitation
p20252772	W096	GC-FID 30 m x 0.32 mm x 1.8 um BAC-1 Plus Restek Column (quantitative and qualitative analysis) GC-FID 30 m x 0.32 mm x 0.6 um BAC-2 Plus Restek Column (qualitative analysis only) 5-point calibration curve from 0.50 g/dL to 20 g/dL; 4-point calibration curve from 20 g/dL to 80 g/dL. Internal Standard - 0.4% n-propanol in water
p20252775	W206	GC-FID: Column: Restek BACPlus-2. 0.020-0.500 g%. Internal standard: T-Butanol
p20252776	W116	GC-FID-MS: FID Column: DB-ALC1 30 m X 0.32 mm X 1.80 µm (Agilent 123-9134), MS Column: DB-1701 30 m X 0.25 mm X 1 µm (Agilent 122-0733). 6-point calibration:0.010 - 0.500 g/100mL. Internal standard: n-propanol, Solvent: DI water.
p20252777	W116	GC-FID-MS: FID column: DB-ALC1 30m x 0.32mm x 1.8µm (Agilent 123-9134), MS column: DB-1701 30m x 0.25mm x 1µm (Agilent 122-0733), 6-point calibration: 0.010-0.500 g/100mL. Internal standard: n-Propanol, Solvent: Water
p20252778	W025	Mettler Toledo Density Meter DM50, 2-point calibration, Internal Standard: Air/Water 0.00119/0.99820 Adjustment Factor 1.516983
p20252779	W256	GC-FID: column: Restek Rtx-BAC1 30 m x 0.53 mm (P/N - 18001). 7-point calibration: 10-400 mg/dL. Internal standard: n-propanol, Solvent: water with ammonium sulfate.
p20252780	W070	GC-MS column Restek BAC2 , GC-FID column Restek BAC1, 7 point calibration curve 0.01 - 0.5 gm%, Internal Standard 0.01667 v/v% n-Propanol, Solvent: DI Water
p20252781	W070	GC-MS column Restek 18002, GC-FID column Restek 18003, 7 point calibration 0.01-0.50g%, Internal Standard 0.01667% N-Propanol, Solvent: Water
p20252782	W070	GC-MS column Restek 18002 (Rtx-BAC2); GC-FID column Restek 18003 (Rtx-BAC1), 5 point calibration 0.01-0.50g%, Internal Standard 0.01667% N-Propanol, Solvent: Water
p20252783	W070	GC-MS column Restek 18002, GC-FID column Restek 18003, 5-point calibration: 0.01-0.50 gm%, Internal standard: 0.01667% N-Propanol, Solvent: Water.
p20252784	W055	GC-FID Column: Restek Rxi-1ms 30m x 0.25mm 4-point calibration: 0.32-4.06 mg/ml Interntal standard: n-Butanol Reference material: 95% Ethanol by volume
p20252785	W055	GC-FID Column RX-1MS - 0.25mm x 0.25um x 30m 4 point calibration 0.32mg/mL, 1.62mg/mL, 2.44mg/mL, 4.06mg/mL Internal standard: butanol

UTIC	Webcode	Indicate the Method and Parameters Used for Quantitation
p20252786	W055	GC-FID, 4-point calibration: 0.32-4.06 mg/mL. Internal standard: n-butanol, Solvent: DI Water
p20252787	W055	GC-FID Column: Restek Rxi-1ms 30m x 0.25mm 4-point calibration: 0.32-4.06 mg/ml Interntal standard: n-Butanol Reference material: 95% Ethanol by volume
p20252788	W004	Headspace GC-FID: column: DB-ALC1 (30 m x 0.320 mm x 1.8 μm). 4-point calibration: 0.5%-50% v/v Internal Standard: 0.5% (v/v) n-propanol. Solvent: deionized water
p20252789	W037	HS-GC-FID-MS: column: Agilent DB-ALC1 30mx0.320mm i.d. x 1.80um film. 5-point calibration: 0.01 g/100ml -0.40 g/100ml. Internal Standard: N-Propanol ISTD Solution.

4) What standard was used and, if given, it's stated purity?

   Example: Sigma-Aldrich Batch 079K1053 96.5%

UTIC	Webcode	What standard was used and, if given, it's stated purity?
p20252701	W049	Calibrator/Control Information Level Provider Lot Expiration 0.020 g/100 mL Supelco FN03122113 Exp 03/2026 0.100 g/100 mL Supelco FN04042408 Exp 04/2029 0.200 g/100 mL Supelco FN03132302 Exp 03/2028 0.500 g/100 mL Supelco FN01172402 Exp 01/2029 Mixed Volatiles Cerilliant FN02162310 Exp 05/2028 0.025 g/100 mL Lipomed 30102019-C Exp 05/2026 Beverage 14% ABV SCDL 3 Exp None 0.300 g/100 mL Lipomed 530442 Exp 08/2027
p20252702	W163	Certified Supelco standards for calibrators. Certified LGC standards for QCs.
p20252703	W088	Calibration Kit: Supelco Multicomponent Alcohol Calibration Kit C1-C6 (MeOH, EtOH, Acetone, 2-Propanol), FN05092202, >99.9% Control: Supelco 0.05 g% Mix Control (MeOH, EtOH, Acetone, 2-Propanol), FN01212104, >99.9%
p20252704	W088	Calibrators: Cerilliant Lot FN05092202 >99.9% Validators: Cerilliant Lot FN09092101 >99.9%, Cerilliant Lot FN07252344 >99.9%, Cerilliant Lot FN06232204 >99.9% Controls: Cerilliant Lot FN05232301 >99.9%, Cerilliant Lot FN02162310 >99.9%, Cerilliant Lot FN06112149 >99.9%

UTIC	Webcode	What standard was used and, if given, it's stated purity?
p20252705	W088	Calibration Kit: Ceriliant Mix Calibration Kit (MeOH, EtOH, Acetone, 2-Propanol) : FN05092202; >99.9% (0.01, 0.025, 0.05, 0.10, 0.20, 0.40g%) Controls: 1. Ceriliant 0.05 g% Mix Control (MeOH, EtOH, Acetone, 2-Propanol): FN05232301; >99.9% 2. Ceriliant 0.10 g% Mix Control (MeOH, EtOH, Acetone, 2-Propanol): FN02162310; >99.9% 3. Ceriliant 0.30 g% Ethanol Control (EtOH): FN06112149 ; >99.9%
p20252706	W088	Cerilliant Multicomponent Alcohol Calibration Kit (01-06) - NIST Traceable, Solution Lot: FN05092202 C1 FN01042201 Level 100 mcg/mL: purity ≥ 99.9% for Acetone, Methanol, Ethanol, and Isopropanol C2 FN01042202 Level 250 mcg/mL: purity ≥ 99.9% for Acetone, Methanol, Ethanol, and Isopropanol C3 FN01042203 Level 500 mcg/mL: purity ≥ 99.9% for Acetone, Methanol, Ethanol, and Isopropanol C4 FN01042204 Level 1000 mcg/mL: purity ≥ 99.9% for Acetone, Methanol, Ethanol, and Isopropanol C5 FN01042205 Level 2000 mcg/mL: purity ≥ 99.9% for Acetone, Methanol, Ethanol, and Isopropanol C6 FN05062202 Level 4000 mcg/mL: purity ≥ 99.9% for Acetone, Methanol, Ethanol, and Isopropanol
p20252707	W088	Three standards were used for testing. The 0.10 g% Multicomponent Alcohol Mix (Cerilliant Solution Lot FN02162310) had a purity of 99.9% for all components. The 0.05 g% Multicomponent Alchol Mix (Cerilliant Solution Lot FN05232301) had a purity of 99.9% for all components. The 0.30 g% Ethanol Solution (Cerilliant Solution Lot FN06112149) had a purity of 99.9%.
p20252708	W088	Cal: Supelco FN05092202 >99.9% Val: Supelco FN07252344 >99.9% Controls: Supelco FN05232301 >99.9%; FN02161210 >99.9%, FN06112149 >99.9%
p20252709	W088	Cerilliant for all analytes, Calibration: Multicomponent Alcohol Calibration Kit (C1 - C6) FN05092202 >99.9% Validation: Multicomponent Alcohol Calibration Kit FN07252344 >99.9% Multicomponent Alcohol Mix 100 FN04162405 >99.9% Ethanol-80 FN0623204 >99.9% Controls: Multicomponent Alcohol Mix 500 FN05232301 >99.9% Multicomponent Alcohol Mix 1000 FN02162310 >99.9% Ethanol-300 FN06112149 >99.9%

