Fasteners & Metals Interlaboratory Testing Program

Summary Report Cycle 143, 3rd Qtr 2023

About the Metals Program   About CTS   Key to Tables and Graphs

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Tensile Tests	
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1102	Yield Strength: Lab-Machined Flat Aluminum
1103	Elongation: Lab-Machined Flat Aluminum
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ABOUT THE FASTENERS & METALS PROGRAM

Collaborative Testing Services operates and maintains the program for Fasteners and Metals as part of a series of Proficiency and Interlaboratory Testing Programs offered by CTS in cooperation with various associations for a wide range of industries. Personnel from the National Institute of Standards and Technology (formerly the National Bureau of Standards), Industrial Fasteners Institute (IFI), and the Naval Shipyard Laboratories provide technical guidance and advice to this program.

The purpose of the program is to give participating laboratories a means to compare periodically the level and uniformity of their testing with that of other laboratories in the industry. It also provides a realistic assessment of the state of fasteners and metals testing proficiency.

In each report, there is a summary of the statistics for the analysis and a graphical representation of the data for each test. Also shown are notes concerning specific laboratory results, as well as significant findings related to instrument types or other testing variations. Refer to the KEY TO TABLES AND GRAPHS for an explanation of terms and guidelines to interpreting the results.

ABOUT CTS

Founded in 1971, CTS is a privately-owned company that specializes in interlaboratory tests for a wide variety of industries including rubber, plastics, fasteners and metals, containerboard, paper, color, hemp, and wine as well as proficiency tests for forensic laboratories. All of the tests are designed to assist organizations in achieving and maintaining quality control objectives. Labs from the U.S., as well as more than 100 countries, currently participate in the CTS programs.
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Key for Fasteners & Metals Program Web Summary Report

WebCode   -   Assigned laboratory identification number(temporary)used to ensure lab confidentiality while permitting a lab to locate its data in the report published on the CTS website.

Lab Mean   -   The average of the test results obtained by the participant.

Grand Mean   -   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.

Between-Lab   -   An indication of the precision of measurement between the laboratories.
Standard Deviation   The greater the spread of the LAB MEANS about the GRAND MEAN, the larger the BETWEEN-LAB STANDARD DEVIATION (and vice versa).

Comparative   -   An indication of how well a laboratory's results agree with the other participants.
Performance Value   The CPV is a ratio indicating the number of standard deviations from the GRAND MEAN.
(CPV)   CPV = (LAB MEAN - GRAND MEAN)/ BETWEEN-LAB STANDARD DEVIATION.
     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).

Instr. Code   -   A code indicating the manufacturer of the instrument used to perform the test (see separate INSTRUMENT CODE LIST for each test section).

Data Flag   -   DATA FLAGS are assigned based on the simultaneous analysis of both samples tested. Refer to the following chart for an explanation of each symbol:

Data Flags

Data Flag Type	Statistically Included/Excluded	ACTION REQUIRED
*	INCLUDED	CAUTION – review testing procedure and monitor future results. Results fall outside the drawn 95% ellipse but within a 99% ellipse that is calculated but not drawn. Labs flagged with an * do not typically receive a specific note regarding the flag. If this error is repeated in future rounds, however, a lab may need to stop and review its testing procedures. The initial data flag is not cause for alarm.
X	EXCLUDED	STOP - immediate review of data and/or testing procedure is required (all tests exept Chemical Analyses). Results fall outside the 99% ellipse. See the specific note following the data for more information on why the data are excluded. For Chemical Analyses see an additional Memo.
M	EXCLUDED	PROCEED - lab was unable to report data for at least one sample. However, a lab receiving two or more M flags for a test may need to stop and review its testing procedures.

Graph   -   For each laboratory, the Lab Mean for the second sample (y-axis) is plotted against the Lab Mean for the first sample (x-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 included 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. Labs not receiving a data flag appear as points on the plot.

Fasteners and Metals Interlaboratory Testing Program

Analysis 1001

Dimensional: Outside Diameter of Plain Plug Gage
ISO GUM

Cycle 143

3rd Qtr 2023

During Cycle 143, CTS conducted the Analysis #1001 - Round Dimensional. For this test all participants received two samples I93 and I94 with nominal diameters; 0.5000 in. and 0.4996 in. Each sample is an English Class X gage pin with 0.00002 in roundness limit made from 52100 bearing steel, hardened to 60-62 Rockwell C. Laboratories were asked to determine the outside diameter of the pins. 43 laboratories that subscribed for this test reported testing results. The graph below shows a breakdown of the types of instruments used.

Instrument Types

Legend:
- Caliper
- Micrometer
- Other

Labs

- Caliper: 7
- Micrometer: 35
- Other: 1

Analysis of the Results

The most convenient and common method of judging the quality of measurement results is by calculating the performance statistic, En, calculated as:
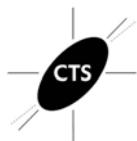
$$E_n = \frac{\left(X_{lab} - X_{ref}\right)}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

Where the assigned value, Xref, is determined in a reference laboratory, Uref is the expanded uncertainty of Xref, and Ulab is the **Expanded Uncertainty** of a participant's result, Xlab. En is not calculated for Labs who did not report their Expanded Uncertainty.

Absolute values of En less than **1.00** should be obtained for the measurements to be acceptable.

The following graph and the table represent the results reported by participants. All tests were conducted at room temperature (20-23C or 68-77F).

Xref and Uref were determined by the gage pin manufacturer. The manufacturer is ISO 9001 Certified and an ISO 17025 Accredited company. All master gages used in checking the plug gages are calibrated with standards traceable to NIST.

Fasteners and Metals Interlaboratory Testing Program
Analysis 1001

Cycle 143
3rd Qtr 2023

Dimensional: Outside Diameter of Plain Plug Gage
ISO GUM

$$E_n = \frac{\left(X_{lab} - X_{ref}\right)}{\sqrt{U_{lab}^2 + U_{ref}^2}}$$

Xref1 = 0.5000 in. Xref2 = 0.4996 in.

				Sample I93		Sample I94		
WebCode	Data Flag (if assigned)	Reference Uncertainty (Uref)	Expanded Uncertainty (Ulab)	Lab Mean (Xlab)	Performance Statistic (En1)	Lab Mean (Xlab)	Performance Statistic (En2)	Instrument
36PN67		0.00004	0.00100	0.49980	-0.20	0.49940	-0.20	Caliper
37A8CY		0.00004	Not Reported	0.49986		0.49950		Micrometer
39QN8N		0.00004	0.00024	0.49995	-0.21	0.49955	-0.21	Micrometer
3A6QZV		0.00004	0.00118	0.50000	0.00	0.49961	0.01	Caliper
3RPPGA		0.00004	0.00012	0.49997	-0.24	0.49958	-0.20	Micrometer
4PVHC3		0.00004	Not Reported	0.49958		0.49923		Micrometer
6UHRY7		0.00004	0.00024	0.49987	-0.54	0.49955	-0.20	Micrometer
78NZGN		0.00004	0.00210	0.49950	-0.24	0.49940	-0.10	Caliper
7FJ3HZ		0.00004	0.00030	0.50000	0.00	0.49950	-0.33	Micrometer
9G4J4R		0.00004	0.00016	0.50000	0.00	0.49960	0.00	Micrometer
9Y7DH6		0.00004	0.00008	0.50000	0.00	0.49954	-0.64	Micrometer
AWCU76		0.00004	Not Reported	0.50000		0.49950		Caliper
C3D9ZQ	X	0.00004	0.00015	0.49968	-2.06	0.49934	-1.67	Micrometer
CB8936		0.00004	0.00110	0.49978	-0.20	0.49947	-0.12	Micrometer
CBQRAW		0.00004	0.00016	0.49994	-0.39	0.49954	-0.39	Micrometer
DDPU7C		0.00004	Not Reported	0.49998		0.49955		Micrometer
DFHDJB		0.00004	0.00040	0.50000	0.00	0.49950	-0.25	Micrometer
DNRFNP		0.00004	0.00050	0.49990	-0.20	0.49970	0.20	Micrometer
HDCMDQ		0.00004	0.00012	0.50004	0.33	0.49964	0.33	Micrometer
JH3FNW		0.00004	0.00059	0.50001	0.02	0.49962	0.03	Micrometer
JVPLXE		0.00004	0.00161	0.49900	-0.62	0.49900	-0.37	Caliper
K7MXLR	X	0.00004	0.00006	0.49971	-3.98	0.49933	-3.71	Micrometer
K7YUQW		0.00004	Not Reported	0.50000		0.49960		Micrometer
KQRL2U	X	0.00004	0.00016	0.49982	-1.09	0.49938	-1.33	Micrometer
MH9Z3B		0.00004	0.00005	0.49995	-0.78	0.49955	-0.78	Micrometer
N3TTDA		0.00004	0.00260	0.50000	0.00	0.49950	-0.04	Caliper
N49KFL		0.00004	0.00015	0.49998	-0.13	0.49960	0.00	Micrometer
NYB43R		0.00004	0.00070	0.50000	0.00	0.49900	-0.86	Caliper
PCWV3M		0.00004	0.00040	0.50008	0.20	0.49968	0.20	Micrometer
PNQ2CK		0.00004	Not Reported	0.49997		0.49956		Micrometer
PXR6A8	X	0.00004	0.00001	0.49982	-4.41	0.49942	-4.41	Micrometer
PYVZ9Z		0.00004	0.00010	0.49998	-0.19	0.49953	-0.66	Micrometer
QUCWL9		0.00004	0.00012	0.50000	0.00	0.49960	0.00	Micrometer

Dimensional: Outside Diameter of Plain Plug Gage
ISO GUM

$$E_n = \frac{(X_{lab} - X_{ref})}{\sqrt{U^2_{lab} + U^2_{ref}}}$$

Xref1 = 0.5000 in.

Xref2 = 0.4996 in.

				Sample I93		**Sample I94**		
WebCode	Data Flag (if assigned)	Reference Uncertainty (Uref)	Expanded Uncertainty (Ulab)	Lab Mean (Xlab)	Performance Statistic (En1)	Lab Mean (Xlab)	Performance Statistic (En2)	Instrument
REAEZL		0.00004	0.00116	0.50000	0.00	0.49950	-0.09	Micrometer
T6MDKC		0.00004	0.20000	0.49993	0.00	0.49955	0.00	Micrometer
UHK6GZ		0.00004	Not Reported	0.49970		0.49922		Micrometer
URV732		0.00004	0.00030	0.49990	-0.33	0.49952	-0.26	Micrometer
V83MNU		0.00004	0.00016	0.49996	-0.24	0.49960	0.00	Micrometer
WU764K	X	0.00004	0.00011	0.50016	1.39	0.49946	-1.26	Other
XWDBAY		0.00004	0.00009	0.50000	0.00	0.49957	-0.32	Micrometer
YTN34Q		0.00004	0.00006	0.49999	-0.16	0.49954	-0.91	Micrometer
YVD8Z4	X	0.00004	0.00010	0.49993	-0.66	0.49944	-1.49	Micrometer
Z2WC6U		0.00004	0.00198	0.49990	-0.05	0.49953	-0.04	Micrometer

Summary Statistics

	Sample I93		**Sample I94**	
Grand Means	0.4999	inch	0.4995	inch
Stnd Dev Btwn Labs	0.0001	inch	0.0001	inch

Samples I93, I94 : 52100 Steel, 52100 Steel

Statistics based on 38 of 43 reporting participants

Comments on Assigned Data Flags for Test #1001

C3D9ZQ (X) - En value for both samples was low.

K7MXLR (X) - En value for both samples was low.

KQRL2U (X) - En value for both samples was low.

PXR6A8 (X) - En value for both samples was low.

WU764K (X) - En value for sample I93 was high. En value for sample I94 was low.

YVD8Z4 (X) - En value for sample I94 was low.
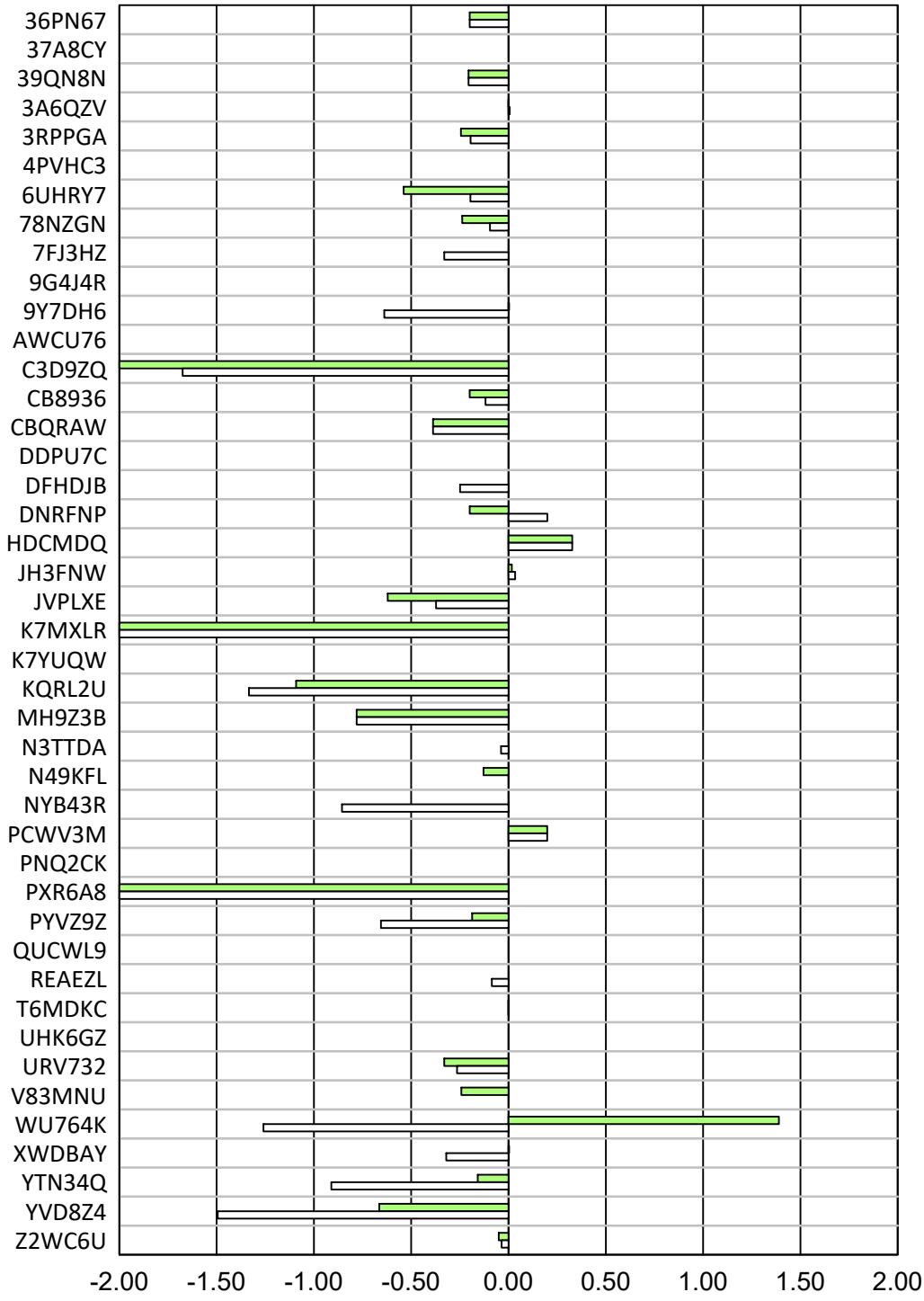
Dimensional: Outside Diameter of Plain Plug Gage
ISO GUM
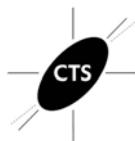
En Results (All Labs)

- ■ I93
- □ I94

En

Fasteners and Metals Interlaboratory Testing Program
Analysis 1101
Tensile Strength: Lab-Machined Flat Aluminum
ASTM B557

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample R93			Sample R94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2VNPVK		46.10	-0.46	-0.93	49.20	-0.13	-0.24
2WGLKE	*	47.80	1.24	2.48	49.20	-0.13	-0.24
2XE6AM		46.74	0.18	0.35	49.50	0.17	0.32
37KBGA		46.70	0.14	0.27	49.30	-0.03	-0.06
3LVW2Z		46.15	-0.41	-0.83	48.79	-0.54	-1.01
4Q6CAN	X	37.01	-9.55	-19.16	50.39	1.06	1.99
4WWJTW		46.49	-0.07	-0.15	48.98	-0.35	-0.66
6T9H9U		47.70	1.14	2.28	50.00	0.67	1.26
6XKFRB		45.70	-0.86	-1.73	48.50	-0.83	-1.56
72FNFG		46.20	-0.36	-0.73	48.80	-0.53	-1.00
76ZHBW		46.22	-0.35	-0.69	48.29	-1.04	-1.96
7MJC2L		46.30	-0.26	-0.53	49.40	0.07	0.13
8QBXAZ		46.90	0.34	0.67	49.50	0.17	0.32
AZERGX		46.85	0.28	0.57	49.42	0.09	0.17
BEPTQT	X	48.60	2.04	4.08	48.50	-0.83	-1.56
BWP6YU		46.20	-0.36	-0.73	48.90	-0.43	-0.81
CDDFLW		46.30	-0.26	-0.53	49.10	-0.23	-0.43
CME3DU	*	47.90	1.34	2.68	49.70	0.37	0.70
CR9WBV		47.10	0.54	1.07	50.00	0.67	1.26
EQDG8H	*	45.60	-0.96	-1.94	48.00	-1.33	-2.50
EQRMBT		46.80	0.24	0.47	49.50	0.17	0.32
FDWTEP		46.30	-0.26	-0.53	50.30	0.97	1.82
FJL7FD		46.51	-0.05	-0.10	49.24	-0.09	-0.17
FWC3EQ		46.30	-0.26	-0.53	50.20	0.87	1.64
G6JMBC		46.60	0.04	0.07	49.80	0.47	0.88
GGC4ZD		46.49	-0.07	-0.15	48.97	-0.36	-0.68
GLDEBZ		46.90	0.34	0.67	48.50	-0.83	-1.56
HDA2FP		46.40	-0.16	-0.33	49.70	0.37	0.70
HYMW78	X	4.614	-41.95	-84.14	4.880	-44.45	-83.55
JQCPA6		46.00	-0.56	-1.13	48.60	-0.73	-1.37
JQXEF7		47.00	0.44	0.87	50.30	0.97	1.82
M692GY	X	602.65	556.08	1,115.38	499.48	450.15	846.16
N22X7N		46.82	0.26	0.51	49.31	-0.02	-0.04
N82QPH		46.30	-0.26	-0.53	50.20	0.87	1.64
N8KHY3		47.00	0.44	0.87	49.30	-0.03	-0.06
NHKQF6		46.70	0.14	0.27	49.40	0.07	0.13
NQJLPJ		46.10	-0.46	-0.93	49.50	0.17	0.32
P3LH2H		46.30	-0.26	-0.53	50.10	0.77	1.45
PBG42A		46.90	0.34	0.67	50.00	0.67	1.26
PEFYQJ		46.30	-0.26	-0.53	49.00	-0.33	-0.62
PYALH3		47.30	0.74	1.47	49.40	0.07	0.13
QBV8FG		46.80	0.24	0.47	50.00	0.67	1.26
RDWU8C		47.20	0.64	1.27	49.80	0.47	0.88
RU3W4Y	X	49.50	2.94	5.89	51.20	1.87	3.52
T3UU9C		45.50	-1.06	-2.14	49.10	-0.23	-0.43
TAWUTZ		46.40	-0.16	-0.33	49.20	-0.13	-0.24
UDWW6Z		46.60	0.04	0.07	49.40	0.07	0.13

Tensile Strength: Lab-Machined Flat Aluminum
ASTM B557

WebCode	Data Flag	Sample R93			Sample R94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
VAMLTC		46.70	0.14	0.27	49.20	-0.13	-0.24
VPZAQC		46.47	-0.09	-0.19	49.20	-0.13	-0.25
WBVDYX		46.50	-0.06	-0.13	50.00	0.67	1.26
WKMPJQ		46.60	0.04	0.07	48.90	-0.43	-0.81
X8GTX4		47.10	0.54	1.07	49.50	0.17	0.32
X94GA4		45.92	-0.64	-1.29	48.71	-0.62	-1.16
XAG7DG		46.03	-0.53	-1.07	48.56	-0.77	-1.45
YKG286		46.70	0.14	0.27	49.40	0.07	0.13
YZCC3N		46.27	-0.30	-0.60	49.17	-0.16	-0.30
ZDAWUC		46.61	0.05	0.09	49.12	-0.21	-0.39

Summary Statistics

	Sample R93		Sample R94	
Grand Means	46.56	ksi	49.33	ksi
Stnd Dev Btwn Labs	0.50	ksi	0.53	ksi

Samples R93, R94 : 16G 6061-T6 (A), 14G 6061-T6 (B)

Statistics based on 52 of 57 reporting participants

Comments on Assigned Data Flags for Test #1101
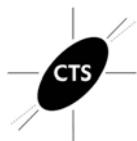
4Q6CAN (X) - Data for sample R93 are low.

BEPTQT (X) - Data for sample R93 are high.

HYMW78 (X) - Extreme data.

M692GY (X) - Extreme data.
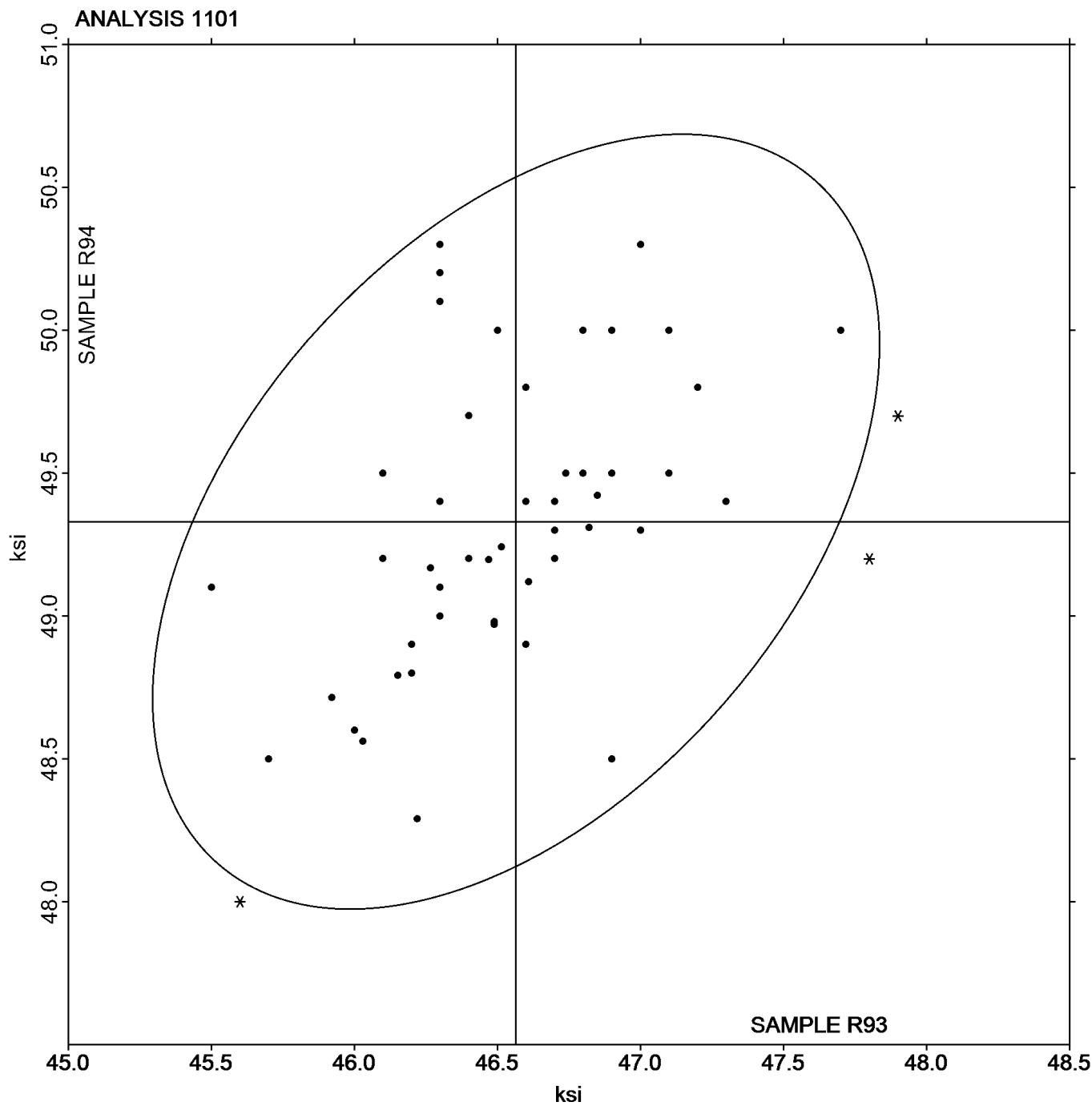
RU3W4Y (X) - Data for both samples are high.
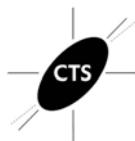
Tensile Strength: Lab-Machined Flat Aluminum
ASTM B557

SAMPLE R93

46.56 ksi

SAMPLE R94

49.33 ksi

ANALYSIS 1101

Fasteners and Metals Interlaboratory Testing Program
Analysis 1102
Yield Strength: Lab-Machined Flat Aluminum
ASTM B557

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample R93			Sample R94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2VNPVK		37.30	-1.01	-1.93	42.90	-0.65	-1.28
2WGLKE	*	39.60	1.29	2.47	43.40	-0.15	-0.30
2XE6AM		38.60	0.29	0.56	43.76	0.21	0.41
37KBGA		38.30	-0.01	-0.02	43.80	0.25	0.49
3LVW2Z		38.04	-0.26	-0.51	43.29	-0.26	-0.51
4Q6CAN	X	30.60	-7.71	-14.73	44.38	0.83	1.64
4WWJTW		38.34	0.03	0.06	43.33	-0.22	-0.44
6T9H9U		39.60	1.29	2.47	44.10	0.55	1.08
6XKFRB		37.90	-0.41	-0.78	43.10	-0.45	-0.89
72FNFG		38.30	-0.01	-0.02	43.30	-0.25	-0.50
76ZHBW		39.15	0.84	1.61	43.18	-0.37	-0.73
7MJC2L		38.00	-0.31	-0.59	43.70	0.15	0.29
8QBXAZ		38.60	0.29	0.56	43.70	0.15	0.29
AZERGX		38.75	0.44	0.84	43.84	0.29	0.56
BEPTQT	X	39.80	1.49	2.85	39.70	-3.85	-7.59
BWP6YU		37.90	-0.41	-0.78	43.20	-0.35	-0.69
CDDFLW		38.40	0.09	0.17	43.40	-0.15	-0.30
CME3DU		39.30	0.99	1.89	44.00	0.45	0.88
CR9WBV		38.90	0.59	1.13	44.30	0.75	1.47
EQDG8H	X	36.80	-1.51	-2.88	41.00	-2.55	-5.03
EQRMBT		38.40	0.09	0.17	43.20	-0.35	-0.69
FDWTEP	*	38.00	-0.31	-0.59	44.60	1.05	2.07
FJL7FD		38.38	0.07	0.13	43.77	0.22	0.44
FWC3EQ		38.10	-0.21	-0.40	44.30	0.75	1.47
G6JMBC		37.70	-0.61	-1.16	43.70	0.15	0.29
GGC4ZD	X	38.92	0.61	1.16	41.14	-2.41	-4.76
GLDEBZ		38.40	0.09	0.17	42.80	-0.75	-1.48
HDA2FP		37.90	-0.41	-0.78	43.90	0.35	0.69
HYMW78	X	3.743	-34.57	-66.07	4.244	-39.31	-77.45
JQCPA6		37.90	-0.41	-0.78	43.10	-0.45	-0.89
JQXEF7		38.60	0.29	0.56	44.30	0.75	1.47
M692GY	X	494.43	456.12	871.81	437.83	394.27	776.87
N22X7N		38.40	0.09	0.17	43.40	-0.15	-0.30
N82QPH		37.90	-0.41	-0.78	44.30	0.75	1.47
N8KHY3		38.40	0.09	0.17	43.40	-0.15	-0.30
NHKQF6		38.10	-0.21	-0.40	43.40	-0.15	-0.30
NQJLPJ		37.80	-0.51	-0.97	43.10	-0.45	-0.89
P3LH2H		38.20	-0.11	-0.21	44.20	0.65	1.28
PBG42A	*	39.30	0.99	1.89	44.80	1.25	2.46
PEFYQJ		38.30	-0.01	-0.02	43.30	-0.25	-0.50
PYALH3	X	40.60	2.29	4.38	44.90	1.35	2.66
QBV8FG		38.40	0.09	0.17	44.00	0.45	0.88
RDWU8C		38.70	0.39	0.75	43.80	0.25	0.49
RU3W4Y	X	41.10	2.79	5.34	45.20	1.65	3.25
T3UU9C		37.30	-1.01	-1.93	43.30	-0.25	-0.50
TAWUTZ		38.10	-0.21	-0.40	43.20	-0.35	-0.69
UDWW6Z		38.00	-0.31	-0.59	43.20	-0.35	-0.69

Fasteners and Metals Interlaboratory Testing Program
Analysis 1102
Yield Strength: Lab-Machined Flat Aluminum
ASTM B557

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample R93 Lab Mean	Diff. from Grand Mean	CPV	Sample R94 Lab Mean	Diff. from Grand Mean	CPV
VAMLTC		38.30	-0.01	-0.02	43.40	-0.15	-0.30
VPZAQC		38.22	-0.09	-0.17	43.22	-0.33	-0.65
WBVDYX		38.40	0.09	0.17	44.30	0.75	1.47
WKMPJQ		38.20	-0.11	-0.21	43.10	-0.45	-0.89
X8GTX4		39.00	0.69	1.32	43.60	0.05	0.10
X94GA4		37.11	-1.20	-2.29	42.59	-0.97	-1.90
XAG7DG		37.98	-0.32	-0.62	42.68	-0.87	-1.71
YKG286		38.40	0.09	0.17	43.60	0.05	0.10
YZCC3N		38.15	-0.16	-0.31	43.37	-0.18	-0.36
ZDAWUC		38.11	-0.20	-0.38	42.79	-0.76	-1.50

Summary Statistics

	Sample R93		Sample R94	
Grand Means	38.31	ksi	43.55	ksi
Stnd Dev Btwn Labs	0.52	ksi	0.51	ksi

Samples R93, R94 : 16G 6061-T6 (A), 14G 6061-T6 (B)
Statistics based on 49 of 57 reporting participants

Comments on Assigned Data Flags for Test #1102

4Q6CAN (X) - Data for sample R93 are low.
BEPTQT (X) - Data for sample R93 are high and data for sample R94 are low.
EQDG8H (X) - Data for both samples are low.
GGC4ZD (X) - Data for sample R94 are low.
HYMW78 (X) - Extreme data.
M692GY (X) - Extreme data.
PYALH3 (X) - Data for sample R93 are high.
RU3W4Y (X) - Data for both samples are high.
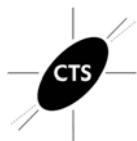
Fasteners and Metals Interlaboratory Testing Program
Analysis 1102
Yield Strength: Lab-Machined Flat Aluminum
ASTM B557
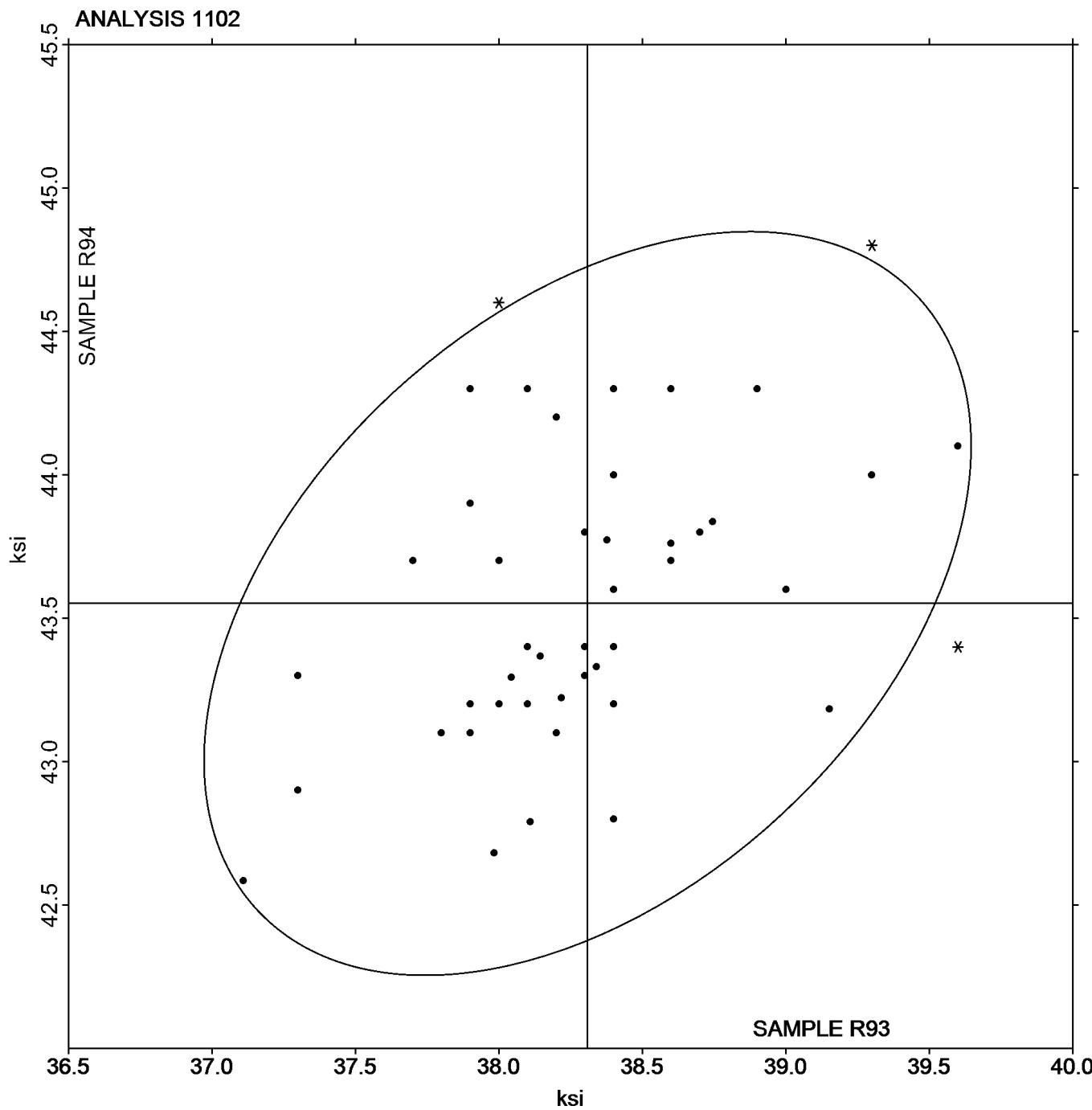
Cycle 143
3rd Qtr 2023
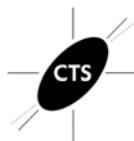
SAMPLE R93
38.31 ksi

