



## Wine Industry Interlaboratory Program

### Summary Report #023- Summer 2006

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[Introduction to the Wine Program](#)

[Explanation of Tables and Definitions of Terms](#)

Analysis	Analysis Name
<a href="#"><u>901</u></a>	<a href="#"><u>Ethanol (% of volume)</u></a>
<a href="#"><u>902</u></a>	<a href="#"><u>Total Sulfur Dioxide</u></a>
<a href="#"><u>903</u></a>	<a href="#"><u>Free Sulfur Dioxide</u></a>
<a href="#"><u>904</u></a>	<a href="#"><u>Titrateable Acidity</u></a>
<a href="#"><u>905</u></a>	<a href="#"><u>Volatile Acidity</u></a>
<a href="#"><u>906</u></a>	<a href="#"><u>Specific Gravity</u></a>
<a href="#"><u>907</u></a>	<a href="#"><u>pH</u></a>
<a href="#"><u>908</u></a>	<a href="#"><u>Reducing Sugar</u></a>
<a href="#"><u>909</u></a>	<a href="#"><u>L-Malic Acid</u></a>
<a href="#"><u>910</u></a>	<a href="#"><u>Glucose + Fructose</u></a>
<a href="#"><u>950</u></a>	<a href="#"><u>Research Property: Copper (Cu) Content</u></a>
<a href="#"><u>951</u></a>	<a href="#"><u>Research Property: Calcium (Ca) Content</u></a>

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## **About the Wine Industry Interlaboratory Program**

This interlaboratory survey was administered by Collaborative Testing Services, Inc. (CTS) through an agreement with The American Society for Enology and Viticulture (ASEV) with technical assistance provided by the Laboratory Proficiency Testing Guidance Committee (LPTGC) of the Technical Projects Committee (TPC). The purpose of the survey was to evaluate laboratory performance and assess the performance of the industry with respect to quality assurance testing conducted on commercially produced wine through an on-going interlaboratory testing program. Two bottles of differing wines were supplied to participant laboratories. The samples for each type of wine were chosen consecutively from a single production run, to minimize variation between bottles. Participating laboratories were asked to analyze the samples' ten properties in accordance with their normal laboratory procedures and return the results and methodology information to CTS.

### **About CTS**

Founded in 1971, Collaborative Testing Services, Inc. (CTS) is a privately - owned company that specializes in interlaboratory tests for a variety of sectors: including rubber, plastics, fasteners and metals, containerboard, paper, wine and color, as well as proficiency tests for forensic laboratories. All of the tests are designed to assist organizations in achieving and maintaining quality assurance objectives. Labs from the U.S., as well as more than 55 countries, currently participate in the CTS programs.

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## Key for Web Summary Report (Page 1 of 2)

<b>WebCode</b>	Assigned laboratory identification number (temporary) used to ensure lab confidentiality while permitting a lab to locate its data in the Wine Web Summary Report published on the CTS web site. The WebCode for each analysis can be found in the Performance Analysis Report mailed to each participant.
<b>Lab Mean</b>	The average of the test results obtained by the participant.
<b>Grand Mean</b>	The average of the LAB MEANS for all included participants. Laboratories flagged with an X or an M (see DATA FLAG column) are excluded from the GRAND MEAN.
<b>Difference from Grand Mean</b>	The difference of the LAB MEAN from the GRAND MEAN.
<b>Between-Lab Standard Deviation</b>	An indication of the precision of measurement between the laboratories. The greater the spread of the LAB MEANS about the GRAND MEAN, the larger the BETWEEN-LAB STANDARD DEVIATION (and vice versa).
<b>Comparative Performance Value</b>	An indication of how well a laboratory's results agree with the other participants. The CPV is a ratio indicating the number of standard deviations from the GRAND MEAN. The closer a laboratory's COMPARATIVE PERFORMANCE VALUE is to zero, the more consistent its results are with the other participants' data (and vice versa). The critical value for each CPV will vary depending on the number of labs participating in a test.
<b>Data Flag</b>	DATA FLAGS are assigned based on the simultaneous analysis of both samples tested. Refer to the following chart for an explanation of each symbol:

<u>DATA FLAG</u>	<u>STATISTICALLY INCLUDED/EXCLUDED</u>	<u>ACTION REQUIRED</u>
*	INCLUDED	<b>CAUTION</b> - review testing procedure and monitor future results. Results fall outside 95% ellipse but within a 99% ellipse that is calculated but not drawn.
X	EXCLUDED	<b>STOP</b> - immediate review of data and/or testing procedure is required. Results fall outside the 99% ellipse. See specific notes following each table for more information on why the data is excluded.
M	EXCLUDED	<b>PROCEED</b> - lab was unable to report data for one sample.

**Graph** - For each laboratory, the LAB MEAN for the first sample (x-axis) is plotted against the LAB MEAN for the second sample (y-axis) with each point representing a laboratory. The horizontal and vertical cross-hairs are the GRAND MEANS for each sample. When 20 or more laboratories are in the statistics, an ellipse is also drawn so that 95% of the time a randomly selected laboratory will be included inside the ellipse. Plotted data flags are explained above.

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### Common Problems Highlighted in Footnotes

1. **Extreme data** - The laboratory's results for one or both samples are so inconsistent with those of the other participants that the lab mean(s) fall outside the plot. The participant is advised to immediately review his data and/or testing procedure.
2. **Systematic bias** - The laboratory's results are either consistently high or low for both samples when compared to the other participants (the plotted point falls near the top or bottom of the ellipse). This indicates that the participant is performing the test with a constant bias. Causes of systematic errors include improper calibration, the particular make/model of equipment or a modification to the testing procedure.
3. **Inconsistency in testing between samples/sample sets** - The laboratory's results indicate that there are differences in the way the two samples tested (the plotted point falls to the side of the ellipse). This type of error may be attributed to the analyst deviating from the procedure when testing one of the samples or a material interaction occurrence with the instrument or room conditions. The inconsistency is reflected in the CPVs for the two samples, such as a +1.5 CPV for sample A and a -2.2 CPV for sample B. CTS also will specify if the laboratory's data for one sample are high/low compared to the other participants. If this inconsistency is slight, the lab's plotted point will be an \* that falls on the edge of the ellipse.
4. **Inconsistency in testing within a sample** - The laboratory's within-lab standard deviation for a specified sample is high when compared to the other participants, often causing the lab's plotted point to fall outside of the ellipse.

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Labs flagged with an \* are not typically included in the footnotes of a data table. These labs may locate their position in the control ellipse and use the definitions above to help identify the type of testing error. An \* should serve as a caution flag, a "yellow light", to a lab. If this error is repeated in future rounds, a lab may need to stop and review its testing procedures. The initial data flag is not cause for alarm. Interlaboratory tests conducted at regular intervals permit a lab to recognize trends in testing.

## ASEV-CTS Wine Industry Interlaboratory Testing Program

## Analysis 901

## Ethanol (% of volume)

WebCode	Data Flag	Sample SA43			Sample SA44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2C3WNC		12.20	0.01	0.06	13.10	0.01	0.11
2QS86X		12.32	0.13	1.24	13.22	0.13	1.17
3PJ2CD		12.06	-0.13	-1.32	12.94	-0.15	-1.37
49PNBX	*	12.12	-0.08	-0.74	12.96	-0.13	-1.22
4BWJQF		12.26	0.07	0.65	13.14	0.05	0.48
51PPV8		12.25	0.06	0.55	13.14	0.05	0.48
5ZWT8Z		12.32	0.13	1.24	13.22	0.13	1.22
95S5EU	X	12.30	0.11	1.05	13.10	0.01	0.11
9M5M71		12.35	0.16	1.54	13.26	0.17	1.59
9RPNMK		12.17	-0.03	-0.28	13.08	-0.01	-0.08
9ZM21S		12.21	0.02	0.16	13.13	0.04	0.39
A3YD3N		12.23	0.03	0.31	13.13	0.04	0.34
AJRDVL	X	12.36	0.16	1.59	13.11	0.02	0.16
AKJ9HU	X	12.55	0.35	3.46	13.26	0.17	1.59
AS5LTV		12.20	0.01	0.06	13.10	0.01	0.11
AXERPG	X	12.00	-0.19	-1.91	13.05	-0.04	-0.35
AYEKV2	X	12.45	0.26	2.52	12.95	-0.14	-1.28
C75SQQ		12.28	0.08	0.80	13.18	0.09	0.85
C9T9WG		12.04	-0.15	-1.51	12.97	-0.12	-1.10
EJGP7R		12.22	0.02	0.21	13.11	0.02	0.16
F48A46		12.20	0.01	0.06	13.10	0.01	0.11
FAZ7YU		12.30	0.11	1.05	13.18	0.09	0.80
FBHY8E		12.20	0.00	0.01	13.10	0.01	0.06
FD3BPR		12.12	-0.08	-0.78	13.02	-0.07	-0.63
G3LVRH		12.20	0.01	0.06	13.10	0.01	0.11
H2BTJA		12.12	-0.08	-0.78	12.98	-0.11	-1.05
HQ4WP8		12.24	0.05	0.46	13.13	0.04	0.34
J1ENZ8		12.24	0.04	0.41	13.12	0.03	0.29
JJR5F		12.16	-0.03	-0.33	13.04	-0.05	-0.45
K84QCB		12.23	0.04	0.36	13.13	0.04	0.39
KBT2DG		12.28	0.08	0.80	13.19	0.10	0.94
KFB3U1		12.21	0.02	0.16	13.09	0.00	-0.03
LM8E3P	*	12.25	0.06	0.55	13.20	0.11	1.04
LXWVBC		12.16	-0.04	-0.38	13.06	-0.03	-0.31
M6K9R3		12.22	0.03	0.26	13.14	0.05	0.48

ASEV-CTS Wine Industry Interlaboratory Testing Program

Analysis 901

Ethanol (% of volume)

WebCode	Data Flag	Sample SA43			Sample SA44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
N5938C		12.18	-0.01	-0.14	13.08	-0.01	-0.08
NE4ZRM	X	12.00	-0.19	-1.91	13.00	-0.09	-0.82
RC7H53	X	12.45	0.26	2.52	13.10	0.01	0.11
RGSC78	*	12.50	0.31	3.01	13.40	0.31	2.89
SEHBZ1	X	12.50	0.31	3.01	13.60	0.51	4.74
SGA3B7	X	12.35	0.16	1.54	13.10	0.01	0.11
SQDTP	X	11.60	-0.60	-5.89	12.48	-0.61	-5.68
SX5MUF		12.00	-0.19	-1.91	12.90	-0.19	-1.74
SYS1AY		12.14	-0.06	-0.57	13.01	-0.08	-0.75
TW5R3X		12.23	0.03	0.31	13.11	0.02	0.20
U8B24S	*	11.90	-0.29	-2.89	12.80	-0.29	-2.67
W36UDE		12.18	-0.01	-0.14	13.11	0.02	0.16
WPC82K		12.12	-0.07	-0.73	12.98	-0.11	-1.00
WU963V		12.05	-0.14	-1.41	12.90	-0.19	-1.74
X94UZ1		12.15	-0.04	-0.43	13.03	-0.06	-0.54
XHMNGW		12.20	0.00	0.01	13.10	0.01	0.06
ZSDQGC	X	12.55	0.36	3.51	13.12	0.03	0.29

Grand Means		Summary Statistics	
	12.194 percent		13.088 percent
Std Dev Btwn Labs			
	0.102 percent		0.108 percent
Statistics based on 41 of 52 reporting participants			

Wines tested: SA43: Burgundy; SA44: Cabernet Sauvignon

# ASEV-CTS Wine Industry Interlaboratory Testing Program

## Analysis 901

### Ethanol (% of volume)

#### Comments on assigned Data Flags

95S5EU (X) - Inconsistent in testing between samples.

AJRDVL (X) - Inconsistent in testing between samples. Also inconsistent in testing within Sample SA44.

AKJ9HU (X) - Inconsistent in testing between samples. Data for Sample SA43 are high.

AXERPG (X) - Inconsistent in testing between samples. Also inconsistent in testing within Sample SA44.

AYEKV2 (X) - Inconsistent in testing between samples. Also inconsistent in testing within Sample SA44.

NE4ZRM (X) - Inconsistent in testing between samples.

RC7H53 (X) - Inconsistent in testing between samples.

SEHBZ1 (X) - Data for both samples are high.

SGA3B7 (X) - Inconsistent in testing between samples.

SQDTP (X) - Data for both samples are low.

ZSDQGC (X) - Inconsistent in testing between samples. Data for Sample SA43 are high.