UTIC	Webcode	What standard was used and, if given, it's stated purity?
p20252710	W088	Calibration (Supleco) - Calibration Kit (Methyl Alcohol, Ethyl Alcohol, Isopropyl Alcohol, Acetone); Lot # FN05092202; Expiration Date: 05/2027; Purity: ≥99.9% Controls (Supleco) - 0.10 g/dL mix (Methyl Alcohol, Ethyl Alcohol, Isopropyl Alcohol, Acetone); Lot # FN02162310; Expiration Date: 05/2028; Purity: >99.9% - 0.30 g/dL Ethyl Alcohol; Lot # FN06112149; Expiration Date: 06/2026; Purity: >99.9% - 0.05 g/dL mix (Methyl Alcohol, Ethyl Alcohol, Isopropyl Alcohol, Acetone); Lot # FN05232301; Expiration Date: 05/2028; Purity: >99.9%

p20252711	W088	Calibration: Supleco FN05092202 exp. 05/2027 Methyl Alcohol, Ethyl Alcohol, Isopropyl Alcohol, Acetone ≥99.9%
		Verification: Supleco FN07252344 exp. 04/2028 Methyl Alcohol, Isopropyl Alcohol, Acetone >99.9% Ethyl Alcohol 99.9%
		          Supleco FN04162405 exp. 04/2029 Methyl Alcohol, Ethyl Alcohol, Isopropyl Alcohol, Acetone >99.9%
		          Supleco FN06232204 exp. 04/2027 Ethyl Alcohol >99.9%
		Controls: Supleco FN05232301 exp.05/2028 Methyl Alcohol, Isopropyl Alcohol, Acetone >99.9% Ethyl Alcohol 99.9%
		          Supleco FN02162310 exp 05/2028 Methyl Alcohol, Isopropyl Alcohol, Acetone >99.9% Ethyl Alcohol 99.9%
		          Supleco FN06112149 exp 06/2028 Ethyl Alcohol >99.9%

p20252712	W088	Calibration kit: Cerilliant Mix Calibration Kit (MeOH, EtOH, Acetone, 2-Propanol): FN08182003; > 99.9% (0.010 g/%) and FN05092202; 99.9% (0.025, 0.050, 0.100, 0.200, 0.400 g/%) Controls: • Cerilliant 0.05 g% Mix Control (MeOH, EtOH, Acetone, 2-Propanol): FN05232301; >99.9% • Cerilliant 0.10 g% Mix Control (MetOH, EtOH, Acetone, 2-Propanol): FN02162310; >99.9% • Cerilliant 0.30 g% Ethanol Control (EtOH): FN06112149; >99.9%
p20252713	W088	Supelco for all standards calibration kit (EtOH, MeOH, IPA, Ace) FN05092202 0.01, 0.025, 0.05, 0.10, 0.20, 0.40 g/dL >99% Controls for run .05 g/dL Mix (MeOH, EtOH, IPA, Ace) FN01212104 >99% 0.10 g/dL Mix (MeOH, EtOH, IPA, Ace) FN02162310 >99% 0.30 g/dL EtOH FN06112149 >99%

UTIC	Webcode	What standard was used and, if given, it's stated purity?
p20252714	W088	Calibration: Cerilliant Calibration Mix Kit: (MeOH, EtOH, Acetone, 2-propanol): FN05092202 >99.9% Controls: Cerilliant 0.05 g/dL Mix Control (FN05232301); Cerilliant 0.10 g/dL Mix (FN02162310); Cerilliant 0.30 g/dL EtOH (FN06112149). All >99.9%
p20252715	W088	All stated 99.9% (or greater) purity Calibration Cerilliant A-127 kit (FN05092202) Validation Cerilliant A-076 (FN04162405) Cerilliant A-054 kit (FN07252344) Cerilliant E-030 (FN06232204) Controls Cerilliant E-033 (FN06112149) Cerilliant A-056 (FN02162310) Cerilliant A-057 (FN05232301)
p20252716	W088	All stated 99.9% (or greater) purity Calibration Cerilliant A-127 kit (FN05092202) Validation Cerilliant A-076 (FN04162405) Cerilliant A-054 kit (FN07252344) Cerilliant E-030 (FN06232204) Controls Cerilliant E-033 (FN06112149) Cerilliant A-056 (FN02162310) Cerilliant A-057 (FN05232301)

UTIC	Webcode	What standard was used and, if given, it's stated purity?
p20252717	W088	All stated 99.9% (or greater) purity Calibration Cerilliant A-127 kit (FN05092202) Validation Cerilliant A-076 (FN04162405) Cerilliant A-054 kit (FN07252344) Cerilliant E-030 (FN06232204) Controls Cerilliant E-033 (FN06112149) Cerilliant A-056 (FN02162310) Cerilliant A-057 (FN05232301)
p20252718	W088	Cerilliant A-127 kit FN05092202 Cerilliant A-076 FN04162405 Cerilliant A-054 kit FN07252344 Cerilliant E-030 FN06232204 Cerilliant E-033 FN06112149 Cerilliant A-056 FN02162310 Cerilliant A-057 FN05232301 all 99.9%
p20252719	W088	All stated 99.9% (or greater) purity Calibration Cerilliant A-127 kit (FN05092202) Validation Cerilliant A-076 (FN04162405) Cerilliant A-054 kit (FN07252344) Cerilliant E-030 (FN06232204) Controls Cerilliant E-033 (FN06112149) Cerilliant A-056 (FN02162310)

UTIC	Webcode	What standard was used and, if given, it's stated purity?
p20252720	W088	All stated 99.9% (or greater) purity Calibration Cerilliant A-127 kit (FN05092202) Validation Cerilliant A-076 (FN04162405) Cerilliant A-054 kit (FN07252344) Cerilliant E-030 (FN06232204) Controls Cerilliant E-033 (FN03062415) Cerilliant A-056 (FN02162310) Cerilliant A-057 (FN05232301)
p20252721	W088	Calibration Cerilliant A-127 kit (FN05092202) Validation Cerilliant A-076 (FN04162405) Cerilliant A-054 kit (FN07252344) Cerilliant E-030 (FN06232204) Controls Cerilliant E-033 (FN06112149) Cerilliant A-056 (FN02162310) Cerilliant A-057 (FN05232301) Calibration Cerilliant A-127 kit (FN05092202) Validation Cerilliant A-076 (FN04162405) Cerilliant A-054 kit (FN07252344) Cerilliant E-030 (FN06232204) Controls Cerilliant E-033 (FN06112149) Cerilliant A-056 (FN02162310) Cerilliant A-057 (FN05232301) All >99.9% purity