SAMPLE R94
43.55 ksi

Fasteners and Metals Interlaboratory Testing Program
Analysis 1103
Elongation: Lab-Machined Flat Aluminum
ASTM B557
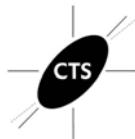
Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample R93			Sample R94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2VNPVK	X	18.30	3.64	4.21	16.40	2.45	3.03
2WGLKE		13.70	-0.96	-1.11	13.20	-0.75	-0.92
2XE6AM		12.90	-1.76	-2.04	12.14	-1.81	-2.23
37KBGA		15.20	0.54	0.62	13.90	-0.05	-0.06
3LVW2Z		14.00	-0.66	-0.77	12.80	-1.15	-1.42
4Q6CAN	X	16.50	1.84	2.13	12.50	-1.45	-1.79
4WWJTW		14.96	0.30	0.34	13.95	0.00	0.00
6T9H9U		15.50	0.84	0.97	15.00	1.05	1.30
6XKFRB		14.60	-0.06	-0.07	14.20	0.25	0.31
72FNFG		14.60	-0.06	-0.07	13.70	-0.25	-0.31
76ZHBW	X	11.52	-3.14	-3.64	10.25	-3.70	-4.57
7MJC2L		14.80	0.14	0.16	13.60	-0.35	-0.43
8QBXAZ		14.00	-0.66	-0.77	13.50	-0.45	-0.55
AZERGX		14.10	-0.56	-0.65	13.70	-0.25	-0.31
BEPTQT		14.00	-0.66	-0.77	14.00	0.05	0.06
BWP6YU		14.50	-0.16	-0.19	13.50	-0.45	-0.55
CDDFLW		14.50	-0.16	-0.19	14.00	0.05	0.06
CME3DU		14.50	-0.16	-0.19	14.00	0.05	0.06
CR9WBV		14.50	-0.16	-0.19	13.50	-0.45	-0.55
EQDG8H		14.50	-0.16	-0.19	14.00	0.05	0.06
EQRMBT		15.00	0.34	0.39	14.00	0.05	0.06
FDWTEP		14.50	-0.16	-0.19	14.00	0.05	0.06
FJL7FD		14.20	-0.46	-0.54	13.40	-0.55	-0.68
FWC3EQ		14.50	-0.16	-0.19	13.50	-0.45	-0.55
G6JMBC		14.20	-0.46	-0.54	13.90	-0.05	-0.06
GGC4ZD	*	17.10	2.44	2.82	15.75	1.80	2.22
GLDEBZ	X	10.00	-4.66	-5.40	10.00	-3.95	-4.88
HDA2FP		14.00	-0.66	-0.77	13.00	-0.95	-1.17
HYMW78	*	15.24	0.58	0.67	13.16	-0.79	-0.97
JQCPA6		14.50	-0.16	-0.19	13.90	-0.05	-0.06
JQXEF7		15.50	0.84	0.97	14.30	0.35	0.43
M692GY		15.40	0.74	0.85	14.52	0.57	0.71
N22X7N		13.90	-0.76	-0.88	13.50	-0.45	-0.55
N82QPH		13.50	-1.16	-1.35	13.00	-0.95	-1.17
N8KHY3		15.70	1.04	1.20	14.60	0.65	0.80
NHKQF6		14.50	-0.16	-0.19	14.50	0.55	0.68
NQJLPJ		13.40	-1.26	-1.46	12.90	-1.05	-1.29
P3LH2H		13.50	-1.16	-1.35	13.00	-0.95	-1.17
PBG42A	*	16.90	2.24	2.59	15.50	1.55	1.92
PEFYQJ		15.30	0.64	0.74	15.00	1.05	1.30
PYALH3		15.00	0.34	0.39	14.00	0.05	0.06
QBV8FG		15.00	0.34	0.39	14.00	0.05	0.06
RDWU8C		15.00	0.34	0.39	14.00	0.05	0.06
RU3W4Y		13.90	-0.76	-0.88	14.00	0.05	0.06
T3UU9C		13.50	-1.16	-1.35	13.00	-0.95	-1.17
TAWUTZ		14.40	-0.26	-0.30	14.20	0.25	0.31
UDWW6Z	*	14.70	0.04	0.04	15.30	1.35	1.67

Fasteners and Metals Interlaboratory Testing Program
Analysis 1103
Elongation: Lab-Machined Flat Aluminum
ASTM B557

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample R93			Sample R94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
VAMLTC	*	16.00	1.34	1.55	14.00	0.05	0.06
VPZAQC		15.80	1.14	1.32	15.00	1.05	1.30
WBVDYX		14.00	-0.66	-0.77	12.50	-1.45	-1.79
WKMPJQ		13.20	-1.46	-1.69	12.90	-1.05	-1.29
X8GTX4		15.50	0.84	0.97	14.50	0.55	0.68
X94GA4		15.38	0.72	0.83	15.08	1.13	1.40
XAG7DG		16.22	1.55	1.80	15.98	2.03	2.50
YKG286		14.50	-0.16	-0.19	13.50	-0.45	-0.55
YZCC3N		14.30	-0.36	-0.42	14.60	0.65	0.80
ZDAWUC		15.00	0.34	0.39	14.60	0.65	0.80

Summary Statistics

	Sample R93		Sample R94	
Grand Means	14.66	Percent	13.95	Percent
Stnd Dev Btwn Labs	0.86	Percent	0.81	Percent

Samples R93, R94 : 16G 6061-T6 (A), 14G 6061-T6 (B)

Statistics based on 53 of 57 reporting participants

Comments on Assigned Data Flags for Test #1103

2VNPVK (X) - Data for both samples are high. Possible Systematic Error.

4Q6CAN (X) - Inconsistent in testing between samples.

76ZHBW (X) - Data for both samples are low. Possible Systematic Error.
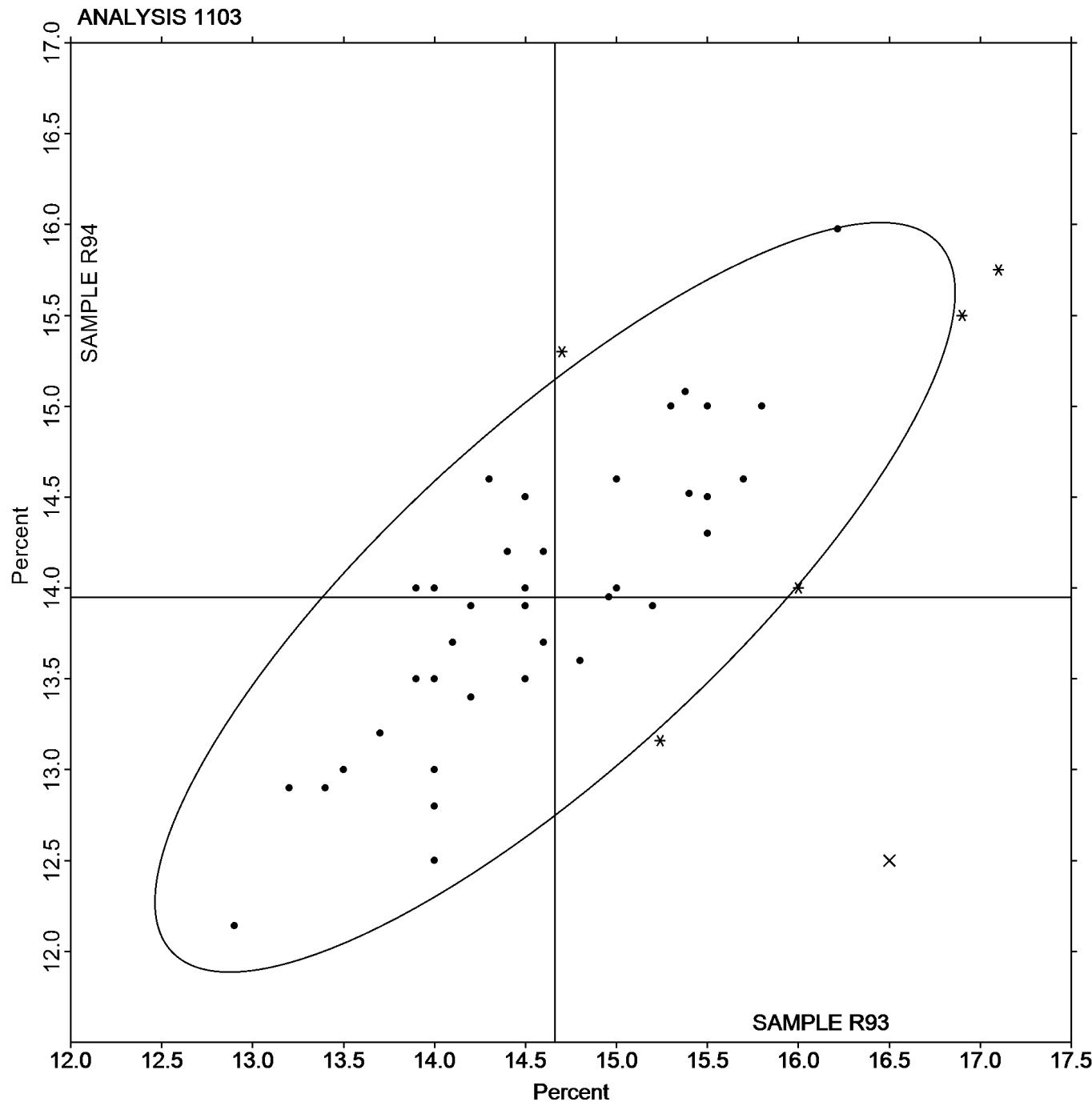
GLDEBZ (X) - Data for both samples are low. Possible Systematic Error.
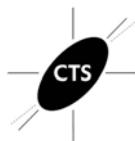
Elongation: Lab-Machined Flat Aluminum
ASTM B557

<u>SAMPLE R93</u>

14.66 Percent

<u>SAMPLE R94</u>

13.95 Percent

Fasteners and Metals Interlaboratory Testing Program
Analysis 1111
Tensile Strength: Pre-Machined Round Steel
ASTM E8

WebCode	Data Flag	Sample A93 Lab Mean	Diff. from Grand Mean	CPV	Sample A94 Lab Mean	Diff. from Grand Mean	CPV
23BHA7		148.90	-1.46	-1.24	152.23	-0.33	-0.24
2APFZX		152.90	2.54	2.15	153.40	0.84	0.62
2LJQCB		151.60	1.24	1.05	153.60	1.04	0.77
2MCTTY		149.90	-0.46	-0.39	152.20	-0.36	-0.27
2QB6PY		150.00	-0.36	-0.31	153.00	0.44	0.33
2R4ZDT		149.50	-0.86	-0.73	150.40	-2.16	-1.60
2WGLKE		150.00	-0.36	-0.31	152.80	0.24	0.18
36PN67		150.00	-0.36	-0.31	151.00	-1.56	-1.16
3BF6EB		151.39	1.02	0.86	153.97	1.41	1.05
3KMPVL		151.54	1.18	0.99	151.51	-1.05	-0.78
4AFC6A		149.65	-0.71	-0.60	152.29	-0.27	-0.20
4XMZQC		149.10	-1.26	-1.07	151.57	-0.99	-0.74
69ZDLK	X	151.06	0.69	0.59	158.06	5.50	4.08
6PUUNX		148.90	-1.46	-1.24	151.40	-1.16	-0.86
6T9H9U		150.00	-0.36	-0.31	151.00	-1.56	-1.16
7CX4JJ		148.00	-2.36	-2.00	150.00	-2.56	-1.90
8PJ3K7		150.97	0.61	0.51	153.87	1.31	0.97
94GB2K		152.58	2.22	1.88	151.86	-0.70	-0.52
969FM6		150.36	0.00	0.00	154.22	1.66	1.23
A29QJ3		151.30	0.94	0.79	153.70	1.14	0.84
A3JDFV		150.30	-0.06	-0.05	153.80	1.24	0.92
AFBZMC		151.56	1.19	1.01	152.37	-0.19	-0.14
AGJC3T		150.20	-0.16	-0.14	154.40	1.84	1.36
AV3UXH		149.54	-0.83	-0.70	151.86	-0.70	-0.52
B46NG9		152.00	1.64	1.38	152.71	0.15	0.11
B84ZD9		149.00	-1.36	-1.15	152.00	-0.56	-0.41
BACA9C		150.00	-0.36	-0.31	151.00	-1.56	-1.16
BAWV23		150.29	-0.08	-0.07	153.83	1.27	0.94
BGYVMQ		152.32	1.96	1.66	154.34	1.78	1.32
CBQRAW		150.06	-0.31	-0.26	153.26	0.70	0.52
DH4RUJ		150.70	0.34	0.28	153.90	1.34	0.99
DLKZGJ	*	148.80	-1.56	-1.32	154.30	1.74	1.29
E2VNYY	X	150.60	0.24	0.20	158.60	6.04	4.47
EHFEXX		151.40	1.04	0.88	153.20	0.64	0.47
FJQLUY		151.00	0.64	0.54	153.40	0.84	0.62
GU2FJX		150.55	0.19	0.16	153.36	0.80	0.59
JKUART		151.28	0.91	0.77	153.89	1.33	0.98
JVNZZD	X	159.08	8.72	7.38	161.33	8.77	6.50
JVPLXE		149.30	-1.06	-0.90	151.65	-0.91	-0.67
KFPBJ8	*	147.67	-2.69	-2.28	148.65	-3.91	-2.90
KLH7R7	*	149.00	-1.36	-1.15	155.00	2.44	1.81
KQRL2U		151.43	1.06	0.90	151.55	-1.01	-0.75
KU88HF		149.60	-0.76	-0.65	151.40	-1.16	-0.86
KX7GV4		151.10	0.74	0.62	154.40	1.84	1.36
KXRVJG		149.55	-0.81	-0.69	151.84	-0.72	-0.53
PG9BL4		150.00	-0.36	-0.31	153.00	0.44	0.33
QA6N8A		152.00	1.64	1.38	152.60	0.04	0.03

Tensile Strength: Pre-Machined Round Steel
ASTM E8

WebCode	Data Flag	Sample A93			Sample A94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
RRJV9C		150.25	-0.12	-0.10	152.49	-0.07	-0.05
UGRBLH		151.13	0.77	0.65	152.44	-0.12	-0.09
UXF2P4		150.00	-0.36	-0.31	151.30	-1.26	-0.93
X8GTX4		149.00	-1.36	-1.15	151.00	-1.56	-1.16
XRHJ23		149.50	-0.86	-0.73	151.40	-1.16	-0.86
XVYB7W		151.00	0.64	0.54	154.20	1.64	1.22
YTN34Q		152.00	1.64	1.38	152.00	-0.56	-0.41
YZUUUU		149.10	-1.26	-1.07	151.10	-1.46	-1.08
Z2HFTH		150.55	0.19	0.16	152.73	0.17	0.12
Z7R73V		152.65	2.29	1.93	155.01	2.45	1.82
ZHLZKE		149.60	-0.76	-0.65	151.40	-1.16	-0.86

Summary Statistics

	Sample A93		Sample A94	
Grand Means	150.36	ksi	152.56	ksi
Stnd Dev Btwn Labs	1.18	ksi	1.35	ksi
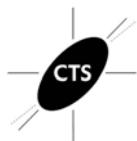
Samples A93, A94 : AISI 4340 (S), AISI 4340 (L)   *Statistics based on 55 of 58 reporting participants*

Comments on Assigned Data Flags for Test #1111

69ZDLK (X) - Data for sample A94 are high.

E2VNYY (X) - Data for sample A94 are high.

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

Fasteners and Metals Interlaboratory Testing Program
Analysis 1111
Cycle 143
3rd Qtr 2023
Tensile Strength: Pre-Machined Round Steel
ASTM E8
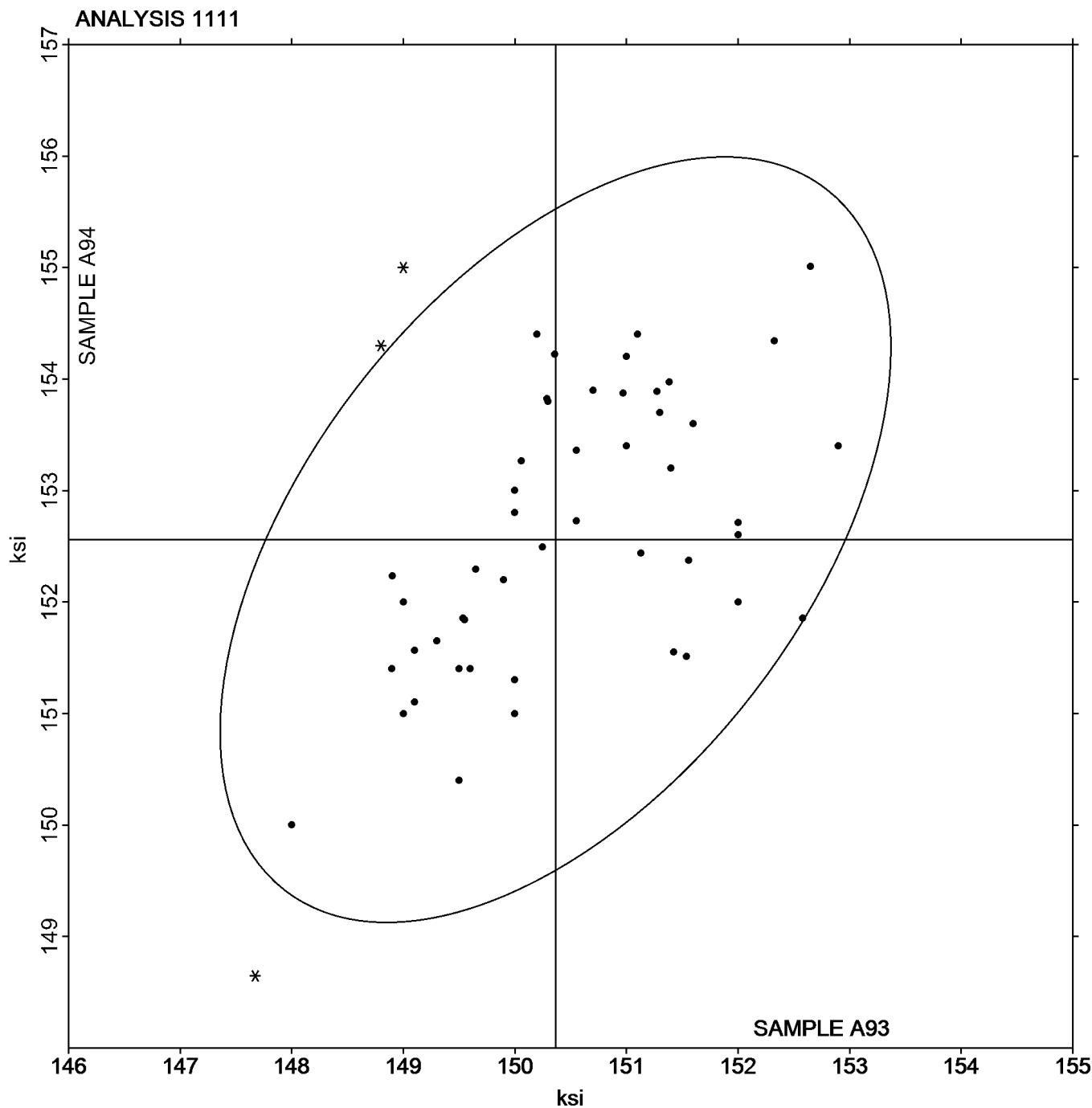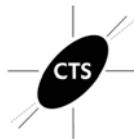
SAMPLE A93
150.36 ksi

SAMPLE A94
152.56 ksi

ANALYSIS 1111

SAMPLE A94 / ksi (vertical axis)

SAMPLE A93 / ksi (horizontal axis)

Fasteners and Metals Interlaboratory Testing Program
Analysis 1112
Yield Strength: Pre-Machined Round Steel
ASTM E8

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample A93 Lab Mean	Diff. from Grand Mean	CPV	Sample A94 Lab Mean	Diff. from Grand Mean	CPV
23BHA7		124.22	-0.55	-0.42	125.20	-1.33	-0.80
2APFZX		126.30	1.53	1.17	126.00	-0.53	-0.32
2LJQCB		125.50	0.73	0.56	127.20	0.67	0.40
2MCTTY	X	137.40	12.63	9.66	139.30	12.77	7.63
2QB6PY	X	118.00	-6.77	-5.18	124.00	-2.53	-1.51
2R4ZDT		123.80	-0.97	-0.74	123.00	-3.53	-2.11
2WGLKE		123.70	-1.07	-0.82	125.80	-0.73	-0.44
36PN67		125.00	0.23	0.18	124.00	-2.53	-1.51
3BF6EB		126.41	1.64	1.25	128.56	2.03	1.21
4AFC6A		123.85	-0.92	-0.70	125.63	-0.90	-0.54
4XMZQC		122.27	-2.50	-1.91	126.18	-0.35	-0.21
69ZDLK	X	124.31	-0.46	-0.35	133.84	7.31	4.37
6PUUNX		124.90	0.13	0.10	125.50	-1.03	-0.62
6T9H9U		124.00	-0.77	-0.59	124.00	-2.53	-1.51
7CX4JJ	*	121.00	-3.77	-2.88	124.00	-2.53	-1.51
8PJ3K7		126.66	1.89	1.45	128.69	2.16	1.29
94GB2K	X	129.08	4.31	3.30	127.20	0.67	0.40
969FM6		124.00	-0.77	-0.59	126.79	0.26	0.16
A29QJ3		125.20	0.43	0.33	127.30	0.77	0.46
A3JDFV		124.90	0.13	0.10	128.80	2.27	1.36
AFBZMC		127.16	2.39	1.82	129.44	2.90	1.73
AGJC3T		125.30	0.53	0.40	129.60	3.07	1.83
AV3UXH		127.49	2.72	2.08	129.52	2.99	1.79
B46NG9		126.32	1.55	1.18	126.71	0.18	0.11
B84ZD9		125.00	0.23	0.18	127.00	0.47	0.28
BACA9C		125.00	0.23	0.18	124.00	-2.53	-1.51
BAWV23		124.07	-0.70	-0.53	127.68	1.15	0.69
BGYVMQ		126.04	1.27	0.97	127.49	0.96	0.57
CBQRAW		125.65	0.88	0.67	129.53	3.00	1.79
DH4RUJ		125.20	0.43	0.33	128.50	1.97	1.18
DLKZGJ	X	142.80	18.03	13.79	141.60	15.07	9.00
E2VNYY	X	124.40	-0.37	-0.28	132.40	5.87	3.51
EHFEXX		125.70	0.93	0.71	127.20	0.67	0.40
FJQLUY		123.60	-1.17	-0.90	126.30	-0.23	-0.14
GU2FJX		124.90	0.13	0.10	127.15	0.62	0.37
JKUART		124.15	-0.62	-0.47	127.92	1.39	0.83
JVNZZD	X	114.47	-10.30	-7.88	116.83	-9.70	-5.79
JVPLXE		123.88	-0.89	-0.68	125.63	-0.90	-0.54
KFPBJ8		125.26	0.49	0.37	126.54	0.01	0.01
KLH7R7	X	122.00	-2.77	-2.12	131.00	4.47	2.67
KQRL2U	X	116.32	-8.45	-6.46	117.59	-8.94	-5.34
KU88HF		124.00	-0.77	-0.59	125.00	-1.53	-0.91
KX7GV4		123.30	-1.47	-1.12	126.60	0.07	0.04
KXRVJG		124.15	-0.62	-0.48	125.85	-0.68	-0.40
PG9BL4		125.00	0.23	0.18	127.00	0.47	0.28
QA6N8A		124.60	-0.17	-0.13	125.80	-0.73	-0.44
RRJV9C		124.99	0.22	0.17	126.88	0.35	0.21

Yield Strength: Pre-Machined Round Steel
ASTM E8

WebCode	Data Flag	Sample A93 Lab Mean	Sample A93 Diff. from Grand Mean	Sample A93 CPV	Sample A94 Lab Mean	Sample A94 Diff. from Grand Mean	Sample A94 CPV
UGRBLH		123.57	-1.20	-0.92	125.31	-1.22	-0.73
UXF2P4		123.80	-0.97	-0.74	124.60	-1.93	-1.15
X8GTX4		123.00	-1.77	-1.35	124.00	-2.53	-1.51
XRHJ23	X	131.70	6.93	5.30	124.80	-1.73	-1.03
XVYB7W		126.20	1.43	1.09	127.00	0.47	0.28
YTN34Q		127.00	2.23	1.70	127.00	0.47	0.28
YZUUUU		123.60	-1.17	-0.90	125.20	-1.33	-0.79
Z2HFTH		124.30	-0.47	-0.36	125.60	-0.93	-0.55
Z7R73V		126.57	1.80	1.38	128.89	2.36	1.41
ZHLZKE		123.70	-1.07	-0.82	125.30	-1.23	-0.73

Summary Statistics

	Sample A93		**Sample A94**	
Grand Means	124.77	ksi	126.53	ksi
Stnd Dev Btwn Labs	1.31	ksi	1.67	ksi

Samples A93, A94 : AISI 4340 (S), AISI 4340 (L)

Statistics based on 47 of 57 reporting participants

Comments on Assigned Data Flags for Test #1112

2MCTTY (X) - Data for both samples are high.

2QB6PY (X) - Data for sample A93 are low.

69ZDLK (X) - Data for sample A94 are high.

94GB2K (X) - Data for sample A93 are high.

DLKZGJ (X) - Data for both samples are high.
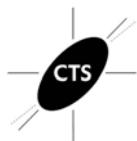
E2VNYY (X) - Data for sample A94 are high.

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

KLH7R7 (X) - Inconsistent in testing between samples.

KQRL2U (X) - Data for both samples are low.
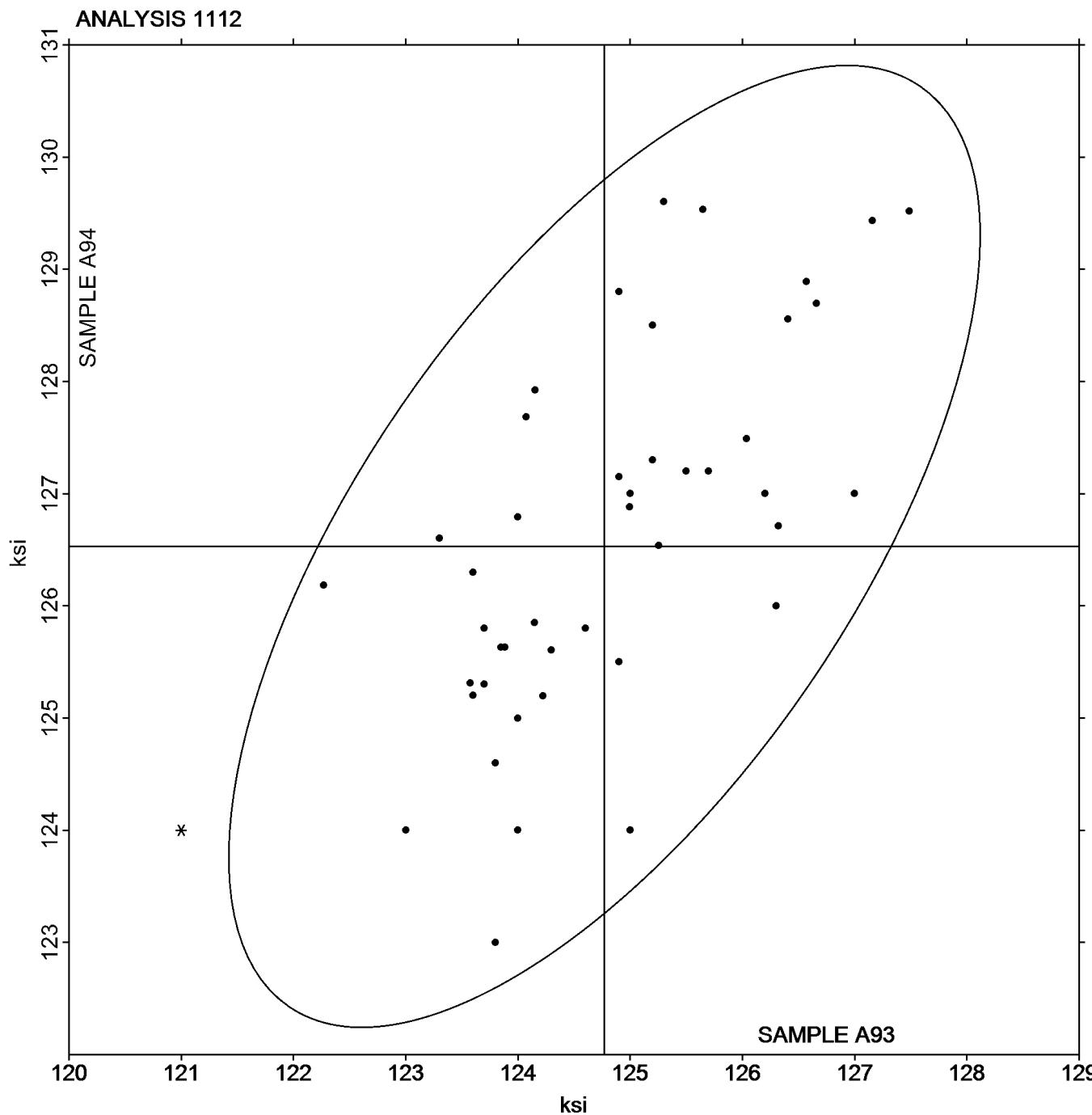
XRHJ23 (X) - Data for sample A93 are high.

Fasteners and Metals Interlaboratory Testing Program
Analysis 1112
Yield Strength: Pre-Machined Round Steel
ASTM E8
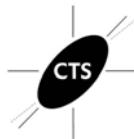
Cycle 143
3rd Qtr 2023

SAMPLE A93
124.77 ksi

SAMPLE A94
126.53 ksi

ANALYSIS 1112

Fasteners and Metals Interlaboratory Testing Program
Analysis 1113
Elongation: Pre-Machined Round Steel
ASTM E8

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample A93			Sample A94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
23BHA7		16.68	-0.38	-0.45	16.42	0.00	0.00
2APFZX		16.90	-0.16	-0.19	16.50	0.08	0.10
2LJQCB		16.60	-0.46	-0.54	16.60	0.18	0.22
2MCTTY	X	2.322	-14.74	-17.29	2.353	-14.07	-17.29
2QB6PY		16.20	-0.86	-1.01	16.70	0.28	0.34
2R4ZDT		17.52	0.46	0.54	15.45	-0.97	-1.19
2WGLKE		16.90	-0.16	-0.19	16.40	-0.02	-0.02
36PN67		16.00	-1.06	-1.24	16.00	-0.42	-0.52
3BF6EB		15.85	-1.21	-1.42	14.65	-1.77	-2.18
4AFC6A		16.70	-0.36	-0.42	15.80	-0.62	-0.76
4XMZQC		16.50	-0.56	-0.66	15.50	-0.92	-1.13
69ZDLK		17.70	0.64	0.75	17.70	1.28	1.57
6PUUNX	X	18.60	1.54	1.81	14.20	-2.22	-2.73
6T9H9U		16.00	-1.06	-1.24	16.00	-0.42	-0.52
7CX4JJ		17.00	-0.06	-0.07	16.00	-0.42	-0.52
8PJ3K7		16.45	-0.61	-0.72	16.70	0.28	0.34
94GB2K		17.52	0.46	0.54	17.62	1.20	1.47
969FM6		18.00	0.94	1.10	17.00	0.58	0.71
A29QJ3		17.20	0.14	0.16	15.80	-0.62	-0.76
A3JDFV	*	19.30	2.24	2.63	18.60	2.18	2.68
AFBZMC		17.00	-0.06	-0.07	16.00	-0.42	-0.52
AGJC3T		17.00	-0.06	-0.07	17.00	0.58	0.71
AV3UXH	*	14.60	-2.46	-2.89	14.52	-1.90	-2.33
B46NG9		17.45	0.39	0.46	17.00	0.58	0.71
B84ZD9	X	16.00	-1.06	-1.24	20.00	3.58	4.40
BACA9C		17.20	0.14	0.16	15.90	-0.52	-0.64
BAWV23		16.98	-0.08	-0.09	17.23	0.81	1.00
BGYVMQ		17.03	-0.03	-0.03	16.36	-0.06	-0.07
CBQRAW		17.00	-0.06	-0.07	16.70	0.28	0.34
DH4RUJ		17.40	0.34	0.40	16.50	0.08	0.10
DLKZGJ		18.40	1.34	1.57	17.60	1.18	1.45
E2VNYY		17.00	-0.06	-0.07	16.70	0.28	0.34
EHFEXX		16.90	-0.16	-0.19	16.10	-0.32	-0.39
FJQLUY		17.40	0.34	0.40	18.00	1.58	1.94
GU2FJX		16.68	-0.38	-0.45	15.54	-0.88	-1.08
JKUART		16.00	-1.06	-1.24	15.00	-1.42	-1.75
JVNZZD		17.76	0.70	0.82	16.40	-0.02	-0.02
JVPLXE		18.10	1.04	1.22	17.30	0.88	1.08
KFPBJ8	*	19.25	2.19	2.57	17.72	1.30	1.60
KLH7R7	*	19.00	1.94	2.28	17.00	0.58	0.71
KQRL2U		17.00	-0.06	-0.07	16.00	-0.42	-0.52
KU88HF		16.30	-0.76	-0.89	16.30	-0.12	-0.15
KX7GV4		18.20	1.14	1.34	17.35	0.93	1.14
KXRVJG		16.00	-1.06	-1.24	16.00	-0.42	-0.52
PG9BL4		17.00	-0.06	-0.07	16.00	-0.42	-0.52
QA6N8A		16.50	-0.56	-0.66	15.50	-0.92	-1.13
RRJV9C		16.30	-0.76	-0.89	16.20	-0.22	-0.27

Elongation: Pre-Machined Round Steel
ASTM E8

WebCode	Data Flag	Sample A93 Lab Mean	Sample A93 Diff. from Grand Mean	Sample A93 CPV	Sample A94 Lab Mean	Sample A94 Diff. from Grand Mean	Sample A94 CPV
UGRBLH		17.00	-0.06	-0.07	15.00	-1.42	-1.75
UXF2P4		17.70	0.64	0.75	16.50	0.08	0.10
X8GTX4		16.00	-1.06	-1.24	16.00	-0.42	-0.52
XRHJ23		17.10	0.04	0.05	16.80	0.38	0.47
XVYB7W		17.20	0.14	0.16	16.50	0.08	0.10
YTN34Q		16.90	-0.16	-0.19	16.50	0.08	0.10
YZUUUU		17.80	0.74	0.87	17.10	0.68	0.84
Z2HFTH		17.50	0.44	0.52	16.70	0.28	0.34
Z7R73V		16.75	-0.31	-0.36	16.13	-0.29	-0.36
ZHLZKE		16.80	-0.26	-0.30	16.10	-0.32	-0.39

Summary Statistics

	Sample A93		**Sample A94**	
Grand Means	17.06	Percent	16.42	Percent
Stnd Dev Btwn Labs	0.85	Percent	0.81	Percent

Samples A93, A94 : AISI 4340 (S), AISI 4340 (L)
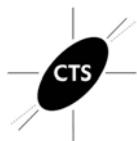
Statistics based on 54 of 57 reporting participants

Comments on Assigned Data Flags for Test #1113

2MCTTY (X) - Extreme data.