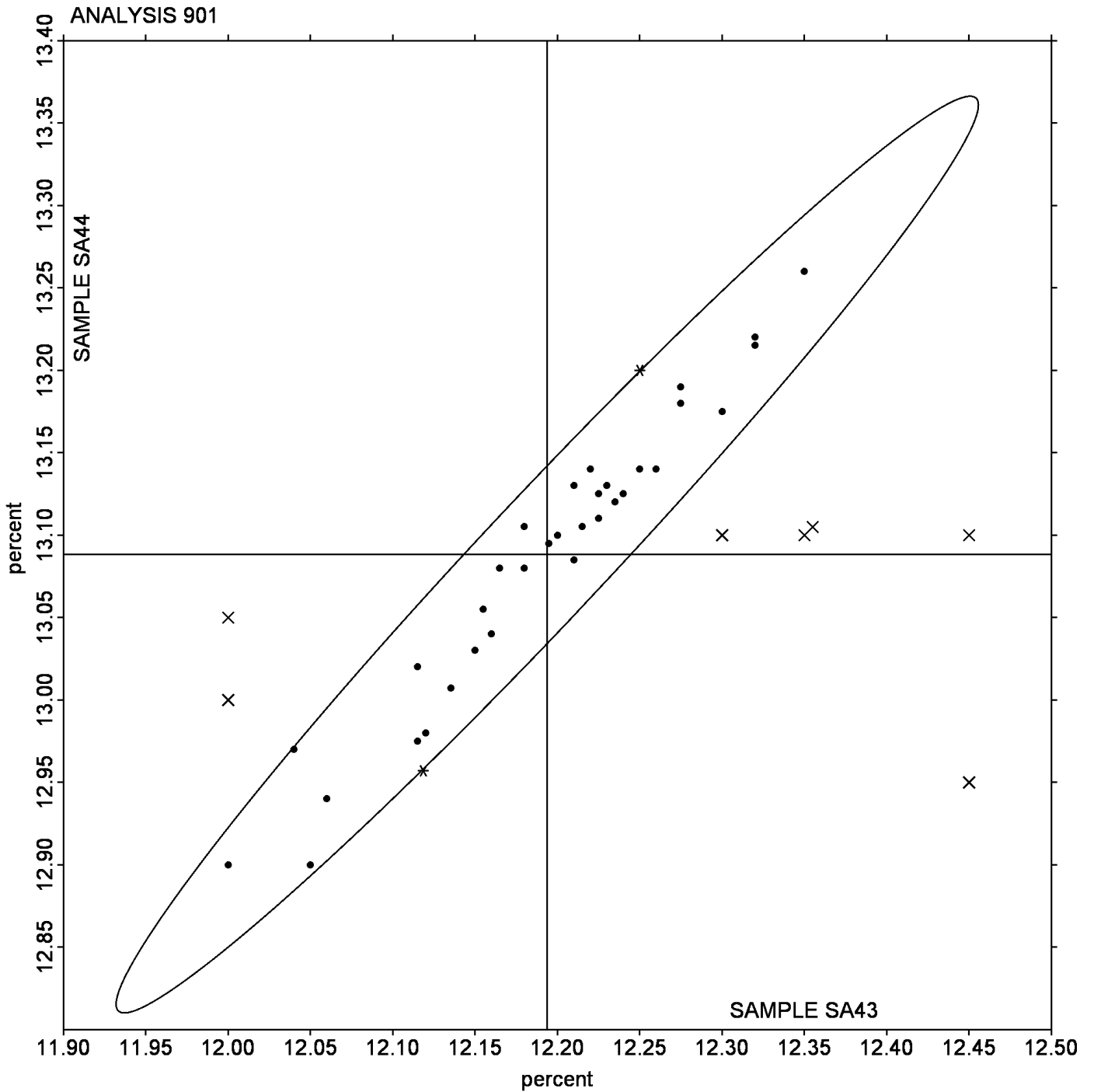
#### Results by Methodology (as reported by laboratory)

Test Methodology	Sample SA43 <i>Burgundy</i>			Sample SA44 <i>Cabernet Sauvignon</i>			Labs Incl / Rpt	
	Group Mean	Btwn Lab STD	Diff from GM	Group Mean	Btwn Lab STD	Diff from GM		
Ebulliometer Method	12.13	0.11	-0.07	13.00	0.14	-0.09	2	8
Gas Chromatography	12.22	0.06	0.02	13.11	0.05	0.02	5	8
Near Infrared Method	12.20	0.07	0.01	13.10	0.07	0.01	24	26
Dist. / Density Method	12.07	0.10	-0.13	12.95	0.08	-0.13	2	4
FTIR	12.20	0.13	0.00	13.09	0.15	0.00	3	5
Other	12.23	0.00	0.03	13.13	0.00	0.04	1	1

# ASEV-CTS Wine Industry Interlaboratory Testing Program

## Analysis 901

### Ethanol (% of volume)



## ASEV-CTS Wine Industry Interlaboratory Testing Program

## Analysis 902

## Total Sulfur Dioxide

WebCode	Data Flag	Sample SA43			Sample SA44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
17QAZE	X	68.00	20.46	3.32	78.00	25.29	3.85
1EF4G7	X	0.06	-47.48	-7.70	0.06	-52.65	-8.01
23VEQZ		51.50	3.96	0.64	55.00	2.29	0.35
2K2YWY		54.50	6.96	1.13	59.00	6.29	0.96
35NGRM		49.50	1.96	0.32	53.00	0.29	0.04
3GTQWJ		36.00	-11.54	-1.87	41.50	-11.21	-1.71
3JLLKS	*	62.50	14.96	2.43	63.00	10.29	1.57
45RB7L		39.00	-8.54	-1.39	42.00	-10.71	-1.63
4JTS2F		41.00	-6.54	-1.06	46.00	-6.71	-1.02
4KNH5M		56.00	8.46	1.37	64.00	11.29	1.72
5REBMD		39.00	-8.54	-1.39	45.00	-7.71	-1.17
5RJSWY		58.00	10.46	1.70	62.00	9.29	1.41
7HLPWU	X	73.60	26.06	4.23	62.40	9.69	1.47
89AATN		43.50	-4.04	-0.66	52.00	-0.71	-0.11
8CCQ4E		52.50	4.96	0.80	65.00	12.29	1.87
9655RM		43.50	-4.04	-0.66	52.00	-0.71	-0.11
99HJZV		38.00	-9.54	-1.55	40.00	-12.71	-1.93
A56QWW		50.00	2.46	0.40	54.50	1.79	0.27
BKPB5D		53.00	5.46	0.89	54.50	1.79	0.27
BQ69C3		45.50	-2.04	-0.33	48.50	-4.21	-0.64
CDHX1P		39.50	-8.04	-1.30	48.00	-4.71	-0.72
D4Q4XB		44.80	-2.74	-0.44	55.20	2.49	0.38
DGDH8K		52.50	4.96	0.80	61.50	8.79	1.34
EF4G1C		46.00	-1.54	-0.25	52.00	-0.71	-0.11
F6LTFP		55.50	7.96	1.29	63.50	10.79	1.64
GCH1EB		45.50	-2.04	-0.33	46.00	-6.71	-1.02
GQNE2E	X	35.00	-12.54	-2.04	53.50	0.79	0.12
HJBTKH		41.00	-6.54	-1.06	47.00	-5.71	-0.87
J12VHC		53.00	5.46	0.89	51.00	-1.71	-0.26
JC5DGS		50.00	2.46	0.40	55.00	2.29	0.35
JKDP6C		39.50	-8.04	-1.30	48.50	-4.21	-0.64
JXF9CH		42.50	-5.04	-0.82	51.00	-1.71	-0.26
LDGWPG		46.40	-1.14	-0.19	52.80	0.09	0.01
LS5RJ8		50.50	2.96	0.48	56.50	3.79	0.58
MVF83W		52.00	4.46	0.72	59.00	6.29	0.96

## ASEV-CTS Wine Industry Interlaboratory Testing Program

## Analysis 902

## Total Sulfur Dioxide

WebCode	Data Flag	Sample SA43			Sample SA44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
ND13NK		45.00	-2.54	-0.41	48.00	-4.71	-0.72
P1EFAX		59.00	11.46	1.86	63.00	10.29	1.57
P383DZ		48.50	0.96	0.16	55.00	2.29	0.35
P43YPE		52.50	4.96	0.80	54.50	1.79	0.27
SWUPU5		49.00	1.46	0.24	57.00	4.29	0.65
T81XYG		47.00	-0.54	-0.09	52.50	-0.21	-0.03
TXQB6M		44.85	-2.69	-0.44	50.32	-2.40	-0.36
U5EGCF		38.00	-9.54	-1.55	42.00	-10.71	-1.63
U7AZFE		54.50	6.96	1.13	63.00	10.29	1.57
UF6M37		47.50	-0.04	-0.01	55.00	2.29	0.35
VZ86ZE	*	43.00	-4.54	-0.74	39.00	-13.71	-2.09
W53VEW		51.00	3.46	0.56	55.00	2.29	0.35
WUZ3XX		46.50	-1.04	-0.17	53.50	0.79	0.12
XDTRZY		44.00	-3.54	-0.57	52.00	-0.71	-0.11
XT5U8D		38.50	-9.04	-1.47	48.00	-4.71	-0.72
XX2PF8		46.50	-1.04	-0.17	52.00	-0.71	-0.11
Y2S2H3		49.50	1.96	0.32	46.50	-6.21	-0.95
Y5UHQB		53.00	5.46	0.89	52.50	-0.21	-0.03

## Grand Means

47.542 mg/L

## Summary Statistics

52.711 mg/L

## Std Dev Btwn Labs

6.163 mg/L

6.571 mg/L

Statistics based on 49 of 53 reporting participants

Wines tested: SA43: Burgundy; SA44: Cabernet Sauvignon

**Comments on assigned Data Flags**

17QAZE (X) - Data for both samples are high.

1EF4G7 (X) - Extreme data. Data appear to be off by a factor of 1000.

7HLPWU (X) - Inconsistent in testing between samples. Data for Sample SA43 are high.

GQNE2E (X) - Inconsistent in testing between samples.

## Analysis 902

## Total Sulfur Dioxide

## Results by Methodology (as reported by laboratory)

Test Methodology	Sample SA43 <i>Burgundy</i>			Sample SA44 <i>Cabernet Sauvignon</i>			Labs Incl / Rpt	
	Group Mean	Btwn Lab STD	Diff from GM	Group Mean	Btwn Lab STD	Diff from GM		
Ripper Method	49.67	5.58	2.13	54.69	6.01	1.98	23	25
Aeration Oxidation (AO) Method	44.92	5.60	-2.62	51.29	6.26	-1.42	17	19
Segmented Flow Analyzer	48.50	4.95	0.96	53.50	7.78	0.79	2	2
Enzymatic Method	50.00	0.00	2.46	54.50	0.00	1.79	1	1
Colorimetric Analyzer	46.50	0.00	-1.04	52.00	0.00	-0.71	1	2
Flow injection Analysis	41.50	3.77	-6.04	45.83	3.40	-6.88	3	4



## ASEV-CTS Wine Industry Interlaboratory Testing Program

## Analysis 903

## Free Sulfur Dioxide

WebCode	Data Flag	Sample SA43			Sample SA44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
25KNXF		17.00	-0.53	-0.25	20.50	1.70	0.64
2AQTJT		18.50	0.97	0.45	21.00	2.20	0.82
3EMAPS		17.50	-0.03	-0.01	22.50	3.70	1.38
43PDTB		20.00	2.47	1.15	22.00	3.20	1.20
4WCE5M		18.50	0.97	0.45	18.00	-0.80	-0.30
57TG7D	*	15.00	-2.53	-1.18	12.00	-6.80	-2.54
652QUL		15.00	-2.53	-1.18	19.00	0.20	0.08
6CSJBC		16.50	-1.03	-0.48	18.50	-0.30	-0.11
6MNCZ9		20.09	2.56	1.19	21.81	3.01	1.12
75M9F4		19.00	1.47	0.69	22.00	3.20	1.20
7EY5VW	X	24.00	6.47	3.02	30.00	11.20	4.19
7UJQGP		19.50	1.97	0.92	20.00	1.20	0.45
8DPBSU		17.00	-0.53	-0.25	17.50	-1.30	-0.48
8YGWUR		16.00	-1.53	-0.71	17.00	-1.80	-0.67
A1YTDM		19.00	1.47	0.69	19.00	0.20	0.08
A3RSUL		15.20	-2.33	-1.09	18.00	-0.80	-0.30
AT8US8		19.00	1.47	0.69	21.00	2.20	0.82
BGV7R2		19.00	1.47	0.69	18.50	-0.30	-0.11
DRBH DY		15.00	-2.53	-1.18	13.00	-5.80	-2.17
DYFDNX	X	21.50	3.97	1.85	37.50	18.70	6.99
F3MHKP		23.00	5.47	2.55	24.00	5.20	1.95
FSRS49		18.50	0.97	0.45	17.00	-1.80	-0.67
GLLDZJ		15.00	-2.53	-1.18	14.00	-4.80	-1.79
HFCCFE		12.50	-5.03	-2.34	15.00	-3.80	-1.42
JM49A2		16.00	-1.53	-0.71	17.00	-1.80	-0.67
JQVAHR		19.00	1.47	0.69	20.00	1.20	0.45
KP2N3E		15.00	-2.53	-1.18	17.50	-1.30	-0.48
KWRMQS		14.00	-3.53	-1.64	14.50	-4.30	-1.61
L28Y1F	X	27.20	9.67	4.51	16.80	-2.00	-0.75
L2ARY2		17.00	-0.53	-0.25	17.00	-1.80	-0.67
L33MLA		17.00	-0.53	-0.25	18.00	-0.80	-0.30
L9YQY8		16.00	-1.53	-0.71	20.00	1.20	0.45
LGW9AB		15.12	-2.41	-1.12	15.75	-3.05	-1.14
LXUBAH	X	9.00	-8.53	-3.98	9.00	-9.80	-3.66
M95776		21.50	3.97	1.85	23.00	4.20	1.57