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UTIC	Webcode	What standard was used and, if given, it's stated purity?
p20252722	W088	Cerilliant for all analytes, all greater than 99.9% pure **Calibrators:** FN1042201, FN1042202, FN1042203, FN1042204, FN1042205, FN05062202 **Validators:** FN09082101, FN04032301, FN04032302, FN04032303, FN06232204 **Controls:** FN02162310, FN03062415, FN05232301
p20252723	W088	Calibrators: Cerilliant for all analytes all >99.9% pure FN01042201 FN01042202 FN01042203 FN01042204 FN01042205 FN05062202 Validators: Cerilliant for all analytes, all greater than 99.9% pure FN09082101 FN04032301 FN04032302 FN04032303 FN06232204 Controls: Cerilliant for all analytes, all greater than 99.9% pure FN02162310 FN03062415 FN05232301

UTIC	Webcode	What standard was used and, if given, it's stated purity?
p20252724	W088	Calibrators: Cerilliant for all analytes all >99.9% pure FN01042201 FN01042202 FN01042203 FN01042204 FN01042205 FN05062202 Validators: Cerilliant for all analytes, all greater than 99.9% pure FN09082101 FN04032301 FN04032302 FN04032303 FN06232204 Controls: Cerilliant for all analytes, all greater than 99.9% pure FN02162310 FN03062415 FN05232301
p20252725	W088	Calibrators: Cerilliant for all analytes all >99.9% pure FN01042201 FN01042202 FN01042203 FN01042204 FN01042205 FN05062202 Validators: Cerilliant for all analytes, all greater than 99.9% pure FN09082101 FN04032301 FN04032302 FN04032303 FN06232204 Controls: Cerilliant for all analytes, all greater than 99.9% pure FN02162310 FN03062415 FN05232301

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UTIC	Webcode	What standard was used and, if given, it's stated purity?
		Calibrators: Cerilliant for all analytes all >99.9% pure FN01042201 FN01042202 FN01042203 FN01042204 FN01042205 FN05062202 Validators: Cerilliant for all analytes, all greater than 99.9% pure FN09082101 FN04032301 FN04032302 FN04032303 FN06232204 Controls: Cerilliant for all analytes, all greater than 99.9% pure FN02162310 FN03062415
p20252726	W088	FN05232301
		Calibrators: Cerilliant for all analytes all >99.9% pure FN01042201 FN01042202 FN01042203 FN01042204 FN01042205 FN05062202 Validators: Cerilliant for all analytes, all greater than 99.9% pure FN09082101 FN04032301 FN04032302 FN04032303 FN06232204 Controls: Cerilliant for all analytes, all greater than 99.9% pure FN02162310 FN03062415
p20252727	W088	FN05232301

UTIC	Webcode	What standard was used and, if given, it's stated purity?
p20252728	W088	Calibrators: Cerilliant for all analytes all >99.9% pure FN01042201 FN01042202 FN01042203 FN01042204 FN01042205 FN05062202 Validators: Cerilliant for all analytes, all greater than 99.9% pure FN09082101 FN04032301 FN04032302 FN04032303 FN06232204 Controls: Cerilliant for all analytes, all greater than 99.9% pure FN02162310 FN03062415 FN05232301
p20252733	W092	VWR Chemicals Ethanol absolute (99.7%) LGC Reference Spirit-5% ABV (Certified Reference Material)
p20252735	W031	The following NIST Traceable Certified Reference Standards were used: 200 ± 1 mg/dL Ethanol, Cerilliant Lot FN03132302, >99.9% 300 ± 2 mg/dL Ethanol, Cerilliant Lot FN06112149, >99.9%
p20252736	W079	Lipomed Ethanol 400.0 mg/dL Lot #12052023-B
p20252737	W079	Lipomed Lot No. 12052023-B, 400 mg/dL
p20252738	W044	Lipomed, Aqueous Ethanol Standard Solution 400 mg/dL, Lot # 12052023-B, 100.0% purity
p20252739	W114	Supelco Multicomponent Alcohol Calibration Kit lot# FN05092202 (purity > 99.9%) was used to calibrate the GC-FID. Alcohol Pharmaceutical Secondary Standard Lot# LRAD5063 (purity 92.7%) was used to make the in-house 0.080 g/dL whole blood control and the in-house 0.300 g/dL high aqueous control.
p20252740	W114	Cerilliant Calibration Kit Lot# FN05092202
p20252741	W114	Cerilliant Multicomponent Alcohol Calibration Kit (C1-C6) A-127-6X1.2ML Lot FN05092202
p20252742	W114	Cerilliant calibration kit Lot#: FN05092202
p20252743	W114	Ceriliant Multicomponent Alcohol Calibration Kit A-127 Lot FN05092202
p20252744	W114	Cerilliant Multicomponent Calibration Kit Lot# FN05092202 Chromatographic purity of each neat compnent is >=99.9%
p20252745	W114	Cerilliant Calibration Kit: FN05092202

UTIC	Webcode	What standard was used and, if given, it's stated purity?
p20252746	W114	Cerilliant Multicomponent Calibration Kit Lot# FN05092202 Chromatographic purity of each neat component is >=99.9%
p20252747	W114	Cerilliant multi component alcohol calibration kit, catalog A-127, lot FN05092202
p20252749	W190	Cerilliant calibration kit: Lot# FN05092202, exp 5-31-27
p20252750	W190	Cerilliant Certified Reference Material: 80 mg/dL and 300 mg/dL Cerilliant calibration kit: FN05092202
p20252751	W190	Cerilliant Calibration Kit FN05092202 >99.9%
p20252752	W190	Cerilliant calibration kit FN05092202
p20252753	W190	Cerilliant calibration kit Lot # FN05092202 exp. date 05.31.2027
p20252754	W190	Cerlilliant multi component alcohol calibration kit FN05092202
p20252755	W190	Cerilliant calibration kit LOT FN05092202
p20252756	W190	Cerilliant Multi-Component Alcohol Calibration Kit: FN05092202
p20252757	W190	Multicomponent Alcohol Calibration Kit Lot# FN05092202, Cerilliant calibration kit
p20252758	W002	Supelco ethanol standards with purity 99.9%
p20252761	W110	Cerilliant Ethanol-80 Lot# FN06232204. Purity > 99.9%
p20252762	W110	Cerilliant Ethanol-80 Lot #FN06232204. Purity > 99.9%
p20252766	W110	Cerillliant Ethanol-80 lot #FN06232204, 99.9%
p20252769	W110	Cerilliant Ethanol-80 Lot# FN06232204 Purity > 99.9%
p20252770	W082	Calibrators Cerilliant FN12272201 0.010 g% Cerilliant FN03072301 0.100 g% Ceriliiant FN03132302 0.200 g% Cerilliant FN03052102 0.400 g% Controls Cerilliant FN03122113 0.020 g% Cerilliant FN06232204 0.080 g% Cerilliant FN06112149 0.300 g%
p20252771	W172	Cerilliant
p20252772	W096	Internal standard - n-propanol (Millipore-Sigma lot SHBN6629) Calibrators - ethanol (Pharmco-Aaper lot 240208-B079607) Controls - ethanol (Pharmco-Aaper lot 240208-B079608)
p20252775	W206	Ethanol 200 proof - Lot# SHBC2261V
p20252776	W116	Cerilliant 0.080 g/100mL Lot #:FN06232204 purity:>99.9%
p20252777	W116	Cerilliant 0.080 g/100mL Lot #:FN06232204 purity: >99.9%
p20252778	W025	Ethanol (400 +/- 2mg/dL) Sigma Aldrich (Supelco) lot FN03052102, >99.9%
p20252779	W256	Cerilliant Multicomponent alcohol calibration kit, Lot: FN07252344. 99.9%