6PUUNX (X) - Data for sample A94 are low.
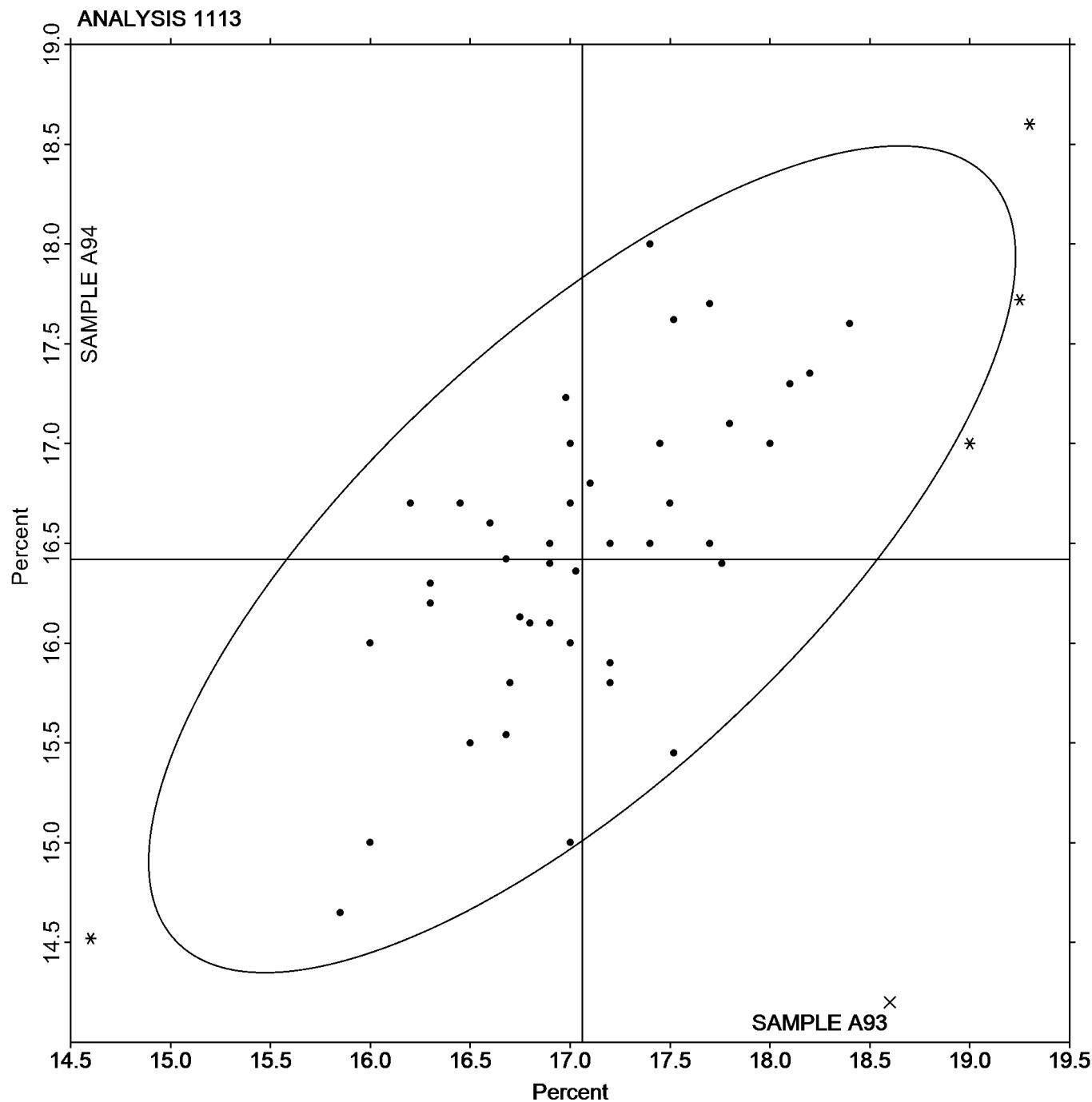
B84ZD9 (X) - Data for sample A94 are high.
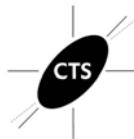
**Elongation: Pre-Machined Round Steel**
ASTM E8

<u>SAMPLE A93</u>

17.06 Percent

<u>SAMPLE A94</u>

16.42 Percent

Fasteners and Metals Interlaboratory Testing Program
Analysis 1114
Reduction of Area: Pre-Machined Round Steel
ASTM E8
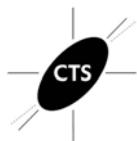
Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample A93			Sample A94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2APFZX		54.80	0.30	0.29	51.60	0.11	0.04
2LJQCB		53.10	-1.40	-1.34	49.50	-1.99	-0.80
2MCTTY	X	0.1971	-54.30	-52.15	0.1971	-51.30	-20.55
2QB6PY		53.00	-1.50	-1.44	53.90	2.41	0.96
2R4ZDT		54.04	-0.46	-0.44	48.78	-2.72	-1.09
2WGLKE		54.90	0.40	0.39	55.80	4.31	1.73
36PN67		55.00	0.50	0.48	52.00	0.51	0.20
3BF6EB		55.20	0.70	0.67	48.16	-3.33	-1.34
4AFC6A		55.40	0.90	0.87	48.70	-2.79	-1.12
4XMZQC		54.00	-0.50	-0.48	52.00	0.51	0.20
69ZDLK		54.30	-0.20	-0.19	54.30	2.81	1.12
6PUUNX		54.00	-0.50	-0.48	52.80	1.31	0.52
6T9H9U		54.00	-0.50	-0.48	52.00	0.51	0.20
7CX4JJ		55.00	0.50	0.48	53.00	1.51	0.60
8PJ3K7		55.80	1.30	1.25	55.80	4.31	1.73
94GB2K		55.03	0.53	0.51	54.36	2.87	1.15
969FM6		56.00	1.50	1.44	50.00	-1.49	-0.60
A29QJ3	*	52.00	-2.50	-2.40	48.00	-3.49	-1.40
A3JDFV		55.60	1.10	1.06	50.10	-1.39	-0.56
AFBZMC		53.76	-0.74	-0.71	47.00	-4.49	-1.80
AGJC3T		55.00	0.50	0.48	56.00	4.51	1.81
B46NG9		54.40	-0.10	-0.09	52.49	1.00	0.40
BACA9C		54.80	0.30	0.29	47.10	-4.39	-1.76
BAWV23		53.82	-0.68	-0.65	54.42	2.93	1.17
BGYVMQ		55.42	0.92	0.89	50.54	-0.95	-0.38
CBQRAW		54.80	0.30	0.29	54.20	2.71	1.08
DH4RUJ		55.40	0.90	0.87	53.00	1.51	0.60
DLKZGJ		55.80	1.30	1.25	51.50	0.01	0.00
E2VNYY	*	57.00	2.50	2.40	49.10	-2.39	-0.96
EHFEXX		53.80	-0.70	-0.67	50.70	-0.79	-0.32
FJQLUY		53.50	-1.00	-0.96	53.40	1.91	0.76
GU2FJX		53.94	-0.56	-0.54	45.56	-5.93	-2.38
JKUART	X	54.00	-0.50	-0.48	42.00	-9.49	-3.80
JVNZZD	X	36.30	-18.20	-17.48	36.50	-14.99	-6.01
JVPLXE		54.75	0.25	0.24	52.02	0.53	0.21
KFPBJ8		54.33	-0.17	-0.16	54.23	2.74	1.10
KLH7R7	*	52.00	-2.50	-2.40	55.00	3.51	1.41
KQRL2U		55.00	0.50	0.48	49.00	-2.49	-1.00
KU88HF		55.10	0.60	0.58	53.90	2.41	0.96
KX7GV4		55.20	0.70	0.67	51.90	0.41	0.16
KXRVJG		52.00	-2.50	-2.40	53.00	1.51	0.60
PG9BL4		55.00	0.50	0.48	51.00	-0.49	-0.20
QA6N8A		53.70	-0.80	-0.77	49.90	-1.59	-0.64
RRJV9C		53.60	-0.90	-0.86	52.10	0.61	0.24
UGRBLH		53.00	-1.50	-1.44	48.00	-3.49	-1.40
UXF2P4		55.00	0.50	0.48	51.00	-0.49	-0.20
X8GTX4		54.00	-0.50	-0.48	52.00	0.51	0.20

Reduction of Area: Pre-Machined Round Steel
ASTM E8

WebCode	Data Flag	Sample A93 Lab Mean	Sample A93 Diff. from Grand Mean	Sample A93 CPV	Sample A94 Lab Mean	Sample A94 Diff. from Grand Mean	Sample A94 CPV
XRHJ23		54.60	0.10	0.10	51.00	-0.49	-0.20
XVYB7W		54.80	0.30	0.29	53.90	2.41	0.96
YTN34Q		54.70	0.20	0.19	52.90	1.41	0.56
YZUUUU		56.30	1.80	1.73	51.40	-0.09	-0.04
Z2HFTH		54.00	-0.50	-0.48	48.50	-2.99	-1.20
Z7R73V		54.41	-0.09	-0.08	50.99	-0.50	-0.20
ZHLZKE		55.30	0.80	0.77	48.60	-2.89	-1.16

Summary Statistics

	Sample A93		Sample A94	
Grand Means	54.50	Percent	51.49	Percent
Stnd Dev Btwn Labs	1.04	Percent	2.50	Percent

Samples A93, A94 : AISI 4340 (S), AISI 4340 (L)

Statistics based on 51 of 54 reporting participants

Comments on Assigned Data Flags for Test #1114

2MCTTY (X) - Extreme data.

JKUART (X) - Data for sample A94 are low.
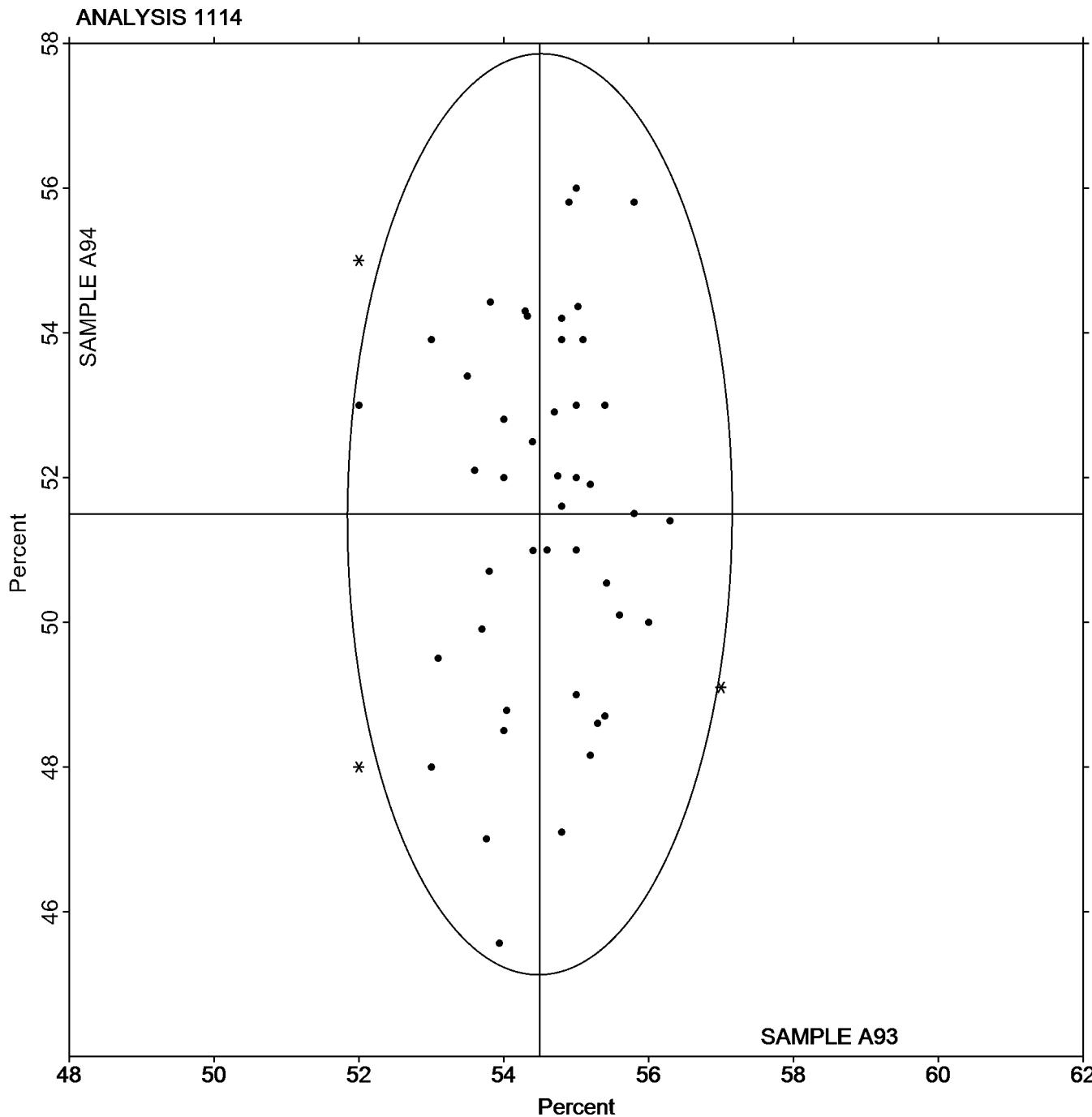
JVNZZD (X) - Data for both samples are low.

**Fasteners and Metals Interlaboratory Testing Program**
Analysis 1114
Reduction of Area: Pre-Machined Round Steel
ASTM E8
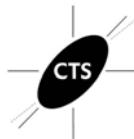
Cycle 143
3rd Qtr 2023

SAMPLE A93

54.50 Percent

SAMPLE A94

51.49 Percent

ANALYSIS 1114

Fasteners and Metals Interlaboratory Testing Program
Analysis 1121
Tensile Strength: Lab-Machined Round Steel
ASTM E8

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample P93			Sample P94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2E2CJE		148.81	-0.33	-0.20	152.00	-1.13	-0.71
2KRRYD		151.00	1.86	1.15	155.00	1.87	1.19
2N4PHT		146.40	-2.74	-1.69	152.20	-0.93	-0.59
2WGLKE	X	153.20	4.06	2.51	149.00	-4.13	-2.62
2XE6AM		148.93	-0.21	-0.13	150.52	-2.61	-1.66
2Y72YG		148.00	-1.14	-0.70	153.00	-0.13	-0.08
39N2QB		148.58	-0.56	-0.35	152.48	-0.65	-0.41
3A6QZV		149.97	0.83	0.51	154.18	1.05	0.67
3BF6EB		150.18	1.04	0.64	153.88	0.76	0.48
3D6AEA		148.90	-0.24	-0.15	152.70	-0.43	-0.27
3G3N2Z	X	150.30	1.16	0.72	148.00	-5.13	-3.26
3PV66A		149.28	0.14	0.09	152.99	-0.14	-0.09
3TXWLM		148.10	-1.04	-0.64	150.20	-2.93	-1.86
4Q6CAN		150.23	1.09	0.67	152.32	-0.81	-0.51
4TWL7B		150.00	0.86	0.53	154.00	0.87	0.55
4YX93X		145.20	-3.94	-2.44	151.10	-2.03	-1.29
4ZDY6A		148.71	-0.43	-0.27	152.20	-0.92	-0.59
63FPXM		148.70	-0.44	-0.27	152.60	-0.53	-0.33
6499RG		148.36	-0.78	-0.48	150.86	-2.27	-1.44
689GWR		150.12	0.98	0.60	151.86	-1.27	-0.81
6AXUEA		146.80	-2.34	-1.45	151.00	-2.13	-1.35
78NZGN		146.00	-3.14	-1.94	153.20	0.07	0.05
7H44DL		150.00	0.86	0.53	155.90	2.77	1.76
7RCLW7		148.50	-0.64	-0.40	153.20	0.07	0.05
7T4HLY		149.79	0.65	0.40	151.04	-2.08	-1.32
7UVQL3		150.10	0.96	0.59	153.60	0.47	0.30
7WNAX3		147.90	-1.24	-0.77	152.50	-0.63	-0.40
839RTP	*	148.96	-0.18	-0.11	157.08	3.95	2.51
8W3ZH7		146.50	-2.64	-1.63	151.20	-1.93	-1.22
99TGHR		149.30	0.16	0.10	156.47	3.34	2.12
9ALZUQ		149.94	0.80	0.49	151.65	-1.47	-0.94
9EDGVJ		149.99	0.85	0.53	154.18	1.05	0.67
9VJRPG		150.38	1.24	0.76	151.29	-1.84	-1.17
A73EAH		150.00	0.86	0.53	154.00	0.87	0.55
ACPFD2	M	No Data Reported			150.12	-3.01	-1.91
B7WK73		151.90	2.76	1.71	155.21	2.08	1.32
BGYVMQ		152.22	3.08	1.91	154.29	1.16	0.74
C7D74B		148.40	-0.74	-0.46	149.40	-3.73	-2.37
D7UMWJ		149.83	0.69	0.42	151.13	-2.00	-1.27
E4FPUL	*	147.30	-1.84	-1.14	155.90	2.77	1.76
E9VWGK		145.70	-3.44	-2.12	152.35	-0.78	-0.49
ELFPRD		150.10	0.96	0.59	152.80	-0.33	-0.21
EMTZ6J		150.00	0.86	0.53	154.00	0.87	0.55
FJQLUY		151.20	2.06	1.27	154.90	1.77	1.13
FLRQ6Y		146.40	-2.74	-1.69	151.70	-1.43	-0.91
GGC4ZD		149.87	0.73	0.45	153.89	0.76	0.48
GH846Y		147.87	-1.27	-0.78	153.08	-0.05	-0.03

Fasteners and Metals Interlaboratory Testing Program
Analysis 1121
Tensile Strength: Lab-Machined Round Steel
ASTM E8
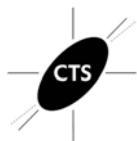
Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample P93			Sample P94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
GXM43B		149.54	0.40	0.24	153.31	0.18	0.11
J3CBKA		150.20	1.06	0.66	151.60	-1.53	-0.97
JLZ2BT		145.40	-3.74	-2.31	152.40	-0.73	-0.46
JTHEAR		150.40	1.26	0.78	154.00	0.87	0.55
K6C24U		150.00	0.86	0.53	154.00	0.87	0.55
K7MXLR		151.10	1.96	1.21	154.70	1.57	1.00
KFAWCX		149.74	0.60	0.37	155.39	2.26	1.44
KN6U47	X	124.10	-25.04	-15.48	127.10	-26.03	-16.53
KVMD87		151.00	1.86	1.15	153.00	-0.13	-0.08
KWEAVZ		147.10	-2.04	-1.26	152.10	-1.03	-0.65
KX7GV4		147.10	-2.04	-1.26	152.30	-0.83	-0.53
L68X23		149.10	-0.04	-0.02	153.60	0.47	0.30
LPQZUG		146.70	-2.44	-1.51	153.52	0.39	0.25
LTUTV8	X	145.76	-3.38	-2.09	158.67	5.55	3.52
NHKQF6		147.90	-1.24	-0.77	151.70	-1.43	-0.91
PGQRUY		150.80	1.66	1.03	152.10	-1.03	-0.65
PL4D2K		150.70	1.56	0.96	154.70	1.57	1.00
R6QQJ2		148.00	-1.14	-0.70	153.00	-0.13	-0.08
R8DHGP		150.81	1.67	1.03	155.08	1.95	1.24
RFNQW7		148.23	-0.91	-0.56	152.87	-0.26	-0.16
TAWUTZ		150.50	1.36	0.84	151.90	-1.23	-0.78
TCGVNM		147.90	-1.24	-0.77	152.30	-0.83	-0.53
TGCMWJ		149.70	0.56	0.35	152.70	-0.43	-0.27
TGW9GM		145.76	-3.38	-2.09	152.29	-0.84	-0.53
TLNFYV		150.22	1.08	0.67	151.32	-1.80	-1.15
TYBPJF		149.42	0.28	0.17	152.83	-0.30	-0.19
U7BDT8		150.80	1.66	1.03	154.70	1.57	1.00
U88PWM		151.10	1.96	1.21	155.20	2.07	1.32
UAUJDN		150.00	0.86	0.53	153.00	-0.13	-0.08
UL496X		148.41	-0.73	-0.45	152.84	-0.29	-0.18
VPZAQC		147.81	-1.33	-0.82	151.74	-1.39	-0.88
W29E9T		150.46	1.32	0.82	153.46	0.33	0.21
W7LYEE		152.00	2.86	1.77	156.00	2.87	1.82
W7NMWR		150.90	1.76	1.09	154.70	1.57	1.00
X7KFFH		150.00	0.86	0.53	154.00	0.87	0.55
X94GA4		151.15	2.01	1.24	154.45	1.32	0.84
YEN4FT	*	148.60	-0.54	-0.33	157.20	4.07	2.59
YZ4LK4	X	145.00	-4.14	-2.56	155.00	1.87	1.19
ZGUWVD		149.00	-0.14	-0.09	152.71	-0.42	-0.26
ZLJL8B		149.87	0.73	0.45	152.83	-0.30	-0.19
ZYQGEJ		147.65	-1.49	-0.92	151.86	-1.27	-0.81

Fasteners and Metals Interlaboratory Testing Program
Analysis 1121
Tensile Strength: Lab-Machined Round Steel
ASTM E8

Cycle 143
3rd Qtr 2023

Summary Statistics

	Sample P93		**Sample P94**	
Grand Means	149.14	ksi	153.13	ksi
Stnd Dev Btwn Labs	1.62	ksi	1.58	ksi

Samples P93, P94 : AISI 4340 (E), AISI 4340 (F)

Statistics based on 82 of 88 reporting participants

Comments on Assigned Data Flags for Test #1121

2WGLKE (X) - Inconsistent in testing between samples.
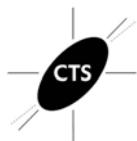
3G3N2Z (X) - Data for sample P94 are low.

ACPFD2 (M) - Participant did not submit data for sample P93.

KN6U47 (X) - Data for both samples are low.

LTUTV8 (X) - Data for sample P94 are high.

YZ4LK4 (X) - Inconsistent in testing between samples.
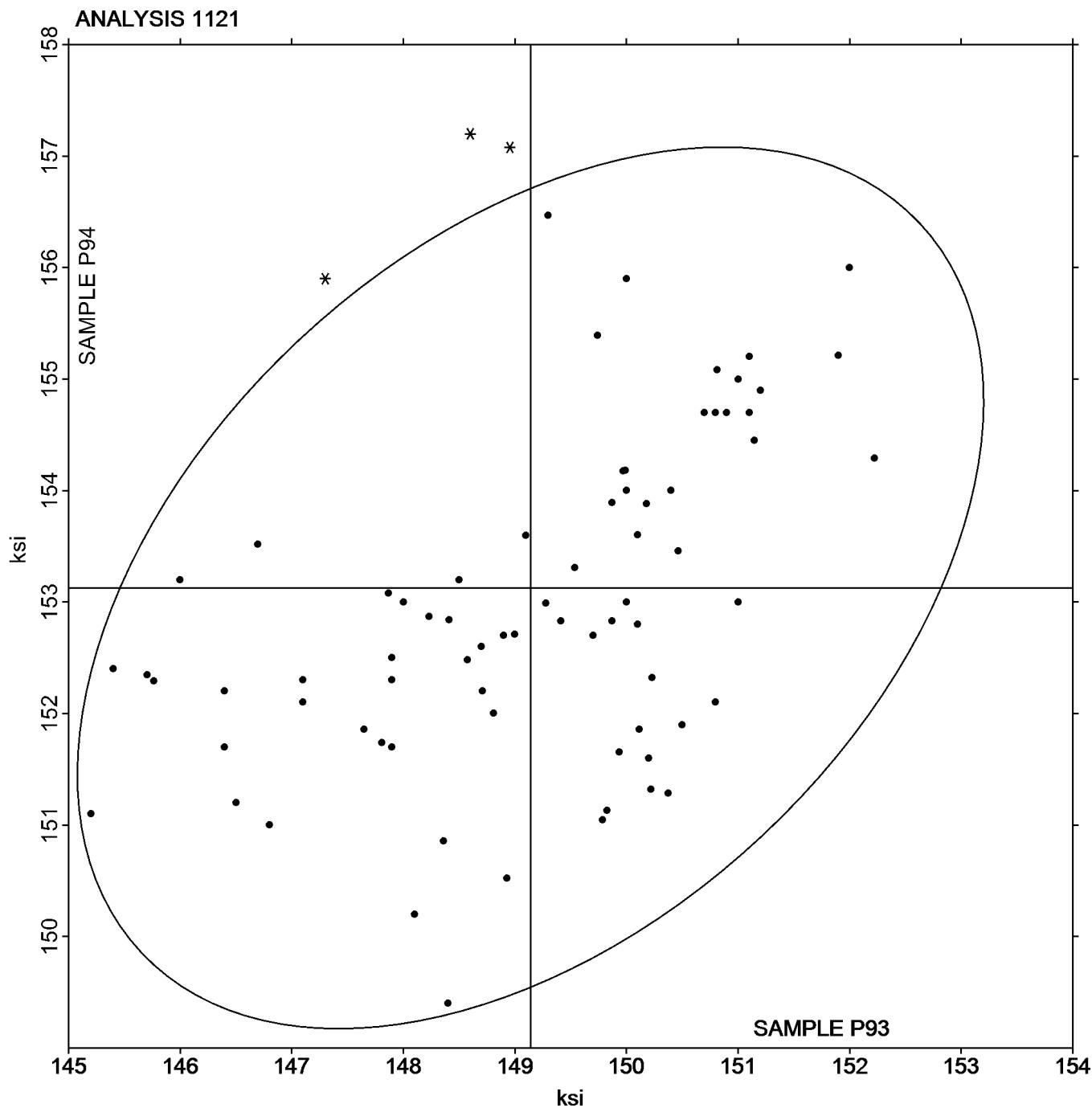
Tensile Strength: Lab-Machined Round Steel
ASTM E8
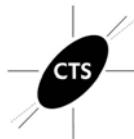
SAMPLE P93

149.14 ksi

SAMPLE P94

153.13 ksi
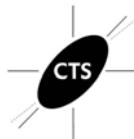
ANALYSIS 1121

Fasteners and Metals Interlaboratory Testing Program
Analysis 1122
Yield Strength: Lab-Machined Round Steel
ASTM E8

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample P93			Sample P94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2E2CJE		122.56	0.02	0.01	125.75	-0.68	-0.33
2KRRYD		124.00	1.46	0.76	129.00	2.57	1.27
2N4PHT		119.30	-3.24	-1.68	125.30	-1.13	-0.55
2WGLKE	X	126.50	3.96	2.05	121.20	-5.23	-2.57
2XE6AM		123.06	0.52	0.27	123.86	-2.57	-1.26
2Y72YG		122.00	-0.54	-0.28	126.00	-0.43	-0.21
39N2QB		121.96	-0.58	-0.30	126.05	-0.37	-0.18
3A6QZV		123.14	0.60	0.31	127.63	1.21	0.60
3BF6EB		123.81	1.27	0.66	127.94	1.51	0.74
3D6AEA		123.40	0.86	0.45	127.30	0.87	0.43
3G3N2Z	*	123.20	0.66	0.34	121.50	-4.93	-2.42
3PV66A		122.17	-0.37	-0.19	126.30	-0.12	-0.06
3TXWLM		126.10	3.56	1.85	127.80	1.37	0.68
4Q6CAN		124.82	2.28	1.18	129.64	3.21	1.58
4TWL7B		124.00	1.46	0.76	127.00	0.57	0.28
4YX93X		118.60	-3.94	-2.04	124.90	-1.53	-0.75
4ZDY6A		122.43	-0.11	-0.06	124.95	-1.47	-0.73
63FPXM		122.00	-0.54	-0.28	126.00	-0.43	-0.21
6499RG		122.14	-0.40	-0.21	123.99	-2.43	-1.20
689GWR		123.43	0.89	0.46	124.30	-2.13	-1.05
6AXUEA		118.90	-3.64	-1.89	122.90	-3.53	-1.74
78NZGN		118.70	-3.84	-1.99	126.30	-0.13	-0.06
7H44DL		122.60	0.06	0.03	130.70	4.27	2.10
7RCLW7		122.30	-0.24	-0.12	128.00	1.57	0.78
7T4HLY		124.69	2.15	1.12	125.03	-1.40	-0.69
7TN9M8		123.63	1.09	0.57	126.30	-0.13	-0.06
7UVQL3		122.90	0.36	0.19	127.70	1.27	0.63
7WNAX3		123.30	0.76	0.39	128.20	1.77	0.87
839RTP	X	122.41	-0.13	-0.07	133.87	7.45	3.67
8W3ZH7		119.20	-3.34	-1.73	121.70	-4.73	-2.33
99TGHR	*	119.28	-3.26	-1.69	128.59	2.17	1.07
9ALZUQ		124.59	2.04	1.06	124.66	-1.76	-0.87
9EDGVJ		123.14	0.60	0.31	127.63	1.20	0.59
9VJRPG		121.87	-0.67	-0.35	123.37	-3.06	-1.50
A73EAH		124.00	1.46	0.76	128.00	1.57	0.78
ACPFD2	M	No Data Reported			124.59	-1.84	-0.90
B7WK73		125.67	3.13	1.62	129.14	2.71	1.34
BGYVMQ		125.75	3.21	1.66	127.20	0.77	0.38
C7D74B		122.30	-0.24	-0.12	123.00	-3.43	-1.69
D7UMWJ		124.44	1.90	0.99	124.01	-2.42	-1.19
E4FPUL	*	119.40	-3.14	-1.63	130.00	3.57	1.76
E9VWGK		120.10	-2.44	-1.27	127.05	0.63	0.31
ELFPRD		122.20	-0.34	-0.18	124.40	-2.03	-1.00
EMTZ6J		123.00	0.46	0.24	127.00	0.57	0.28
FJQLUY		124.00	1.46	0.76	127.90	1.47	0.73
FLRQ6Y		118.50	-4.04	-2.10	124.10	-2.33	-1.14
GGC4ZD		122.10	-0.45	-0.23	126.08	-0.35	-0.17

Fasteners and Metals Interlaboratory Testing Program
Analysis 1122
Yield Strength: Lab-Machined Round Steel
ASTM E8

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample P93			Sample P94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
GH846Y		120.14	-2.40	-1.25	125.73	-0.70	-0.34
GXM43B		122.12	-0.42	-0.22	125.60	-0.82	-0.40
J3CBKA		123.10	0.56	0.29	124.10	-2.33	-1.14
JLZ2BT	X	115.70	-6.84	-3.55	125.20	-1.23	-0.60
JTHEAR		124.50	1.96	1.02	127.90	1.47	0.73
K6C24U		123.00	0.46	0.24	128.00	1.57	0.78
K7MXLR		124.50	1.96	1.02	127.30	0.87	0.43
KFAWCX		122.38	-0.16	-0.08	128.47	2.05	1.01
KVMD87		124.00	1.46	0.76	125.00	-1.43	-0.70
KWEAVZ		120.00	-2.54	-1.32	125.70	-0.73	-0.36
KX7GV4		121.40	-1.14	-0.59	126.90	0.47	0.23
L68X23		121.54	-1.00	-0.52	126.18	-0.24	-0.12
LPQZUG	*	117.10	-5.44	-2.82	123.47	-2.95	-1.45
LTUTV8	X	117.48	-5.06	-2.62	132.13	5.71	2.81
NHKQF6		121.80	-0.74	-0.38	126.40	-0.03	-0.01
PGQRUY		121.80	-0.74	-0.38	125.50	-0.93	-0.46
PL4D2K		123.90	1.36	0.71	131.20	4.77	2.35
R6QQJ2		118.00	-4.54	-2.36	123.00	-3.43	-1.69
R8DHGP		123.86	1.32	0.69	129.32	2.89	1.42
RFNQW7		122.12	-0.42	-0.22	126.76	0.34	0.17
TAWUTZ		124.90	2.36	1.22	125.00	-1.43	-0.70
TCGVNM		121.00	-1.54	-0.80	125.30	-1.13	-0.55
TGCMWJ		123.40	0.86	0.45	127.20	0.77	0.38
TGW9GM		124.01	1.47	0.76	130.54	4.11	2.02
TLNFYV		123.32	0.78	0.40	124.19	-2.23	-1.10
TYBPJF		122.19	-0.35	-0.18	125.92	-0.50	-0.25
U7BDT8		123.90	1.36	0.71	127.90	1.47	0.73
U88PWM		125.20	2.66	1.38	128.60	2.17	1.07
UAUJDN		123.00	0.46	0.24	126.00	-0.43	-0.21
UL496X		121.81	-0.73	-0.38	126.93	0.50	0.25
VPZAQC		122.27	-0.27	-0.14	125.66	-0.76	-0.38
W29E9T		123.87	1.33	0.69	126.83	0.41	0.20
W7LYEE		124.00	1.46	0.76	129.00	2.57	1.27
W7NMWR		125.10	2.56	1.33	127.70	1.27	0.63
X7KFFH		124.00	1.46	0.76	128.00	1.57	0.78
X94GA4		123.78	1.24	0.64	127.38	0.95	0.47
YEN4FT	X	121.20	-1.34	-0.70	133.20	6.77	3.34
YZ4LK4	X	118.00	-4.54	-2.36	129.00	2.57	1.27
ZGUWVD		122.49	-0.06	-0.03	126.34	-0.08	-0.04
ZLJL8B	X	134.03	11.49	5.96	136.41	9.98	4.92
ZYQGEJ		121.07	-1.47	-0.76	124.80	-1.62	-0.80

Yield Strength: Lab-Machined Round Steel
ASTM E8

Summary Statistics

	Sample P93		**Sample P94**	
Grand Means	122.54	ksi	126.43	ksi
Stnd Dev Btwn Labs	1.93	ksi	2.03	ksi

Samples P93, P94 : AISI 4340 (E), AISI 4340 (F)

Statistics based on 80 of 88 reporting participants

Comments on Assigned Data Flags for Test #1122

2WGLKE (X) - Inconsistent in testing between samples.

839RTP (X) - Data for sample P94 are high.

ACPFD2 (M) - Participant did not submit data for sample P93.

JLZ2BT (X) - Data for sample P93 are low.