## ASEV-CTS Wine Industry Interlaboratory Testing Program

## Analysis 903

## Free Sulfur Dioxide

WebCode	Data Flag	Sample SA43			Sample SA44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
MBP128		18.00	0.47	0.22	17.00	-1.80	-0.67
NTBTHB		18.50	0.97	0.45	17.00	-1.80	-0.67
P166ZR		17.00	-0.53	-0.25	20.00	1.20	0.45
P7XZFH	X	0.02	-17.51	-8.16	0.02	-18.78	-7.02
PL4U4E		16.00	-1.53	-0.71	19.20	0.40	0.15
RL3JME		18.50	0.97	0.45	19.00	0.20	0.08
RQG6CD		20.50	2.97	1.38	21.00	2.20	0.82
SQ1HYA		19.50	1.97	0.92	21.00	2.20	0.82
T5ZSNU		20.00	2.47	1.15	20.50	1.70	0.64
TADJ12		19.00	1.47	0.69	23.00	4.20	1.57
TUWBF6		19.00	1.47	0.69	19.00	0.20	0.08
U475WC		14.50	-3.03	-1.41	17.50	-1.30	-0.48
U7VKH6		18.00	0.47	0.22	20.00	1.20	0.45
UXZYV2		15.00	-2.53	-1.18	16.00	-2.80	-1.05
V98WJ2		17.50	-0.03	-0.01	20.50	1.70	0.64
VUAQ8T	X	32.00	14.47	6.74	35.00	16.20	6.06
W99X2S		17.00	-0.53	-0.25	16.00	-2.80	-1.05
X3R6SY		17.00	-0.53	-0.25	20.50	1.70	0.64
YRF24V		20.00	2.47	1.15	21.00	2.20	0.82

## Grand Means

17.529 mg/L

## Summary Statistics

18.797 mg/L

## Std Dev Btwn Labs

2.145 mg/L

2.675 mg/L

Statistics based on 48 of 54 reporting participants

Wines tested: SA43: Burgundy; SA44: Cabernet Sauvignon

## Analysis 903

## Free Sulfur Dioxide

**Comments on assigned Data Flags**

7EY5VW (X) - Data for both samples are high.

DYFDNX (X) - Inconsistent in testing between samples. Data for Sample SA44 are high.

L28Y1F (X) - Inconsistent in testing between samples. Data for Sample SA43 are high.

LXUBAH (X) - Data for both samples are low.

P7XZFH (X) - Extreme data. Data appear to be off by a factor of 1000.

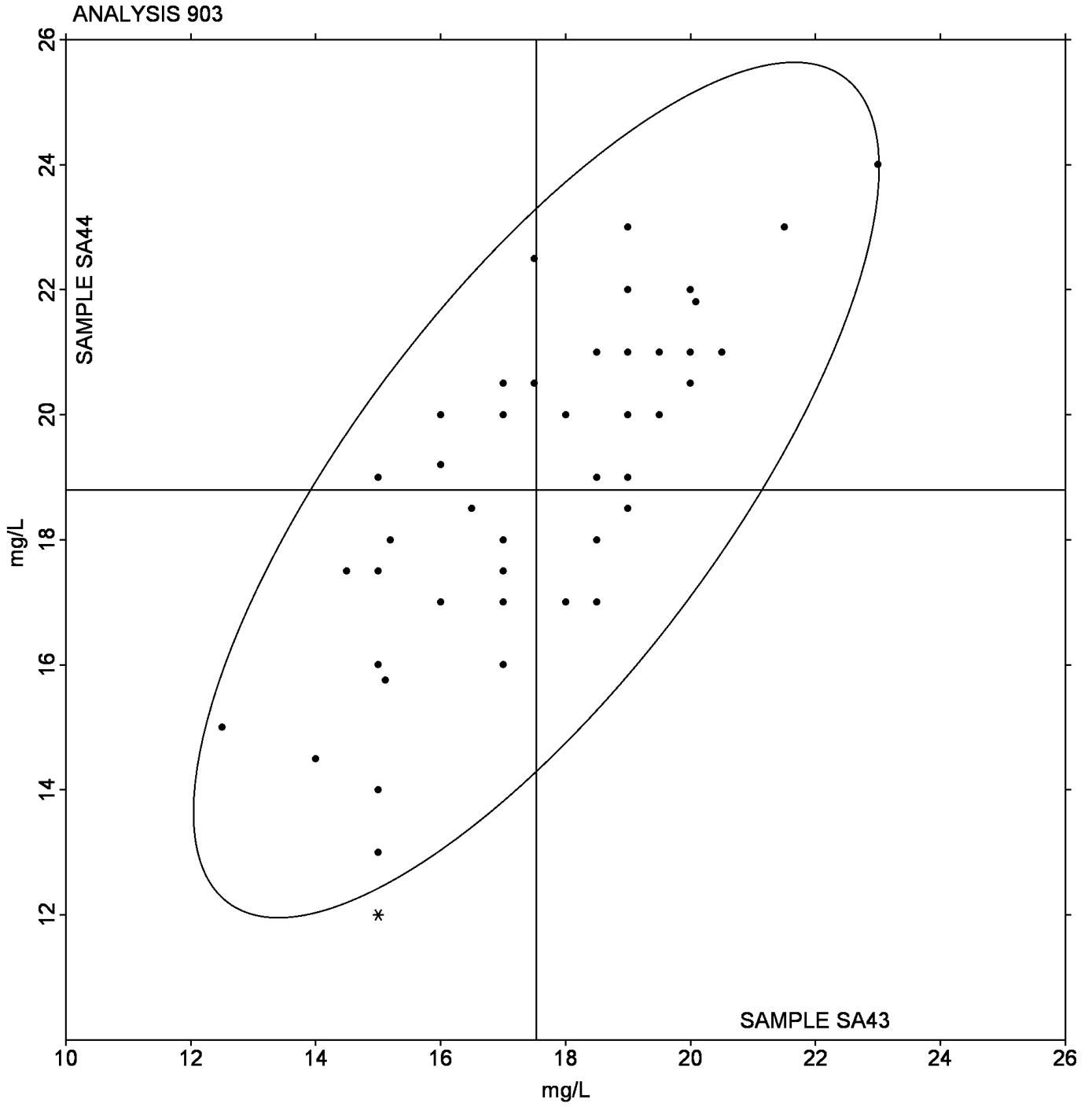
VUAQ8T (X) - Data for both samples are high.

**Results by Methodology (as reported by laboratory)**

Test Methodology	Sample SA43 <i>Burgundy</i>			Sample SA44 <i>Cabernet Sauvignon</i>			Labs Incl / Rpt	
	Group Mean	Btwn Lab STD	Diff from GM	Group Mean	Btwn Lab STD	Diff from GM		
Ripper Method	20.72	1.29	3.19	21.86	1.34	3.06	5	7
Aeration Oxidation (AO) Method	17.42	1.75	-0.11	18.80	2.35	0.00	35	40
Segmented Flow Analyzer	17.38	1.80	-0.15	19.00	2.16	0.20	4	4
Enzymatic Method	17.00	0.00	-0.53	17.50	0.00	-1.30	1	1
Colormetric Analyzer	13.25	1.06	-4.28	14.75	0.35	-4.05	2	2

Analysis 903

Free Sulfur Dioxide



## ASEV-CTS Wine Industry Interlaboratory Testing Program

## Analysis 904

## Titratable Acidity

WebCode	Data Flag	Sample SA43			Sample SA44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
1N37FU		6.800	0.064	0.32	6.000	-0.049	-0.26
2NC8EF	X	0.680	-6.056	-30.37	0.600	-5.449	-29.18
3G7RJZ		6.650	-0.086	-0.43	6.000	-0.049	-0.26
3U32W7	*	6.170	-0.566	-2.84	5.530	-0.519	-2.78
43U2QQ	*	6.350	-0.386	-1.94	5.850	-0.199	-1.07
5SMDTC	X	7.050	0.314	1.58	6.700	0.651	3.48
6BFSCU	*	6.295	-0.441	-2.21	5.770	-0.279	-1.50
6HUB1F		6.845	0.109	0.55	6.240	0.191	1.02
6XJBUN		6.600	-0.136	-0.68	5.890	-0.159	-0.85
73FT1L		6.685	-0.051	-0.26	5.950	-0.099	-0.53
7SD1JL		6.650	-0.086	-0.43	5.950	-0.099	-0.53
89UDKR		6.767	0.031	0.16	5.998	-0.051	-0.27
8HEWK4		6.500	-0.236	-1.18	5.800	-0.249	-1.34
943ZFM		6.610	-0.126	-0.63	5.940	-0.109	-0.59
A56U4C		6.800	0.064	0.32	6.050	0.001	0.00
DF27LU		6.785	0.049	0.25	6.085	0.036	0.19
E9U9A8		6.600	-0.136	-0.68	6.000	-0.049	-0.26
EH2FRB		6.700	-0.036	-0.18	5.950	-0.099	-0.53
EPS983		7.030	0.294	1.48	6.310	0.261	1.40
FLHPS1		6.650	-0.086	-0.43	5.945	-0.104	-0.56
G3TAKG		6.850	0.114	0.57	6.150	0.101	0.54
GFU4QL		6.650	-0.086	-0.43	5.950	-0.099	-0.53
GQUA2E		6.750	0.014	0.07	6.115	0.066	0.35
HD8LL7		6.650	-0.086	-0.43	5.920	-0.129	-0.69
JA3FJ7		6.800	0.064	0.32	6.100	0.051	0.27
JE3L9J		6.600	-0.136	-0.68	6.000	-0.049	-0.26
JMSGFE	X	72.000	65.264	327.33	65.300	59.251	317.32
KSAQCH		6.750	0.014	0.07	6.000	-0.049	-0.26
KY7PDT	X	6.180	-0.556	-2.79	5.870	-0.179	-0.96
M7SPX8		6.750	0.014	0.07	6.150	0.101	0.54
MR9DL7		6.515	-0.221	-1.11	5.870	-0.179	-0.96
MUTFHE		6.900	0.164	0.82	6.200	0.151	0.81
N2L9TH		6.774	0.038	0.19	6.065	0.016	0.08
N6HENT		6.650	-0.086	-0.43	5.945	-0.104	-0.56
P4T6FC	X	6.250	-0.486	-2.44	6.100	0.051	0.27

## ASEV-CTS Wine Industry Interlaboratory Testing Program

## Analysis 904

## Titratable Acidity

WebCode	Data Flag	Sample SA43			Sample SA44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
Q41ENK		7.035	0.299	1.50	6.370	0.321	1.72
R37X2P		6.825	0.089	0.45	6.195	0.146	0.78
RNWWGZ		6.727	-0.009	-0.05	6.025	-0.025	-0.13
SBRLC4	*	6.585	-0.151	-0.76	5.745	-0.304	-1.63
SFRDLK		6.700	-0.036	-0.18	6.000	-0.049	-0.26
TGQR67		6.550	-0.186	-0.93	5.850	-0.199	-1.07
THRK1Y	*	7.250	0.514	2.58	6.500	0.451	2.41
U9SCZ4		6.730	-0.006	-0.03	6.035	-0.014	-0.08
UAJB2G		7.000	0.264	1.32	6.200	0.151	0.81
V4GN4M		6.750	0.014	0.07	6.000	-0.049	-0.26
VE557V		6.700	-0.036	-0.18	6.000	-0.049	-0.26
VJACWZ		6.900	0.164	0.82	6.250	0.201	1.07
XMHJ7P		6.700	-0.036	-0.18	6.000	-0.049	-0.26
XMZYPD		6.600	-0.136	-0.68	6.000	-0.049	-0.26
YBE198		7.060	0.324	1.63	6.385	0.336	1.80
YREZ5X		6.850	0.114	0.57	6.150	0.101	0.54
Z2GW94		6.900	0.164	0.82	6.250	0.201	1.07
ZFEV9U		7.000	0.264	1.32	6.400	0.351	1.88
ZV8K27	X	58.600	51.864	260.12	55.700	49.651	265.90
ZYWVDJ		7.070	0.334	1.68	6.340	0.291	1.56

## Grand Means

6.7359 g/L as tartaric acid

## Summary Statistics

6.0493 g/L as tartaric acid

## Std Dev Btwn Labs

0.1994 g/L as tartaric acid

0.1867 g/L as tartaric acid

Statistics based on 49 of 55 reporting participants

Wines tested: SA43: Burgundy; SA44: Cabernet Sauvignon

# ASEV-CTS Wine Industry Interlaboratory Testing Program

## Analysis 904

### Titratable Acidity

#### Comments on assigned Data Flags

2NC8EF (X) - Extreme data. Lab indicated reporting in g/L as Tartaric, but data appear to be in g/100mL Tartaric.

5SMDTC (X) - Inconsistent in testing between samples. Data for Sample SA44 are high.

JMSGFE (X) - Extreme data. Lab previously reported in g/100mLTartaric, but data appear to be in g/L as Tartaric.

KY7PDT (X) - Inconsistent in testing between samples. Data for Sample SA43 are low.

P4T6FC (X) - Inconsistent in testing between samples.