UTIC	Webcode	What standard was used and, if given, it's stated purity?
p20252780	W070	0.01 g% MIAE Lipomed lot: 1808.1B1.1L11 (MIAE = Methanol, Isopropanol, Acetone, Ethanol) 0.03 g% MIAE Lipomed lot: 524303 0.04 g% MIAE Lipomed lot: 524308 0.05 g% MIAE Lipomed lot: 1808.1B1.1L10 0.10 g% MIAE Lipomed lot: 1808.1B1.1L13 0.20 g% MIAE Lipomed lot: 529866 0.50 g% MIAE Lipomed lot: 531813 NIST 0.08 g% Ceriliant lot: FN06232204 0.10 g% control Ceriliant lot: FN02162310
p20252781	W070	Lipomed used for calibrators. 0.01 g% Lot 1808.1B1.1L11 , 0.03 g% Lot 524303, 0.04 g% Lot 524308, 0.05 g% Lot 1808.1B1.1L10, 0.10 g% Lot: 1808.1B1.1L13, 0.2 g% Lot 529866. Calibrator at 0.5 g% made in house using Thermo fisher Ethanol B0547734A (retest 03/31/29) 99.5% Ceriliant used for controls. 0.08 g% Lot FN06232204 and 0.1 g% Lot FN02162310
p20252782	W070	Thermo Scientific Lot #: B0547734A, 99.5%
p20252783	W070	Lipomed- Alcohol mixture 4, Lot #1808.1B1.1L11, Lot #,524303, Lot #524308, Lot #534932, Lot # 1808.1B1.1L13, Lot # 529866, Lot # 531813. Cerilliant multicomponent mix (1000 ug/mL) Lot # FN02162310 , Cerilliant NIST Ethanol-80 Lot # FN06232204
p20252784	W055	95% Ethanol: Sigma-Aldrich, 190 Proof, 95%, Lot#SHBR8294 1-Butanol: Sigma-Aldrich, 99.9%, Lot#SHBS0450
p20252785	W055	Ethanol 95% Sigma-Aldrich Lot: SHBR8294
p20252786	W055	Sigma SHBR8294 95%
p20252787	W055	Ethanol 95% Sigma-Aldrich Lot: SHBR8294
p20252788	W004	NIST Ethanol-water solution, Nominal Mass Fraction 95.6% (Standard Reference Material (SRM) 2900)
p20252789	W037	Calibration Standards: Cerilliant Ethanol 10mg/dl Lot FN12272201 Cerilliant Ethanol 20mg/dl Lot FN03122113 Cerilliant Ethanol 50mg/dl Lot FN03172301 Cerilliant Ethanol 100mg/dl Lot FN03072301 Cerilliant Ethanol 300mg/dl Lot FN06112149 Cerilliant Ethanol 400mg/dl Lot FN04092401 Lipomed Standards for positive control: Lipomed 80mg/dl Lot 517757 Lipomed 150mg/dl Lot 518346

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5) Method for Estimating Uncertainty:

Example: Uncertainty estimate is based on method reproducibility. CRM uncertainty and sample homogeneity.

UTIC	Webcode	Method for Estimating Uncertainty:
p20252701	W049	Uncertainty estimate is based on calibrator and control manufacturing variability, matrix-matched control reproducibility, and allowed sample reproducibility limits.
p20252702	W163	Measurement uncertainty measurement is based on method reproducibility and the uncertainty of equipment for (dilutor, pipettes, etc) and CRM
p20252703	W088	Uncertainty estimate is based on control charts of method and process reproducibility, and the purity of standardsused to make calibrator solutions.
p20252704	W088	Uncertainty estimate is based on control charts of method and process reproducibility, and the purity of standards used to make calibrator solutions.
p20252705	W088	Uncertainty estimate is based on control charts of method and process reproducibility, and the purity of standards used to make calibrator solutions.
p20252706	W088	Uncertainty estimate is based on control charts of method and process reproducibility, and the purity of standards used to make calibration.
p20252707	W088	The estimations for measurement uncertainty are based on the precision and reproducability of the testing method for all analytes. Each step of the testing process is taken into account including, but not limited to, pipetting, human factors, and instrumentation when considering the reproducability.
p20252708	W088	Uncertainty estimate is based on control charts of method and process reproducibility, and the purity of standards used to make calibrator solutions.
p20252709	W088	Uncertainty estimate is based on control charts of method and process reproducibility, and the purity of standards used to make calibrator solutions.
p20252710	W088	Uncertainty estimate is based on control charts of method and process reproducibility, and the purity of standards used to make calibrator solutions.
p20252711	W088	Uncertainty estimate is based on control charts of method and process reproducibility, and the purity of standards used to make calibrator solutions.
p20252712	W088	Uncertainty estimate is based on control charts of method and process reproducibility, and the purity of standards used to make calibrator solutions.

UTIC	Webcode	Method for Estimating Uncertainty:
p20252713	W088	Uncertainty is based on controls charts of method and process reproducibility, as well as the purity of standards used for calibration solutions.
p20252714	W088	Measurement uncertainty is based on control charts of the method reproducibility, and purity of standards, pipettes, and volumetric glassware that were used for testing.
p20252715	W088	Uncertainty estimate is based on control charts of method and process reproducibility, and the purity of standards used to make calibrator solutions
p20252716	W088	Uncertainty estimate is based on control charts of method and process reproducibility, and the purity of standards used to make calibrator solutions
p20252717	W088	Uncertainty estimate is based on control charts of method and process reproducibility, and the purity of standards used to make calibrator solutions.
p20252718	W088	Uncertainty estimate is based on control charts of the method, process reproducibility and purity of the standards used to make calibration solutions.
p20252719	W088	Uncertainty estimate is based on control charts of method and process reproducibility and the purity of standards used to make calibrator solutions.
p20252720	W088	Uncertainty estimate is based on control charts of method and process reproducibility, and the purity of standards used to make calibrator solutions.
p20252721	W088	Uncertainty estimate is based on control charts of method and process reproducibility, and the purity of standards used to make calibrator solutions.
p20252722	W088	Uncertainty estimate is based on control charts of method and process reproducibility, and the purity of standards used to make calibrator solutions.
p20252723	W088	Uncertainty estimate is based on control charts of method and process reproducibility, and the purity of standards used to make calibrator solutions.
p20252724	W088	Uncertainty estimate is based on control charts of method and process reproducibility, and the purity of standards used to make calibrator solutions.
p20252725	W088	Uncertainty estimate is based on control charts of method and process reproducibility, and the purity of standards used to make calibrator solutions.
p20252726	W088	Uncertainty estimate is based on control charts of method and process reproducibility, and the purity of standards used to make calibrator solutions.