LTUTV8 (X) - Data for sample P94 are high.

YEN4FT (X) - Data for sample P94 are high.

YZ4LK4 (X) - Inconsistent in testing between samples.

ZLJL8B (X) - Data for both samples are high.

Yield Strength: Lab-Machined Round Steel
ASTM E8
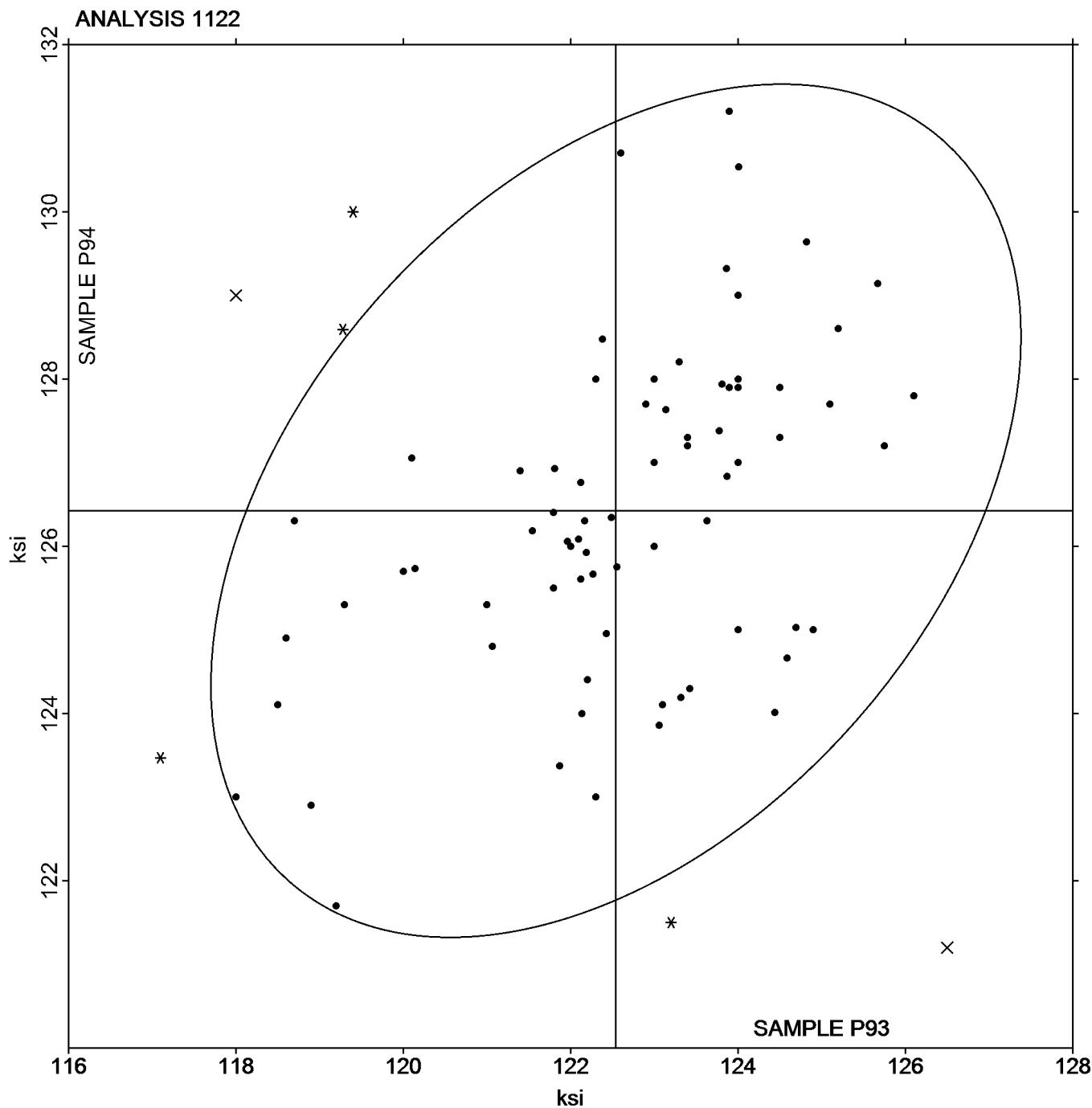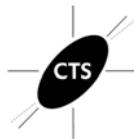
<u>SAMPLE P93</u>

122.54 ksi

<u>SAMPLE P94</u>

126.43 ksi
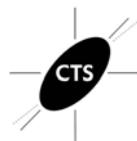
ANALYSIS 1122

Fasteners and Metals Interlaboratory Testing Program
Analysis 1123

Cycle 143
3rd Qtr 2023

Elongation: Lab-Machined Round Steel
ASTM E8

WebCode	Data Flag	Sample P93			Sample P94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2E2CJE		19.00	1.28	1.06	19.50	2.31	1.65
2KRRYD		17.00	-0.72	-0.60	15.00	-2.19	-1.56
2N4PHT		19.00	1.28	1.06	17.90	0.71	0.51
2WGLKE		18.00	0.28	0.23	19.50	2.31	1.65
2XE6AM		17.29	-0.43	-0.36	16.79	-0.40	-0.29
2Y72YG		17.00	-0.72	-0.60	16.50	-0.69	-0.49
39N2QB		18.30	0.58	0.48	17.70	0.51	0.36
3A6QZV		17.80	0.08	0.07	17.52	0.33	0.24
3BF6EB		16.20	-1.52	-1.26	16.05	-1.14	-0.81
3D6AEA		18.30	0.58	0.48	17.30	0.11	0.08
3G3N2Z		16.70	-1.02	-0.84	17.80	0.61	0.44
3PV66A		18.16	0.44	0.37	18.70	1.51	1.08
3TXWLM		17.90	0.18	0.15	18.60	1.41	1.01
4Q6CAN		20.50	2.78	2.31	20.00	2.81	2.01
4TWL7B		17.00	-0.72	-0.60	16.00	-1.19	-0.85
4YX93X		17.80	0.08	0.07	15.70	-1.49	-1.06
4ZDY6A		17.80	0.08	0.07	17.90	0.71	0.51
63FPXM		18.00	0.28	0.23	17.00	-0.19	-0.14
6499RG		16.40	-1.32	-1.09	16.80	-0.39	-0.28
689GWR		17.60	-0.12	-0.10	16.00	-1.19	-0.85
6AXUEA		17.90	0.18	0.15	18.60	1.41	1.01
78NZGN	X	13.00	-4.72	-3.92	16.50	-0.69	-0.49
7H44DL	X	11.70	-6.02	-4.99	11.60	-5.59	-3.99
7RCLW7		20.50	2.78	2.31	20.50	3.31	2.37
7T4HLY		16.10	-1.62	-1.34	16.40	-0.79	-0.56
7TN9M8	*	20.68	2.96	2.46	20.78	3.59	2.57
7UVQL3		18.20	0.48	0.40	17.60	0.41	0.29
7WNAX3		18.80	1.08	0.90	17.70	0.51	0.36
839RTP		18.00	0.28	0.23	17.00	-0.19	-0.14
8W3ZH7		19.30	1.58	1.31	17.10	-0.09	-0.06
99TGHR		18.42	0.70	0.58	15.79	-1.40	-1.00
9ALZUQ		16.50	-1.22	-1.01	16.00	-1.19	-0.85
9EDGVJ		18.00	0.28	0.23	17.55	0.36	0.26
9VJRPG		16.50	-1.22	-1.01	14.50	-2.69	-1.92
A73EAH		15.00	-2.72	-2.26	14.00	-3.19	-2.28
ACPFD2	M	No Data Reported			18.00	0.81	0.58
B7WK73		17.55	-0.17	-0.14	17.43	0.24	0.17
BGYVMQ		16.87	-0.85	-0.70	16.25	-0.94	-0.67
C7D74B		20.00	2.28	1.89	18.30	1.11	0.79
D7UMWJ		18.00	0.28	0.23	18.00	0.81	0.58
E4FPUL		18.80	1.08	0.90	17.60	0.41	0.29
E9VWGK	X	12.68	-5.04	-4.18	16.92	-0.27	-0.19
ELFPRD		19.10	1.38	1.15	18.80	1.61	1.15
EMTZ6J		16.40	-1.32	-1.09	15.50	-1.69	-1.21
FJQLUY		17.40	-0.32	-0.26	18.40	1.21	0.87
FLRQ6Y		17.90	0.18	0.15	17.10	-0.09	-0.06
GGC4ZD		16.90	-0.82	-0.68	16.40	-0.79	-0.56
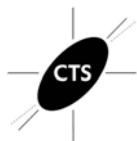
Elongation: Lab-Machined Round Steel
ASTM E8

WebCode	Data Flag	Sample P93			Sample P94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
GH846Y		19.00	1.28	1.06	18.00	0.81	0.58
GXM43B		17.10	-0.62	-0.51	16.80	-0.39	-0.28
J3CBKA		18.30	0.58	0.48	18.00	0.81	0.58
JLZ2BT		16.40	-1.32	-1.09	16.40	-0.79	-0.56
JTHEAR		18.90	1.18	0.98	18.60	1.41	1.01
K6C24U		16.50	-1.22	-1.01	16.50	-0.69	-0.49
K7MXLR		18.00	0.28	0.23	17.60	0.41	0.29
KFAWCX		18.80	1.08	0.90	18.10	0.91	0.65
KVMD87		18.00	0.28	0.23	19.00	1.81	1.29
KWEAVZ		17.20	-0.52	-0.43	16.70	-0.49	-0.35
KX7GV4		16.90	-0.82	-0.68	17.40	0.21	0.15
L68X23		18.00	0.28	0.23	17.60	0.41	0.29
LPQZUG		17.27	-0.45	-0.37	16.18	-1.01	-0.72
LTUTV8		19.19	1.47	1.22	17.88	0.69	0.49
NHKQF6	M	17.10	-0.62	-0.51	No Data Reported		
PGQRUY		19.40	1.68	1.40	19.90	2.71	1.94
PL4D2K		16.20	-1.52	-1.26	17.50	0.31	0.22
R6QQJ2		16.90	-0.82	-0.68	17.70	0.51	0.36
R8DHGP		15.53	-2.19	-1.82	15.30	-1.89	-1.35
RFNQW7		15.70	-2.02	-1.67	15.00	-2.19	-1.56
TAWUTZ		17.80	0.08	0.07	18.80	1.61	1.15
TCGVNM		15.40	-2.32	-1.92	15.70	-1.49	-1.06
TGCMWJ		17.70	-0.02	-0.01	17.40	0.21	0.15
TGW9GM	X	15.00	-2.72	-2.26	18.00	0.81	0.58
TLNFYV	*	14.61	-3.11	-2.58	13.72	-3.47	-2.48
TYBPJF		17.20	-0.52	-0.43	16.15	-1.04	-0.74
U7BDT8		18.10	0.38	0.32	16.00	-1.19	-0.85
U88PWM		18.90	1.18	0.98	17.70	0.51	0.36
UAUJDN		17.00	-0.72	-0.60	17.00	-0.19	-0.14
UL496X	*	16.80	-0.92	-0.76	13.80	-3.39	-2.42
VPZAQC		18.00	0.28	0.23	17.00	-0.19	-0.14
W29E9T		18.05	0.33	0.28	16.90	-0.29	-0.21
W7LYEE		17.50	-0.22	-0.18	17.00	-0.19	-0.14
W7NMWR		18.12	0.40	0.33	16.45	-0.74	-0.53
X7KFFH		16.50	-1.22	-1.01	16.50	-0.69	-0.49
X94GA4		19.50	1.78	1.48	17.40	0.21	0.15
YEN4FT		18.30	0.58	0.48	17.50	0.31	0.22
YZ4LK4		18.20	0.48	0.40	17.50	0.31	0.22
ZGUWVD		18.60	0.88	0.73	18.10	0.91	0.65
ZLJL8B	X	21.84	4.12	3.42	17.74	0.55	0.39
ZYQGEJ		17.00	-0.72	-0.60	16.00	-1.19	-0.85

Elongation: Lab-Machined Round Steel
ASTM E8

Summary Statistics

	Sample P93		**Sample P94**	
Grand Means	17.72	Percent	17.19	Percent
Stnd Dev Btwn Labs	1.20	Percent	1.40	Percent

Samples P93, P94 : AISI 4340 (E), AISI 4340 (F)

Statistics based on 81 of 88 reporting participants

Comments on Assigned Data Flags for Test #1123

78NZGN (X) - Data for sample P93 are low.

7H44DL (X) - Data for both samples are low.

ACPFD2 (M) - Participant did not submit data for sample P93.

E9VWGK (X) - Data for sample P93 are low.

NHKQF6 (M) - Participant did not submit data for sample P94.

TGW9GM (X) - Inconsistent in testing between samples.
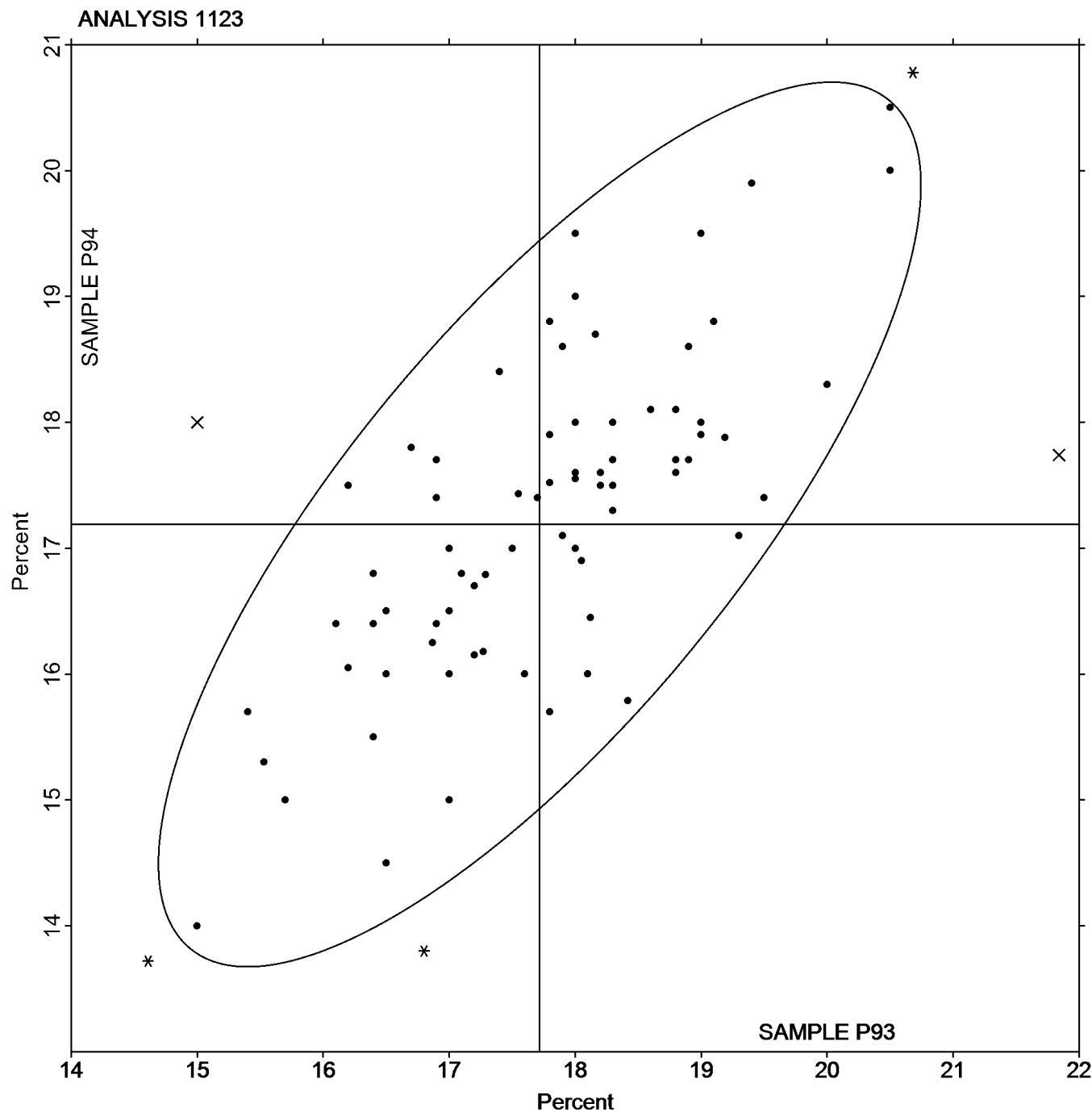
ZLJL8B (X) - Data for sample P93 are high.
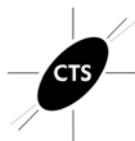
Elongation: Lab-Machined Round Steel
ASTM E8

SAMPLE P93

17.72 Percent

SAMPLE P94

17.19 Percent
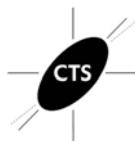
ANALYSIS 1123

Fasteners and Metals Interlaboratory Testing Program
Analysis 1124
Reduction of Area: Lab-Machined Round Steel
ASTM E8

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample P93			Sample P94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2E2CJE		53.50	-0.88	-0.97	54.60	2.04	0.87
2KRRYD	*	54.00	-0.38	-0.42	45.80	-6.76	-2.88
2N4PHT	X	60.80	6.42	7.06	59.60	7.04	2.99
2WGLKE		55.70	1.32	1.45	57.10	4.54	1.93
2XE6AM		55.10	0.72	0.79	51.92	-0.65	-0.27
2Y72YG		54.50	0.12	0.13	53.80	1.24	0.53
39N2QB		55.60	1.22	1.34	57.20	4.64	1.97
3A6QZV		54.86	0.48	0.53	51.82	-0.74	-0.32
3BF6EB		52.75	-1.63	-1.79	50.44	-2.12	-0.90
3D6AEA		54.20	-0.18	-0.20	53.20	0.64	0.27
3G3N2Z	X	50.20	-4.18	-4.59	55.50	2.94	1.25
3PV66A		55.50	1.12	1.23	53.70	1.14	0.48
3TXWLM	*	54.90	0.52	0.57	46.90	-5.66	-2.41
4Q6CAN	X	50.50	-3.88	-4.26	59.50	6.94	2.95
4TWL7B		54.50	0.12	0.13	52.70	0.14	0.06
4YX93X		53.30	-1.08	-1.19	53.10	0.54	0.23
4ZDY6A		52.90	-1.48	-1.63	53.50	0.94	0.40
63FPXM		55.90	1.52	1.67	51.10	-1.46	-0.62
6499RG		54.26	-0.12	-0.13	54.40	1.84	0.78
689GWR	X	63.00	8.62	9.48	50.00	-2.56	-1.09
78NZGN		55.60	1.22	1.34	52.60	0.04	0.02
7H44DL		55.30	0.92	1.01	55.40	2.84	1.21
7RCLW7		54.20	-0.18	-0.20	54.20	1.64	0.70
7T4HLY	X	49.50	-4.88	-5.36	47.50	-5.06	-2.15
7TN9M8	X	51.39	-2.99	-3.29	55.25	2.69	1.14
7UVQL3		53.90	-0.48	-0.53	48.90	-3.66	-1.56
7WNAX3		54.40	0.02	0.02	53.70	1.14	0.48
839RTP		53.00	-1.38	-1.52	52.00	-0.56	-0.24
99TGHR	X	56.78	2.40	2.64	45.96	-6.60	-2.81
9ALZUQ		53.94	-0.43	-0.48	50.39	-2.17	-0.92
9EDGVJ		54.81	0.43	0.47	51.85	-0.71	-0.30
9VJRPG		53.04	-1.34	-1.47	51.69	-0.87	-0.37
A73EAH		55.00	0.62	0.68	52.00	-0.56	-0.24
ACPFD2	M	No Data Reported			55.00	2.44	1.04
B7WK73		54.23	-0.15	-0.16	54.42	1.86	0.79
BGYVMQ		53.38	-1.00	-1.10	50.22	-2.34	-1.00
C7D74B		55.00	0.62	0.68	52.30	-0.26	-0.11
D7UMWJ		55.00	0.62	0.68	53.00	0.44	0.19
E4FPUL		55.70	1.32	1.45	56.30	3.74	1.59
E9VWGK	X	57.77	3.39	3.73	54.42	1.86	0.79
ELFPRD		54.80	0.42	0.46	52.80	0.24	0.10
EMTZ6J		54.80	0.42	0.46	52.10	-0.46	-0.20
FJQLUY		54.10	-0.28	-0.31	53.90	1.34	0.57
GGC4ZD		54.10	-0.28	-0.31	51.10	-1.46	-0.62
GH846Y	X	58.01	3.63	3.99	56.97	4.41	1.87
GXM43B		53.40	-0.98	-1.08	52.30	-0.26	-0.11
J3CBKA		53.00	-1.38	-1.52	51.00	-1.56	-0.67

Fasteners and Metals Interlaboratory Testing Program
Analysis 1124
Reduction of Area: Lab-Machined Round Steel
ASTM E8

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample P93			Sample P94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
JTHEAR		55.10	0.72	0.79	55.60	3.04	1.29
K6C24U		54.50	0.12	0.13	52.10	-0.46	-0.20
K7MXLR		54.00	-0.38	-0.42	53.40	0.84	0.36
KFAWCX		54.50	0.12	0.13	54.30	1.74	0.74
KVMD87		54.00	-0.38	-0.42	55.00	2.44	1.04
KWEAVZ		53.60	-0.78	-0.86	52.00	-0.56	-0.24
KX7GV4	X	43.40	-10.98	-12.07	49.00	-3.56	-1.52
L68X23		53.80	-0.58	-0.64	52.20	-0.36	-0.15
LPQZUG		52.94	-1.44	-1.58	51.17	-1.40	-0.59
LTUTV8		55.56	1.18	1.30	53.98	1.42	0.60
NHKQF6	X	47.30	-7.08	-7.78	47.60	-4.96	-2.11
PGQRUY		53.70	-0.68	-0.75	53.50	0.94	0.40
PL4D2K		55.10	0.72	0.79	52.50	-0.06	-0.03
R6QQJ2		55.70	1.32	1.45	55.70	3.14	1.33
R8DHGP		55.47	1.09	1.20	56.88	4.32	1.84
RFNQW7		53.60	-0.78	-0.86	51.60	-0.96	-0.41
TAWUTZ		55.10	0.72	0.79	53.60	1.04	0.44
TCGVNM		54.90	0.52	0.57	50.00	-2.56	-1.09
TGCMWJ		55.70	1.32	1.45	55.90	3.34	1.42
TGW9GM	X	51.75	-2.63	-2.89	45.33	-7.23	-3.08
TLNFYV		55.00	0.62	0.68	51.00	-1.56	-0.67
TYBPJF		55.19	0.81	0.89	51.03	-1.53	-0.65
U88PWM		53.70	-0.68	-0.75	53.20	0.64	0.27
UAUJDN		53.40	-0.98	-1.08	54.60	2.04	0.87
UL496X	X	49.40	-4.98	-5.47	49.60	-2.96	-1.26
VPZAQC		54.60	0.22	0.24	52.90	0.34	0.14
W29E9T		53.76	-0.62	-0.68	48.82	-3.74	-1.59
W7LYEE		55.10	0.72	0.79	50.00	-2.56	-1.09
W7NMWR		52.90	-1.48	-1.63	47.10	-5.46	-2.32
X7KFFH		53.40	-0.98	-1.08	53.20	0.64	0.27
X94GA4		53.67	-0.71	-0.78	47.17	-5.39	-2.29
YEN4FT		52.90	-1.48	-1.63	53.30	0.74	0.31
YZ4LK4		54.80	0.42	0.46	51.90	-0.66	-0.28
ZGUWVD		55.00	0.62	0.68	53.30	0.74	0.31
ZLJL8B		56.23	1.85	2.04	55.48	2.92	1.24
ZYQGEJ		53.00	-1.38	-1.52	51.00	-1.56	-0.67

Summary Statistics

	Sample P93		Sample P94	
Grand Means	54.38	Percent	52.56	Percent
Stnd Dev Btwn Labs	0.91	Percent	2.35	Percent

Samples P93, P94 : AISI 4340 (E), AISI 4340 (F)

Statistics based on 69 of 83 reporting participants

Fasteners and Metals Interlaboratory Testing Program
Analysis 1124
Reduction of Area: Lab-Machined Round Steel
ASTM E8

Cycle 143
3rd Qtr 2023

Comments on Assigned Data Flags for Test #1124
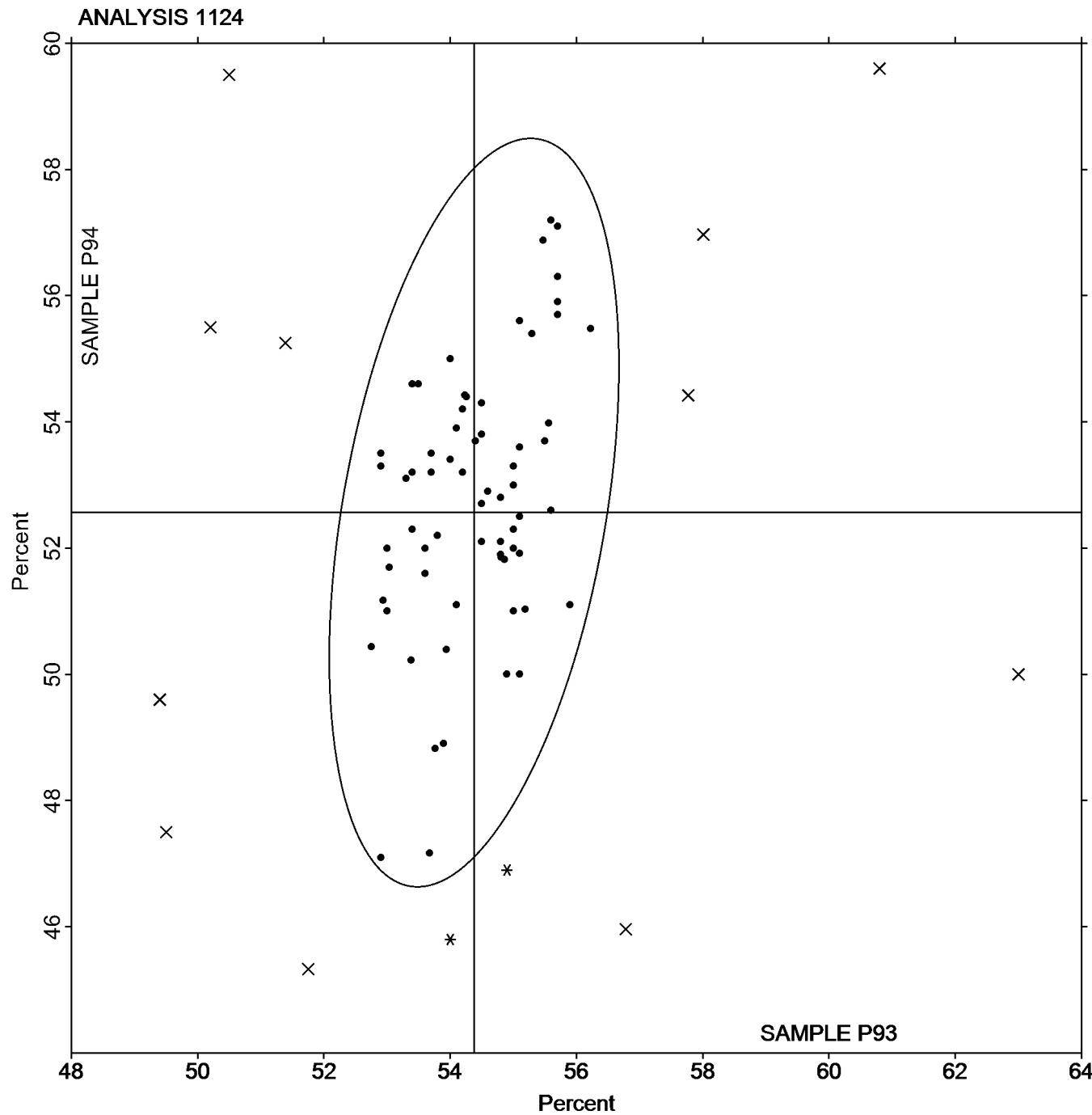
2N4PHT (X) - Data for both samples are high.

3G3N2Z (X) - Data for sample P93 are low.

4Q6CAN (X) - Data for sample P93 are low and data for sample P94 are high.

689GWR (X) - Data for sample P93 are high.

7T4HLY (X) - Data for sample P93 are low.

7TN9M8 (X) - Data for sample P93 are low.

99TGHR (X) - Data for sample P94 are low.

ACPFD2 (M) - Participant did not submit data for sample P93.

E9VWGK (X) - Data for sample P93 are high.

GH846Y (X) - Data for sample P93 are high.

KX7GV4 (X) - Data for sample P93 are low.

NHKQF6 (X) - Data for sample P93 are low.

TGW9GM (X) - Data for both samples are low.

UL496X (X) - Data for sample P93 are low.

**Fasteners and Metals Interlaboratory Testing Program**
Analysis 1124
Reduction of Area: Lab-Machined Round Steel
ASTM E8
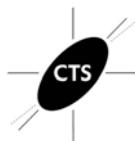
Cycle 143
3rd Qtr 2023

SAMPLE P93

54.38 Percent

SAMPLE P94

52.56 Percent
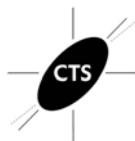
ANALYSIS 1124

Fasteners and Metals Interlaboratory Testing Program
Analysis 1301
Rockwell Hardness: C & B Scales
ASTM E18

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample N93			Sample N94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2N4PHT	*	95.68	0.49	0.96	94.68	-0.20	-0.35
2UWKPT		94.34	-0.85	-1.64	93.98	-0.90	-1.59
36PN67		95.02	-0.17	-0.32	94.90	0.02	0.04
37A8CY		95.28	0.09	0.17	95.19	0.31	0.55
3BF6EB		95.36	0.17	0.34	95.16	0.28	0.50
3D6AEA		95.22	0.03	0.07	95.08	0.20	0.36
3RKCUD		95.04	-0.15	-0.28	94.60	-0.28	-0.50
3TXWLM		94.88	-0.31	-0.59	94.86	-0.02	-0.03
44W4T8		95.46	0.27	0.53	95.30	0.42	0.75
48VGDB		95.31	0.13	0.25	94.94	0.06	0.11
4PVHC3		95.82	0.63	1.23	95.76	0.88	1.56
4Q6CAN		95.24	0.05	0.10	95.44	0.56	0.99
4QME2W		95.26	0.07	0.14	94.58	-0.30	-0.53
4RFGGK		95.36	0.17	0.34	95.20	0.32	0.57
4U8FVJ		94.20	-0.99	-1.91	94.40	-0.48	-0.85
63FPXM		94.02	-1.17	-2.26	93.48	-1.40	-2.48
6499RG		94.69	-0.49	-0.95	94.49	-0.39	-0.69
6VZEXN		94.80	-0.39	-0.75	94.22	-0.66	-1.17
78NZGN		94.98	-0.21	-0.40	94.40	-0.48	-0.85
7A92BB	*	96.66	1.47	2.85	96.62	1.74	3.09
7FJ3HZ		95.56	0.37	0.72	95.14	0.26	0.46
7MJC2L		95.54	0.35	0.69	95.32	0.44	0.78
7NCB4Q		94.96	-0.23	-0.44	94.52	-0.36	-0.64
7T4HLY		95.64	0.45	0.88	95.34	0.46	0.82
7XJKGN		95.60	0.41	0.80	94.78	-0.10	-0.18
92WCW3		95.42	0.23	0.45	94.98	0.10	0.18
9EDGVJ		94.70	-0.49	-0.94	94.42	-0.46	-0.81
A3JDFV		95.78	0.59	1.15	94.96	0.08	0.14
B3EFH6		95.16	-0.03	-0.05	94.94	0.06	0.11
B46NG9		95.28	0.09	0.18	95.46	0.58	1.03
B84ZD9	*	96.42	1.23	2.39	95.68	0.80	1.42
BE6CBQ		96.00	0.81	1.58	96.04	1.16	2.06
BGYVMQ		95.06	-0.13	-0.24	94.96	0.08	0.14
BU3GMU		96.00	0.81	1.58	95.40	0.52	0.92
C7D74B		95.26	0.07	0.14	94.58	-0.30	-0.53
C7Q9WH		94.24	-0.95	-1.83	94.34	-0.54	-0.96
CKU3J8		95.00	-0.19	-0.36	94.68	-0.20	-0.35
CYR4AM	X	94.68	-0.51	-0.98	92.86	-2.02	-3.58
D6BVMY		95.58	0.39	0.76	95.22	0.34	0.60
DH4RUJ		95.78	0.59	1.15	95.50	0.62	1.10
DLKZGJ		94.60	-0.59	-1.13	94.60	-0.28	-0.50
ELFPRD		94.66	-0.53	-1.02	94.74	-0.14	-0.25
F94TXA		94.83	-0.36	-0.70	94.84	-0.04	-0.08
FFPCQP		94.86	-0.33	-0.63	95.10	0.22	0.39
FJQLUY		95.86	0.67	1.30	95.66	0.78	1.38
FK2MGX		94.84	-0.35	-0.67	94.98	0.10	0.18
FY7LRP		95.20	0.01	0.03	94.60	-0.28	-0.50

Fasteners and Metals Interlaboratory Testing Program
Analysis 1301
Rockwell Hardness: C & B Scales
ASTM E18
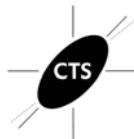
Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample N93			Sample N94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
GGC4ZD		95.28	0.09	0.18	94.80	-0.08	-0.14
GH846Y		94.62	-0.57	-1.09	94.44	-0.44	-0.78
GU2FJX		95.08	-0.11	-0.20	94.72	-0.16	-0.28
HF4LRN		95.10	-0.09	-0.17	94.94	0.06	0.11
HL46RY		95.38	0.19	0.38	95.34	0.46	0.82
HYMW78		95.78	0.59	1.15	95.60	0.72	1.28
JH3FNW	*	96.70	1.51	2.93	96.58	1.70	3.02
JJUJDX		95.20	0.01	0.02	94.53	-0.35	-0.63
JTHX89		94.80	-0.38	-0.74	94.26	-0.62	-1.09
JVBYMR		95.58	0.39	0.76	95.52	0.64	1.14
K3KH8F		95.10	-0.09	-0.17	95.00	0.12	0.21
KBXYTG		94.78	-0.41	-0.79	94.56	-0.32	-0.57
KDHZM4		96.04	0.85	1.65	95.40	0.52	0.92
KFAWCX	X	93.88	-1.31	-2.53	95.00	0.12	0.21
KLH7R7		95.30	0.11	0.22	94.46	-0.42	-0.74
KN6U47		94.04	-1.15	-2.22	93.66	-1.22	-2.16
KNMXJJ		95.46	0.27	0.53	95.32	0.44	0.78
KVMD87		94.80	-0.39	-0.75	94.28	-0.60	-1.06
LETHGE		95.64	0.45	0.88	95.36	0.48	0.85
MH9Z3B		94.50	-0.69	-1.33	94.70	-0.18	-0.32
MKTX8T		94.66	-0.53	-1.02	93.90	-0.98	-1.74
ML7LRT		95.32	0.13	0.26	95.08	0.20	0.36
N38WRG	X	75.14	-20.05	-38.78	75.22	-19.66	-34.86
N3TTDA		94.60	-0.59	-1.13	94.12	-0.76	-1.35
N6E3EH		94.78	-0.41	-0.79	94.66	-0.22	-0.39
NHQD4T	X	93.74	-1.45	-2.80	95.06	0.18	0.32
NJGGTU		95.66	0.47	0.92	95.40	0.52	0.92
PCWV3M		95.52	0.33	0.65	95.06	0.18	0.32
PEFYQJ		95.54	0.35	0.69	95.08	0.20	0.36
PGQRUY		94.90	-0.29	-0.55	94.64	-0.24	-0.42
PL4D2K		94.90	-0.29	-0.55	94.02	-0.86	-1.52
PP2RNA		95.76	0.57	1.11	95.42	0.54	0.96
PYVZ9Z		94.50	-0.69	-1.33	94.16	-0.72	-1.28
QA6N8A		94.94	-0.25	-0.48	94.88	0.00	0.00
QHGB96		94.16	-1.03	-1.98	94.04	-0.84	-1.49
QY2286		95.90	0.71	1.38	95.84	0.96	1.70
R8DHGP		94.88	-0.31	-0.59	94.28	-0.60	-1.06
RX9GV6		95.16	-0.03	-0.05	95.42	0.54	0.96
T7WLPQ		95.04	-0.15	-0.28	94.42	-0.46	-0.81
T8Q94E		95.16	-0.03	-0.05	95.04	0.16	0.28
T96X67		95.08	-0.11	-0.20	95.22	0.34	0.60
TEUNXA	*	94.86	-0.33	-0.63	93.78	-1.10	-1.95
UEZ7ZX		95.70	0.51	0.99	95.25	0.37	0.65
UFZRN3		94.98	-0.21	-0.40	94.60	-0.28	-0.50
UKVWMW		95.58	0.39	0.76	95.10	0.22	0.39
UXF2P4		94.50	-0.69	-1.33	94.36	-0.52	-0.92
V8H79R		94.32	-0.87	-1.67	93.72	-1.16	-2.06

Fasteners and Metals Interlaboratory Testing Program
Cycle 143

Analysis 1301
3rd Qtr 2023

Rockwell Hardness: C & B Scales
ASTM E18

| WebCode | Data Flag | Sample N93 | | | Sample N94 | | |
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
VPZAQC		95.00	-0.19	-0.36	94.80	-0.08	-0.14
W43YKR		95.00	-0.19	-0.36	94.62	-0.26	-0.46
W7LYEE		95.20	0.01	0.03	94.90	0.02	0.04
WKMPJQ		95.40	0.21	0.41	95.26	0.38	0.67
X8GTX4		95.68	0.49	0.96	95.40	0.52	0.92
X8Q8WW		95.00	-0.19	-0.36	94.74	-0.14	-0.25
XAJQ9W		94.88	-0.31	-0.59	94.52	-0.36	-0.64
XVYB7W	X	94.64	-0.55	-1.06	93.42	-1.46	-2.59
YEN4FT		94.80	-0.39	-0.75	94.64	-0.24	-0.42
YJ4G9U		95.64	0.45	0.88	95.26	0.38	0.67
YKEDPR		94.86	-0.33	-0.63	94.46	-0.42	-0.74
YKWJPH		96.18	0.99	1.92	95.82	0.94	1.67
YMMLWQ		94.58	-0.61	-1.17	94.40	-0.48	-0.85
Z2HFTH		95.12	-0.07	-0.13	95.00	0.12	0.21
ZB8EQV		95.34	0.15	0.30	94.84	-0.04	-0.07
ZFU24U		95.30	0.11	0.22	95.16	0.28	0.50
ZHLZKE	*	94.96	-0.23	-0.44	93.96	-0.92	-1.63
ZN9P6N		95.50	0.31	0.61	94.88	0.00	0.00
ZNBGW6		95.60	0.41	0.80	95.30	0.42	0.75

Summary Statistics

	Sample N93		Sample N94	
Grand Means	95.19	HRB	94.88	HRB
Stnd Dev Btwn Labs	0.52	HRB	0.56	HRB

Samples N93, N94 : Steel, Steel

Statistics based on 108 of 113 reporting participants

Comments on Assigned Data Flags for Test #1301

CYR4AM (X) - Data for sample N94 are low. Inconsistent within the determinations of sample N94.