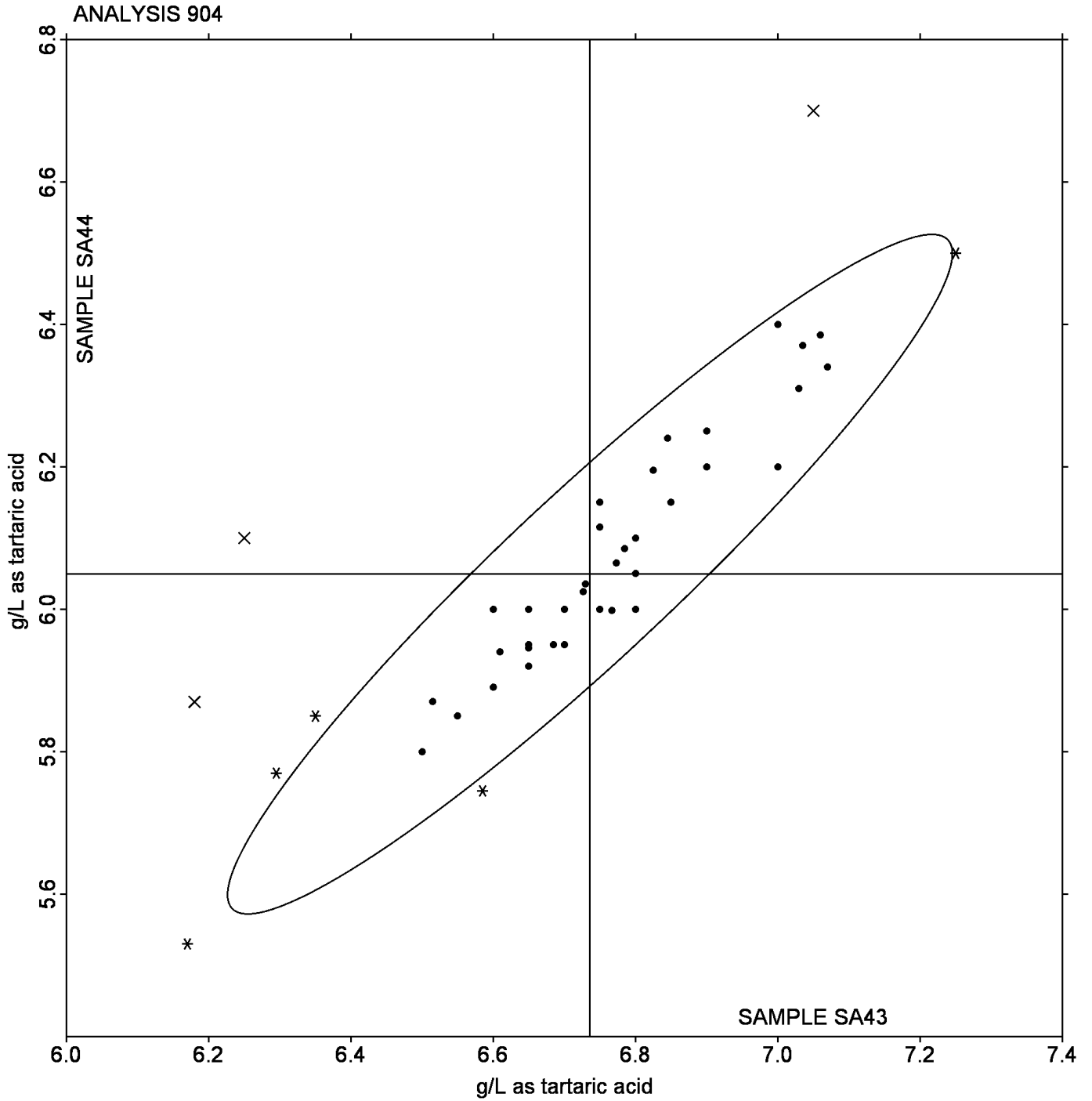
ZV8K27 (X) - Extreme data. Lab indicated reporting in g/100mLTartaric, but data appear to be in g/L as Tartaric.

#### Results by Methodology (as reported by laboratory)

Test Methodology	Sample SA43 <i>Burgundy</i>			Sample SA44 <i>Cabernet Sauvignon</i>			Labs Incl / Rpt	
	Group Mean	Btwn Lab STD	Diff from GM	Group Mean	Btwn Lab STD	Diff from GM		
Autotitration	6.725	0.120	-0.011	6.033	0.122	-0.017	26	27
Manual Titration	6.810	0.167	0.074	6.111	0.168	0.061	16	22
FTIR	6.800	0.283	0.064	6.200	0.283	0.151	2	5

Analysis 904

Titrateable Acidity



**ASEV-CTS Wine Industry Interlaboratory Testing Program**  
**Analysis 905**  
**Volatile Acidity**

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WebCode	Data Flag	Sample SA43			Sample SA44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2PQPST		0.6150	0.0768	1.30	0.7250	0.0796	1.15
2RGP3B		0.5890	0.0508	0.86	0.6900	0.0446	0.64
3HJAN4		0.5900	0.0518	0.88	0.6450	-0.0004	-0.01
3YB5X9		0.4650	-0.0732	-1.24	0.6350	-0.0104	-0.15
64Z8ZW		0.5250	-0.0132	-0.22	0.5450	-0.1004	-1.45
67PGKJ		0.4800	-0.0582	-0.99	0.5200	-0.1254	-1.81
7ABB8A	X	0.3250	-0.2132	-3.62	0.5350	-0.1104	-1.59
7F88EM		0.4100	-0.1282	-2.17	0.4850	-0.1604	-2.31
7PB4PK		0.4300	-0.1082	-1.83	0.5500	-0.0954	-1.37
7V2X6C		0.6100	0.0718	1.22	0.7050	0.0596	0.86
8V19H7		0.5700	0.0318	0.54	0.6500	0.0046	0.07
8ZKBYQ		0.5100	-0.0282	-0.48	0.5850	-0.0604	-0.87
A7FUMR		0.6330	0.0948	1.61	0.7595	0.1141	1.64
AFYJQR		0.5100	-0.0282	-0.48	0.6000	-0.0454	-0.65
AGYEHA		0.5950	0.0568	0.96	0.7650	0.1196	1.72
AKFPME		0.5700	0.0318	0.54	0.6600	0.0146	0.21
BEAAHP		0.6000	0.0618	1.05	0.7400	0.0946	1.36
BFB1YK		0.6450	0.1068	1.81	0.7350	0.0896	1.29
DEUXRG		0.5700	0.0318	0.54	0.6950	0.0496	0.71
EFX9N4		0.5150	-0.0232	-0.39	0.5850	-0.0604	-0.87
F1J7P7		0.4310	-0.1072	-1.82	0.4855	-0.1599	-2.30
F2J3FQ	X	5.2000	4.6618	79.05	5.9000	5.2546	75.68
F5A891	X	0.0430	-0.4952	-8.40	0.0600	-0.5854	-8.43
FFDS7F		0.5500	0.0118	0.20	0.6500	0.0046	0.07
G7FCW2		0.5150	-0.0232	-0.39	0.5850	-0.0604	-0.87
GB13QS		0.5300	-0.0082	-0.14	0.6950	0.0496	0.71
GX5SDL		0.6150	0.0768	1.30	0.7150	0.0696	1.00
HDXMNR		0.6035	0.0653	1.11	0.7065	0.0611	0.88
HUK9MN		0.5250	-0.0132	-0.22	0.6500	0.0046	0.07
J397YF	*	0.5350	-0.0032	-0.05	0.7500	0.1046	1.51
J6SJNH		0.4900	-0.0482	-0.82	0.5950	-0.0504	-0.73
KWXPA7		0.5150	-0.0232	-0.39	0.6400	-0.0054	-0.08
MHZB17		0.5600	0.0218	0.37	0.7200	0.0746	1.07
NDET99		0.5300	-0.0082	-0.14	0.6600	0.0146	0.21
NT89GG		0.6225	0.0843	1.43	0.6975	0.0521	0.75

**ASEV-CTS Wine Industry Interlaboratory Testing Program**  
**Analysis 905**  
**Volatile Acidity**

WebCode	Data Flag	Sample SA43			Sample SA44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
NU17PN		0.6100	0.0718	1.22	0.6500	0.0046	0.07
PFLQVJ		0.5600	0.0218	0.37	0.6800	0.0346	0.50
QC5S22		0.5200	-0.0182	-0.31	0.6300	-0.0154	-0.22
QDXJD7	X	0.6000	0.0618	1.05	0.5700	-0.0754	-1.09
QVKYJ3		0.5100	-0.0282	-0.48	0.6450	-0.0004	-0.01
QWCXSW		0.4400	-0.0982	-1.67	0.5450	-0.1004	-1.45
RUT3WU		0.5300	-0.0082	-0.14	0.6600	0.0146	0.21
T82UKY		0.5550	0.0168	0.28	0.6750	0.0296	0.43
TB3VMF		0.5200	-0.0182	-0.31	0.6750	0.0296	0.43
UR22KV		0.5700	0.0318	0.54	0.6850	0.0396	0.57
URYFSV		0.4100	-0.1282	-2.17	0.5250	-0.1204	-1.73
USRBE4		0.6000	0.0618	1.05	0.6750	0.0296	0.43
UXPFD8		0.4850	-0.0532	-0.90	0.6100	-0.0354	-0.51
UZFB1G		0.4900	-0.0482	-0.82	0.6150	-0.0304	-0.44
WEDQDX		0.5100	-0.0282	-0.48	0.6000	-0.0454	-0.65
XWKUEY	X	0.0505	-0.4877	-8.27	0.0615	-0.5839	-8.41
Y31B8E		0.5300	-0.0082	-0.14	0.6250	-0.0204	-0.29
Z9QCQD		0.5400	0.0018	0.03	0.6600	0.0146	0.21

Grand Means		Summary Statistics	
	0.53821 g/L as acetic acid		0.64540 g/L as acetic acid
Std Dev Btwn Labs			
	0.05897 g/L as acetic acid		0.06943 g/L as acetic acid
Statistics based on 48 of 53 reporting participants			

Wines tested: SA43: Burgundy; SA44: Cabernet Sauvignon

**Comments on assigned Data Flags**

7ABB8A (X) - Inconsistent in testing between samples. Data for Samples SA43 are low.

F2J3FQ (X) - Extreme data. Lab previously reported in g/100mL Acetic, but data appears to be in g/L as Acetic.

F5A891 (X) - Extreme data. Lab indicated reporting in g/L as Acetic, but data appears to be in g/100 mL Acetic.

QDXJD7 (X) - Inconsistent in testing between samples.

XWKUEY (X) - Extreme data. Lab previously reported in g/L as Acetic, but data appears to be in g/100 mL as Acetic.