UTIC	Webcode	Method for Estimating Uncertainty:
p20252727	W088	Uncertainty estimate is based on control charts of method and process reproducibility, and the purity of standards used to make calibrator solutions.
p20252728	W088	Uncertainty estimate is based on control charts of method and process reproducibility, and the purity of standards used to make calibrator solutions.
p20252733	W092	Uncertainty estimate is based on recovery, precision, purity of standard and standard preparation.
p20252735	W031	Uncertainty estimate is based on uncertainties of the Hamilton Diluter and Eppendorf pipette calibrations, CRM uncertainties, and method reproducibility. The following NIST Traceable Certified Reference Standard is used as a method reproducibility control: 150 ± 1 mg/dL Ethanol, Cerilliant Lot FN 07022010, >99.9%
p20252736	W079	Uncertainty estimate is based on the overall procedure and analysis
p20252737	W079	Uncertainty estimate is based on the overall procedure and analysts
p20252738	W044	Uncertainty of Measurement is based on measurment reproducibility, CRM uncertainty, duplicate aliquots, and the use of pipettes.
p20252739	W114	Measurement Uncertainty estimate is based on the following budget components: method reproducibility, duplicate analysis, and equipment: CRM, dilutor, pipettes, etc.
p20252740	W114	Measurement Uncertainty estimate is based on the following budget components: method reproducibility, duplicate analysis, and equipment: CRM, dilutor, pipettes, etc.
p20252741	W114	Measurement Uncertainty estimate is based on the following budget components: method reproducibility, duplicate analysis, and equipment: CRM, dilutor, pipettes, etc.
p20252742	W114	Measurement Uncertainty estimate is based on the following budget components: method reproducibility, duplicate analysis, and equipment: CRM, dilutor, pipettes, etc.
p20252743	W114	Measurement Uncertainty estimate is based on the following budget components: method reproducibility, duplicate analysis, and equipment: CRM, dilutor, pipettes, etc.
p20252744	W114	Measurement Uncertainty estimate is based on the following budget components: method reproducibility, duplicate analysis, and equipment (certified reference material, dilutor, pipettes, etc.)
p20252745	W114	Measurement Uncertainty estimate is based on the following budget components: method reproducibility, duplicate analysis, and equipment: CRM, dilutor, pipettes, etc.
p20252746	W114	Measurement Uncertainty estimate is based on the following budget components: method reproducibility, duplicate analysis, and equipment: CRM, dilutor, pipettes, etc.

UTIC	Webcode	Method for Estimating Uncertainty:
p20252747	W114	Measurement Uncertainty estimate is based on the following budget components: method reproducibility, duplicate analysis, and equipment: CRM, dilutor, pipettes, etc.
p20252749	W190	Measurment Uncertainty estimate is based on the following budget components: method reproducibility, duplicate analysis, and equipment: CRM, dilutor, pipettes, etc.
p20252750	W190	Measurement Uncertainty estimate is based on the following budget components: method reproducibility, duplicate analysis, and equipment: CRM, dilutor, pipettes, etc.
p20252751	W190	Measurement Uncertainty estimate is based on the following budget components: method reproducibility, duplicate analysis, and equipment: CRM, dilutor, pipettes, etc.
p20252752	W190	Measurement Uncertainty estimate is based on the following budget components: method reproducibility, duplicate analysis, and equipment: CRM, dilutor, pipettes, etc.
p20252753	W190	Mesurment Uncertanty estimate is based on the following components: method reproducibility, dublicate analysis, and equipment: CRM, dilutor, pipettes, etc.
p20252754	W190	Measurement Uncertainty estimate is based on the following budget components: method reproducibility, duplicate analysis, and equiptment: CRM, dilutor, pipettes, etc.
p20252755	W190	Measurement Uncertainty estimate is based on the following budget components: method reproducibility, duplicate analysis, and equipment: CRM, diluter, pipettes, flasks
p20252756	W190	Measurement Uncertainty estimate is based on the following budget components: method reproducibility, duplicate analysis, and equipement: CRM, dilutor, pipettes, etc.
p20252757	W190	Measurement Uncertainty estimate is based on the following budget components: method reproducibility, duplicate analysis, and equipment: CRM, dilutor, pipettes, etc.
p20252758	W002	Uncertainty is based on method reproducibility, CRM of calibrators, and pipette calibration.
p20252761	W110	All components of uncertainty (i.e. standards and equipment), when analyzing forensic alcohol samples, are used to make a reasonable estimation of the uncertainty of measurement.
p20252762	W110	All components of uncertainty (i.e. standards and equipment), when analyzing forensic alcohol samples, are used to make a reasonable estimation of the uncertainty of measurement.
p20252766	W110	All components of uncertainty (i.e. standards and equipment), when analyzing forensic alcohol samples, are used to make a reasonable estimation of the uncertainty of measurement.

UTIC	Webcode	Method for Estimating Uncertainty:
p20252769	W110	All components of uncertainty (i.e. standards and equipment), when analyzing forensic alcohol samples, are used to make a reasonable estimation of the uncertainty of measurement.
p20252770	W082	Estimation of uncertainty for this method is based upon both a Type A and Type B evaluation. The Type A evaluation is covered by the reproducibility of the method and measurements of the positive control standards. The Type B evaluation included the equipment used in the method, the laboratory requirement of 5% agreement between replicates, and the purity of the reference material.
p20252771	W172	Uncertainty estimate is based on method reproducibility. CRM uncertainty and sample homogeneity.
p20252772	W096	Uncertainty estimate based on method reproducibility, diluter/dispenser uncertainty, and glassware uncertainty.
p20252775	W206	Uncertainty estimate is based on duplicate sampling criteria and historical QC data. CRM, glassware and pipette uncertainty is also considered. Expanded uncertainty = 8% at 95.45% confidence interval (k=2)
p20252776	W116	Uncertainty estimate is based on method reproducibility. The following are included in the calculation: measurement reproducibility (control chart), CRM uncertainty for calibrators, internal standard dispensette uncertainty, matrix (duplicate result acceptability), dilution (volumetric flask uncertainty), pipette uncertainty.
p20252777	W116	Uncertainty estimate is based on method reproducibility. The following are included in the calculation: measurement reproducibility (control chart), CRM uncertainty for calibrators, internal standard dispensette uncertainty, matrix (duplicate result acceptability), dilution (volumetric flask uncertainty), pipette uncertainty.
p20252778	W025	Uncertainty of the densitometer, reference standard uncertainty, uncertainty of the process, instrument bias
p20252779	W256	Uncertainty is based on known QC recovery, CRM uncertainty and dispenser/pipette coefficient of variation.
p20252780	W070	Uncertainty estimate is based on method reproducibility based off of historic control data, pipette, and glassware calibration information, and CRM uncertainty.
p20252781	W070	Uncertainty estimate is based on method reproducibility based off of historic control data, pipette, and glasswarecalibration information, and CRM uncertainty.
p20252782	W070	Uncertainty estimate is based on method reproducibility based off of historic control data, pipette, and glassware calibration information, and CRM uncertainty.
p20252783	W070	Uncertainty estimate is based on method reproducibility based off of historic control data, pipette, and glassware calibration information, and CRM uncertainty.