KFAWCX (X) - Inconsistent in testing between samples.

N38WRG (X) - Data for both samples are low. Possible Systematic Error.

NHQD4T (X) - Data for sample N93 are low. Inconsistent within the determinations of sample N93.
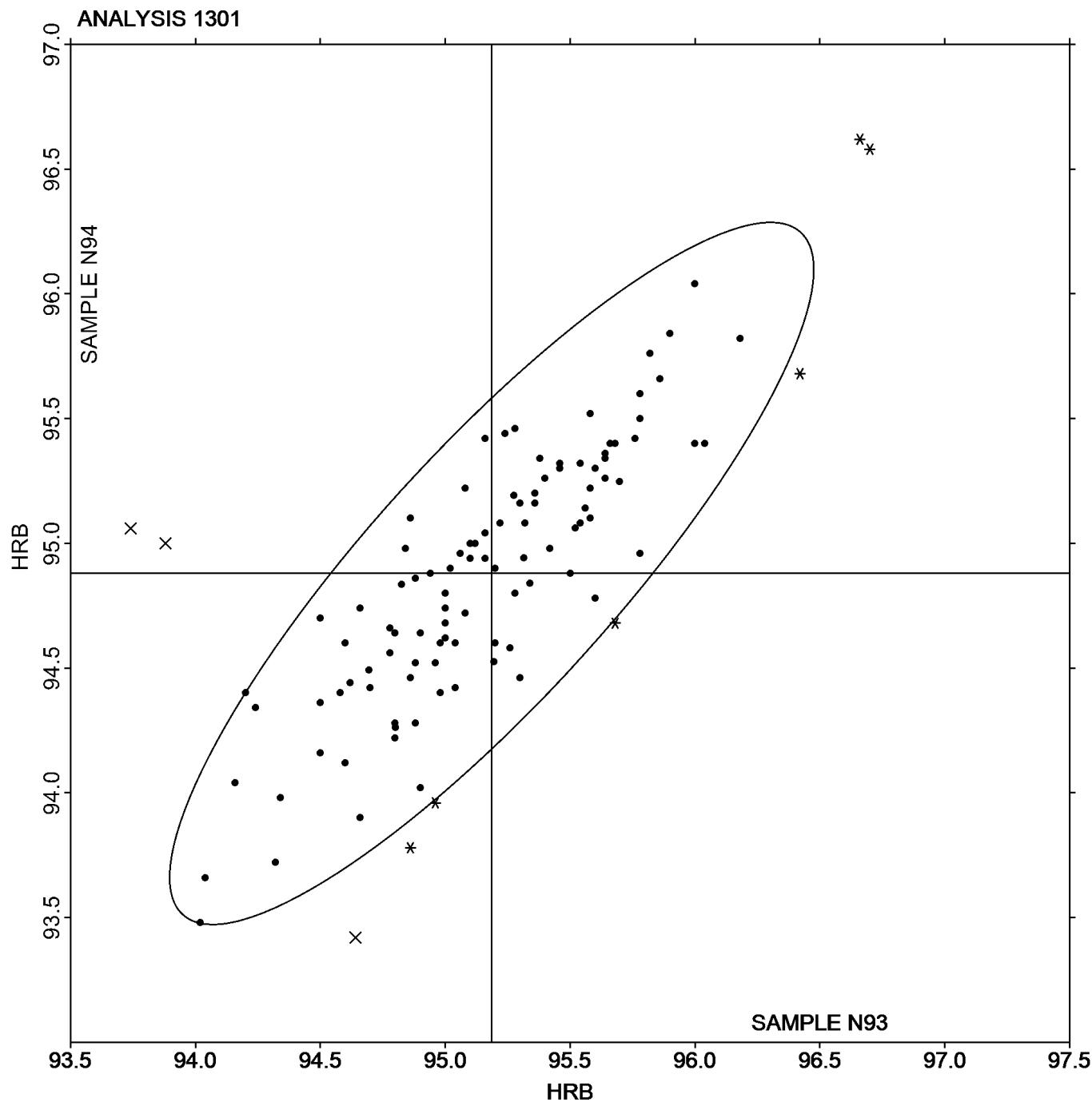
XVYB7W (X) - Inconsistent in testing between samples.

Fasteners and Metals Interlaboratory Testing Program
Analysis 1301
Rockwell Hardness: C & B Scales
ASTM E18

Cycle 143
3rd Qtr 2023
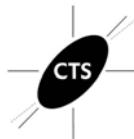
SAMPLE N93

95.19 HRB

SAMPLE N94

94.88 HRB

Fasteners and Metals Interlaboratory Testing Program
Analysis 1302
Rockwell Hardness: B Scale
ASTM E18
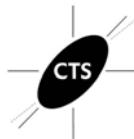
Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample N93			Sample N94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
23BHA7		96.56	1.14	2.29	96.10	1.00	1.98
2P6D6Y		95.36	-0.06	-0.13	95.66	0.56	1.11
37KBGA		95.36	-0.06	-0.13	94.74	-0.36	-0.70
3A6QZV		94.90	-0.52	-1.05	94.36	-0.74	-1.45
46PHCV		96.02	0.60	1.20	96.00	0.90	1.78
4ECX4Z		96.12	0.70	1.41	95.72	0.62	1.23
4WR6FW		95.32	-0.10	-0.21	95.16	0.06	0.13
4YX93X		95.50	0.08	0.16	95.24	0.14	0.28
67Z6GB		95.80	0.38	0.76	95.38	0.28	0.56
6DX8QU		94.88	-0.54	-1.09	94.64	-0.46	-0.90
6VTGEC	X	94.56	-0.86	-1.74	95.46	0.36	0.72
79X6UD		95.54	0.12	0.24	95.18	0.08	0.17
7CX4JJ		94.70	-0.72	-1.46	94.00	-1.10	-2.16
7FYUHP		95.04	-0.38	-0.77	94.78	-0.32	-0.62
7RCLW7		95.40	-0.02	-0.05	95.24	0.14	0.28
7YNUCL		95.62	0.20	0.40	95.24	0.14	0.28
83QBKU		95.70	0.28	0.56	95.60	0.50	0.99
9EGJHM	*	94.10	-1.32	-2.67	94.00	-1.10	-2.16
ACPFD2		95.80	0.38	0.76	95.88	0.78	1.54
AWCU76		96.30	0.88	1.77	95.86	0.76	1.50
CJXYYP		95.78	0.36	0.72	95.48	0.38	0.76
D43Q8P		94.48	-0.95	-1.91	94.34	-0.76	-1.49
DFHDJB		95.40	-0.02	-0.05	95.28	0.18	0.36
E4BAGK		95.52	0.10	0.20	95.16	0.06	0.13
EMTZ6J		95.98	0.56	1.12	95.66	0.56	1.11
F7X7NB		95.44	0.02	0.03	94.84	-0.26	-0.50
FHADKB		95.74	0.32	0.64	95.40	0.30	0.60
FMNBTX		95.26	-0.16	-0.33	94.92	-0.18	-0.35
GDW7KH		95.32	-0.10	-0.21	95.24	0.14	0.28
GXM43B	*	94.60	-0.82	-1.66	95.00	-0.10	-0.19
HF4LRN		95.68	0.26	0.52	95.16	0.06	0.13
HG8M68		95.04	-0.38	-0.77	95.34	0.24	0.48
HVX7BX		95.48	0.06	0.12	95.34	0.24	0.48
JC2382		95.70	0.28	0.56	95.12	0.02	0.05
JQXEF7		95.96	0.54	1.08	95.80	0.70	1.39
JUABYL		95.60	0.18	0.36	95.00	-0.10	-0.19
JZJR9A		95.70	0.28	0.56	95.50	0.40	0.80
KQ7YE7		94.90	-0.52	-1.05	94.36	-0.74	-1.45
KV8UPU	*	94.66	-0.76	-1.54	94.98	-0.12	-0.23
KX7GV4		95.92	0.50	1.01	95.76	0.66	1.31
L3MW8G		95.92	0.50	1.00	95.34	0.24	0.48
LTEXKD		94.90	-0.52	-1.05	94.34	-0.76	-1.49
N3TTDA		94.40	-1.02	-2.06	94.42	-0.68	-1.33
N49KFL		94.98	-0.44	-0.89	94.86	-0.24	-0.46
N6HPVV		96.14	0.72	1.45	95.70	0.60	1.19
NZMXMY	X	95.88	0.46	0.92	96.90	1.80	3.55
P6QBUV		95.28	-0.14	-0.29	94.94	-0.16	-0.31

Rockwell Hardness: B Scale
ASTM E18

WebCode	Data Flag	Sample N93			Sample N94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
PDNRRG	*	95.00	-0.42	-0.85	94.00	-1.10	-2.16
PG9BL4	*	96.00	0.58	1.16	95.00	-0.10	-0.19
PYALH3		95.56	0.14	0.28	95.30	0.20	0.40
REAEZL		95.26	-0.16	-0.33	94.82	-0.28	-0.54
T4C773		95.24	-0.18	-0.37	94.94	-0.16	-0.31
TLNFYV		94.64	-0.78	-1.58	94.40	-0.70	-1.37
TRULL7		95.60	0.18	0.36	95.26	0.16	0.32
TYBPJF		95.74	0.32	0.64	95.46	0.36	0.72
U84AG2		94.84	-0.58	-1.18	94.70	-0.40	-0.78
UCEK8A		95.70	0.28	0.56	95.20	0.10	0.20
UHK6GZ		95.18	-0.24	-0.49	95.18	0.08	0.17
VJCCF4		95.70	0.28	0.56	95.20	0.10	0.20
VK9ZFE		95.22	-0.20	-0.41	94.54	-0.56	-1.09
WEUUBR		94.98	-0.44	-0.89	94.42	-0.68	-1.33
WFVEAT	*	96.68	1.26	2.54	96.62	1.52	3.00
WQQNUG		95.00	-0.42	-0.85	94.80	-0.30	-0.58
X348RH		95.84	0.42	0.84	95.26	0.16	0.32
XF34YH		95.74	0.32	0.64	95.20	0.10	0.20
XKYRFP		95.10	-0.32	-0.65	94.94	-0.16	-0.31
YF3G7B		94.94	-0.48	-0.97	94.70	-0.40	-0.78
YHUCV6		95.43	0.01	0.01	95.02	-0.07	-0.14
YJ4G9U		95.84	0.42	0.84	95.44	0.34	0.68
YQ2AGN		95.20	-0.22	-0.45	94.60	-0.50	-0.98
YQ4294		95.36	-0.06	-0.13	94.82	-0.28	-0.54
YTT77G		95.94	0.52	1.04	95.54	0.44	0.87
YZUUUU		95.20	-0.22	-0.45	94.78	-0.32	-0.62
Z7R73V		95.76	0.34	0.68	94.90	-0.20	-0.39
ZDAWUC		94.94	-0.48	-0.97	94.44	-0.66	-1.29
ZGBXWU		95.40	-0.02	-0.05	95.16	0.06	0.13
ZYA7WE		95.88	0.46	0.92	95.50	0.40	0.80

Summary Statistics

	Sample N93		Sample N94	
Grand Means	95.42	HRB	95.10	HRB
Stnd Dev Btwn Labs	0.50	HRB	0.51	HRB
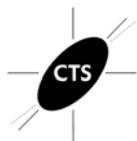
Samples N93, N94 : Steel, Steel

Statistics based on 75 of 77 reporting participants

Comments on Assigned Data Flags for Test #1302

6VTGEC (X) - Inconsistent in testing between samples.

NZMXMY (X) - Data for sample N94 are high.

Fasteners and Metals Interlaboratory Testing Program
Analysis 1302
Rockwell Hardness: B Scale
ASTM E18
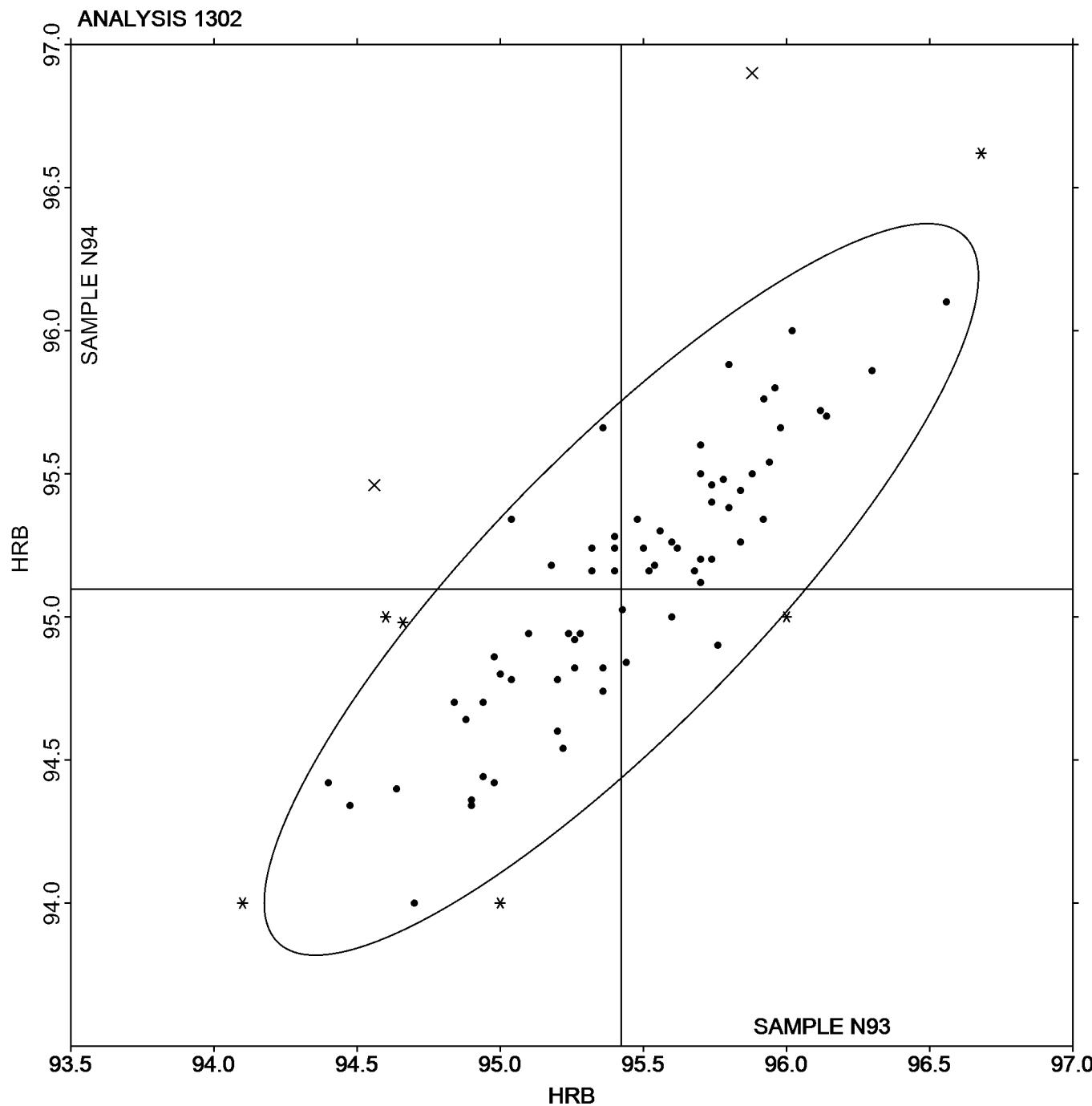
Cycle 143
3rd Qtr 2023
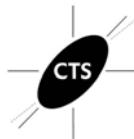
<u>SAMPLE N93</u>

95.42 HRB

<u>SAMPLE N94</u>

95.10 HRB
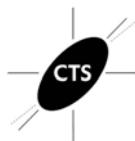
Microhardness: Knoop Indenters (500 gf)
ASTM E384

WebCode	Data Flag	Sample S93 Lab Mean	Diff. from Grand Mean	CPV	Sample S94 Lab Mean	Diff. from Grand Mean	CPV
2APFZX	X	451.60	16.63	1.38	462.00	-9.50	-0.80
2XE6AM		441.28	6.31	0.52	475.52	4.02	0.34
2ZJJV8		449.80	14.83	1.23	489.60	18.10	1.53
3A6QZV		428.20	-6.77	-0.56	474.20	2.70	0.23
3G3N2Z		413.40	-21.57	-1.79	465.60	-5.90	-0.50
3TXWLM		428.40	-6.57	-0.55	457.90	-13.60	-1.15
48VGDB		449.20	14.23	1.18	475.40	3.90	0.33
4Q6CAN		441.60	6.63	0.55	481.60	10.10	0.85
6499RG	*	466.99	32.02	2.66	502.43	30.93	2.61
6PUUNX	X	127.38	-307.59	-25.58	122.16	-349.34	-29.46
6VZEXN		419.00	-15.97	-1.33	455.60	-15.90	-1.34
78NZGN		443.40	8.43	0.70	483.80	12.30	1.04
7CX4JJ		424.20	-10.77	-0.90	464.00	-7.50	-0.63
7MJC2L		442.40	7.43	0.62	478.40	6.90	0.58
7NCB4Q		431.60	-3.37	-0.28	462.00	-9.50	-0.80
7RCLW7		449.20	14.23	1.18	483.80	12.30	1.04
7T4HLY		435.76	0.79	0.07	467.86	-3.64	-0.31
7XJKGN		420.00	-14.97	-1.24	456.80	-14.70	-1.24
82AVVE		449.80	14.83	1.23	479.20	7.70	0.65
86XTHQ	*	409.60	-25.37	-2.11	438.20	-33.30	-2.81
8JW3FR		423.00	-11.97	-1.00	463.40	-8.10	-0.68
8T4CTP		444.72	9.75	0.81	482.34	10.84	0.91
8WL37U		431.80	-3.17	-0.26	461.80	-9.70	-0.82
92WCW3		429.01	-5.96	-0.50	461.99	-9.51	-0.80
A73EAH	X	473.40	38.43	3.20	513.20	41.70	3.52
B2KMLM		420.80	-14.17	-1.18	463.20	-8.30	-0.70
B46NG9		416.20	-18.77	-1.56	456.00	-15.50	-1.31
B6KYHL		448.80	13.83	1.15	491.20	19.70	1.66
B8UFNP		449.00	14.03	1.17	475.20	3.70	0.31
DH4RUJ		437.00	2.03	0.17	474.00	2.50	0.21
E2VNYY		448.80	13.83	1.15	481.40	9.90	0.83
FFPCQP		421.00	-13.97	-1.16	456.80	-14.70	-1.24
FNFT4C		442.36	7.39	0.61	479.44	7.94	0.67
FRE4YC		448.40	13.43	1.12	476.60	5.10	0.43
GGC4ZD		442.60	7.63	0.63	470.00	-1.50	-0.13
GU2FJX		431.60	-3.37	-0.28	471.40	-0.10	-0.01
HF4LRN		435.40	0.43	0.04	475.00	3.50	0.30
HW4VBL	*	438.20	3.23	0.27	494.40	22.90	1.93
HYMW78		427.00	-7.97	-0.66	465.80	-5.70	-0.48
J9FHXR		459.40	24.43	2.03	482.80	11.30	0.95
JWHNE3		448.40	13.43	1.12	475.20	3.70	0.31
JXGJCD		426.70	-8.27	-0.69	473.06	1.56	0.13
K2BZ2C		441.40	6.43	0.53	470.40	-1.10	-0.09
KFAWCX		450.48	15.51	1.29	498.64	27.14	2.29
KN6U47	*	423.60	-11.37	-0.95	482.40	10.90	0.92
LA2RY4		428.20	-6.77	-0.56	473.80	2.30	0.19
LPQZUG		443.46	8.49	0.71	465.68	-5.82	-0.49

Fasteners and Metals Interlaboratory Testing Program
Analysis 1321
Cycle 143
3rd Qtr 2023
Microhardness: Knoop Indenters (500 gf)
ASTM E384

| WebCode | Data Flag | Sample S93 | | | Sample S94 | | |
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
LTTTWR		452.60	17.63	1.47	489.40	17.90	1.51
M7DVQ4	X	420.20	-14.77	-1.23	485.00	13.50	1.14
MKTX8T		435.02	0.05	0.00	472.54	1.04	0.09
MMMHKR		425.80	-9.17	-0.76	471.00	-0.50	-0.04
NHQD4T		446.80	11.83	0.98	482.20	10.70	0.90
NQJLPJ		417.20	-17.77	-1.48	458.00	-13.50	-1.14
P6QBUV		443.48	8.51	0.71	487.32	15.82	1.33
PEFYQJ		445.60	10.63	0.88	469.40	-2.10	-0.18
PG9BL4		424.00	-10.97	-0.91	460.00	-11.50	-0.97
PG9J4J		418.40	-16.57	-1.38	461.00	-10.50	-0.89
PGQRUY		433.36	-1.61	-0.13	467.06	-4.44	-0.37
PGTR27		418.80	-16.17	-1.34	461.00	-10.50	-0.89
PXR6A8		426.88	-8.09	-0.67	460.08	-11.42	-0.96
PYVZ9Z		436.65	1.68	0.14	468.88	-2.62	-0.22
QEZQLP		426.58	-8.39	-0.70	463.58	-7.92	-0.67
QHGB96		432.80	-2.17	-0.18	465.60	-5.90	-0.50
QUCWL9		425.40	-9.57	-0.80	458.00	-13.50	-1.14
QY2286		449.60	14.63	1.22	481.40	9.90	0.83
RBCTDP		417.40	-17.57	-1.46	451.80	-19.70	-1.66
REAEZL		441.42	6.45	0.54	478.52	7.02	0.59
RXA6JB		429.00	-5.97	-0.50	473.40	1.90	0.16
T6XPRF		447.40	12.43	1.03	479.20	7.70	0.65
T96X67		438.00	3.03	0.25	466.40	-5.10	-0.43
TAWUTZ		432.80	-2.17	-0.18	470.60	-0.90	-0.08
TEUNXA		434.20	-0.77	-0.06	471.00	-0.50	-0.04
TQZDJC		439.88	4.91	0.41	472.18	0.68	0.06
UCG77B		450.76	15.79	1.31	484.52	13.02	1.10
UEZ7ZX		446.00	11.03	0.92	485.40	13.90	1.17
UHK6GZ	*	452.40	17.43	1.45	469.80	-1.70	-0.14
UUHUD2		435.20	0.23	0.02	466.00	-5.50	-0.46
VFRK62		426.00	-8.97	-0.75	468.00	-3.50	-0.30
VPZAQC		423.60	-11.37	-0.95	454.20	-17.30	-1.46
W43YKR		430.12	-4.85	-0.40	475.10	3.60	0.30
W7NMWR		451.20	16.23	1.35	484.60	13.10	1.10
WHWMCH		424.34	-10.63	-0.88	463.80	-7.70	-0.65
WJMQZH		432.40	-2.57	-0.21	469.60	-1.90	-0.16
WQQNUG	X	408.00	-26.97	-2.24	429.40	-42.10	-3.55
X8GTX4		458.60	23.63	1.96	499.80	28.30	2.39
X8Q8WW	*	411.40	-23.57	-1.96	469.40	-2.10	-0.18
XKYRFP		425.60	-9.37	-0.78	451.80	-19.70	-1.66
XPULDQ		427.00	-7.97	-0.66	448.00	-23.50	-1.98
XRHJ23		428.60	-6.37	-0.53	462.60	-8.90	-0.75
YHUCV6		438.00	3.03	0.25	490.34	18.84	1.59
YJ4G9U		436.00	1.03	0.09	469.40	-2.10	-0.18
YZUUUU		433.80	-1.17	-0.10	469.60	-1.90	-0.16
ZHLZKE		424.60	-10.37	-0.86	457.60	-13.90	-1.17
ZLJL8B		423.78	-11.19	-0.93	471.30	-0.20	-0.02

Fasteners and Metals Interlaboratory Testing Program
Analysis 1321
Microhardness: Knoop Indenters (500 gf)
ASTM E384

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample S93			Sample S94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
ZNBGW6		427.66	-7.31	-0.61	470.81	-0.69	-0.06

Summary Statistics

	Sample S93		Sample S94	
Grand Means	434.97	HK 500 gf	471.50	HK 500 gf
Stnd Dev Btwn Labs	12.03	HK 500 gf	11.86	HK 500 gf

Samples S93, S94 : Steel, Steel

Statistics based on 90 of 95 reporting participants

Comments on Assigned Data Flags for Test #1321

2APFZX (X) - Inconsistent in testing between samples.

6PUUNX (X) - Extreme data.

A73EAH (X) - Data for both samples are high. Possible Systematic Error.

M7DVQ4 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample S94.

WQQNUG (X) - Data for sample S94 are low.
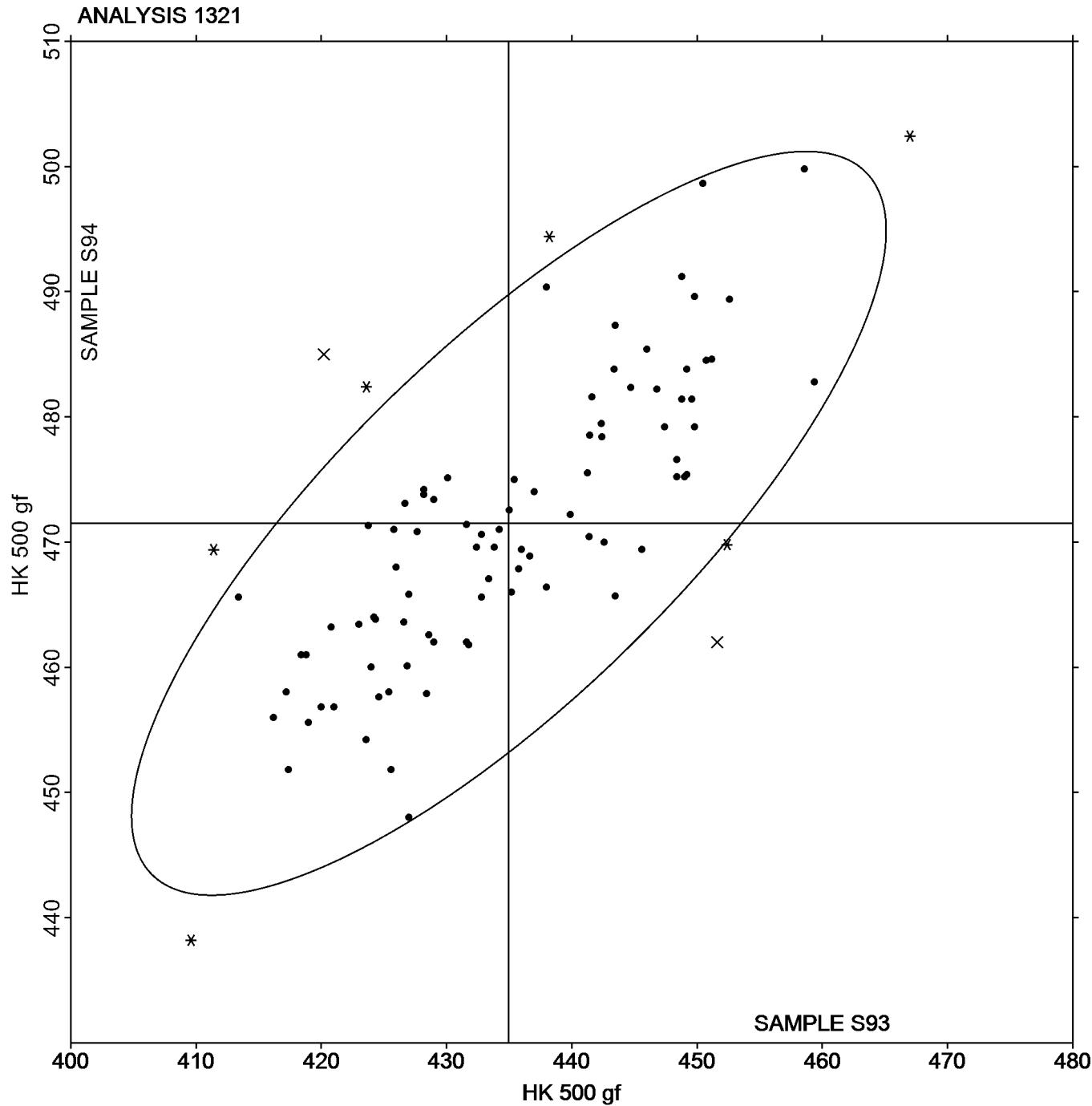
Microhardness: Knoop Indenters (500 gf)
ASTM E384

SAMPLE S93

434.97 HK 500 gf

SAMPLE S94

471.50 HK 500 gf

Fasteners and Metals Interlaboratory Testing Program
Analysis 1322
Microhardness: Knoop Indenters (200 gf)
ASTM E384