## Analysis 905

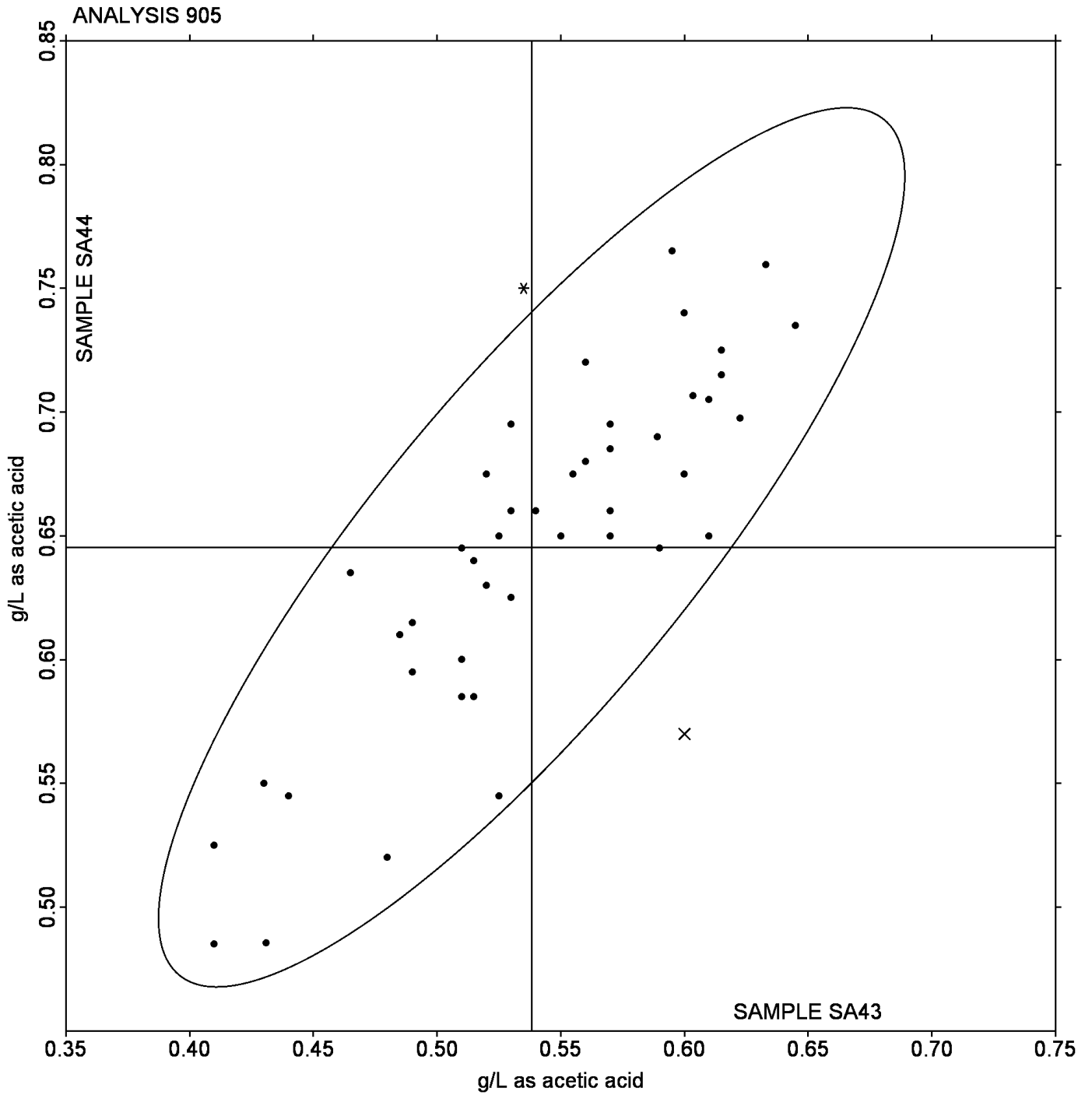
## Volatile Acidity

## Results by Methodology (as reported by laboratory)

Test Methodology	Sample SA43 <i>Burgundy</i>			Sample SA44 <i>Cabernet Sauvignon</i>			Labs Incl / Rpt	
	Group Mean	Btwn Lab STD	Diff from GM	Group Mean	Btwn Lab STD	Diff from GM		
Cash Still method	0.5514	0.0567	0.0132	0.6451	0.0695	-0.0003	27	30
Enzymatic Method	0.4795	0.0385	-0.0587	0.5945	0.0417	-0.0509	11	12
GC	0.5593	0.0626	0.0210	0.6733	0.0470	0.0279	2	2
Seg. Flow / Colorimetric Analyzer	0.5705	0.0404	0.0323	0.6933	0.0500	0.0479	6	6
FTIR	0.5950	0.0000	0.0568	0.7650	0.0000	0.1196	1	3

Analysis 905

Volatile Acidity



**ASEV-CTS Wine Industry Interlaboratory Testing Program**  
**Analysis 906**  
**Specific Gravity**

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WebCode	Data Flag	Sample SA43			Sample SA44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
1WUN4X		0.9997	-0.0001	-0.05	0.9964	-0.0001	-0.08
2DLN4N		1.0020	0.0023	2.03	0.9988	0.0024	2.16
2FEHVQ		0.9978	-0.0019	-1.70	0.9945	-0.0019	-1.75
2N5BCH	*	0.9988	-0.0009	-0.83	0.9963	-0.0002	-0.14
3DQVCF	*	1.0026	0.0029	2.56	0.9993	0.0028	2.56
3HSVGY		1.0002	0.0004	0.37	0.9968	0.0003	0.27
3M4PQC		1.0000	0.0003	0.24	0.9970	0.0006	0.50
47GAN4		0.9980	-0.0018	-1.57	0.9946	-0.0018	-1.66
4JR1YR		0.9983	-0.0015	-1.30	0.9948	-0.0017	-1.52
576AKT		0.9997	0.0000	-0.03	0.9964	-0.0001	-0.05
5RJV9U		1.0017	0.0020	1.73	0.9984	0.0020	1.76
612TPD		0.9974	-0.0023	-2.05	0.9946	-0.0019	-1.70
7QYVEJ		0.9997	0.0000	-0.03	0.9965	0.0001	0.05
7UQ3M6	X	0.9978	-0.0019	-1.71	0.9958	-0.0007	-0.59
89STJW		0.9997	0.0000	0.01	0.9964	0.0000	0.00
A4GFZ2		1.0002	0.0005	0.41	0.9969	0.0005	0.41
DCWDBA		0.9997	0.0000	-0.02	0.9964	-0.0001	-0.05
DUBT7D		0.9997	0.0000	0.00	0.9964	0.0000	-0.03
ED81FN		0.9997	0.0000	-0.02	0.9964	-0.0001	-0.06
EUDJEU		1.0004	0.0006	0.56	0.9964	0.0000	-0.01
F9991J		0.9997	0.0000	-0.02	0.9964	-0.0001	-0.06
FAYLBB		0.9997	0.0000	-0.04	0.9964	-0.0001	-0.07
FYG62G		0.9997	0.0000	-0.03	0.9965	0.0000	0.00
GSBSXR		1.0005	0.0008	0.67	0.9975	0.0010	0.94
H691CK		0.9986	-0.0011	-1.00	0.9955	-0.0010	-0.86
J3TY7D		0.9986	-0.0011	-1.00	0.9952	-0.0012	-1.12
J6CZ4L		0.9999	0.0002	0.15	0.9965	0.0001	0.05
JEUNP8	X	0.9980	-0.0017	-1.52	0.9990	0.0026	2.30
JQ67LV		0.9997	0.0000	-0.03	0.9964	-0.0001	-0.06
KD5Q67		1.0014	0.0017	1.47	0.9977	0.0013	1.13
KPEBY2		0.9997	0.0000	-0.01	0.9964	0.0000	-0.03
KYW8ED	*	0.9979	-0.0018	-1.61	0.9954	-0.0011	-0.98
MGKTF9		0.9998	0.0001	0.05	0.9968	0.0003	0.31
NLFB67		1.0004	0.0007	0.59	0.9977	0.0013	1.13
PF9R82		0.9998	0.0001	0.09	0.9964	0.0000	0.00

**ASEV-CTS Wine Industry Interlaboratory Testing Program**  
**Analysis 906**  
**Specific Gravity**

WebCode	Data Flag	Sample SA43			Sample SA44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
QH5H9D		0.9994	-0.0003	-0.28	0.9956	-0.0008	-0.74
RN3SE5		1.0003	0.0006	0.50	0.9970	0.0006	0.50
U9Z9NV		0.9996	-0.0001	-0.11	0.9961	-0.0003	-0.31
V3UVJ5		0.9996	-0.0001	-0.12	0.9963	-0.0001	-0.13
VGSZQG		1.0002	0.0004	0.37	0.9967	0.0003	0.23
WVVL1Y		0.9992	-0.0005	-0.47	0.9953	-0.0011	-1.03
X7PQVH	*	1.0026	0.0029	2.56	0.9993	0.0028	2.56
XK4KHM		0.9997	0.0000	-0.02	0.9964	-0.0001	-0.05
XTLFS9		0.9997	0.0000	-0.03	0.9964	0.0000	-0.04
YA747A		0.9998	0.0001	0.06	0.9966	0.0002	0.14
YLYGT3		0.9997	0.0000	-0.03	0.9964	0.0000	-0.04
YQ3NH7		0.9975	-0.0022	-1.96	0.9942	-0.0022	-2.02
ZTR6VP		0.9997	-0.0001	-0.06	0.9963	-0.0001	-0.10

Grand Means		Summary Statistics	
0.99973	sp gr 20/20 C	0.99644	sp gr 20/20 C
0.00114	sp gr 20/20 C	0.00111	sp gr 20/20 C
Statistics based on 46 of 48 reporting participants			

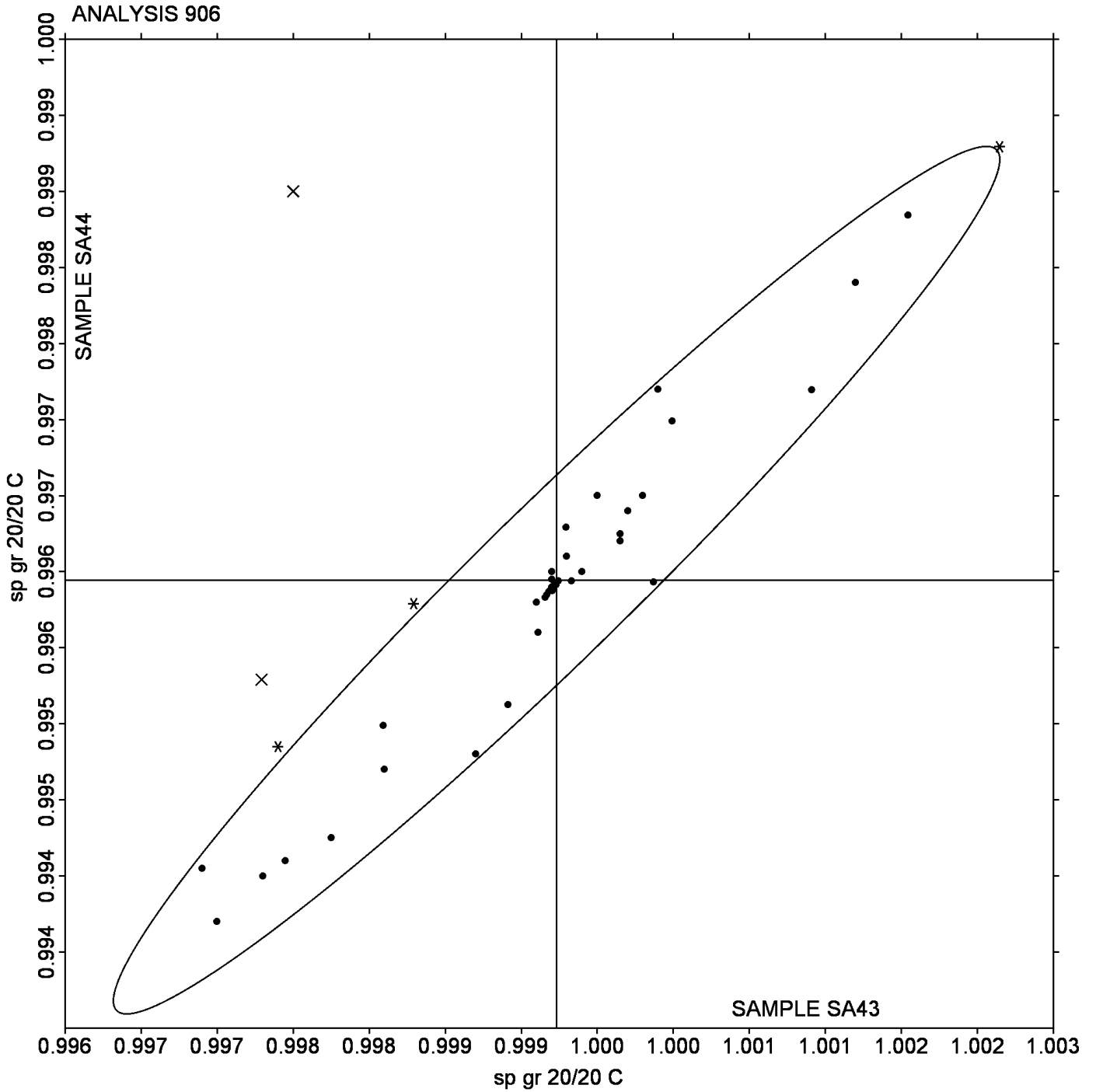
Wines tested: SA43: Burgundy; SA44: Cabernet Sauvignon

**Comments on assigned Data Flags**

7UQ3M6 (X) - Inconsistent in testing between samples.

JEUNP8 (X) - Inconsistent in testing between samples.

Analysis 906  
Specific Gravity



## ASEV-CTS Wine Industry Interlaboratory Testing Program

## Analysis 907

## pH

WebCode	Data Flag	Sample SA43			Sample SA44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
191VLF	X	3.410	-0.128	-4.51	3.395	-0.111	-4.33
1ER6VD	X	3.410	-0.128	-4.51	3.395	-0.111	-4.33
2CF5AL		3.540	0.002	0.09	3.500	-0.006	-0.23
2TZV8M		3.540	0.002	0.09	3.515	0.009	0.36
2ZBUVC	*	3.500	-0.038	-1.33	3.540	0.034	1.33
34HYS4		3.500	-0.038	-1.33	3.475	-0.031	-1.21
3UKAMM		3.540	0.002	0.09	3.520	0.014	0.55
4HJL5S		3.550	0.012	0.44	3.520	0.014	0.55
4ULEV4	X	3.590	0.052	1.85	3.610	0.104	4.07
59KNP3		3.510	-0.028	-0.97	3.490	-0.016	-0.62
5KNAVZ		3.490	-0.048	-1.68	3.460	-0.046	-1.79
7PYTA7		3.555	0.017	0.62	3.540	0.034	1.33
84X3YR		3.585	0.047	1.68	3.510	0.004	0.16
8ZGRXV		3.515	-0.023	-0.80	3.495	-0.011	-0.43
9CF113	*	3.490	-0.048	-1.68	3.434	-0.072	-2.81
9F4DWS		3.525	-0.013	-0.44	3.530	0.024	0.94
9LH4DT		3.555	0.017	0.62	3.500	-0.006	-0.23
BQUK83		3.540	0.002	0.09	3.515	0.009	0.36
BV3UQX	*	3.600	0.062	2.21	3.570	0.064	2.50
CAJJEK		3.550	0.012	0.44	3.470	-0.036	-1.40
E1MFFF		3.510	-0.028	-0.97	3.500	-0.006	-0.23
EX7Y89		3.560	0.022	0.79	3.520	0.014	0.55
F5XYUM		3.515	-0.023	-0.80	3.480	-0.026	-1.01
FDZTHE		3.550	0.012	0.44	3.490	-0.016	-0.62
FKQT5S		3.530	-0.008	-0.27	3.500	-0.006	-0.23
GDZ2E5		3.520	-0.018	-0.62	3.500	-0.006	-0.23
GS1T1A		3.525	-0.013	-0.44	3.495	-0.011	-0.43
GYSMG2		3.530	-0.008	-0.27	3.510	0.004	0.16
HJ4FHM		3.535	-0.003	-0.09	3.500	-0.006	-0.23
HQCQZF		3.533	-0.005	-0.16	3.510	0.004	0.16
HYQYUW		3.530	-0.008	-0.27	3.510	0.004	0.16
JCVDRD	*	3.600	0.062	2.21	3.500	-0.006	-0.23
JUHPLT	X	3.170	-0.368	-13.00	3.130	-0.376	-14.69
JVAL82		3.580	0.042	1.50	3.555	0.049	1.92
K6PZMN		3.550	0.012	0.44	3.520	0.014	0.55