UTIC	Webcode	Method for Estimating Uncertainty:
p20252784	W055	Uncertainty estimate is based off of: pipette external calibration, pipette operator variance, gas chromatography variance, ethanol standard variance, volumetric flask variance, and volumetric pipette variance.
p20252785	W055	Uncertainty budget
p20252786	W055	Uncertainty estimated is based on method reproducibility, equipment variance, and operator variance.
p20252787	W055	Uncertainty estimate is based off of: pipette external calibration, pipette operator variance, gas chromatography variance, ethanol standard variance, volumetric flask variance, and volumetric pipette variance
p20252788	W004	Method uncertainty is estimated utiliizing the method reproducibilty (uncertainty of quality control historical data tracked by control charts), uncertainties for diluters, NIST SRM, and pipettes, and volumetric flask ATSM tolerance.
p20252789	W037	Uncertainty estimate is based on repeatability of positive controls; CRM uncertainty; replicate sample requirement and pipette uncertainty

6)   Item 1: Please report your quantitation result, reported in % (v/v):
      Example: 17.1%.

7)   Item 1: Please report your expanded measurement uncertainty, reported in %. If no uncertainty is reported "0" will be used for statistical purposes.
      Example: 2.6 %.

8)   Item 1: Please report the coverage factor (k) for your measurement uncertainty:
      Example: k=2 (confidence level of approximately 95%, assuming the net mass follows a normal distribution)

UTIC	Webcode	Item 1: Please report your quantitation result, reported in % (v/v)	Item 1: Please report your expanded measurement uncertainty, reported in %	Item 1: Please report the coverage factor (k) for your measurement uncertainty
p20252701	W049	27.8%	1.2%	k=2 (exp coverage probability of 95%)
p20252702	W163	30.3	0.0	(blank)
p20252703	W088	28.1%	1.4%	k = 2.58 (2.576)
p20252704	W088	27.7%	1.4%	2.58
p20252705	W088	28.0%	1.4%	k= 2.58 (2.578)

UTIC	Webcode	Item 1: Please report your quantitation result, reported in % (v/v)	Item 1: Please report your expanded measurement uncertainty, reported in %	Item 1: Please report the coverage factor (k) for your measurement uncertainty
p20252706	W088	27.7%	1.4%	k = 2.576
p20252707	W088	27.3%	1.4%	2.576 (99%)
p20252708	W088	27.7%	1.4%	k=2.58 (2.576)
p20252709	W088	27.6%	1.4%	k=2.58 (2.576)
p20252710	W088	27.9%	1.4%	k= 2.58 (2.576)
p20252711	W088	28.3%	1.4%	2.58
p20252712	W088	28.1%	1.4%	k=2.58 (2.576)
p20252713	W088	27.5	1.4	k=2.58
p20252714	W088	27.2%	1.4%	k=2.576
p20252715	W088	27.9%	1.4%	k=2.58 (2.576)
p20252716	W088	26.9%	1.3%	k=2.58
p20252717	W088	27.3	1.4	k=2.58
p20252718	W088	27.4%	1.4%	k= 2.58 (2.576)
p20252719	W088	27.7%	1.4%	2.58
p20252720	W088	27.2	1.4	k=2.576
p20252721	W088	27.1%	1.4%	k = 2.576
p20252722	W088	28.5	1.4	2.58
p20252723	W088	27.8	1.4	2.58
p20252724	W088	27.8%	1.4%	2.58
p20252725	W088	27.5	1.4	2.58
p20252726	W088	27.5%	1.4%	k = 2.58
p20252727	W088	27.9%	1.4%	k = 2.58
p20252728	W088	28.3%	1.4%	2.58
p20252733	W092	27.2%	1.1%	k=2
p20252735	W031	26.8667%	2.5059%	k=3
p20252736	W079	Greater than 1/2 of 1% by volume	0	k=2
p20252737	W079	Greater than 1/2 of 1% by volume	0	k=2
p20252738	W044	26.3%	3.4%	3
p20252739	W114	27.3%	2.2%	k=3 (Confidence level 99.73%)
p20252740	W114	27.6%	2.2%	k = 3 ; Confidence level 99.73%
p20252741	W114	29.1%	2.3%	k=3 (confidence level 99.73%)
p20252742	W114	28.0%	2.2%	k = 3 ; Confidence level 99.73%
p20252743	W114	28.7%	2.3%	Coverage factor k=3; Conf. Level 99.73%

UTIC	Webcode	Item 1: Please report your quantitation result, reported in % (v/v)	Item 1: Please report your expanded measurement uncertainty, reported in %	Item 1: Please report the coverage factor (k) for your measurement uncertainty
p20252744	W114	27.3%	+/- 2.2%	k = 3 (Confidence level of 99.73%)
p20252745	W114	27.8%	2.2%	k=3 (Confidence Level 99.73 %)
p20252746	W114	27.3%	2.2%	3
p20252747	W114	27.7%	2.2%	k=3 (confidence level 99.73%)
p20252749	W190	27.7%	2.2%	k=3, Confidence level 99.73%
p20252750	W190	27.1%	2.2%	k= 3 confidence level: 99.73 %
p20252751	W190	27.7%	2.2%	k=3 (confidence level of 99.73%)
p20252752	W190	27.3%	2.2%	k=3; Confidence level 99.73%
p20252753	W190	28.2%	2.2%	k=3; confidence level 99.73%
p20252754	W190	27.2%	2.2%	k=3; Confidence level 99.73%
p20252755	W190	27.1%	2.2%	Coverage factor k = 3; Confidence 99.73%
p20252756	W190	27.3%	2.2%	k=3 (confidence level 99.73%)
p20252757	W190	27.2%	2.2%	k = 3; Confidence level 99.73%
p20252758	W002	29.5%	1.6%	k=3
p20252761	W110	29.6%	+/- 2.1%	K = 3 (confidence level of ~ 99%)
p20252762	W110	28.0%	± 2.0%	k=3 (confidence level of approx 99%)
p20252766	W110	27.9%	2.0%	k=3
p20252769	W110	26.5%	+/- 1.9%	K=3 (confidence level of ~ 99%)
p20252770	W082	27.5%	2.0%	k=2 (~95% level of confidence)
p20252771	W172	27	3	2
p20252772	W096	27.8%	1.0%	2.05
p20252775	W206	26.3%	2.1%	k=2
p20252776	W116	27.5%	2.6%	k=3
p20252777	W116	28.3%	2.7%	k=3
p20252778	W025	26.7%	0.3%	k=3
p20252779	W256	28.2% (v/v)	Not Applicable	Not Applicable
p20252780	W070	28.1%	1.4%	k = 3 (confidence level of 99.73%)
p20252781	W070	27.6%	1.3%	K=3 (confidence level of 99.73%)

UTIC	Webcode	Item 1: Please report your quantitation result, reported in % (v/v)	Item 1: Please report your expanded measurement uncertainty, reported in %	Item 1: Please report the coverage factor (k) for your measurement uncertainty
p20252782	W070	28.2%	1.4%	K=3 (confidence level of 99.73%)
p20252783	W070	27.4%	1.3%	K=3 (confidence level of 99.73%)
p20252784	W055	28.7%	1.9%	k=2, 95%
p20252785	W055	27.4%	1.8%	2
p20252786	W055	29.1%	1.9%	2
p20252787	W055	28.7	1.9	k=2. 95%
p20252788	W004	28%	1%	k=2 (95.45 % confidence level)
p20252789	W037	27.94%	1.63%	3

9) Item 2: Please report your quantitation result, reported in % (v/v):
Example: 17.1%.