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample S93			Sample S94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2APFZX	*	400.20	-43.60	-2.66	448.20	-34.99	-2.27
2XE6AM		434.10	-9.70	-0.59	463.56	-19.63	-1.27
2ZJJV8		459.20	15.40	0.94	497.40	14.21	0.92
3A6QZV		438.80	-5.00	-0.30	484.40	1.21	0.08
3G3N2Z		437.80	-6.00	-0.37	491.00	7.81	0.51
48VGDB		463.80	20.00	1.22	494.80	11.61	0.75
4Q6CAN		450.00	6.20	0.38	492.80	9.61	0.62
6499RG		463.04	19.24	1.17	497.54	14.36	0.93
6PUUNX	X	78.96	-364.84	-22.25	76.54	-406.65	-26.39
6VZEXN		438.00	-5.80	-0.35	484.60	1.41	0.09
78NZGN		447.60	3.80	0.23	486.80	3.61	0.23
7CX4JJ		439.80	-4.00	-0.24	480.20	-2.99	-0.19
7MJC2L		461.40	17.60	1.07	510.80	27.61	1.79
7NCB4Q		416.20	-27.60	-1.68	453.40	-29.79	-1.93
7T4HLY		440.16	-3.64	-0.22	477.28	-5.91	-0.38
86XTHQ	X	430.00	-13.80	-0.84	445.40	-37.79	-2.45
8JW3FR		432.40	-11.40	-0.70	472.40	-10.79	-0.70
8T4CTP		443.58	-0.22	-0.01	479.02	-4.17	-0.27
8WL37U		449.80	6.00	0.37	478.20	-4.99	-0.32
A73EAH		447.80	4.00	0.24	481.00	-2.19	-0.14
B2KMLM		422.28	-21.52	-1.31	467.40	-15.79	-1.02
B46NG9		418.92	-24.88	-1.52	459.80	-23.39	-1.52
B6KYHL		453.80	10.00	0.61	492.00	8.81	0.57
DH4RUJ		438.20	-5.60	-0.34	469.60	-13.59	-0.88
E2VNYY		454.80	11.00	0.67	489.60	6.41	0.42
FRE4YC		453.40	9.60	0.59	492.20	9.01	0.58
GGC4ZD		447.80	4.00	0.24	479.40	-3.79	-0.25
HF4LRN		449.60	5.80	0.35	483.40	0.21	0.01
HYMW78		425.00	-18.80	-1.15	472.00	-11.19	-0.73
J9FHXR		477.40	33.60	2.05	521.20	38.01	2.47
JXGJCD		426.20	-17.60	-1.07	471.28	-11.91	-0.77
LPQZUG		445.08	1.28	0.08	472.40	-10.79	-0.70
LTTTWR		469.00	25.20	1.54	505.60	22.41	1.45
M7DVQ4	*	420.20	-23.60	-1.44	485.00	1.81	0.12
MKTX8T		431.40	-12.40	-0.76	484.24	1.05	0.07
NQJLPJ		427.60	-16.20	-0.99	476.60	-6.59	-0.43
PEFYQJ		444.00	0.20	0.01	490.80	7.61	0.49
PG9BL4		438.00	-5.80	-0.35	483.00	-0.19	-0.01
PGQRUY		447.66	3.86	0.24	478.54	-4.65	-0.30
PGTR27		428.80	-15.00	-0.91	463.20	-19.99	-1.30
PXR6A8		439.70	-4.10	-0.25	480.52	-2.67	-0.17
QEZQLP		444.42	0.62	0.04	487.62	4.43	0.29
QHGB96		448.60	4.80	0.29	488.20	5.01	0.33
REAEZL		461.62	17.82	1.09	501.52	18.33	1.19
RXA6JB		428.00	-15.80	-0.96	477.60	-5.59	-0.36
T96X67		443.00	-0.80	-0.05	483.80	0.61	0.04
TAWUTZ		435.40	-8.40	-0.51	468.80	-14.39	-0.93

Fasteners and Metals Interlaboratory Testing Program
Analysis 1322
Microhardness: Knoop Indenters (200 gf)
ASTM E384

WebCode	Data Flag	Sample S93 Lab Mean	Sample S93 Diff. from Grand Mean	Sample S93 CPV	Sample S94 Lab Mean	Sample S94 Diff. from Grand Mean	Sample S94 CPV
TEUNXA		442.00	-1.80	-0.11	481.60	-1.59	-0.10
TQZDJC		445.22	1.42	0.09	480.44	-2.75	-0.18
UCG77B		472.42	28.62	1.75	513.36	30.17	1.96
UEZ7ZX		452.80	9.00	0.55	486.80	3.61	0.23
UHK6GZ	*	464.40	20.60	1.26	479.20	-3.99	-0.26
UUHUD2		471.80	28.00	1.71	515.60	32.41	2.10
VFRK62		427.00	-16.80	-1.02	478.00	-5.19	-0.34
VPZAQC		425.80	-18.00	-1.10	468.20	-14.99	-0.97
W7NMWR		469.60	25.80	1.57	511.60	28.41	1.84
X8GTX4		474.80	31.00	1.89	507.60	24.41	1.58
X8Q8WW		409.60	-34.20	-2.09	449.00	-34.19	-2.22
XPULDQ		467.20	23.40	1.43	495.80	12.61	0.82
XRHJ23		439.80	-4.00	-0.24	470.20	-12.99	-0.84
YHUCV6		446.66	2.86	0.17	496.24	13.05	0.85
YJ4G9U		438.80	-5.00	-0.30	469.20	-13.99	-0.91
YZUUUU		438.80	-5.00	-0.30	483.40	0.21	0.01
ZHLZKE		445.40	1.60	0.10	472.60	-10.59	-0.69

Summary Statistics

	Sample S93		Sample S94	
Grand Means	443.80	HK 200 gf	483.19	HK 200 gf
Stnd Dev Btwn Labs	16.40	HK 200 gf	15.41	HK 200 gf
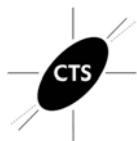
Samples S93, S94 : Steel, Steel

Statistics based on 62 of 64 reporting participants

Comments on Assigned Data Flags for Test #1322

6PUUNX (X) - Extreme data.
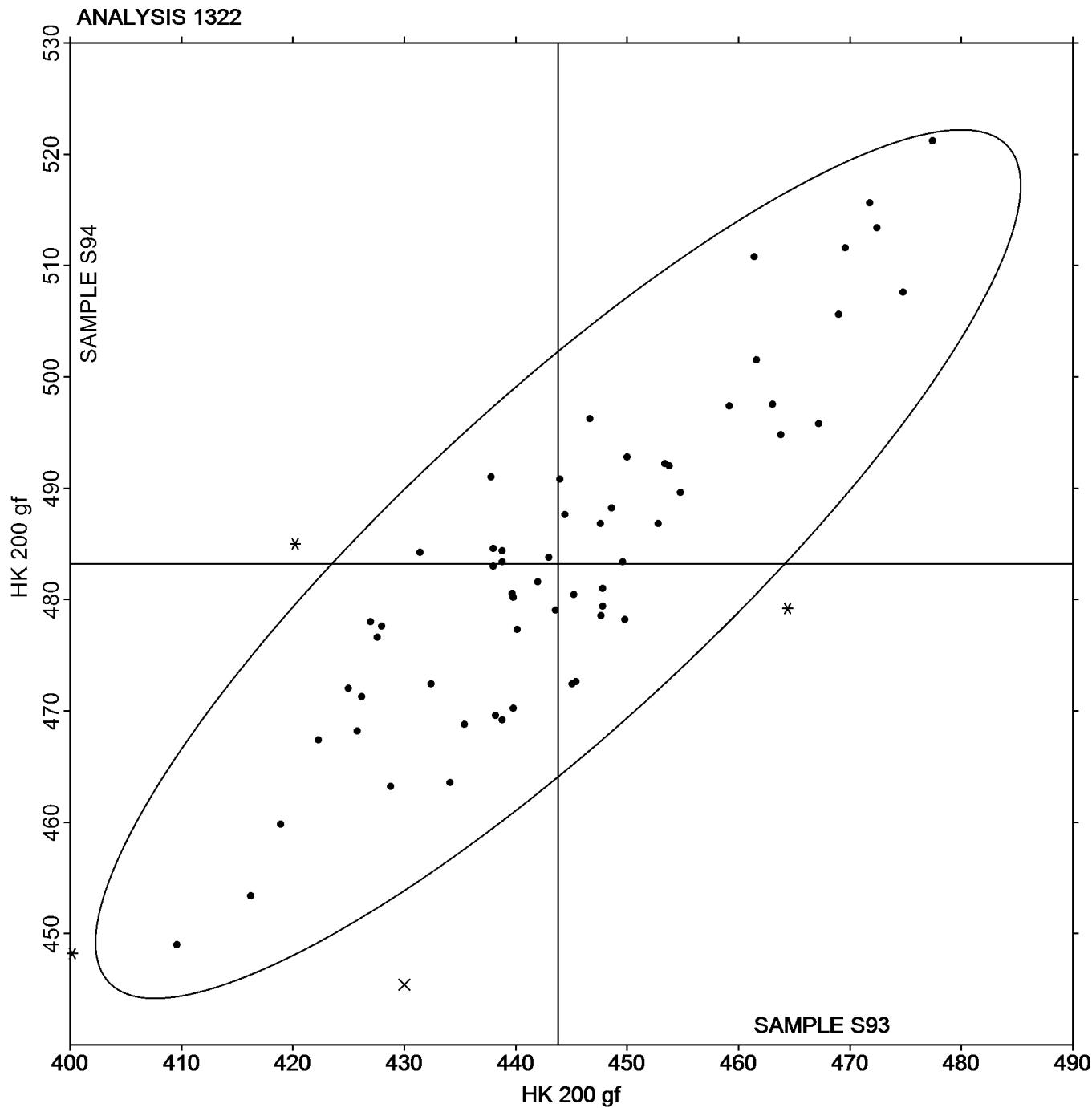
86XTHQ (X) - Inconsistent in testing between samples.

Microhardness: Knoop Indenters (200 gf)
ASTM E384

SAMPLE S93

443.80 HK 200 gf

SAMPLE S94

483.19 HK 200 gf
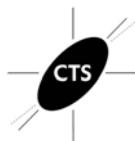
ANALYSIS 1322

Fasteners and Metals Interlaboratory Testing Program
Analysis 1323
Microhardness: Vickers Indenters (500 gf)
ASTM E384

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample S93			Sample S94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2APFZX		424.80	11.93	1.28	456.00	4.58	0.52
2HF8XQ		421.00	8.13	0.87	454.80	3.38	0.38
2QB6PY		414.60	1.73	0.18	447.60	-3.82	-0.43
2XE6AM		423.78	10.91	1.17	464.80	13.38	1.51
2ZJJV8		421.60	8.73	0.93	466.00	14.58	1.65
34GBM6		423.40	10.53	1.13	462.60	11.18	1.26
36PN67		395.04	-17.83	-1.91	442.40	-9.02	-1.02
39QN8N		416.18	3.31	0.35	453.92	2.50	0.28
3A6QZV		414.20	1.33	0.14	453.20	1.78	0.20
3FVD3B		423.26	10.38	1.11	463.59	12.17	1.37
3G3N2Z	*	393.40	-19.47	-2.08	447.40	-4.02	-0.45
3RPPGA		414.60	1.73	0.18	452.20	0.78	0.09
48VGDB		430.20	17.33	1.85	460.80	9.38	1.06
4Q6CAN		406.60	-6.27	-0.67	449.40	-2.02	-0.23
4QME2W		400.80	-12.07	-1.29	441.20	-10.22	-1.15
62Z8GH		405.16	-7.71	-0.83	445.34	-6.08	-0.69
63FPXM		423.20	10.33	1.10	450.00	-1.42	-0.16
6499RG		425.65	12.78	1.37	455.49	4.07	0.46
6M3XZ4		417.38	4.51	0.48	444.66	-6.76	-0.76
6PUUNX	X	47.34	-365.53	-39.10	45.60	-405.82	-45.82
6VZEXN		410.60	-2.27	-0.24	448.60	-2.82	-0.32
78NZGN		417.20	4.33	0.46	458.00	6.58	0.74
7CX4JJ		408.20	-4.67	-0.50	443.00	-8.42	-0.95
7EHAH8		407.62	-5.25	-0.56	445.44	-5.98	-0.67
7FJ3HZ		401.94	-10.93	-1.17	438.96	-12.46	-1.41
7MJC2L		406.20	-6.67	-0.71	449.20	-2.22	-0.25
7NCB4Q		415.60	2.73	0.29	443.40	-8.02	-0.91
7RCLW7		409.80	-3.07	-0.33	452.20	0.78	0.09
7T4HLY		423.06	10.19	1.09	454.86	3.44	0.39
7WNAX3		425.00	12.13	1.30	465.60	14.18	1.60
86XTHQ		405.00	-7.87	-0.84	445.20	-6.22	-0.70
8JW3FR		407.00	-5.87	-0.63	448.60	-2.82	-0.32
8PJ3K7		421.50	8.63	0.92	460.62	9.20	1.04
8T4CTP		420.00	7.13	0.76	451.00	-0.42	-0.05
8WL37U		419.80	6.93	0.74	455.80	4.38	0.49
92WCW3		406.49	-6.39	-0.68	450.26	-1.16	-0.13
9Y7DH6		412.30	-0.57	-0.06	452.66	1.24	0.14
A73EAH		411.40	-1.47	-0.16	445.80	-5.62	-0.63
A9KRU7		402.20	-10.67	-1.14	438.80	-12.62	-1.42
A9P4H2		404.36	-8.51	-0.91	442.82	-8.60	-0.97
ACPFD2	*	408.60	-4.27	-0.46	461.80	10.38	1.17
AWCU76		415.40	2.53	0.27	458.40	6.98	0.79
B2KMLM	*	390.28	-22.59	-2.42	428.82	-22.60	-2.55
B46NG9		401.80	-11.07	-1.18	438.40	-13.02	-1.47
B6KYHL	X	430.00	17.13	1.83	485.80	34.38	3.88
BAWV23		427.00	14.13	1.51	469.00	17.58	1.98
BGYVMQ		410.82	-2.05	-0.22	451.74	0.32	0.04

Fasteners and Metals Interlaboratory Testing Program
Analysis 1323
Microhardness: Vickers Indenters (500 gf)
ASTM E384
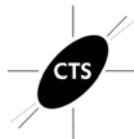
Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample S93 Lab Mean	Diff. from Grand Mean	CPV	Sample S94 Lab Mean	Diff. from Grand Mean	CPV
BQMMAH		415.80	2.93	0.31	465.00	13.58	1.53
C7Q9WH		409.90	-2.97	-0.32	447.64	-3.78	-0.43
CB8936		416.00	3.13	0.33	457.20	5.78	0.65
CBQRAW		423.66	10.79	1.15	457.62	6.20	0.70
CFYN3P		419.60	6.73	0.72	468.80	17.38	1.96
CJXYYP		410.20	-2.67	-0.29	445.40	-6.02	-0.68
DH4RUJ		418.00	5.13	0.55	453.40	1.98	0.22
DJWBQX		417.74	4.87	0.52	455.94	4.52	0.51
E2VNYY		418.20	5.33	0.57	455.00	3.58	0.40
ELFPRD		416.00	3.13	0.33	448.40	-3.02	-0.34
EQDJWL	*	403.00	-9.87	-1.06	429.80	-21.62	-2.44
EQT9AU		414.80	1.93	0.21	466.40	14.98	1.69
FBA63P	X	447.80	34.93	3.74	466.40	14.98	1.69
FFPCQP		406.00	-6.87	-0.74	437.40	-14.02	-1.58
FNFT4C		423.52	10.65	1.14	460.48	9.06	1.02
GGC4ZD		424.00	11.13	1.19	456.80	5.38	0.61
GU2FJX		403.40	-9.47	-1.01	442.20	-9.22	-1.04
HF4LRN		408.80	-4.07	-0.44	449.20	-2.22	-0.25
HFGAV2		415.00	2.13	0.23	452.40	0.98	0.11
HW4VBL		416.00	3.13	0.33	466.80	15.38	1.74
HYMW78		407.80	-5.07	-0.54	438.00	-13.42	-1.51
J9FHXR		419.20	6.33	0.68	457.60	6.18	0.70
JVPLXE		407.40	-5.47	-0.59	448.60	-2.82	-0.32
JXGJCD		407.80	-5.07	-0.54	444.08	-7.34	-0.83
KQC3GX		415.20	2.33	0.25	459.20	7.78	0.88
LPQZUG		422.58	9.71	1.04	453.26	1.84	0.21
LTTTWR		425.80	12.93	1.38	461.80	10.38	1.17
M7DVQ4	X	407.60	-5.27	-0.56	465.60	14.18	1.60
MKTX8T		408.70	-4.17	-0.45	450.00	-1.42	-0.16
MUJJC6		410.98	-1.89	-0.20	451.34	-0.08	-0.01
NHQD4T		415.20	2.33	0.25	451.20	-0.22	-0.02
NQJLPJ		397.40	-15.47	-1.66	440.00	-11.42	-1.29
PD6W3Z	X	454.54	41.67	4.46	422.75	-28.67	-3.24
PEFYQJ		395.80	-17.07	-1.83	439.20	-12.22	-1.38
PG9BL4		407.00	-5.87	-0.63	444.00	-7.42	-0.84
PGQRUY		415.18	2.31	0.25	447.00	-4.42	-0.50
PGTR27		393.00	-19.87	-2.13	439.00	-12.42	-1.40
PYVZ9Z		417.32	4.44	0.48	453.58	2.16	0.24
QHGB96		415.00	2.13	0.23	448.80	-2.62	-0.30
QUCWL9		391.20	-21.67	-2.32	436.20	-15.22	-1.72
RXA6JB		409.80	-3.07	-0.33	450.60	-0.82	-0.09
T6MDKC		410.40	-2.47	-0.26	447.60	-3.82	-0.43
T96X67		420.80	7.93	0.85	455.80	4.38	0.49
TAWUTZ		417.60	4.73	0.51	449.80	-1.62	-0.18
TEUNXA		416.60	3.73	0.40	450.60	-0.82	-0.09
TQZDJC		410.66	-2.21	-0.24	449.14	-2.28	-0.26
UCG77B		419.30	6.43	0.69	448.06	-3.36	-0.38

Fasteners and Metals Interlaboratory Testing Program
Analysis 1323
Microhardness: Vickers Indenters (500 gf)
ASTM E384

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample S93 Lab Mean	Diff. from Grand Mean	CPV	Sample S94 Lab Mean	Diff. from Grand Mean	CPV
UEZ7ZX		422.00	9.13	0.98	462.80	11.38	1.28
UHK6GZ		431.80	18.93	2.02	466.20	14.78	1.67
UKVWMW		412.40	-0.47	-0.05	454.98	3.56	0.40
UUHUD2	X	458.60	45.73	4.89	505.00	53.58	6.05
UXH78F		415.40	2.53	0.27	447.40	-4.02	-0.45
VFRK62	*	399.60	-13.27	-1.42	454.40	2.98	0.34
VPZAQC		400.00	-12.87	-1.38	434.80	-16.62	-1.88
W7NMWR		422.60	9.73	1.04	455.20	3.78	0.43
WQQNUG	X	371.00	-41.87	-4.48	409.20	-42.22	-4.77
X8GTX4		424.40	11.53	1.23	464.00	12.58	1.42
X8Q8WW		399.20	-13.67	-1.46	446.20	-5.22	-0.59
XKYRFP		404.20	-8.67	-0.93	445.80	-5.62	-0.63
XLAKJ6		406.40	-6.47	-0.69	442.60	-8.82	-1.00
XPULDQ	*	424.40	11.53	1.23	474.00	22.58	2.55
XRHJ23		415.40	2.53	0.27	447.40	-4.02	-0.45
XWDBAY		427.60	14.73	1.58	469.00	17.58	1.98
YHUCV6		410.28	-2.59	-0.28	457.24	5.82	0.66
YJ4G9U		408.80	-4.07	-0.44	451.00	-0.42	-0.05
YMMLWQ	X	359.40	-53.47	-5.72	415.72	-35.70	-4.03
YTN34Q		410.10	-2.77	-0.30	443.30	-8.12	-0.92
YZUUUU		403.60	-9.27	-0.99	440.00	-11.42	-1.29
Z3C488		421.20	8.33	0.89	452.80	1.38	0.16
Z7R73V		412.20	-0.67	-0.07	456.20	4.78	0.54
ZEJYHW		426.60	13.73	1.47	462.00	10.58	1.19
ZFU24U		401.80	-11.07	-1.18	448.80	-2.62	-0.30
ZHLZKE	X	419.00	6.13	0.66	433.40	-18.02	-2.03
ZLJL8B	*	387.54	-25.33	-2.71	437.82	-13.60	-1.54
ZN9P6N		412.40	-0.47	-0.05	450.40	-1.02	-0.11
ZNBGW6		409.91	-2.97	-0.32	449.29	-2.13	-0.24
ZQXAUT		429.32	16.45	1.76	458.76	7.34	0.83

Summary Statistics

	Sample S93		Sample S94	
Grand Means	412.87	HV 500 gf	451.42	HV 500 gf
Stnd Dev Btwn Labs	9.35	HV 500 gf	8.86	HV 500 gf

Samples S93, S94 : Steel, Steel

Statistics based on 115 of 124 reporting participants

Fasteners and Metals Interlaboratory Testing Program
Analysis 1323
Microhardness: Vickers Indenters (500 gf)
ASTM E384

Cycle 143
3rd Qtr 2023

Comments on Assigned Data Flags for Test #1323

6PUUNX (X) - Extreme data.

B6KYHL (X) - Data for sample S94 are high. Inconsistent within the determinations of sample S94.

FBA63P (X) - Data for sample S93 are high.

M7DVQ4 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample S94.
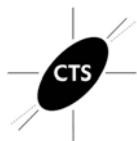
PD6W3Z (X) - Data for sample S93 are high and data for sample S94 are low. Inconsistent in testing between samples. Inconsistent within the determinations of sample S93.

UUHUD2 (X) - Data for both samples are high. Possible Systematic Error.

WQQNUG (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of both samples.

YMMLWQ (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of both samples.

ZHLZKE (X) - Inconsistent in testing between samples.

Fasteners and Metals Interlaboratory Testing Program
Analysis 1323
Microhardness: Vickers Indenters (500 gf)
ASTM E384
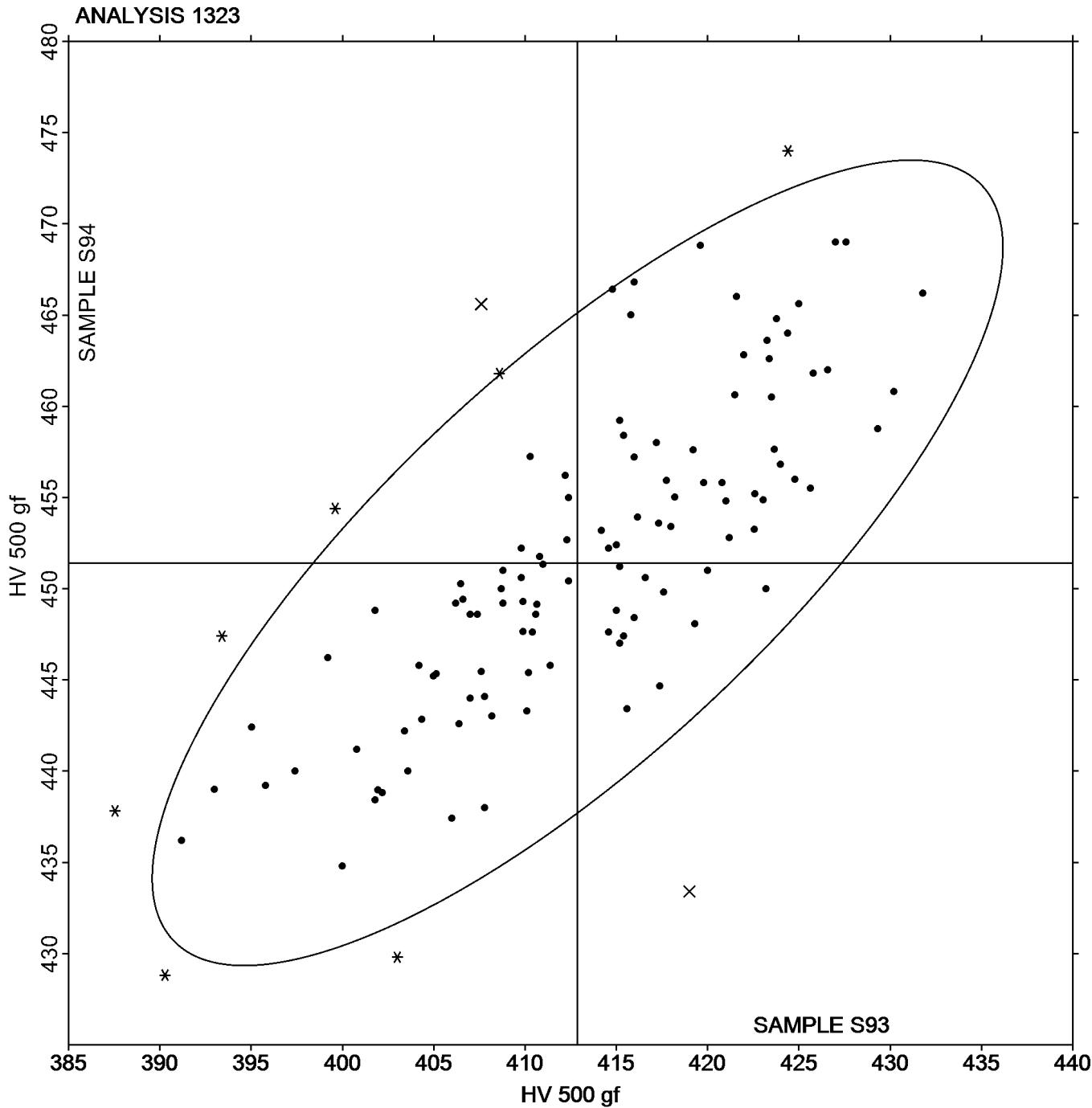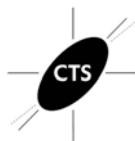
Cycle 143
3rd Qtr 2023

SAMPLE S93

412.87 HV 500 gf

SAMPLE S94

451.42 HV 500 gf
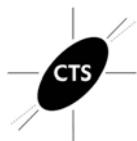
ANALYSIS 1323

SAMPLE S94

HV 500 gf

SAMPLE S93

HV 500 gf

Fasteners and Metals Interlaboratory Testing Program
Analysis 1341
Brinell Hardness
ASTM E10

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample D93			Sample D94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2UWKPT	*	330.50	6.96	1.18	375.20	14.22	2.62
37KBGA		313.80	-9.74	-1.65	357.20	-3.78	-0.70
39T98K		323.00	-0.54	-0.09	360.00	-0.98	-0.18
3A6QZV		325.40	1.86	0.32	361.40	0.42	0.08
3BF6EB		333.00	9.46	1.61	365.40	4.42	0.82
3TXWLM		326.00	2.46	0.42	359.00	-1.98	-0.36
48VGDB		318.00	-5.53	-0.94	354.44	-6.54	-1.21
4Q6CAN		322.68	-0.86	-0.15	361.10	0.12	0.02
4WR6FW		324.40	0.86	0.15	363.20	2.22	0.41
4YX93X		327.80	4.26	0.72	363.60	2.62	0.48
6499RG		321.40	-2.14	-0.36	367.00	6.02	1.11
689GWR		333.00	9.46	1.61	368.20	7.22	1.33
6AXUEA		319.52	-4.02	-0.68	355.40	-5.58	-1.03
6PUUNX		321.20	-2.34	-0.40	357.60	-3.38	-0.62
6VZEXN		329.34	5.80	0.99	361.56	0.58	0.11
78NZGN		316.20	-7.34	-1.25	352.80	-8.18	-1.51
7QWCXD		319.60	-3.94	-0.67	357.80	-3.18	-0.59
7RCLW7	*	338.00	14.46	2.46	368.40	7.42	1.37
7UVQL3	X	343.60	20.06	3.41	363.20	2.22	0.41
8PJ3K7	X	320.20	-3.34	-0.57	341.00	-19.98	-3.69
8W3ZH7		323.92	0.38	0.07	364.28	3.30	0.61
9ALZUQ		321.00	-2.54	-0.43	363.00	2.02	0.37
9EDGVJ		319.00	-4.54	-0.77	360.00	-0.98	-0.18
9WG9J7		326.80	3.26	0.55	368.80	7.82	1.44
A64CKD		325.00	1.46	0.25	363.20	2.22	0.41
ACPFD2		326.20	2.66	0.45	360.60	-0.38	-0.07
AHRK87		324.40	0.86	0.15	359.60	-1.38	-0.25
BC6ULB	*	313.60	-9.94	-1.69	346.20	-14.78	-2.73
BE6CBQ		328.40	4.86	0.83	361.80	0.82	0.15
BE7ZXW		321.00	-2.54	-0.43	362.60	1.62	0.30
C7D74B		321.00	-2.54	-0.43	352.00	-8.98	-1.66
CBQRAW	X	320.00	-3.54	-0.60	345.00	-15.98	-2.95
CYR4AM		333.38	9.84	1.67	369.50	8.52	1.57
D4N6V2		325.06	1.52	0.26	358.10	-2.88	-0.53
DLKZGJ		321.00	-2.54	-0.43	363.00	2.02	0.37
DYNLHM		332.20	8.66	1.47	370.60	9.62	1.78
E9VWGK		320.82	-2.72	-0.46	358.38	-2.60	-0.48
EMTZ6J	X	339.60	16.06	2.73	321.40	-39.58	-7.30
F7GZB7	X	54.30	-269.24	-45.71	58.70	-302.28	-55.78
FF2GVZ	X	321.00	-2.54	-0.43	340.00	-20.98	-3.87
FFPCQP		315.20	-8.34	-1.42	354.80	-6.18	-1.14
FLRQ6Y		321.12	-2.42	-0.41	356.54	-4.44	-0.82
GGC4ZD		317.00	-6.54	-1.11	358.60	-2.38	-0.44
GRBF3D		317.00	-6.54	-1.11	359.00	-1.98	-0.36
GU2FJX		322.60	-0.94	-0.16	355.60	-5.38	-0.99
HF4LRN		324.20	0.66	0.11	361.40	0.42	0.08
HYWJV3	X	323.00	-0.54	-0.09	347.60	-13.38	-2.47

Fasteners and Metals Interlaboratory Testing Program
Analysis 1341
Brinell Hardness
ASTM E10

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample D93			Sample D94		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
J3CBKA		320.76	-2.78	-0.47	355.86	-5.12	-0.94
JLZ2BT		321.04	-2.50	-0.42	359.52	-1.46	-0.27
JUABYL		317.97	-5.57	-0.95	353.53	-7.45	-1.37
JVNZZD	X	321.00	-2.54	-0.43	339.40	-21.58	-3.98
JXGJCD		318.23	-5.31	-0.90	355.77	-5.21	-0.96
KFAWCX		328.40	4.86	0.83	360.60	-0.38	-0.07
KN6U47	X	304.80	-18.74	-3.18	332.60	-28.38	-5.24
KVMD87		321.60	-1.94	-0.33	364.20	3.22	0.59
KWEAVZ		323.00	-0.54	-0.09	361.80	0.82	0.15
KX7GV4		326.80	3.26	0.55	365.20	4.22	0.78
KXRVJG		331.00	7.46	1.27	363.00	2.02	0.37
LETHGE		321.00	-2.54	-0.43	360.20	-0.78	-0.14
MZQZVR		323.80	0.26	0.04	363.00	2.02	0.37
NHKQF6		317.00	-6.54	-1.11	356.40	-4.58	-0.84
NHQD4T		321.00	-2.54	-0.43	363.00	2.02	0.37
NYB43R		321.00	-2.54	-0.43	363.00	2.02	0.37
P6VNGR		325.40	1.86	0.32	363.60	2.62	0.48
PD6W3Z	X	341.00	17.46	2.97	381.60	20.62	3.81
PGQRUY		328.40	4.86	0.83	362.20	1.22	0.23
QA6N8A	*	324.38	0.84	0.14	353.00	-7.98	-1.47
QHGB96		329.00	5.46	0.93	365.60	4.62	0.85
QUCWL9		315.60	-7.94	-1.35	350.20	-10.78	-1.99
R6QQJ2		321.00	-2.54	-0.43	363.00	2.02	0.37
T7WLPQ		316.78	-6.75	-1.15	356.03	-4.95	-0.91
T8Q94E	X	348.14	24.60	4.18	367.14	6.16	1.14
T96X67		325.60	2.06	0.35	366.60	5.62	1.04
TLNFYV		321.00	-2.54	-0.43	361.40	0.42	0.08
TWCEQ2		325.00	1.46	0.25	360.60	-0.38	-0.07
U7BDT8		313.80	-9.74	-1.65	351.60	-9.38	-1.73
UEZ7ZX		324.00	0.46	0.08	360.00	-0.98	-0.18
UKVWMW		321.00	-2.54	-0.43	363.00	2.02	0.37
UXF2P4	*	341.00	17.46	2.97	373.40	12.42	2.29
VAMNHF		328.00	4.46	0.76	368.60	7.62	1.41
VPZAQC		324.00	0.46	0.08	358.20	-2.78	-0.51
W7LYEE	*	341.00	17.46	2.97	375.00	14.02	2.59
X8GTX4		321.00	-2.54	-0.43	362.60	1.62	0.30
XKYRFP	X	336.40	12.86	2.18	346.75	-14.23	-2.63
XWDBAY		320.00	-3.54	-0.60	359.20	-1.78	-0.33
YEN4FT		311.20	-12.34	-2.09	355.80	-5.18	-0.96
YHUCV6		331.48	7.94	1.35	362.62	1.64	0.30
YZUUUU		323.40	-0.14	-0.02	359.80	-1.18	-0.22
Z2HFTH		320.00	-3.54	-0.60	356.60	-4.38	-0.81
ZHLZKE		328.40	4.86	0.83	365.60	4.62	0.85

Fasteners and Metals Interlaboratory Testing Program

Analysis 1341

Cycle 143

3rd Qtr 2023

Brinell Hardness

ASTM E10

Summary Statistics

	Sample D93		**Sample D94**	
Grand Means	323.54	HBW	360.98	HBW
Stnd Dev Btwn Labs	5.89	HBW	5.42	HBW

Samples D93, D94 : Steel, Steel

Statistics based on 78 of 90 reporting participants

Samples D93, D94 are hardness test blocks made from steel. The blocks are heat treated to hardness levels specified by CTS.

Comments on Assigned Data Flags for Test #1341

7UVQL3 (X) - Data for sample D93 are high.

8PJ3K7 (X) - Data for sample D94 are low.

CBQRAW (X) - Data for sample D94 are low.

EMTZ6J (X) - Data for sample D94 are low.

F7GZB7 (X) - Data for both samples are low. Possible Systematic Error.

FF2GVZ (X) - Data for sample D94 are low.

HYWJV3 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both samples.

JVNZZD (X) - Data for sample D94 are low.

KN6U47 (X) - Data for both samples are low. Possible Systematic Error.

PD6W3Z (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample D94.

T8Q94E (X) - Data for sample D93 are high.

XKYRFP (X) - Inconsistent in testing between samples.