## ASEV-CTS Wine Industry Interlaboratory Testing Program

## Analysis 907

## pH

WebCode	Data Flag	Sample SA43			Sample SA44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
MMX4N4		3.540	0.002	0.09	3.520	0.014	0.55
MWUNK4		3.500	-0.038	-1.33	3.455	-0.051	-1.99
P14K3A		3.506	-0.032	-1.13	3.486	-0.020	-0.78
PKVGPY		3.530	-0.008	-0.27	3.520	0.014	0.55
PUYX3U		3.550	0.012	0.44	3.510	0.004	0.16
QGAH37		3.505	-0.033	-1.15	3.485	-0.021	-0.82
QJ3GJ6		3.520	-0.018	-0.62	3.495	-0.011	-0.43
QUY6YL		3.540	0.002	0.09	3.505	-0.001	-0.04
RBEKXW	X	3.280	-0.258	-9.11	3.370	-0.136	-5.31
RRJSJ7		3.530	-0.008	-0.27	3.510	0.004	0.16
S9BMF7		3.565	0.027	0.97	3.500	-0.006	-0.23
SR2K3M	*	3.580	0.042	1.50	3.485	-0.021	-0.82
T6V9UC		3.515	-0.023	-0.80	3.505	-0.001	-0.04
TXAXYC		3.530	-0.008	-0.27	3.500	-0.006	-0.23
WTLH5M		3.565	0.027	0.97	3.535	0.029	1.14
XYPZZT		3.580	0.042	1.50	3.545	0.039	1.53
Z7BLW3		3.540	0.002	0.09	3.520	0.014	0.55
ZEU89Y		3.505	-0.033	-1.15	3.485	-0.021	-0.82
ZWGWGN		3.525	-0.013	-0.44	3.500	-0.006	-0.23
ZXGS86		3.600	0.062	2.21	3.560	0.054	2.11

## Grand Means

3.5376 pH

## Summary Statistics

3.5059 pH

## Std Dev Btwn Labs

0.0283 pH

0.0256 pH

Statistics based on 50 of 55 reporting participants

Wines tested: SA43: Burgundy; SA44: Cabernet Sauvignon

Analysis 907

pH

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**Comments on assigned Data Flags**

191VLF (X) - Data for both samples are low.

1ER6VD (X) - Data for both samples are low.

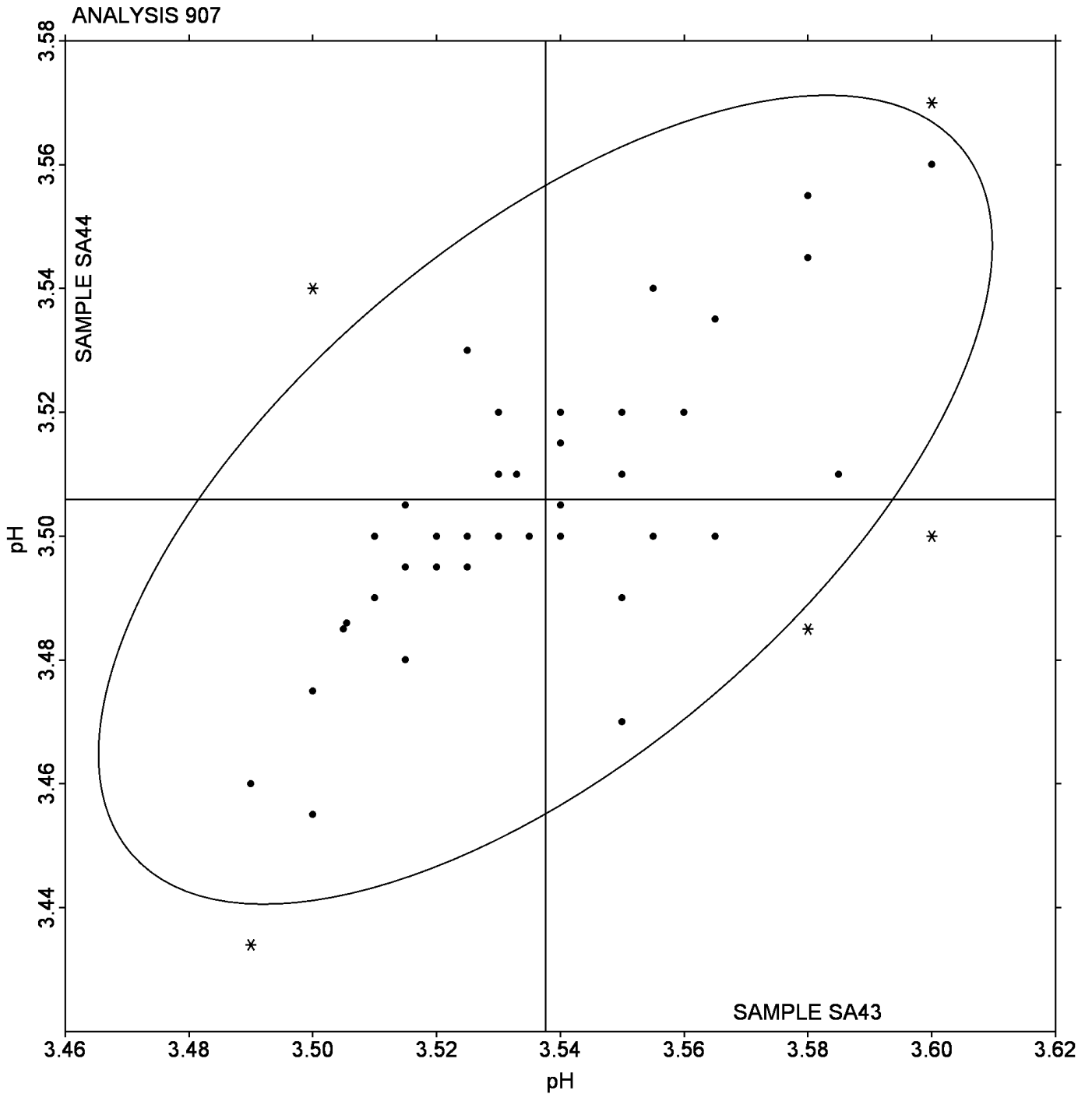
4ULEV4 (X) - Inconsistent in testing between samples. Data for Sample SA44 are high.

JUHPLT (X) - Data for both samples are low.

RBEKXW (X) - Data for both samples are low.

Analysis 907

pH



## ASEV-CTS Wine Industry Interlaboratory Testing Program

## Analysis 908

## Reducing Sugar

WebCode	Data Flag	Sample SA43			Sample SA44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
1CXVKT		9.30	-1.16	-0.52	5.300	-0.776	-0.40
4HW99Z		8.50	-1.96	-0.89	4.300	-1.776	-0.91
5KJD8B		10.00	-0.46	-0.21	9.000	2.924	1.50
7K4ZKX		11.40	0.94	0.43	6.750	0.674	0.35
8Y1KCL		10.20	-0.26	-0.12	6.100	0.024	0.01
9JBCUT	*	14.00	3.54	1.61	4.900	-1.176	-0.61
A36X7Q		11.90	1.44	0.65	8.300	2.224	1.14
C6L5SU		11.15	0.69	0.31	6.450	0.374	0.19
FSKC9N		10.00	-0.46	-0.21	4.500	-1.576	-0.81
HJMB28		6.70	-3.76	-1.70	1.950	-4.126	-2.12
HMFTUA		6.00	-4.46	-2.02	3.000	-3.076	-1.58
MG6UD6		11.90	1.44	0.65	6.800	0.724	0.37
NAJP8R		9.30	-1.16	-0.52	5.300	-0.776	-0.40
PA5WJ1		12.70	2.24	1.02	8.550	2.474	1.27
SBW1PH		11.45	0.99	0.45	7.000	0.924	0.48
U3YZG3		9.72	-0.73	-0.33	5.667	-0.409	-0.21
V8FZWT		10.90	0.44	0.20	5.900	-0.176	-0.09
VQHJZW		14.30	3.84	1.74	9.700	3.624	1.87
X5ZFN2		12.20	1.74	0.79	7.050	0.974	0.50
YLVWS7		7.50	-2.96	-1.34	5.000	-1.076	-0.55

## Grand Means

10.456 g/L

## Summary Statistics

6.0759 g/L

## Std Dev Btwn Labs

2.205 g/L

1.9431 g/L

Statistics based on 20 of 20 reporting participants

Wines tested: SA43: Burgundy; SA44: Cabernet Sauvignon

## Analysis 908

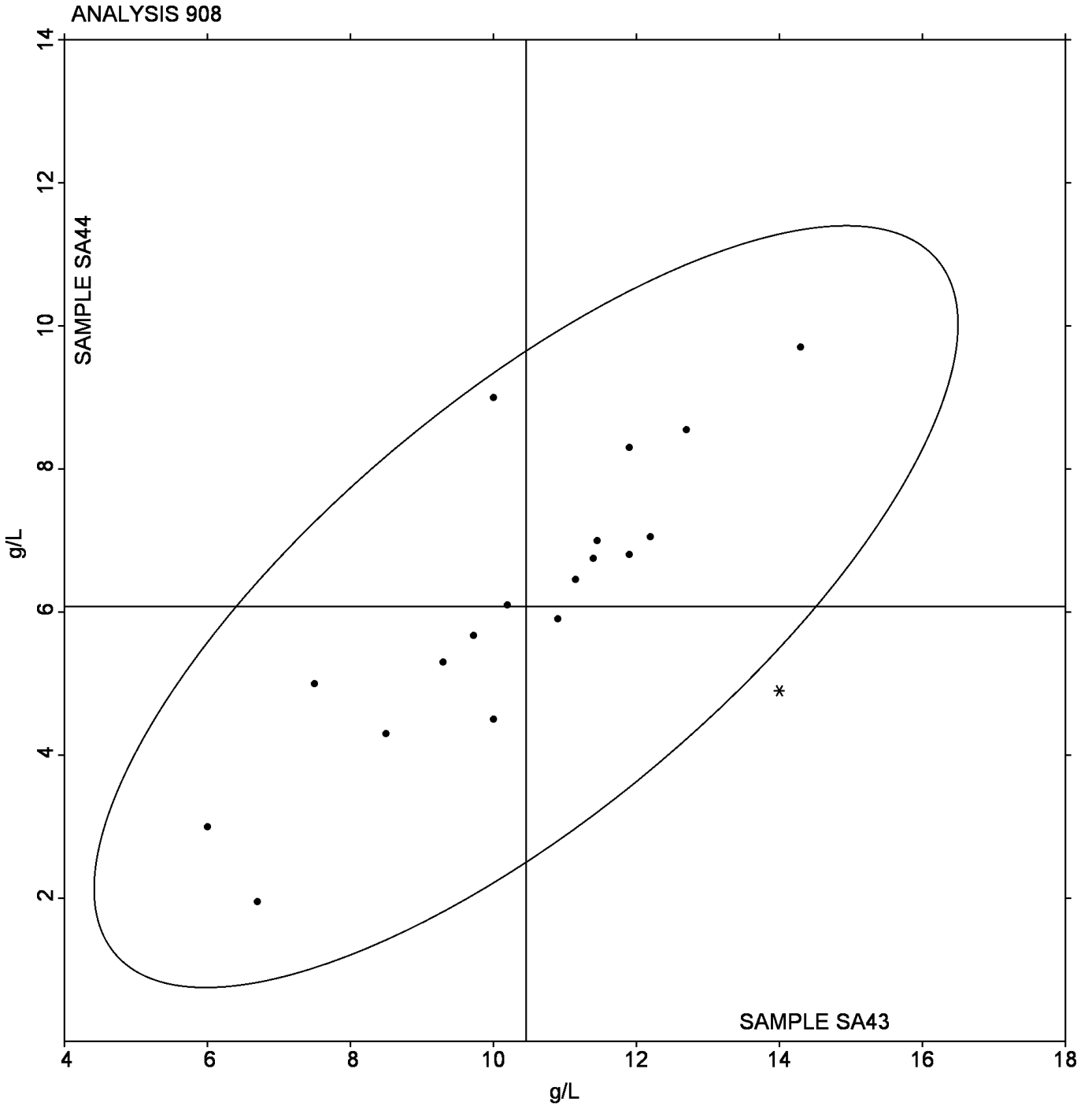
## Reducing Sugar

## Results by Methodology (as reported by laboratory)

Test Methodology	Sample SA43 <i>Burgundy</i>			Sample SA44 <i>Cabernet Sauvignon</i>			Labs Incl / Rpt	
	Group Mean	Btwn Lab STD	Diff from GM	Group Mean	Btwn Lab STD	Diff from GM		
Cu Reduction Method	10.11	2.03	-0.35	6.07	2.00	-0.01	14	15
Segmented Flow	11.93	2.51	1.48	7.35	2.22	1.27	3	3
FTIR	9.30	0.00	-1.16	5.30	0.00	-0.78	1	1
Other	8.50	0.00	-1.96	4.30	0.00	-1.78	1	1