10) Item 2: Please report your expanded measurement uncertainty, reported in %. If no uncertainty is reported "0" will be used for statistical purposes.
Example: 2.6 %.

11) Item 2: Please report the coverage factor (k) for your measurement uncertainty:
Example: k=2 (confidence level of approximately 95%, assuming the net mass follows a normal distribution)

UTIC	Webcode	Item 2: Please report your quantitation result, reported in % (v/v)	Item 2: Please report your expanded measurement uncertainty, reported in %	Item 2: Please report the coverage factor (k) for your measurement uncertainty
p20252701	W049	5.0%	0.6%	k=2 (exp coverage probability of 95%)
p20252702	W163	5.1	0.0	(blank)
p20252703	W088	5.09%	0.25%	k = 2.58 (2.576)
p20252704	W088	5.01%	0.25%	2.58

UTIC	Webcode	Item 2: Please report your quantitation result, reported in % (v/v)	Item 2: Please report your expanded measurement uncertainty, reported in %	Item 2: Please report the coverage factor (k) for your measurement uncertainty
p20252705	W088	5.00%	0.25%	k= 2.58 (2.578)
p20252706	W088	4.99%	0.25%	k = 2.576
p20252707	W088	5.09%	0.25%	2.576 (99%)
p20252708	W088	5.65%	0.28%	k=2.58 (2.576)
p20252709	W088	4.89%	0.24%	k=2.58 (2.576)
p20252710	W088	5.04%	0.25%	k= 2.58 (2.576)
p20252711	W088	5.08%	0.25%	2.58
p20252712	W088	4.95%	0.25%	k=2.58 (2.576)
p20252713	W088	4.95	0.25	k=2.58
p20252714	W088	4.85%	0.24%	k=2.576
p20252715	W088	4.98%	0.25%	k=2.58 (2.576)
p20252716	W088	4.85%	0.24%	k=2.58
p20252717	W088	4.94	0.25	k=2.58
p20252718	W088	4.89%	0.24%	k= 2.58 (2.576)
p20252719	W088	4.95%	0.25%	2.58
p20252720	W088	4.90	0.25	k=2.576
p20252721	W088	4.63%	0.23%	k = 2.576
p20252722	W088	5.13	0.26	2.58
p20252723	W088	5.05	0.25	2.58
p20252724	W088	5.00%	0.25%	2.58
p20252725	W088	5.06%	0.25	2.58
p20252726	W088	4.98%	0.25%	k = 2.58
p20252727	W088	5.07%	0.25%	k = 2.58
p20252728	W088	5.16%	0.26%	2.58
p20252733	W092	5.0%	0.2%	k=2
p20252735	W031	4.8915%	0.4562%	k=3
p20252736	W079	Greater than 1/2 of 1% by volume	0	k=2
p20252737	W079	Greater than 1/2 of 1% by volume	0	k=2
p20252738	W044	4.97%	0.65%	3
p20252739	W114	5.0%	0.5%	k=3 (Confidence level 99.73%)
p20252740	W114	4.9%	0.4%	k = 3 ; Confidence level 99.73%
p20252741	W114	4.9%	0.4%	k=3 (confidence level 99.73%)

UTIC	Webcode	Item 2: Please report your quantitation result, reported in % (v/v)	Item 2: Please report your expanded measurement uncertainty, reported in %	Item 2: Please report the coverage factor (k) for your measurement uncertainty
p20252742	W114	4.9%	0.4%	k = 3 ; Confidence level 99.73%
p20252743	W114	4.9%	0.4%	Coverage factor k=3; Conf. Level 99.73%
p20252744	W114	4.8%	+/- 0.4%	k = 3 (Confidence level of 99.73%)
p20252745	W114	4.8%	0.4%	k=3 (Confidence Level 99.73 %)
p20252746	W114	5.0%	0.5%	3
p20252747	W114	4.8%	0.4%	k=3 (confidence level 99.73%)
p20252749	W190	4.9%	0.4%	k=3, Confidence level 99.73%
p20252750	W190	4.9%	0.4%	k= 3 confidence level: 99.73 %
p20252751	W190	5.1%	0.5%	k=3 (confidence level of 99.73%)
p20252752	W190	4.9%	0.4%	k=3; Confidence level 99.73%
p20252753	W190	5.0%	0.6%	k=3; confidence level 99.73 %
p20252754	W190	4.9%	0.4%	k=3; Confidence level 99.73%
p20252755	W190	4.8%	0.4%	Coverage factor k = 3; Confidence 99.73%
p20252756	W190	4.8%	0.4%	k=3 (confidence level 99.73%)
p20252757	W190	5.0%	0.5%	k = 3; Confidence level 99.73%
p20252758	W002	4.9%	0.3%	k=3
p20252761	W110	5.2%	+/- 0.4%	K = 3 (confidence level of ~ 99%)
p20252762	W110	5.0%	± 0.4%.	k=3 (confidence level of approx 99%)
p20252766	W110	5.4%	0.4%	k=3
p20252769	W110	4.8%	+/- 0.4%	K=3 (confidence level of ~ 99%)
p20252770	W082	5.1%	0.4%	k=2 (~95% level of confidence)
p20252771	W172	4.7	0.5	2
p20252772	W096	5.05%	0.17%	2.05
p20252775	W206	4.7%	0.3%	k=2

UTIC	Webcode	Item 2: Please report your quantitation result, reported in % (v/v)	Item 2: Please report your expanded measurement uncertainty, reported in %	Item 2: Please report the coverage factor (k) for your measurement uncertainty
p20252776	W116	5.1%	0.5%	k=3
p20252777	W116	4.9%	0.5%	k=3
p20252778	W025	4.7%	0.1%	k=3
p20252779	W256	5.0% (v/v)	Not Applicable	Not Applicable
p20252780	W070	5.1%	0.3%	k = 3 (confidence level of 99.73%)
p20252781	W070	5.1%	0.2%	K=3 (confidence level of 99.73%)
p20252782	W070	5.0%	0.3%	K=3 (confidence level of 99.73%)
p20252783	W070	5.0%	0.2%	K=3(confidence level of 99.73%)
p20252784	W055	4.99%	0.33%	k=2, 95%
p20252785	W055	5.01%	0.33%	2
p20252786	W055	4.88%	0.32%	2
p20252787	W055	5.03	0.33	k=2, 95%
p20252788	W004	5.1%	0.1%	k=2 (95.45% confidence level)
p20252789	W037	5.19%	0.30%	3

12) How long did it take to complete this test (in hours)? Please report actual analytical hours only.

13) Did you find this test to be a fair test of the process of the quantitation of ethanol?