Fasteners and Metals Interlaboratory Testing Program
Analysis 1341
Brinell Hardness
ASTM E10
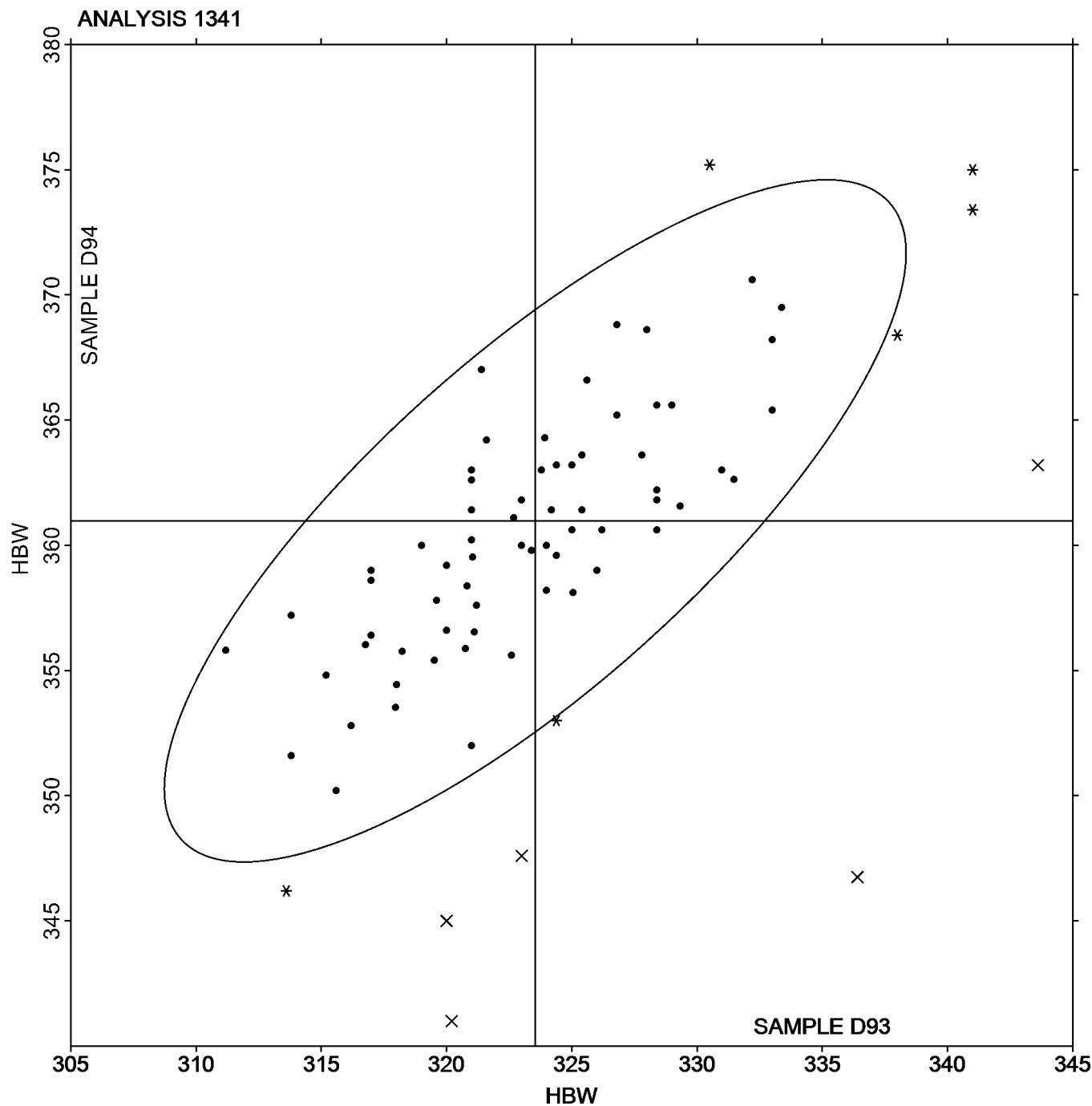
Cycle 143
3rd Qtr 2023
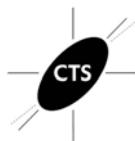
SAMPLE D93

323.54 HBW

SAMPLE D94

360.98 HBW

Fasteners and Metals Interlaboratory Testing Program
Analysis 1411
Cycle 143
3rd Qtr 2023

Grain Size (Stainless Steel)
ASTM E112, ASTM E1382

| WebCode | Data Flag | Sample Y91 | | | Sample Y92 | | | Method |
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2XE6AM		5.77	0.55	0.57	6.61	1.04	1.37	N/A
38VVNY		4.50	-0.71	-0.74	6.10	0.53	0.70	Comparison Method
3A6QZV		3.80	-1.41	-1.46	4.80	-0.77	-1.02	Comparison Method
3RKCUD		4.90	-0.31	-0.32	5.30	-0.27	-0.36	Comparison Method
3TXWLM		5.50	0.29	0.30	4.50	-1.07	-1.41	Comparison Method
3ZNRUE		3.30	-1.91	-1.98	4.40	-1.17	-1.54	Comparison Method
4XMZQC		4.60	-0.61	-0.63	5.80	0.23	0.30	Comparison Method
6499RG		5.60	0.39	0.40	4.60	-0.97	-1.28	Comparison Method
6VZEXN		4.50	-0.71	-0.74	4.90	-0.67	-0.89	Comparison Method
77Y9FC		4.40	-0.81	-0.84	5.50	-0.07	-0.09	General Intercept
78NZGN	*	4.00	-1.21	-1.25	6.40	0.83	1.09	Comparison Method
ACPFD2		5.40	0.19	0.19	5.00	-0.57	-0.75	Comparison Method
AFD699		6.20	0.99	1.02	6.50	0.93	1.22	General Intercept
AWCU76		4.34	-0.87	-0.90	4.86	-0.71	-0.94	N/A
B84ZD9		6.90	1.69	1.74	6.30	0.73	0.96	General Intercept
BE6CBQ		4.81	-0.40	-0.41	5.73	0.15	0.20	Abrams Three-Circle
BU3GMU		4.75	-0.46	-0.48	5.50	-0.07	-0.09	Comparison Method
CJXYYP		6.72	1.51	1.56	6.08	0.51	0.67	Comparison Method
E6FXG6		4.70	-0.51	-0.53	5.00	-0.57	-0.75	Comparison Method
EMTZ6J		5.00	-0.21	-0.22	5.20	-0.37	-0.49	Comparison Method
EQDG8H		5.42	0.21	0.22	5.76	0.19	0.25	Comparison Method
EZMTN2	*	6.90	1.69	1.75	7.60	2.03	2.67	Comparison Method
GGC4ZD	*	8.00	2.79	2.89	7.00	1.43	1.88	Comparison Method
HRYCL2		5.80	0.59	0.61	5.90	0.33	0.43	Comparison Method
JXGJCD		5.10	-0.11	-0.12	5.70	0.13	0.17	Comparison Method
K7MXLR		5.10	-0.11	-0.12	6.00	0.43	0.56	Comparison Method
KBXYTG		4.10	-1.11	-1.15	5.40	-0.17	-0.23	Comparison Method
KFAWCX		3.20	-2.01	-2.08	4.00	-1.57	-2.07	Comparison Method
L7HQ6H		6.50	1.29	1.33	5.00	-0.57	-0.75	Comparison Method
NHQD4T		5.10	-0.11	-0.12	4.90	-0.67	-0.89	Comparison Method
P2EZ4M		4.45	-0.76	-0.79	5.47	-0.10	-0.13	Automatic Image Analysis
P6VEWM		6.54	1.33	1.37	6.38	0.81	1.06	Abrams Three-Circle
PG9J4J		6.20	0.99	1.02	6.60	1.03	1.35	Comparison Method
PGQRUY		5.60	0.39	0.40	7.20	1.63	2.14	Comparison Method
PQJHLT		5.40	0.19	0.19	5.20	-0.37	-0.49	Comparison Method
PYUK8U		6.26	1.05	1.08	6.18	0.61	0.80	Heyn Linear Intercept
QA6N8A		4.70	-0.51	-0.53	5.10	-0.47	-0.62	Comparison Method
QEZQLP		5.40	0.19	0.19	4.80	-0.77	-1.02	Comparison Method
R6QQJ2		6.10	0.89	0.92	6.50	0.93	1.22	Comparison Method
RTWKCP		5.10	-0.11	-0.12	5.20	-0.37	-0.49	Comparison Method
T4XPBP		4.80	-0.41	-0.43	4.70	-0.87	-1.15	Abrams Three-Circle
T96X67		4.80	-0.41	-0.43	4.90	-0.67	-0.89	Heyn Linear Intercept
TC37MV		4.30	-0.91	-0.94	5.30	-0.27	-0.36	General Intercept
TEUNXA		5.07	-0.14	-0.15	6.00	0.43	0.57	Heyn Linear Intercept
TGH6DN		4.42	-0.79	-0.82	5.98	0.41	0.54	Abrams Three-Circle
TWCEQ2		5.00	-0.21	-0.22	5.50	-0.07	-0.09	Comparison Method
TYGGMP		5.00	-0.21	-0.22	4.90	-0.67	-0.89	N/A

Fasteners and Metals Interlaboratory Testing Program
Analysis 1411

Grain Size (Stainless Steel)
ASTM E112, ASTM E1382

WebCode	Data Flag	Sample Y91			Sample Y92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
UP3MP3		4.10	-1.11	-1.15	4.70	-0.87	-1.15	Comparison Method
W7LYEE	X	6.50	1.29	1.33	4.00	-1.57	-2.07	Comparison Method
XAJQ9W	X	40.60	35.39	36.62	43.00	37.43	49.29	General Intercept
XHF4FJ		7.00	1.79	1.85	6.00	0.43	0.56	Comparison Method
XLAKJ6		5.80	0.59	0.61	6.30	0.73	0.96	Comparison Method
XPULDQ		4.10	-1.11	-1.15	4.82	-0.75	-0.99	Abrams Three-Circle
YJ4G9U		5.68	0.47	0.48	5.26	-0.31	-0.41	Abrams Three-Circle
Z2HFTH		5.02	-0.19	-0.20	5.56	-0.01	-0.02	General Intercept
ZHLZKE		5.70	0.49	0.51	6.00	0.43	0.56	Comparison Method

Summary Statistics

	Sample Y91		Sample Y92	
Grand Means	5.212	ASTM Grain Size	5.572	ASTM Grain Size
Stnd Dev Btwn Labs	0.966	ASTM Grain Size	0.759	ASTM Grain Size

Samples Y91, Y92 : AISI 304L, AISI 304L

Statistics based on 54 of 56 reporting participants

Comments on Assigned Data Flags for Test #1411

W7LYEE (X) - Inconsistent in testing between samples.

XAJQ9W (X) - Extreme data.

Fasteners and Metals Interlaboratory Testing Program
**Analysis 1411**
Cycle 143
3rd Qtr 2023

Grain Size (Stainless Steel)
ASTM E112, ASTM E1382

SAMPLE Y91

5.212 ASTM Grain Size Number (G)

SAMPLE Y92

5.572 ASTM Grain Size Number (G)

ANALYSIS 1411

SAMPLE Y92 — ASTM Grain Size Number (G)

SAMPLE Y91

ASTM Grain Size Number (G)

Titanium-based Alloy, TITANIUM (Ti)
TITANIUM (Ti)

WebCode	Data Flag	Sample T93			Sample T94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2WGLKE		89.38	-0.25	-1.17	89.04	-0.39	-1.97	OE
LPQZUG		89.52	-0.11	-0.50	89.36	-0.07	-0.37	OE
LTUTV8		90.07	0.44	2.04	89.43	0.00	0.02	OE
N6UFTE		89.54	-0.09	-0.42	89.44	0.01	0.04	BD
PD6W3Z		89.60	-0.03	-0.13	89.50	0.07	0.37	OE
Q9B7KV		89.63	0.01	0.03	89.62	0.19	0.98	BD
QWG273		89.66	0.03	0.15	89.61	0.18	0.93	WD

Summary Statistics

	Sample T93		Sample T94	
Grand Means	89.63	Percent	89.43	Percent
Stnd Dev Btwn Labs	0.22	Percent	0.20	Percent

Samples T93, T94 : Ti 6-4 (Gr. 5), Ti 6-4 (Gr. 5)
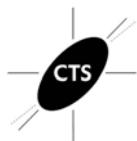
Statistics based on 7 of 7 reporting participants

Key to Method Codes Reported by Participants

BD   By Difference

OE   Spectrometry - Optical Emission (OES)

WD   X-Ray Fluorescence - Wavelength Dispersive (WDX)

**Fasteners and Metals Interlaboratory Testing Program**
Analysis 1520
Titanium-based Alloy, TITANIUM (Ti)
TITANIUM (Ti)
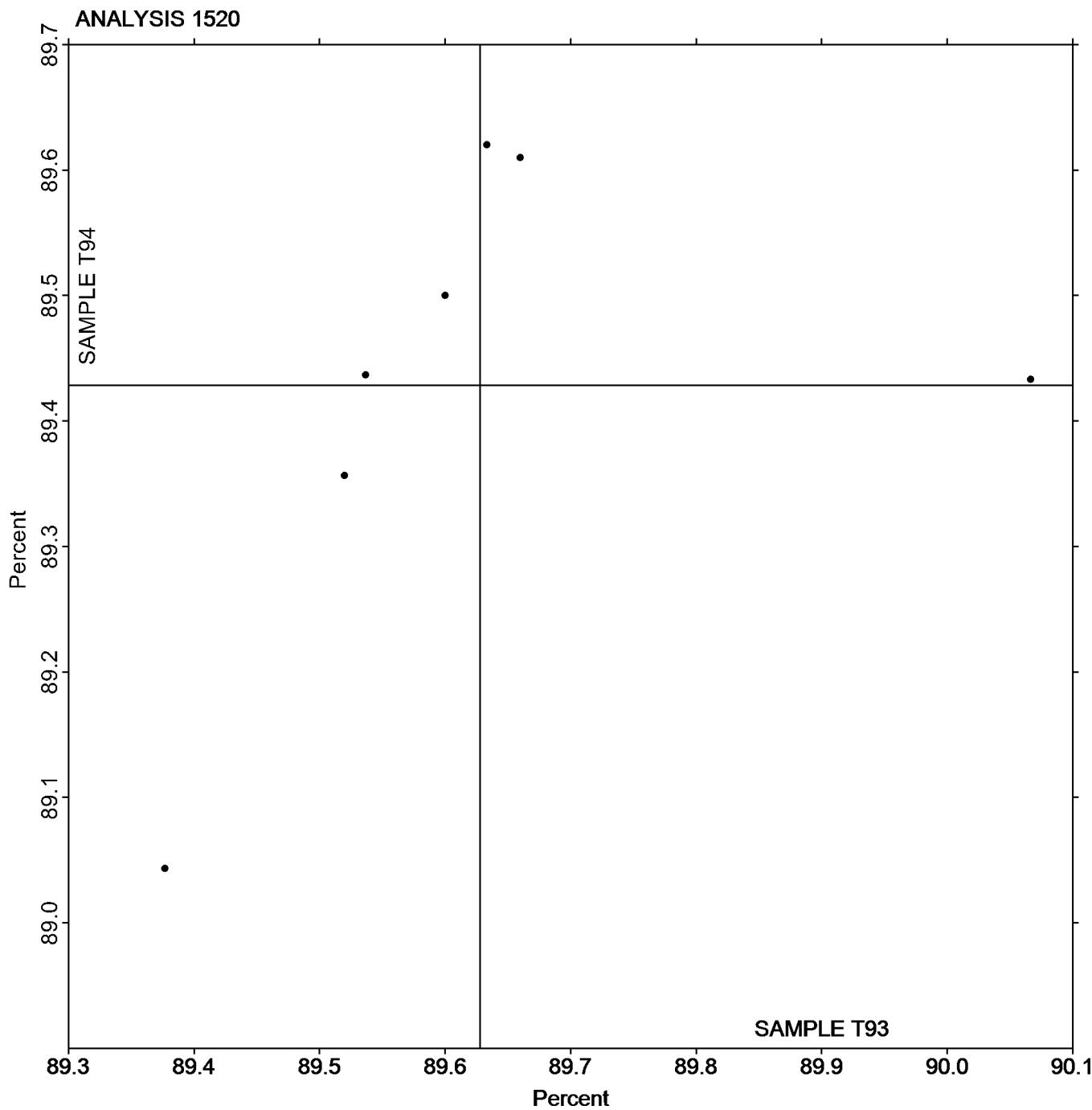
Cycle 143
3rd Qtr 2023
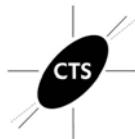
SAMPLE T93

89.63 Percent

SAMPLE T94

89.43 Percent

ANALYSIS 1520

Titanium-based Alloy, HYDROGEN (H)
HYDROGEN (H)

WebCode	Data Flag	Sample T93 Lab Mean	Sample T93 Diff. from Grand Mean	Sample T93 CPV	Sample T94 Lab Mean	Sample T94 Diff. from Grand Mean	Sample T94 CPV	Method
4XMZQC		0.00123	-0.00048	-0.65	0.00167	-0.00032	-0.49	XX
AURV2M	X	0.00611	0.00439	6.00	0.00567	0.00368	5.62	CI
FPPCUG		0.00166	-0.00005	-0.07	0.00194	-0.00005	-0.08	CI
K2BZ2C		0.000875	-0.00084	-1.14	0.00144	-0.00055	-0.84	CO
LPQZUG		0.00347	0.00175	2.40	0.00367	0.00168	2.56	OE
LTUTV8		0.00321	0.00150	2.05	0.00281	0.00082	1.25	CI
MMMHKR		0.00168	-0.00003	-0.04	0.00251	0.00052	0.80	IR
N6UFTE		0.00153	-0.00018	-0.24	0.00157	-0.00042	-0.65	XX
NPNXAU		0.00140	-0.00031	-0.43	0.00187	-0.00012	-0.19	CI
PD6W3Z		0.000813	-0.00090	-1.23	0.000887	-0.00110	-1.69	IR
PG9J4J		0.00167	-0.00005	-0.06	0.00226	0.00027	0.41	CI
Q9B7KV		0.00170	-0.00001	-0.02	0.00177	-0.00022	-0.34	XX
QEZQLP		0.00167	-0.00005	-0.06	0.00210	0.00011	0.17	IR
QHGB96		0.00123	-0.00048	-0.65	0.00170	-0.00029	-0.44	CO
QWG273		0.00157	-0.00015	-0.20	0.00157	-0.00042	-0.65	IR
YJ4G9U		0.00197	0.00025	0.35	0.00210	0.00011	0.17	CI

Summary Statistics

	Sample T93		Sample T94	
Grand Means	0.00171	Percent	0.00199	Percent
Stnd Dev Btwn Labs	0.00073	Percent	0.00065	Percent

Samples T93, T94 : Ti 6-4 (Gr. 5), Ti 6-4 (Gr. 5)

Statistics based on 15 of 16 reporting participants
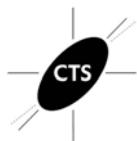
Key to Method Codes Reported by Participants

CI	Combustion / IR	CO	Combustion
IR	IR (Absorption / Detection)	OE	Spectrometry - Optical Emission (OES)
XX	Please Indicate Method Used for Current Element		

Fasteners and Metals Interlaboratory Testing Program   **Cycle 143**
Analysis 1521   **3rd Qtr 2023**
Titanium-based Alloy, HYDROGEN (H)
HYDROGEN (H)
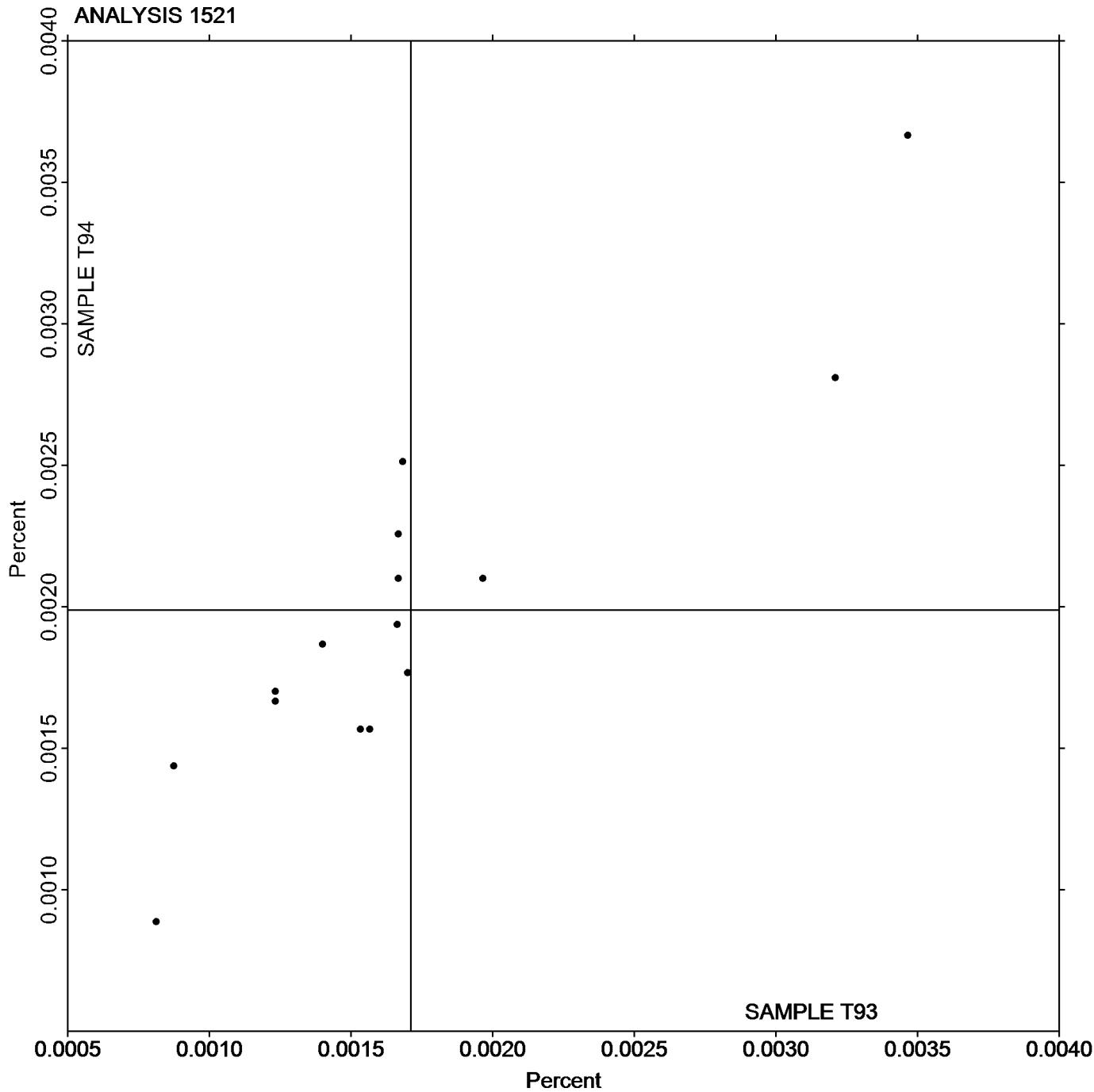
SAMPLE T93
0.00171 Percent

SAMPLE T94
0.00199 Percent

ANALYSIS 1521

Titanium-based Alloy, OXYGEN (O)
OXYGEN (O)

WebCode	Data Flag	Sample T93			Sample T94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2WGLKE		0.1267	-0.0531	-2.55	0.1663	-0.0262	-1.82	OE
4XMZQC		0.1828	0.0030	0.15	0.1965	0.0040	0.28	XX
AURV2M		0.1853	0.0055	0.27	0.2070	0.0145	1.01	CI
LPQZUG		0.1767	-0.0031	-0.15	0.1907	-0.0019	-0.13	OE
LTUTV8		0.1817	0.0019	0.09	0.1906	-0.0019	-0.14	CI
N6UFTE		0.1867	0.0069	0.33	0.1877	-0.0049	-0.34	XX
NPNXAU		0.1910	0.0112	0.54	0.1863	-0.0062	-0.43	CI
PD6W3Z		0.2071	0.0273	1.31	0.2236	0.0310	2.16	IR
Q9B7KV		0.1753	-0.0045	-0.21	0.1880	-0.0045	-0.32	IR
QEZQLP		0.2027	0.0229	1.10	0.2110	0.0185	1.28	IR
QHGB96		0.1607	-0.0191	-0.92	0.1833	-0.0092	-0.64	CO
QWG273		0.1643	-0.0155	-0.74	0.1853	-0.0072	-0.50	IR
YJ4G9U		0.1963	0.0165	0.79	0.1867	-0.0059	-0.41	CI

Summary Statistics

	Sample T93		Sample T94	
Grand Means	0.1798	Percent	0.1925	Percent
Stnd Dev Btwn Labs	0.0208	Percent	0.0144	Percent

Samples T93, T94 : Ti 6-4 (Gr. 5), Ti 6-4 (Gr. 5)   *Statistics based on 13 of 13 reporting participants*
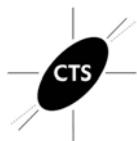
Key to Method Codes Reported by Participants

CI	Combustion / IR	CO	Combustion
IR	IR (Absorption / Detection)	OE	Spectrometry - Optical Emission (OES)
XX	Please Indicate Method Used for Current Element		

Fasteners and Metals Interlaboratory Testing Program
Analysis 1522
Titanium-based Alloy, OXYGEN (O)
OXYGEN (O)
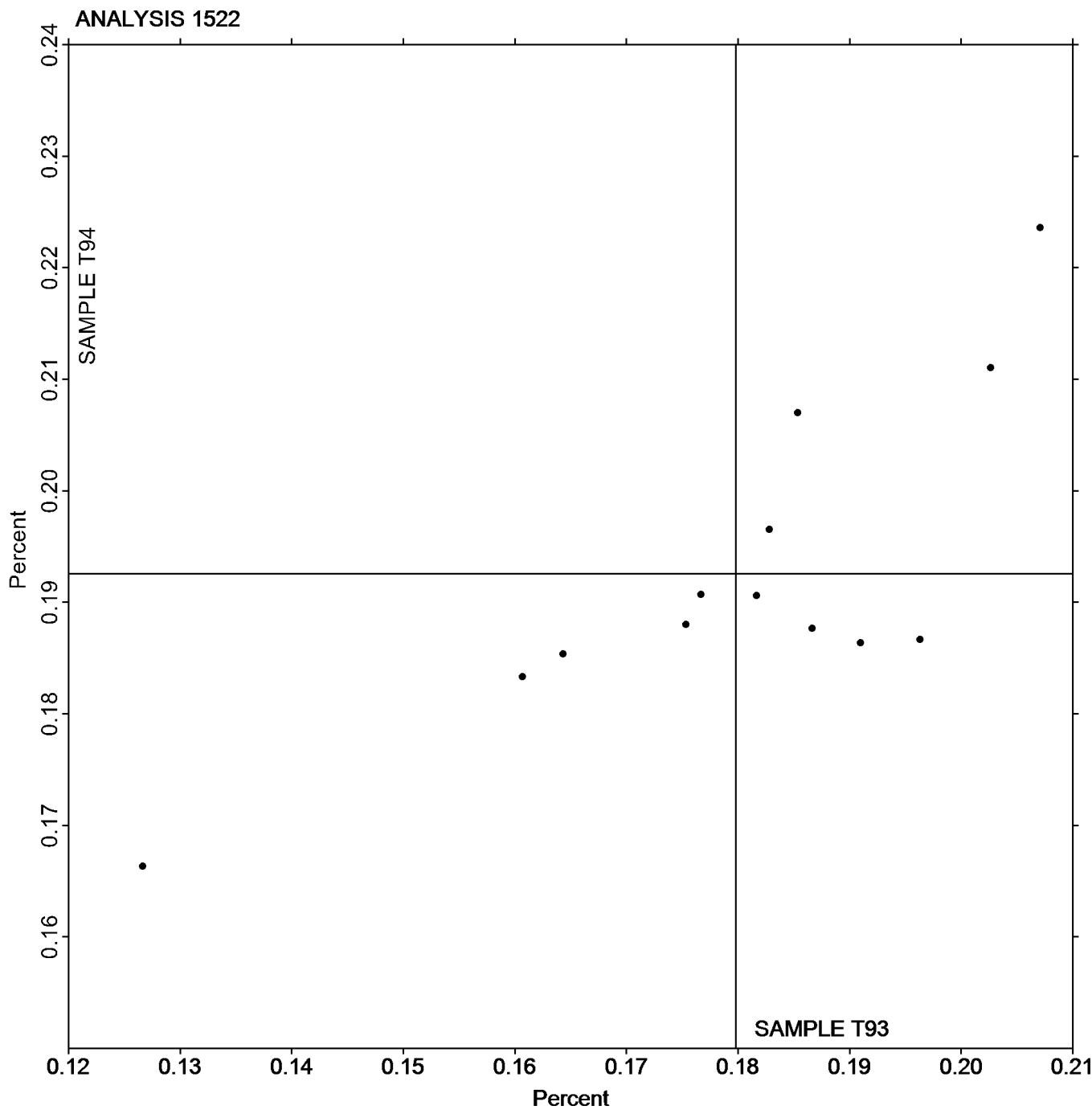
Cycle 143
3rd Qtr 2023

SAMPLE T93

0.1798 Percent

SAMPLE T94

0.1925 Percent

ANALYSIS 1522

SAMPLE T94

Percent

SAMPLE T93

Percent

Titanium-based Alloy, NITROGEN (N)
NITROGEN (N)

WebCode	Data Flag	Sample T93 Lab Mean	Sample T93 Diff. from Grand Mean	Sample T93 CPV	Sample T94 Lab Mean	Sample T94 Diff. from Grand Mean	Sample T94 CPV	Method
LPQZUG		0.0183	0.0065	1.21	0.0173	0.0069	1.25	OE
LTUTV8		0.0107	-0.0011	-0.21	0.00876	-0.0016	-0.29	CI
N6UFTE		0.0107	-0.0012	-0.22	0.00888	-0.0015	-0.27	XX
NPNXAU		0.0102	-0.0016	-0.31	0.00630	-0.0041	-0.73	CO
PD6W3Z		0.0229	0.0110	2.08	0.0221	0.0117	2.12	IR
Q9B7KV		0.00580	-0.0060	-1.14	0.00563	-0.0047	-0.85	XX
QHGB96		0.00893	-0.0029	-0.55	0.00853	-0.0018	-0.33	CO
QWG273		0.00870	-0.0031	-0.59	0.00820	-0.0022	-0.39	IR
YJ4G9U		0.0104	-0.0015	-0.28	0.00750	-0.0029	-0.52	CI

Summary Statistics

	Sample T93		Sample T94	
Grand Means	0.0118	Percent	0.0104	Percent
Stnd Dev Btwn Labs	0.0053	Percent	0.0055	Percent

Samples T93, T94 : Ti 6-4 (Gr. 5), Ti 6-4 (Gr. 5)

Statistics based on 9 of 9 reporting participants

Key to Method Codes Reported by Participants

CI	Combustion / IR	CO	Combustion
IR	IR (Absorption / Detection)	OE	Spectrometry - Optical Emission (OES)
XX	Please Indicate Method Used for Current Element		

Fasteners and Metals Interlaboratory Testing Program
Analysis 1523
Titanium-based Alloy, NITROGEN (N)
NITROGEN (N)
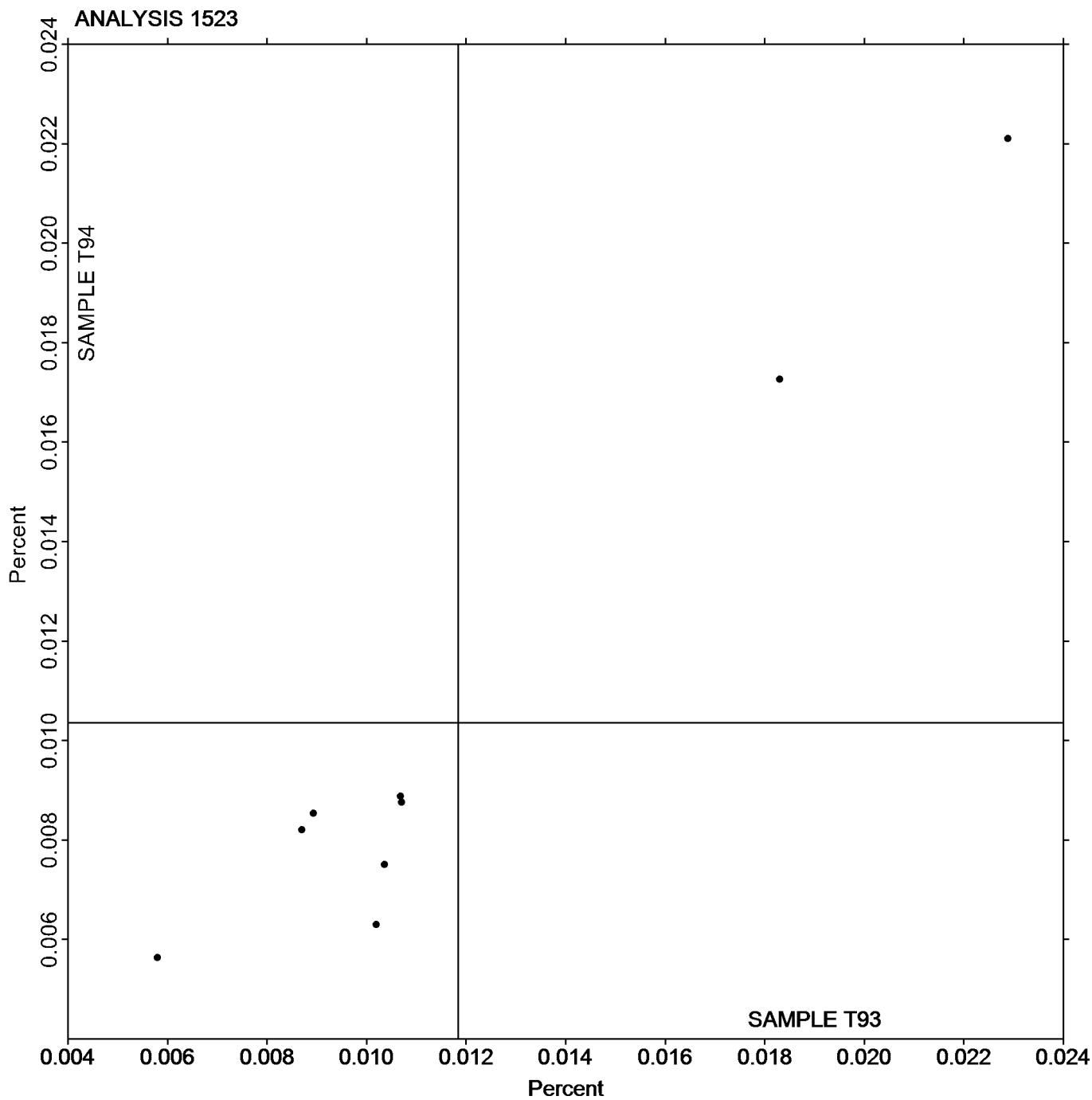
Cycle 143
3rd Qtr 2023

SAMPLE T93

0.0118 Percent

SAMPLE T94

0.0104 Percent

ANALYSIS 1523

SAMPLE T94

Percent

SAMPLE T93

Percent

Fasteners and Metals Interlaboratory Testing Program
Analysis 1524
Titanium-based Alloy, ALUMINUM (Al)
ALUMINUM (Al)

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample T93			Sample T94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2WGLKE		6.330	0.285	1.12	6.553	0.462	1.58	OE
LPQZUG		6.050	0.005	0.02	6.127	0.035	0.12	OE
LTUTV8		5.460	-0.585	-2.30	5.480	-0.611	-2.09	OE
N6UFTE		6.037	-0.009	-0.03	6.093	0.002	0.01	IC
PD6W3Z		6.070	0.025	0.10	6.083	-0.008	-0.03	OE
Q9B7KV		6.181	0.135	0.53	6.177	0.086	0.29	IC
QHGB96		6.149	0.104	0.41	6.067	-0.024	-0.08	IC
QWG273		6.087	0.042	0.16	6.150	0.059	0.20	WD

Summary Statistics

	Sample T93		Sample T94	
Grand Means	6.045	Percent	6.091	Percent
Stnd Dev Btwn Labs	0.255	Percent	0.293	Percent