Analysis 908

Reducing Sugar



## ASEV-CTS Wine Industry Interlaboratory Testing Program

## Analysis 909

## L-Malic Acid

WebCode	Data Flag	Sample SA43			Sample SA44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
1CC7D5		0.2955	0.0204	0.60	0.2120	0.0356	1.05
39LX62		0.2500	-0.0251	-0.74	0.1400	-0.0364	-1.08
43DMFV		0.2500	-0.0251	-0.74	0.1600	-0.0164	-0.49
4DUPGM		0.2750	-0.0001	0.00	0.1800	0.0036	0.11
4H97YG		0.3250	0.0499	1.47	0.2000	0.0236	0.70
4J19ES		0.2775	0.0024	0.07	0.1725	-0.0039	-0.12
5P14T5		0.2405	-0.0346	-1.02	0.1240	-0.0524	-1.55
5V973S		0.3100	0.0349	1.03	0.1750	-0.0014	-0.04
6SU2J3		0.2770	0.0019	0.06	0.1810	0.0046	0.13
6X7S1R	X	0.1857	-0.0894	-2.64	0.4490	0.2725	8.07
8YRA22	*	0.2200	-0.0551	-1.63	0.2100	0.0336	0.99
9AYNTZ		0.3050	0.0299	0.88	0.2300	0.0536	1.59
ARZFPG		0.2900	0.0149	0.44	0.2250	0.0486	1.44
BPJ3CA	X	2.1000	1.8249	53.90	1.1150	0.9386	27.78
BWPJJB		0.2540	-0.0211	-0.62	0.1195	-0.0569	-1.69
D2YMKB		0.3511	0.0760	2.24	0.2469	0.0705	2.09
D3RH7K		0.2965	0.0214	0.63	0.1850	0.0086	0.25
DAFEF2		0.2850	0.0099	0.29	0.1800	0.0036	0.11
DFK5WL		0.2590	-0.0161	-0.48	0.1690	-0.0074	-0.22
DM5SKJ		0.2630	-0.0121	-0.36	0.1535	-0.0229	-0.68
DX7GR1	X	0.6300	0.3549	10.48	0.4600	0.2836	8.39
ED5WL6		0.3200	0.0449	1.33	0.2600	0.0836	2.47
EVS8FL	X	0.3000	0.0249	0.74	0.3000	0.1236	3.66
G3FWYT		0.3110	0.0359	1.06	0.1540	-0.0224	-0.66
H1AYSB		0.2100	-0.0651	-1.92	0.1550	-0.0214	-0.63
HY299V	X	0.3900	0.1149	3.39	0.3050	0.1286	3.81
J6XHF7		0.2200	-0.0551	-1.63	0.1200	-0.0564	-1.67
L3XHNZ		0.3200	0.0449	1.33	0.1700	-0.0064	-0.19
L4QAPK		0.2440	-0.0311	-0.92	0.1330	-0.0434	-1.29
LCT8R8		0.2890	0.0139	0.41	0.1910	0.0146	0.43
LJH7G2		0.2600	-0.0151	-0.45	0.1560	-0.0204	-0.61
LYSH2N		0.2600	-0.0151	-0.45	0.1800	0.0036	0.11
NHWR4R		0.3500	0.0749	2.21	0.2400	0.0636	1.88
NK5KXA		0.2600	-0.0151	-0.45	0.1500	-0.0264	-0.78
P5ERJ4	X	0.4000	0.1249	3.69	0.3500	0.1736	5.14

**ASEV-CTS Wine Industry Interlaboratory Testing Program**  
**Analysis 909**  
**L-Malic Acid**

WebCode	Data Flag	Sample SA43			Sample SA44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
P8YQWC		0.2600	-0.0151	-0.45	0.1550	-0.0214	-0.63
Q1212F		0.2700	-0.0051	-0.15	0.1550	-0.0214	-0.63
RNEGFH		0.2850	0.0099	0.29	0.1750	-0.0014	-0.04
TX7DXH		0.2400	-0.0351	-1.04	0.1750	-0.0014	-0.04
UN9CQ3		0.2400	-0.0351	-1.04	0.1875	0.0111	0.33
UTRCAN		0.3060	0.0309	0.91	0.1970	0.0206	0.61
UX67NT		0.2600	-0.0151	-0.45	0.1560	-0.0204	-0.61
VB6XZ5		0.2695	-0.0056	-0.17	0.1770	0.0006	0.02
ZCELA1		0.2550	-0.0201	-0.59	0.1550	-0.0214	-0.63

Grand Means		Summary Statistics	
	0.27509 g/L		0.17645 g/L
Std Dev Btwn Labs	0.03385 g/L		0.03379 g/L
Statistics based on 38 of 44 reporting participants			

Wines tested: SA43: Burgundy; SA44: Cabernet Sauvignon

**Comments on assigned Data Flags**

6X7S1R (X) - Inconsistent in testing between samples. Data for Sample SA44 are high.

BPJ3CA (X) - Extreme data. Lab indicated reporting in g/100mL, but data appear to be in g/L.

DX7GR1 (X) - Data for both samples are high.

EVS8FL (X) - Inconsistent in testing between samples. Data for Sample SA44 are high.

HY299V (X) - Data for both samples are high. Also inconsistent in testing within both samples.

P5ERJ4 (X) - Data for both samples are high. Also inconsistent in testing within Sample SA44.



## ASEV-CTS Wine Industry Interlaboratory Testing Program

## Analysis 910

## Glucose + Fructose

WebCode	Data Flag	Sample SA43			Sample SA44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
12CL5K	X	4.380	-4.813	-7.14	4.150	-0.820	-1.93
1NA7R8		8.500	-0.693	-1.03	4.300	-0.670	-1.58
396JVK		10.400	1.207	1.79	5.200	0.230	0.54
4322Z5		9.660	0.467	0.69	5.415	0.445	1.05
5HY9X6		9.320	0.127	0.19	5.170	0.200	0.47
63R3WT	X	6.110	-3.083	-4.57	2.895	-2.075	-4.89
83DD9R		9.450	0.257	0.38	4.850	-0.120	-0.28
AJ7EYN	X	8.000	-1.193	-1.77	5.450	0.480	1.13
ARWB75		9.675	0.482	0.72	5.495	0.525	1.24
CF5LBP		8.650	-0.543	-0.81	4.750	-0.220	-0.52
CH4NGK		8.355	-0.838	-1.24	4.615	-0.355	-0.84
CXVFDE		9.750	0.557	0.83	4.785	-0.185	-0.44
D21VQV		9.750	0.557	0.83	5.500	0.530	1.25
DYX97K		9.200	0.007	0.01	5.100	0.130	0.31
E3VJCC	*	7.000	-2.193	-3.25	4.000	-0.970	-2.29
ECUSFV		9.680	0.487	0.72	5.040	0.070	0.16
ERXERC		8.260	-0.933	-1.38	4.410	-0.560	-1.32
F9RVJD		9.450	0.257	0.38	5.200	0.230	0.54
GQQ654	X	9.360	0.167	0.25	6.350	1.380	3.25
HPSZL2		9.355	0.162	0.24	5.560	0.590	1.39
JM5NLB		9.200	0.007	0.01	5.000	0.030	0.07
K1WSFL		9.535	0.342	0.51	5.029	0.058	0.14
KLQ3PK		9.840	0.647	0.96	4.950	-0.020	-0.05
KPG5R7		9.450	0.257	0.38	5.050	0.080	0.19
MVHY6L		9.615	0.422	0.63	5.135	0.165	0.39
N4WL77	*	9.812	0.619	0.92	5.972	1.002	2.36
PCMG9S		8.640	-0.553	-0.82	5.090	0.120	0.28
RYXLF9		9.700	0.507	0.75	5.050	0.080	0.19
S1AURE		8.750	-0.443	-0.66	4.810	-0.160	-0.38
TQKPXF		8.930	-0.263	-0.39	4.590	-0.380	-0.90
U2VFF8		8.750	-0.443	-0.66	4.850	-0.120	-0.28
V4LY86		9.250	0.057	0.08	5.200	0.230	0.54
VJG8XX		9.160	-0.033	-0.05	4.930	-0.040	-0.10
W7XC15		10.300	1.107	1.64	5.700	0.730	1.72
WB5USS		8.400	-0.793	-1.18	4.600	-0.370	-0.87

## ASEV-CTS Wine Industry Interlaboratory Testing Program

## Analysis 910

## Glucose + Fructose

WebCode	Data Flag	Sample SA43			Sample SA44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
XBKDCQ		8.400	-0.793	-1.18	4.600	-0.370	-0.87
XW73U9		10.395	1.202	1.78	5.705	0.735	1.73
XXK2WD		8.800	-0.393	-0.58	4.850	-0.120	-0.28
YJBSG3		9.050	-0.143	-0.21	4.700	-0.270	-0.64
ZB6FWQ		8.770	-0.423	-0.63	4.180	-0.790	-1.86
ZNEF4Q		9.390	0.197	0.29	4.700	-0.270	-0.64
ZP85DK		8.740	-0.453	-0.67	4.795	-0.175	-0.41
ZX8BQD	X	7.065	-2.128	-3.16	5.070	0.100	0.23

## Grand Means

9.1929 g/L

## Summary Statistics

4.9704 g/L

## Std Dev Btwn Labs

0.6741 g/L

0.4243 g/L

Statistics based on 38 of 43 reporting participants

Wines tested: SA43: Burgundy; SA44: Cabernet Sauvignon

**Comments on assigned Data Flags**

12CL5K (X) - Inconsistent in testing between samples. Data for Sample SA43 are low.

63R3WT (X) - Data for both samples are low.

AJ7EYN (X) - Inconsistent in testing between samples.

GQQ654 (X) - Inconsistent in testing between samples. Data for Samples SA44 are high.

ZX8BQD (X) - Inconsistent in testing between samples. Data for Sample SA43 are low.

## Analysis 910

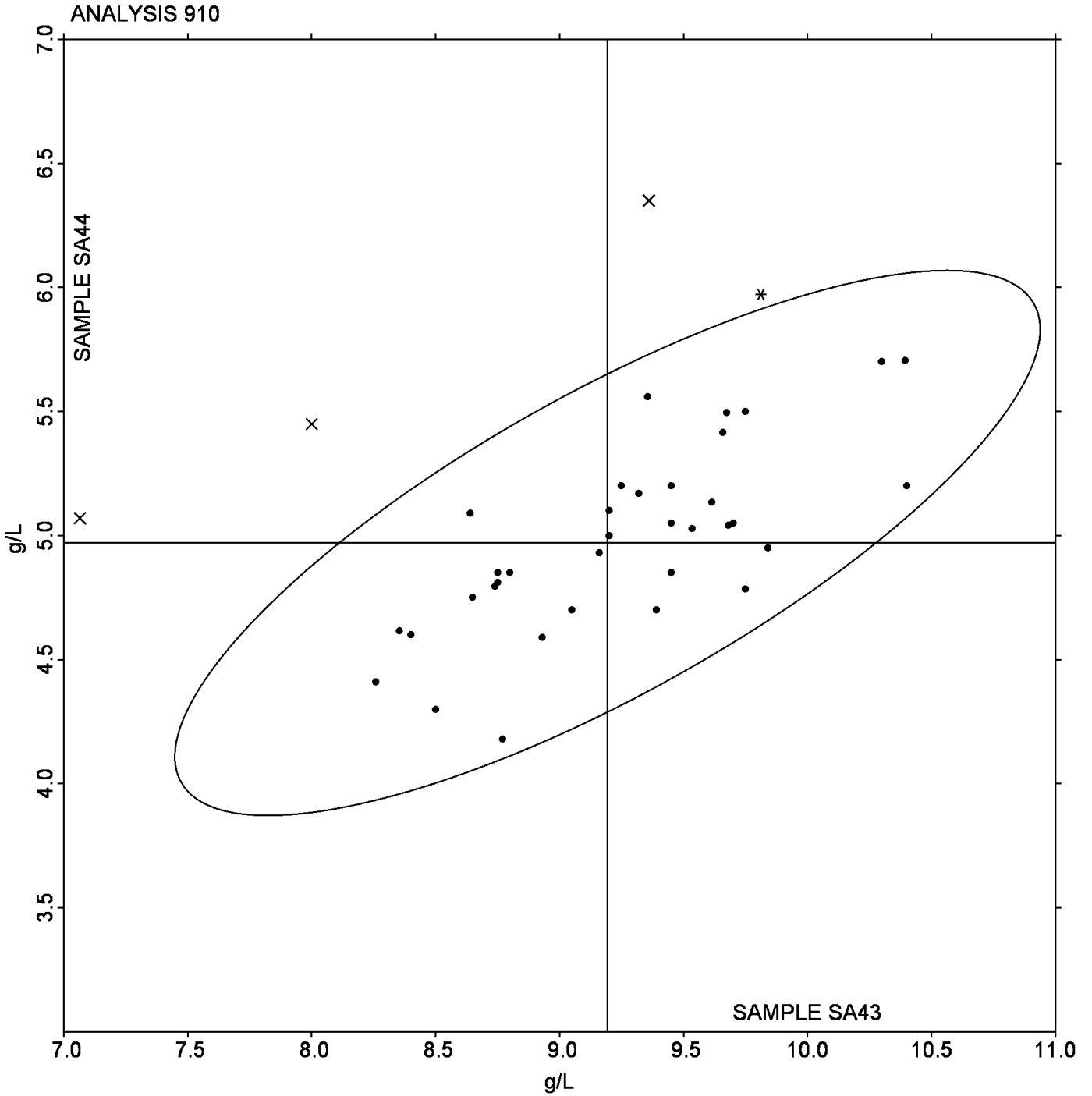
## Glucose + Fructose

## Results by Methodology (as reported by laboratory)

Test Methodology	Sample SA43 <i>Burgundy</i>			Sample SA44 <i>Cabernet Sauvignon</i>			Labs Incl / Rpt	
	Group Mean	Btwn Lab STD	Diff from GM	Group Mean	Btwn Lab STD	Diff from GM		
HPLC	9.450	0.000	0.257	5.050	0.000	0.080	1	1
Enzymatic/Spectrophotometric	9.254	0.584	0.061	4.999	0.332	0.028	32	39
Segmented Flow	9.660	0.000	0.467	5.415	0.000	0.445	1	1
FTIR	8.500	0.000	-0.693	4.300	0.000	-0.670	1	1
Other	8.770	0.000	-0.423	4.180	0.000	-0.790	1	1