A) ⭕ Yes

B) ⭕ No

UTIC	Webcode	How long did it take to complete this test (in hours)? Please report actual analytical hours only.	Did you find this test to be a fair test of the process of the quantitation of ethanol?
p20252701	W049	8 hours - entire run (w/ other samples)	Yes
p20252702	W163	(blank)	Yes
p20252703	W088	3	Yes

UTIC	Webcode	How long did it take to complete this test (in hours)? Please report actual analytical hours only.	Did you find this test to be a fair test of the process of the quantitation of ethanol?
p20252704	W088	1	Yes
p20252705	W088	3	Yes
p20252706	W088	1	Yes
p20252707	W088	2.5 hours	Yes
p20252708	W088	less than 2 hours	Yes
p20252709	W088	2	Yes
p20252710	W088	2.5	Yes
p20252711	W088	~ 3 hrs	Yes
p20252712	W088	3	Yes
p20252713	W088	1	Yes
p20252714	W088	1 hour	Yes
p20252715	W088	1	Yes
p20252716	W088	0.25	Yes
p20252717	W088	0.25	Yes
p20252718	W088	1	Yes
p20252719	W088	1	Yes
p20252720	W088	1.5	Yes
p20252721	W088	0.5	Yes
p20252722	W088	1.5	Yes
p20252723	W088	1.5	Yes
p20252724	W088	1.5	Yes
p20252725	W088	2	Yes
p20252726	W088	1 hr	Yes
p20252727	W088	1	Yes
p20252728	W088	1 hour	Yes
p20252733	W092	3 hours	Yes
p20252735	W031	approximately 2 hours	Yes
p20252736	W079	3	Yes
p20252737	W079	2	Yes
p20252738	W044	2.5	Yes
p20252739	W114	4.5 hours	Yes
p20252740	W114	2.5 hrs	Yes
p20252741	W114	2 hours	Yes
p20252742	W114	2 hours	Yes
p20252743	W114	2	Yes
p20252744	W114	4 hours	Yes
p20252745	W114	1	Yes
p20252746	W114	2	Yes
p20252747	W114	1 hour	Yes
p20252749	W190	1	Yes

UTIC	Webcode	How long did it take to complete this test (in hours)? Please report actual analytical hours only.	Did you find this test to be a fair test of the process of the quantitation of ethanol?
p20252750	W190	1	Yes
p20252751	W190	2	Yes
p20252752	W190	3	Yes
p20252753	W190	1 hour	Yes
p20252754	W190	approximately 2 hours	Yes
p20252755	W190	2	Yes
p20252756	W190	1.5	Yes
p20252757	W190	2.5	Yes
p20252758	W002	2hrs	Yes
p20252761	W110	~3.0 hours	Yes
p20252762	W110	3	Yes
p20252766	W110	3	Yes
p20252769	W110	1.5 hours	Yes
p20252770	W082	3 hours	Yes
p20252771	W172	4	Yes
p20252772	W096	8	Yes
p20252775	W206	5 Hours	Yes
p20252776	W116	2	Yes
p20252777	W116	2	Yes
p20252778	W025	3	Yes
p20252779	W256	2	Yes
p20252780	W070	3 hrs	Yes
p20252781	W070	2.5 hours	Yes
p20252782	W070	2.5 hours	Yes
p20252783	W070	2.5 hours	Yes
p20252784	W055	6	Yes
p20252785	W055	5	Yes
p20252786	W055	8	Yes
p20252787	W055	4	Yes
p20252788	W004	3-4 hours	Yes
p20252789	W037	6	Yes

14) How would you change the aspects of the test (i.e. scenario, test samples, question sections, report format) to improve a future version of this test? Comments and suggestions are welcome.

Additionally, this question is a means to provide you with an opportunity to explain or include information about your findings or interpretation, as needed. In order to maintain confidentiality, please refrain from including identifying information specific to your laboratory.

UTIC	Webcode	How would you change the aspects of the test (i.e. scenario, test samples, question sections, report format) to improve a future version of this test? Comments and suggestions are welcome.	FTS Response
p20252701	W049	Test was well put together, data entry is simple. I'm still confused why so many method specifics are requested like the column and standard info.	Thank you for the comment. FTS requests information regarding methods, standards, and uncertainties to provide additional context in our Summary Report for other agencies to utilize and learn.
p20252716	W088	Needs clarification on question 4 (which standard, what's used to build the calibration curve, what's used with the controls?). Spell check doesn't work in Google Chrome. Would like clarification on sig figs for answers (2 after the decimal? 3 total sig figs?).	Thank you for the suggestion.

We ask that you report as you would for normal casework. FTS will adjust the significant figures, if necessary, for statistical purposes. |
| p20252735 | W031 | I found the overall test samples and questions to be straightforward.

Submitted evidence was stored in the refrigerator upon receipt. Calibrators, controls, and evidence were removed from the refrigerator and allowed to warm to room temperature for at least thirty minutes before sampling and diluting. | |

UTIC	Webcode	How would you change the aspects of the test (i.e. scenario, test samples, question sections, report format) to improve a future version of this test? Comments and suggestions are welcome.	FTS Response
p20252738	W044	I recommend the use of evidence tape or tape that is easier to tear/open with gloves on (in reference to the vial itself). Our results are normally reported in g/100 mL and had to be converted for this PT. The following reflects our data before using ethanol's density (0.789 g/mL) for the conversion: Item 1 results: 20.7 g/100 mL Item 1 UM: 2.7 g/100 mL Item 2 results: 3.92 g/100 mL Item 2 UM: 0.51 g/100 mL	Thank you for the suggestion. Thank you for clarifying your results.
p20252741	W114	Additional information in the form of a case scenario might be helpful for choosing what volume glassware to use.	Thank you for the suggestion.
p20252744	W114	Use of narratives to inform initial sample dilution. This could also be accomplished with using commercially available alcohol products so that scent wafting could inform sample dilution.	Thank you for the suggestion. We will consider this for future PTs.
p20252745	W114	For dilution purposed, it would be helpful to have a description of the smaple: Sample retrieved from a bottle labeled "Miller Lite."	Thank you for the suggestion. We will consider this for future PTs.
p20252747	W114	I think using juice as the matrix for one of the unknowns would be helpful and better represent an actual sample received at the laboratory.	Thank you for the suggestion.
p20252755	W190	None, good test.	
p20252756	W190	Utilizing a different matrix to better simulate a real-world scenario	Thank you for the suggestion.

UTIC	Webcode	How would you change the aspects of the test (i.e. scenario, test samples, question sections, report format) to improve a future version of this test? Comments and suggestions are welcome.	FTS Response
p20252758	W002	Maybe try something different than a clear liquid net time.	Thank you for the suggestion.
p20252770	W082	This test could do with more test samples, including a negative sample.	Thank you for the suggestion.
p20252771	W172	question sections are unnecessary	Please see FTS Response for p20252701.
p20252776	W116	The question section is more in-depth than other proficiency test providers. Would recommend solutions that are different colors and clearness to better represent casework samples.	Please see FTS Response for p20252701. Thank you for the suggestion.
p20252777	W116	The question section is more in-depth than other proficiency test providers. Would recommend solutions that are different colors and clearness to better represent casework samples.	Please see FTS Response for p20252701. Thank you for the suggestion.
p20252778	W025	An ounce of sample provided instead of only half an ounce.	Thank you for the suggestion. FTS will consider this for future PTs.
p20252786	W055	Include more realistic beverages into the mix. It seems like you could buy a commercial whiskey and wine in single container and sufficient volume to be fit for purpose for distribution and validation needs.	Thank you for the suggestion. We will consider this for future PTs.