Analysis 910

Glucose + Fructose



## ASEV-CTS Wine Industry Interlaboratory Testing Program

## Research Property 950

## Research Property - Copper (Cu) Content

WebCode	Data Flag	Sample SA43			Sample SA44		
		Lab Mean	Diff from Target Value	% Diff from Target Value	Lab Mean	Diff from Target Value	% Diff from Target Value
2RE9GX		0.0300	-0.0100	-25.0%	0.0300	-0.0100	-25.0%
95UPFP		0.0500	0.0100	25.0%	0.0500	0.0100	25.0%
ABRY6D		0.0650	0.0250	62.5%	0.0900	0.0500	125.0%
AJFVEV		0.0500	0.0100	25.0%	0.0500	0.0100	25.0%
D2KEXN		0.0400	0.0000	0.0%	0.0400	0.0000	0.0%
G6UD6Z		0.0140	-0.0260	-65.0%	0.0100	-0.0300	-75.0%
G9HUTD		0.0405	0.0005	1.3%	0.0390	-0.0010	-2.5%
MRMBD5		0.0430	0.0030	7.5%	0.0440	0.0040	10.0%
MZ39DG		0.0500	0.0100	25.0%	No data reported for this sample %		
NXADS8		0.0150	-0.0250	-62.5%	0.0100	-0.0300	-75.0%
QDAR2F		0.0450	0.0050	12.5%	0.0850	0.0450	112.5%

## Research Property Target Value

Target Value

0.04000 mg/L

0.04000 mg/L

*CTS has chosen to designate a target value for this property instead of using an average value. The target value was calculated from the average of a single laboratory accredited for this property under ISO 17025.*

Wines tested: SA43: Burgundy; SA44: Cabernet Sauvignon

**Consensus Average**  
(may differ from target value)

0.03925 mg/L

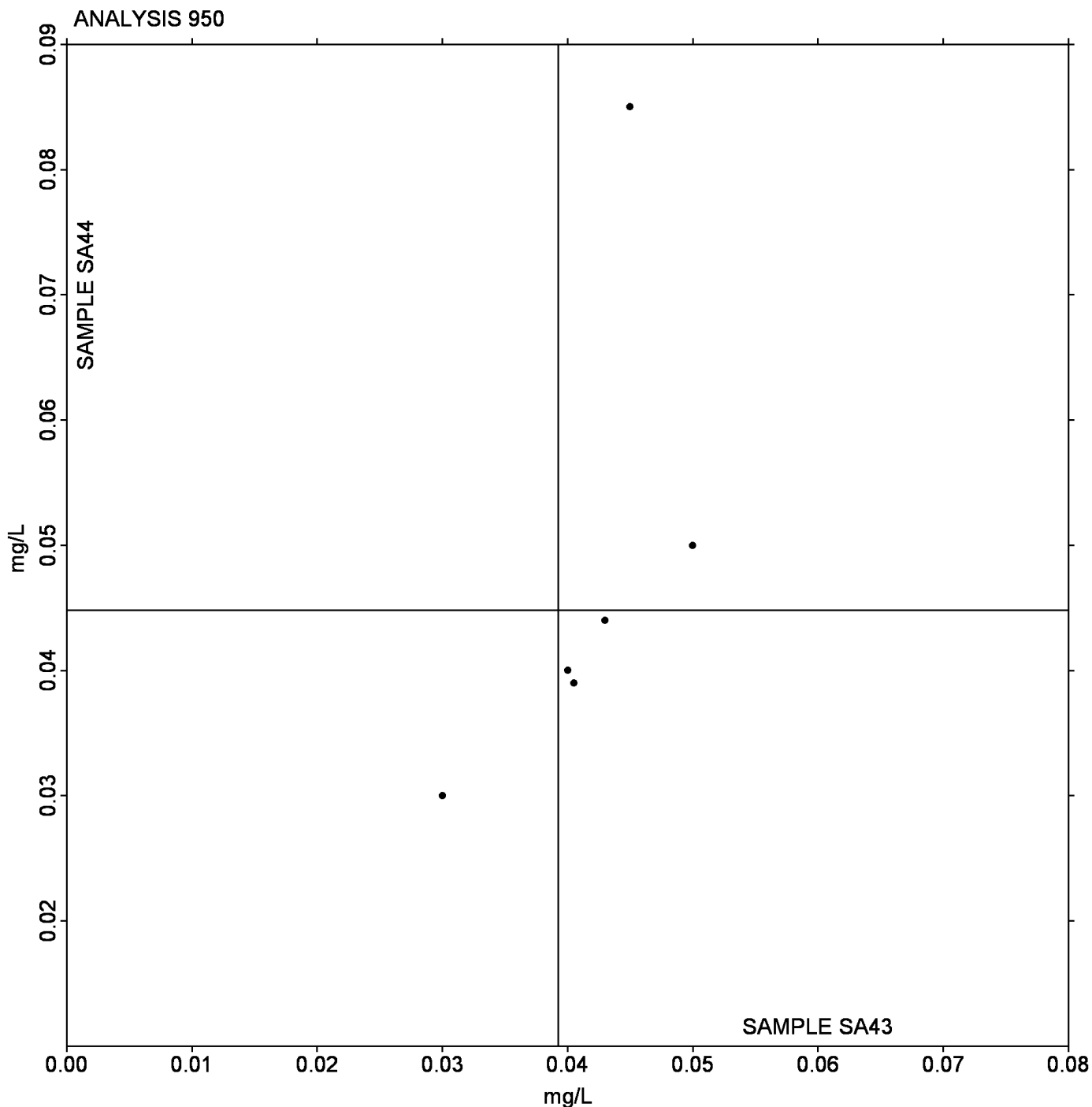
0.04480 mg/L

*This consensus average is based on 10 reporting participants.*

Comments on assigned Data Flags

Research Property 950

Research Property - Copper (Cu) Content



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

## ASEV-CTS Wine Industry Interlaboratory Testing Program

## Research Property 951

## Research Property - Calcium (Ca) Content

WebCode	Data Flag	Sample SA43			Sample SA44		
		Lab Mean	Diff from Target Value	% Diff from Target Value	Lab Mean	Diff from Target Value	% Diff from Target Value
1ZDXUA		95.65	3.43	3.7%	70.92	2.78	4.1%
3LNY7Z		95.00	2.78	3.0%	68.50	0.36	0.5%
F119DF		140.85	48.63	52.7%	79.85	11.71	17.2%
NMRNTH		5.14	-87.08	-94.4%	87.45	19.31	28.3%
PE2KZ7		89.00	-3.22	-3.5%	144.00	75.86	111.3%
T6GQ9T		89.00	-3.22	-3.5%	67.50	-0.64	-0.9%
TD6P9Z		93.50	1.28	1.4%	67.50	-0.64	-0.9%
TVQHQB		188.00	95.78	103.9%	133.00	64.86	95.2%
US479X		96.65	4.43	4.8%	72.00	3.86	5.7%
XNEQP3		92.00	-0.22	-0.2%	66.00	-2.14	-3.1%
Y8PWAU		88.00	-4.22	-4.6%	60.00	-8.14	-11.9%
YZQPXG		87.54	-4.68	-5.1%	64.58	-3.56	-5.2%

## Research Property Target Value

Target Value

92.220 mg/L

68.140 mg/L

*CTS has chosen to designate a target value for this property instead of using an average value. The target value was calculated from the average of three laboratories accredited for this property under ISO 17025, with the difference between those laboratories being less than 10% of the target value.*

Wines tested: SA43: Burgundy; SA44: Cabernet Sauvignon

**Consensus Average**  
(may differ from target value)

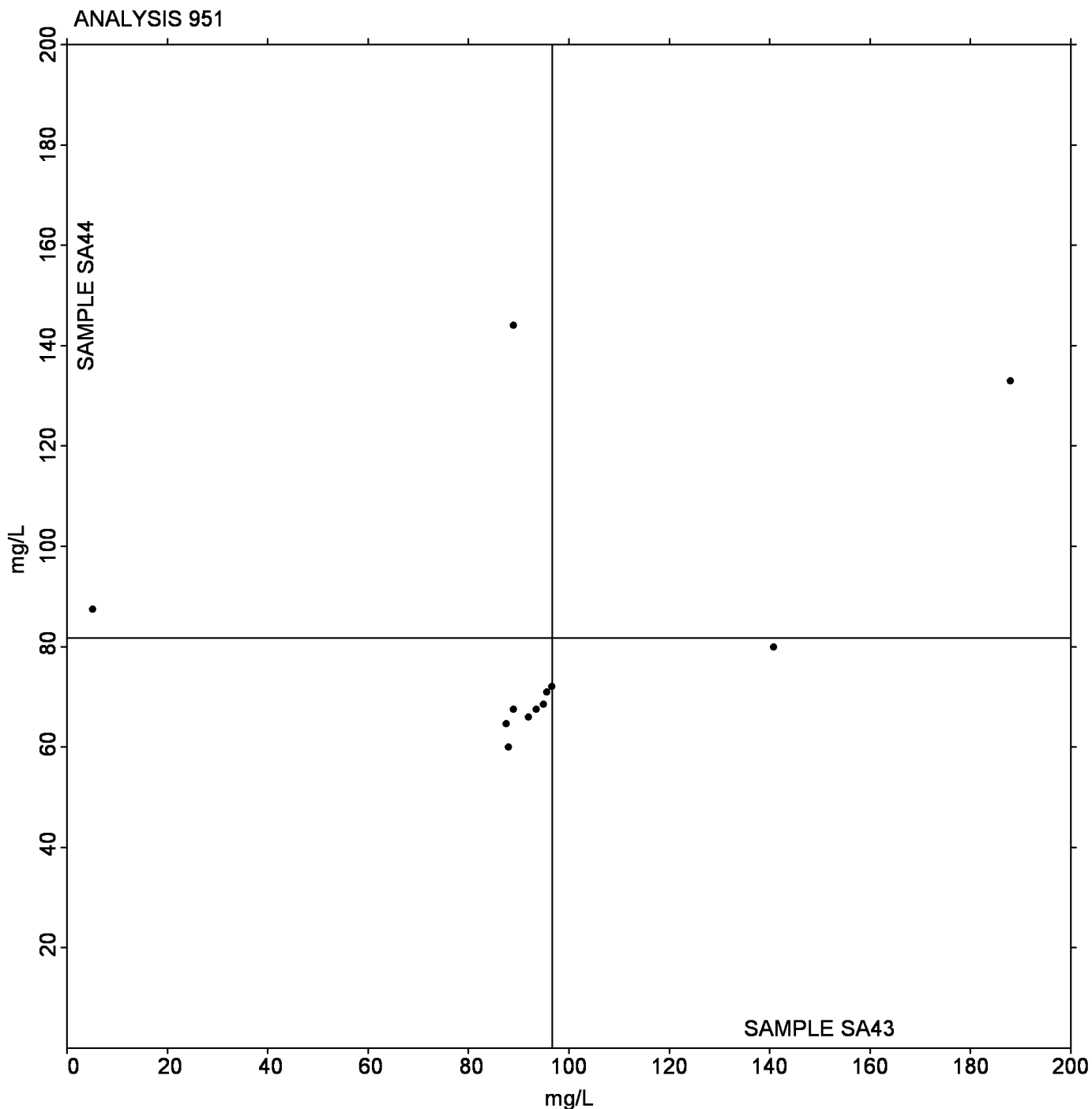
96.694 mg/L

81.775 mg/L

*This consensus average is based on 12 reporting participants.*

Research Property 951

Research Property - Calcium (Ca) Content



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.