Samples T93, T94 : Ti 6-4 (Gr. 5), Ti 6-4 (Gr. 5)

Statistics based on 8 of 8 reporting participants

Key to Method Codes Reported by Participants

IC   Spectrometry - Inductively Coupled Plasma (ICP)   OE   Spectrometry - Optical Emission (OES)

WD   X-Ray Fluorescence - Wavelength Dispersive (WDX)

Fasteners and Metals Interlaboratory Testing Program
Analysis 1524
Titanium-based Alloy, ALUMINUM (Al)
ALUMINUM (Al)
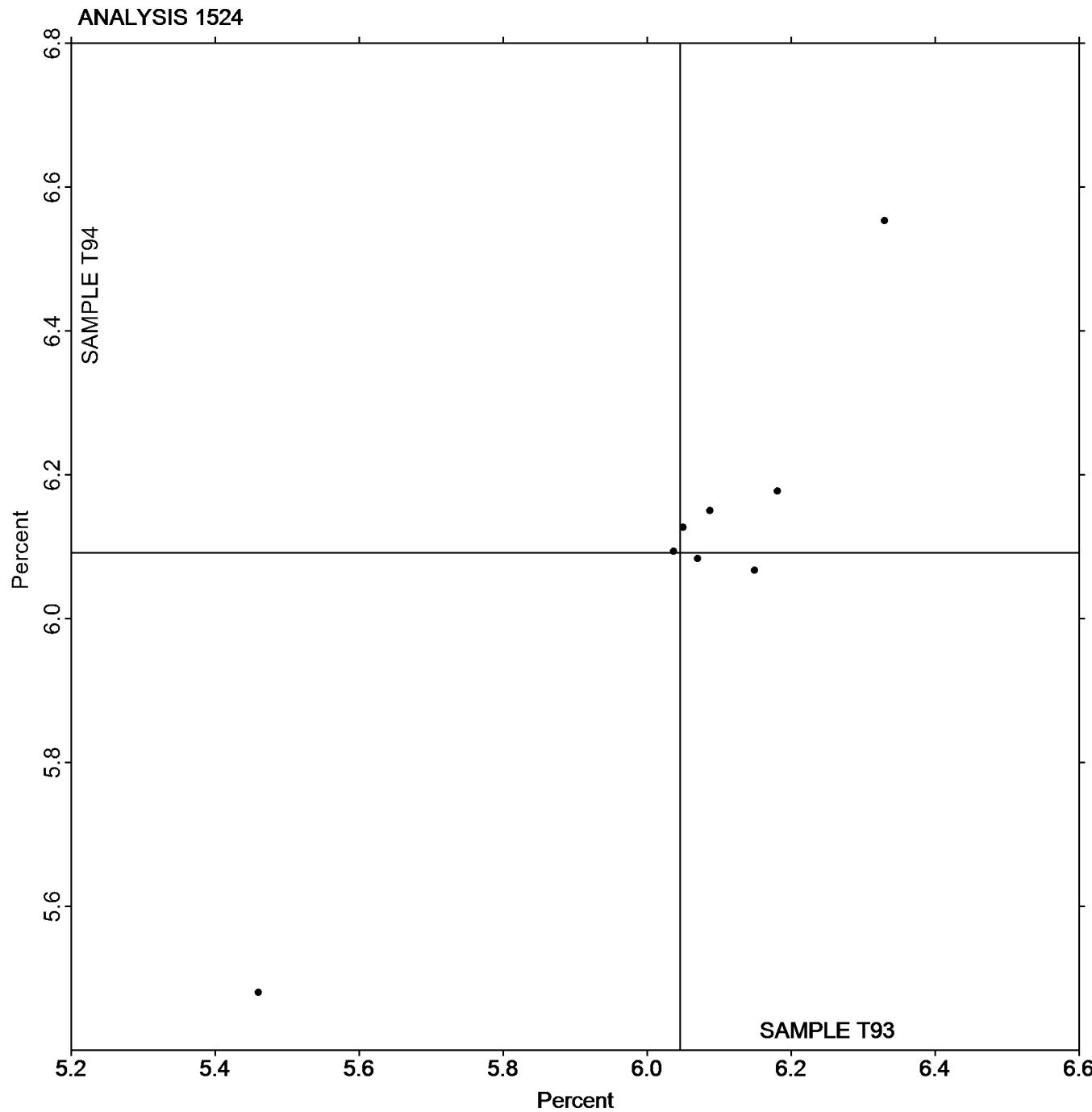
Cycle 143
3rd Qtr 2023

SAMPLE T93

6.045 Percent

SAMPLE T94

6.091 Percent

ANALYSIS 1524

SAMPLE T94

Percent

SAMPLE T93

Percent

Fasteners and Metals Interlaboratory Testing Program
Analysis 1525
Titanium-based Alloy, VANADIUM (V)
VANADIUM (V)

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample T93 Lab Mean	Diff. from Grand Mean	CPV	Sample T94 Lab Mean	Diff. from Grand Mean	CPV	Method
2WGLKE		3.963	0.050	0.46	4.037	0.043	0.42	OE
LPQZUG		4.067	0.153	1.42	4.190	0.197	1.92	OE
LTUTV8		3.703	-0.210	-1.94	3.823	-0.170	-1.66	OE
N6UFTE		3.870	-0.043	-0.40	4.000	0.007	0.06	IC
PD6W3Z		3.920	0.007	0.06	3.983	-0.010	-0.10	OE
Q9B7KV		3.871	-0.043	-0.39	3.936	-0.057	-0.56	IC
QHGB96		4.002	0.089	0.82	4.009	0.016	0.15	IC
QWG273		3.910	-0.004	-0.03	3.969	-0.024	-0.24	XX

Summary Statistics

	Sample T93		Sample T94	
Grand Means	3.913	Percent	3.993	Percent
Stnd Dev Btwn Labs	0.108	Percent	0.103	Percent
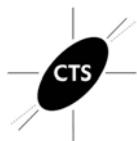
Samples T93, T94 : Ti 6-4 (Gr. 5), Ti 6-4 (Gr. 5)

Statistics based on 8 of 8 reporting participants

Key to Method Codes Reported by Participants

IC Spectrometry - Inductively Coupled Plasma (ICP) OE Spectrometry - Optical Emission (OES)
XX Please Indicate Method Used for Current Element

Fasteners and Metals Interlaboratory Testing Program
Analysis 1525
Titanium-based Alloy, VANADIUM (V)
VANADIUM (V)
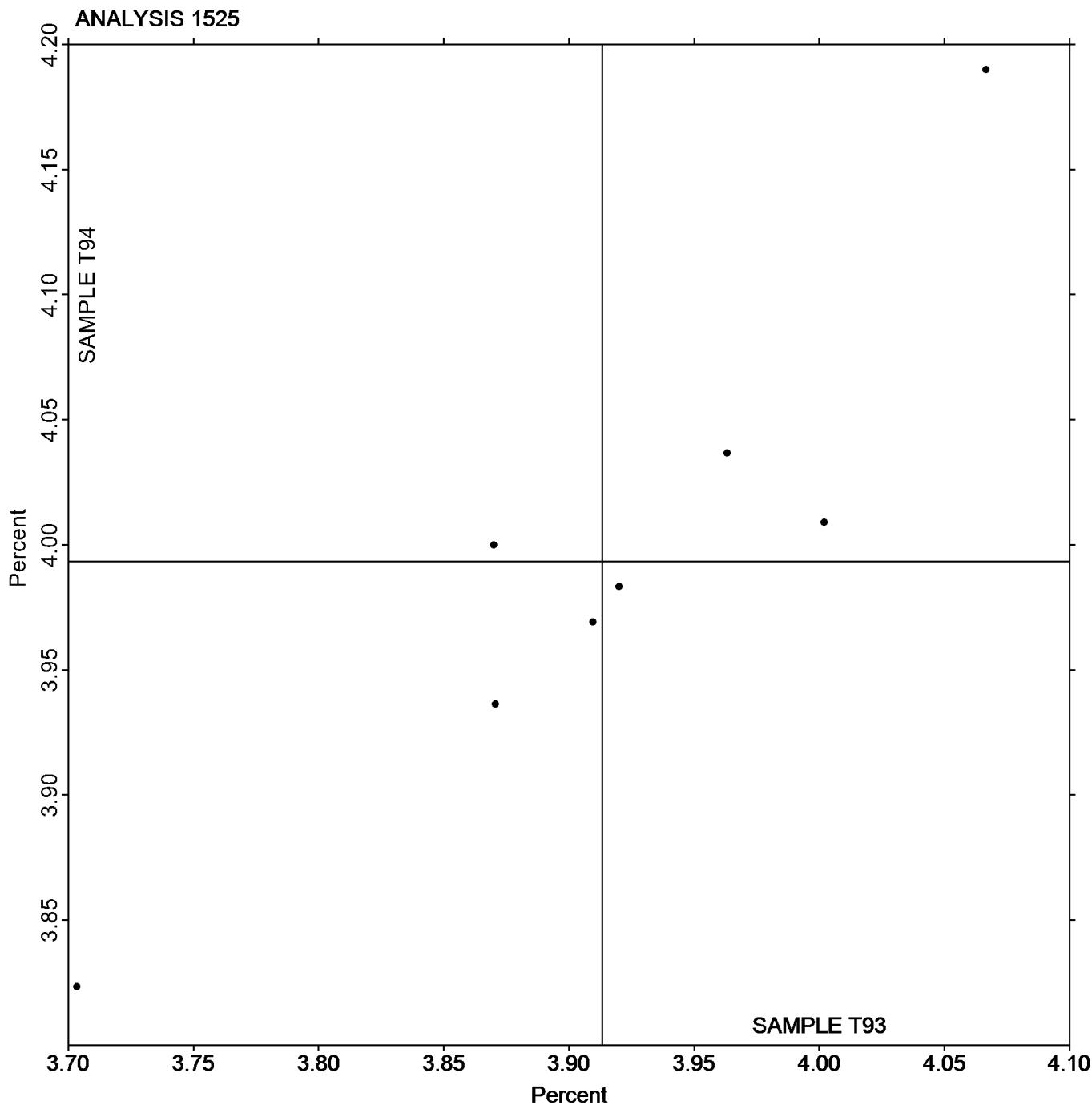
Cycle 143
3rd Qtr 2023

SAMPLE T93

3.913 Percent

SAMPLE T94

3.993 Percent

Fasteners and Metals Interlaboratory Testing Program
Analysis 1526
Titanium-based Alloy, IRON (Fe)
IRON (Fe)

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample T93 Lab Mean	Sample T93 Diff. from Grand Mean	Sample T93 CPV	Sample T94 Lab Mean	Sample T94 Diff. from Grand Mean	Sample T94 CPV	Method
2WGLKE		0.1253	-0.0099	-0.84	0.1223	-0.0144	-1.90	OE
LPQZUG		0.1393	0.0041	0.35	0.1353	-0.0014	-0.19	OE
LTUTV8		0.1167	-0.0185	-1.58	0.1467	0.0099	1.31	OE
N6UFTE		0.1300	-0.0052	-0.44	0.1400	0.0033	0.43	IC
PD6W3Z		0.1463	0.0111	0.95	0.1393	0.0026	0.34	OE
Q9B7KV		0.1290	-0.0062	-0.53	0.1297	-0.0071	-0.93	IC
QHGB96		0.1450	0.0098	0.84	0.1393	0.0026	0.34	IC
QWG273		0.1500	0.0148	1.26	0.1413	0.0046	0.60	WD

Summary Statistics

	Sample T93		Sample T94	
Grand Means	0.1352	Percent	0.1368	Percent
Stnd Dev Btwn Labs	0.0117	Percent	0.0076	Percent

Samples T93, T94 : Ti 6-4 (Gr. 5), Ti 6-4 (Gr. 5)

Statistics based on 8 of 8 reporting participants

Key to Method Codes Reported by Participants

IC — Spectrometry - Inductively Coupled Plasma (ICP)
OE — Spectrometry - Optical Emission (OES)
WD — X-Ray Fluorescence - Wavelength Dispersive (WDX)

Fasteners and Metals Interlaboratory Testing Program
Analysis 1526
Titanium-based Alloy, IRON (Fe)
IRON (Fe)
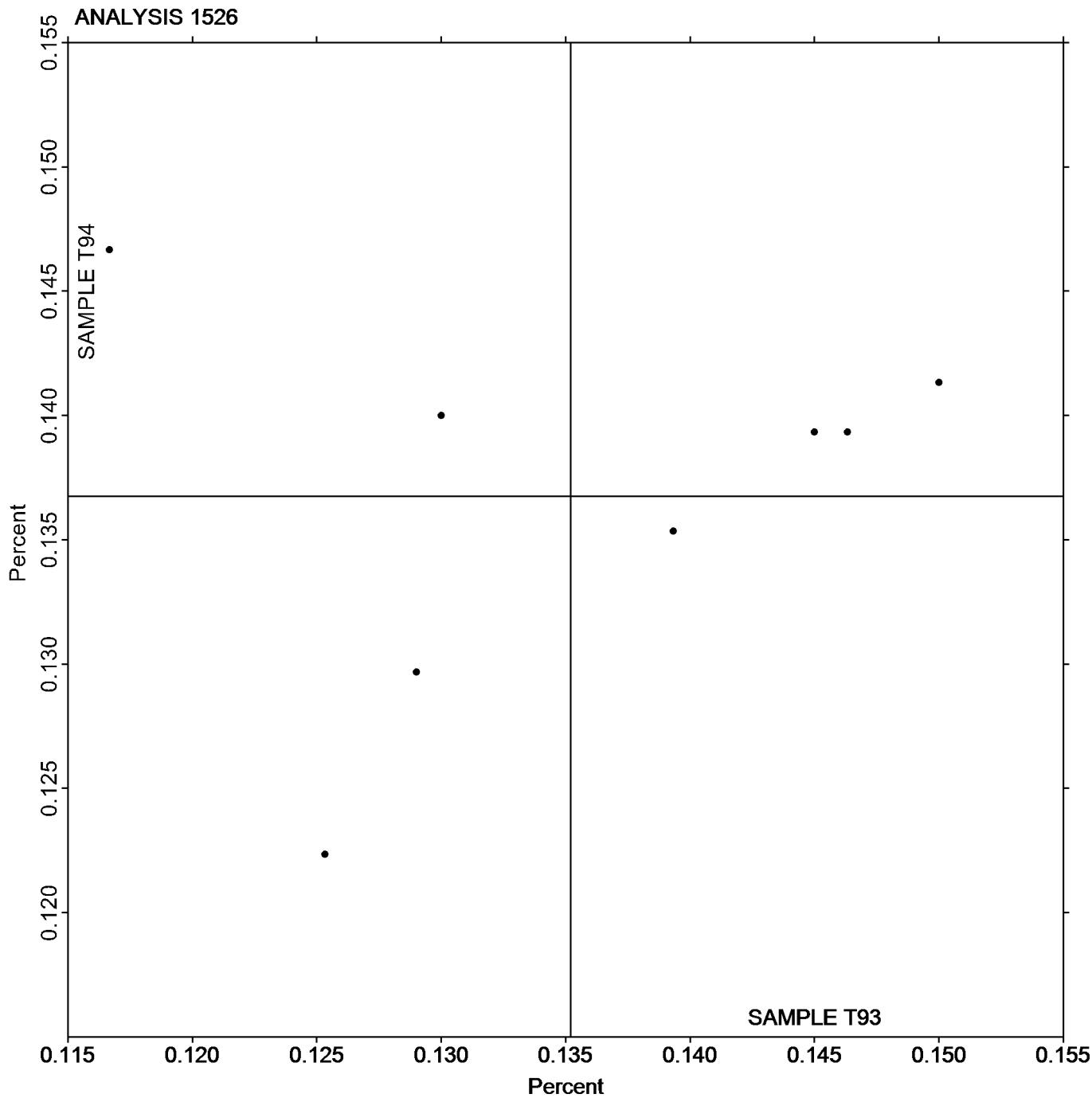
Cycle 143
3rd Qtr 2023

<u>SAMPLE T93</u>

0.1352 Percent

<u>SAMPLE T94</u>

0.1368 Percent

Titanium-based Alloy, CARBON (C)
CARBON (C)

WebCode	Data Flag	Sample T93 Lab Mean	Sample T93 Diff. from Grand Mean	Sample T93 CPV	Sample T94 Lab Mean	Sample T94 Diff. from Grand Mean	Sample T94 CPV	Method
LPQZUG		0.00783	-0.00123	-0.83	0.00670	-0.00104	-0.64	OE
LTUTV8		0.00837	-0.00069	-0.46	0.00861	0.00087	0.53	CI
N6UFTE		0.0109	0.00179	1.20	0.00905	0.00131	0.80	CI
QHGB96		0.0108	0.00173	1.16	0.00943	0.00169	1.04	CO
QWG273		0.00737	-0.00170	-1.14	0.00513	-0.00261	-1.60	CI
YJ4G9U		0.00917	0.00010	0.07	0.00753	-0.00021	-0.13	CI

Summary Statistics

	Sample T93		Sample T94	
Grand Means	0.00907	Percent	0.00774	Percent
Stnd Dev Btwn Labs	0.00149	Percent	0.00163	Percent

Samples T93, T94 : Ti 6-4 (Gr. 5), Ti 6-4 (Gr. 5)
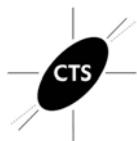
Statistics based on 6 of 6 reporting participants

Key to Method Codes Reported by Participants

CI   Combustion / IR   CO   Combustion

OE   Spectrometry - Optical Emission (OES)

Fasteners and Metals Interlaboratory Testing Program
Analysis 1527
Titanium-based Alloy, CARBON (C)
CARBON (C)
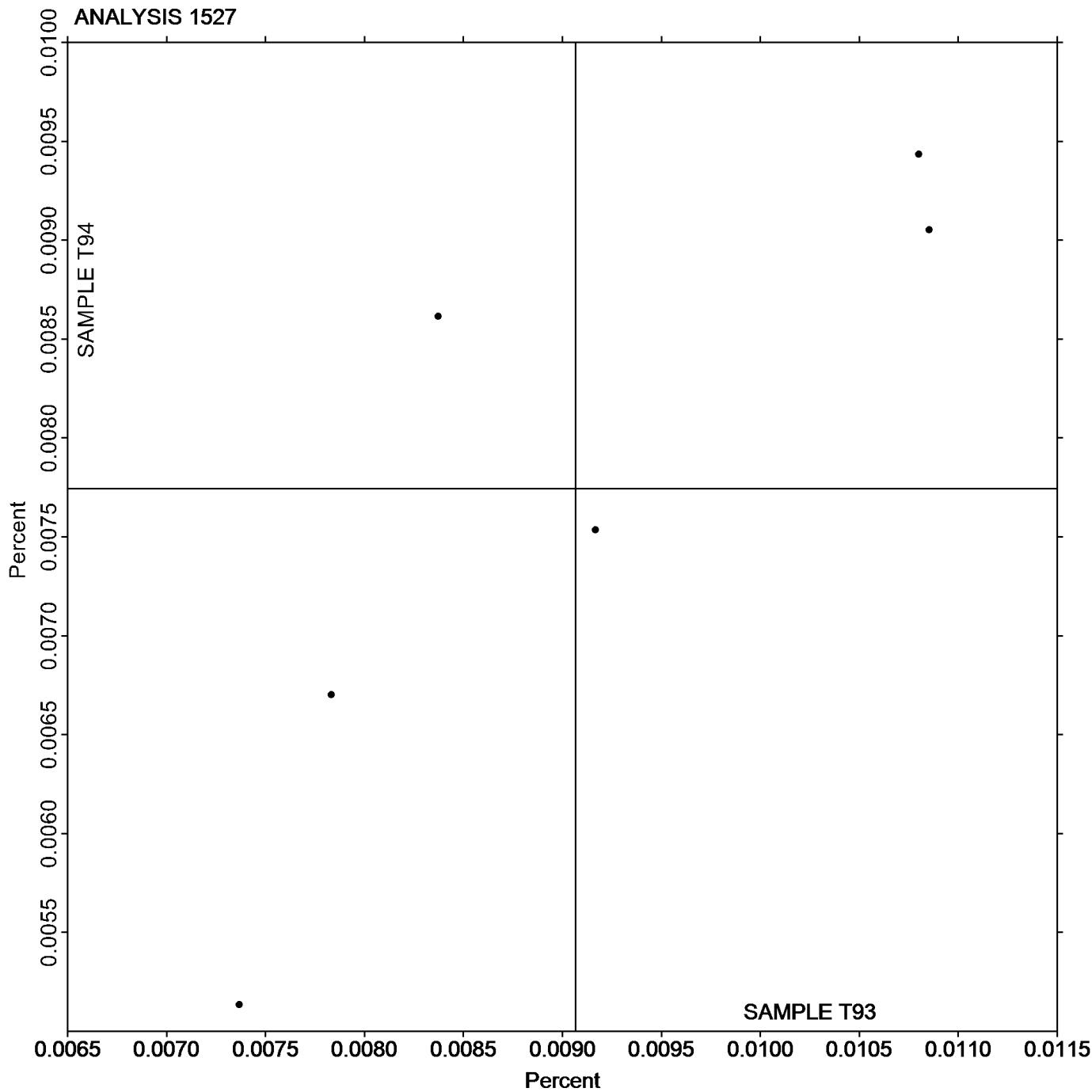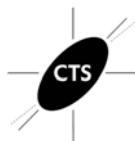
Cycle 143
3rd Qtr 2023

SAMPLE T93

0.00907 Percent

SAMPLE T94

0.00774 Percent

Fasteners and Metals Interlaboratory Testing Program
Analysis 1600
Carbon & Low Alloy Steel, CARBON (C)
CARBON (C)
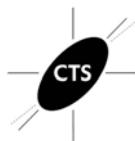
Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample L93			Sample L94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
23P2U3		0.4293	0.0172	1.51	0.4817	0.0172	1.40	OE
2APFZX		0.4160	0.0039	0.34	0.4683	0.0039	0.32	OE
2LJQCB		0.4057	-0.0065	-0.57	0.4627	-0.0018	-0.14	OE
2NPGDY		0.4195	0.0074	0.65	0.4655	0.0011	0.09	OE
2WGLKE		0.4123	0.0002	0.02	0.4450	-0.0194	-1.57	OE
36AW3U		0.4100	-0.0021	-0.19	0.4700	0.0056	0.45	CI
39N2QB		0.4140	0.0019	0.16	0.4677	0.0033	0.27	CI
3A6QZV		0.4031	-0.0090	-0.79	0.4542	-0.0103	-0.83	OE
3BF6EB		0.4153	0.0032	0.28	0.4687	0.0043	0.35	OE
3RPPGA		0.4078	-0.0043	-0.38	0.4657	0.0013	0.11	OE
3TXWLM		0.4260	0.0139	1.22	0.4760	0.0116	0.94	GD
3VKKXN		0.4133	0.0012	0.10	0.4663	0.0019	0.15	CI
46PHCV		0.4217	0.0095	0.84	0.4767	0.0122	0.99	CO
4PVHC3		0.3960	-0.0161	-1.42	0.4333	-0.0311	-2.52	DR
4UCHXB		0.4173	0.0051	0.45	0.4635	-0.0009	-0.07	CI
689GWR		0.4123	0.0002	0.02	0.4723	0.0079	0.64	XX
6ATF29		0.4103	-0.0018	-0.16	0.4633	-0.0011	-0.09	CI
73VVP7		0.3933	-0.0188	-1.65	0.4367	-0.0278	-2.25	OE
76FWKR		0.4055	-0.0066	-0.58	0.4582	-0.0063	-0.51	XX
79X6UD		0.3943	-0.0178	-1.56	0.4360	-0.0284	-2.30	XX
7A92BB		0.4319	0.0197	1.73	0.4792	0.0147	1.19	OE
7MFRBX		0.4107	-0.0015	-0.13	0.4590	-0.0054	-0.44	OE
7RCLW7		0.4147	0.0025	0.22	0.4673	0.0029	0.24	OE
7T4HLY		0.4422	0.0300	2.63	0.4895	0.0251	2.03	OE
7UVQL3	X	0.3700	-0.0421	-3.69	0.4333	-0.0311	-2.52	OE
7VNJGL		0.3953	-0.0168	-1.47	0.4317	-0.0328	-2.65	OE
7VUMJD		0.4103	-0.0018	-0.16	0.4657	0.0012	0.10	OE
839RTP		0.3927	-0.0195	-1.71	0.4497	-0.0148	-1.19	OE
83QBKU		0.3960	-0.0161	-1.42	0.4497	-0.0148	-1.19	OE
86RTMB		0.4123	0.0002	0.02	0.4637	-0.0008	-0.06	CI
8DR7U7		0.3953	-0.0168	-1.47	0.4577	-0.0068	-0.55	OE
8LJQQR		0.4003	-0.0118	-1.04	0.4657	0.0012	0.10	CI
94GB2K		0.4267	0.0145	1.27	0.4833	0.0189	1.53	OE
99TGHR		0.3988	-0.0134	-1.17	0.4453	-0.0192	-1.55	OE
9EGJHM		0.4170	0.0049	0.43	0.4817	0.0172	1.40	OE
A29QJ3		0.4067	-0.0055	-0.48	0.4650	0.0006	0.05	OE
A73EAH	*	0.3846	-0.0275	-2.41	0.4350	-0.0294	-2.38	CO
ALVAL9		0.4081	-0.0041	-0.36	0.4659	0.0015	0.12	OE
B46NG9		0.4140	0.0019	0.16	0.4563	-0.0081	-0.65	OE
BE6CBQ		0.4140	0.0019	0.16	0.4543	-0.0101	-0.82	OE
BJHWHC		0.4093	-0.0028	-0.25	0.4653	0.0009	0.07	OE
BNU3XJ		0.4167	0.0045	0.40	0.4700	0.0056	0.45	CI
BU3GMU		0.3940	-0.0181	-1.59	0.4530	-0.0114	-0.92	GD
BU6469		0.4110	-0.0011	-0.10	0.4670	0.0026	0.21	CI
C7Q9WH		0.4033	-0.0088	-0.77	0.4600	-0.0044	-0.36	OE
C9X8XX		0.4000	-0.0121	-1.06	0.4610	-0.0034	-0.28	CI
CATERB		0.4149	0.0028	0.24	0.4659	0.0015	0.12	CI

Fasteners and Metals Interlaboratory Testing Program
Analysis 1600
Carbon & Low Alloy Steel, CARBON (C)
CARBON (C)
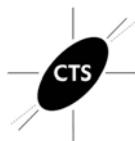
Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample L93			Sample L94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
D7UMWJ	*	0.3837	-0.0285	-2.50	0.4490	-0.0154	-1.25	OE
D9DNQ6		0.4197	0.0075	0.66	0.4657	0.0012	0.10	OE
DH4RUJ		0.3973	-0.0148	-1.30	0.4567	-0.0078	-0.63	OE
E4BAGK		0.4100	-0.0021	-0.19	0.4730	0.0086	0.69	GD
EDMG8L		0.4153	0.0032	0.28	0.4805	0.0161	1.30	OE
EHFEXX		0.4237	0.0115	1.01	0.4753	0.0109	0.88	OE
EN8LG8		0.4287	0.0165	1.45	0.4692	0.0047	0.38	OE
ENZNWV		0.4115	-0.0007	-0.06	0.4860	0.0216	1.75	OE
EQT9AU		0.4117	-0.0005	-0.04	0.4683	0.0039	0.32	OE
ETTTND		0.4220	0.0099	0.86	0.4737	0.0092	0.75	OE
FBA63P		0.3997	-0.0125	-1.09	0.4587	-0.0058	-0.47	OE
FBTXUM		0.4222	0.0101	0.88	0.4697	0.0053	0.43	OE
FFPCQP		0.4180	0.0059	0.51	0.4670	0.0026	0.21	CO
FHADKB	*	0.4440	0.0319	2.79	0.4840	0.0196	1.58	XX
FPGV6X		0.4170	0.0049	0.43	0.4770	0.0126	1.02	XX
FY7LRP		0.4138	0.0017	0.15	0.4602	-0.0042	-0.34	XX
G3GXZC		0.4070	-0.0051	-0.45	0.4683	0.0039	0.32	OE
G6JMBC	X	0.3787	-0.0335	-2.93	0.4173	-0.0471	-3.81	OE
GGC4ZD		0.4077	-0.0045	-0.39	0.4500	-0.0144	-1.17	XX
GNXF7M		0.4057	-0.0064	-0.56	0.4548	-0.0096	-0.78	OE
GNYWBD		0.4190	0.0069	0.60	0.4620	-0.0024	-0.20	GD
HYMW78		0.4233	0.0112	0.98	0.4670	0.0026	0.21	GD
J3CBKA		0.4217	0.0095	0.84	0.4753	0.0109	0.88	AE
JA37AR		0.4057	-0.0065	-0.57	0.4610	-0.0034	-0.28	OE
JCVPLQ		0.4093	-0.0028	-0.25	0.4580	-0.0064	-0.52	CI
JKUART		0.4264	0.0143	1.25	0.4800	0.0156	1.26	OE
JTHEAR		0.3863	-0.0258	-2.26	0.4353	-0.0291	-2.35	OE
JVNZZD		0.4033	-0.0088	-0.77	0.4367	-0.0278	-2.25	OE
K7MXLR		0.4293	0.0172	1.51	0.4850	0.0206	1.67	CI
KFAWCX		0.4053	-0.0068	-0.60	0.4590	-0.0054	-0.44	OE
KHJUV7		0.4237	0.0116	1.01	0.4681	0.0037	0.30	OE
KNMXJJ		0.4294	0.0173	1.52	0.4835	0.0190	1.54	OE
L7HQ6H		0.4193	0.0072	0.63	0.4747	0.0102	0.83	OE
L96EGH		0.4167	0.0045	0.40	0.4710	0.0066	0.53	CO
LZUDVG		0.4144	0.0023	0.20	0.4669	0.0025	0.20	OE
MH9Z3B	*	0.4460	0.0339	2.97	0.4970	0.0326	2.64	GD
ML7LRT		0.4000	-0.0121	-1.06	0.4400	-0.0244	-1.98	OE
MUJJC6		0.4163	0.0042	0.37	0.4610	-0.0034	-0.28	OE
N228RT		0.4223	0.0102	0.89	0.4720	0.0076	0.61	OE
N49KFL		0.4302	0.0181	1.58	0.4771	0.0127	1.03	OE
N6HPVV		0.4067	-0.0055	-0.48	0.4433	-0.0211	-1.71	XX
NZMXMY		0.4127	0.0005	0.05	0.4567	-0.0078	-0.63	XX
P2EZ4M		0.4191	0.0070	0.61	0.4678	0.0034	0.28	OE
P6VEWM		0.4017	-0.0105	-0.92	0.4503	-0.0141	-1.14	OE
PD6W3Z		0.4097	-0.0025	-0.22	0.4757	0.0112	0.91	OE
PFWTRT		0.4160	0.0039	0.34	0.4660	0.0016	0.13	CI
PG9BL4	*	0.3890	-0.0231	-2.03	0.4800	0.0156	1.26	OE

Fasteners and Metals Interlaboratory Testing Program
Analysis 1600
Cycle 143
3rd Qtr 2023

Carbon & Low Alloy Steel, CARBON (C)
CARBON (C)

WebCode	Data Flag	Sample L93			Sample L94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
PJATNK		0.4150	0.0029	0.25	0.4667	0.0022	0.18	OE
PP2RNA		0.4098	-0.0023	-0.20	0.4643	-0.0001	-0.01	OE
Q8JAW2		0.4161	0.0039	0.34	0.4705	0.0061	0.49	XX
Q9B7KV		0.4104	-0.0017	-0.15	0.4678	0.0034	0.28	CI
QHGB96		0.4167	0.0045	0.40	0.4617	-0.0028	-0.22	OE
R8DHGP		0.3982	-0.0139	-1.22	0.4569	-0.0075	-0.61	XX
RJ679J		0.4137	0.0015	0.13	0.4670	0.0026	0.21	CO
RTUWVB		0.4108	-0.0014	-0.12	0.4698	0.0053	0.43	OE
RTWKCP		0.3930	-0.0191	-1.68	0.4630	-0.0014	-0.12	CO
RVGL8B		0.4148	0.0026	0.23	0.4675	0.0031	0.25	CI
RX9GV6		0.4133	0.0012	0.10	0.4737	0.0092	0.75	OE
T2LGTW		0.4200	0.0079	0.69	0.4697	0.0052	0.42	OE
T7WLPQ		0.4323	0.0202	1.77	0.4927	0.0282	2.29	OE
T8Q94E		0.4154	0.0032	0.28	0.4672	0.0028	0.22	OE
TC37MV		0.4091	-0.0030	-0.27	0.4615	-0.0029	-0.24	OE
TCZPD4		0.4073	-0.0048	-0.42	0.4590	-0.0054	-0.44	XX
TGW9GM		0.3810	-0.0311	-2.73	0.4363	-0.0281	-2.27	OE
TWCEQ2		0.4153	0.0032	0.28	0.4650	0.0006	0.05	OE
TYBPJF	*	0.3887	-0.0235	-2.06	0.4567	-0.0078	-0.63	OE
U9KGP4		0.4011	-0.0110	-0.97	0.4579	-0.0065	-0.53	CI
UB76Z4		0.4187	0.0065	0.57	0.4730	0.0086	0.69	OE
UCF9VF		0.4090	-0.0031	-0.28	0.4663	0.0019	0.15	CO
UDWW6Z		0.3960	-0.0161	-1.42	0.4520	-0.0124	-1.01	CO
UGRBLH		0.4113	-0.0008	-0.07	0.4657	0.0012	0.10	CI
UL6WR4		0.4127	0.0005	0.05	0.4627	-0.0018	-0.14	CI
UXF2P4		0.4133	0.0012	0.10	0.4587	-0.0058	-0.47	OE
V6A4CU		0.4137	0.0015	0.13	0.4643	-0.0001	-0.01	OE
V83MNU		0.4243	0.0122	1.07	0.4857	0.0212	1.72	XX
WEDZQ3		0.4140	0.0018	0.16	0.4694	0.0050	0.40	OE
WEUUBR		0.4133	0.0012	0.10	0.4667	0.0022	0.18	OE
WFVEAT		0.4271	0.0149	1.31	0.4830	0.0185	1.50	OE
WGMDNR		0.3990	-0.0131	-1.15	0.4473	-0.0171	-1.38	OE
WHFF4E	X	0.3467	-0.0655	-5.74	0.4000	-0.0644	-5.22	OE
WJ8CT9		0.4160	0.0039	0.34	0.4663	0.0019	0.15	OE
WQQNUG	X	0.4560	0.0439	3.85	0.5070	0.0426	3.45	OE
XF34YH		0.4169	0.0047	0.41	0.4597	-0.0047	-0.38	OE
XHT68R		0.4184	0.0063	0.55	0.4664	0.0020	0.16	AE
XPULDQ		0.4134	0.0013	0.11	0.4607	-0.0038	-0.30	CI
XWDBAY		0.4270	0.0149	1.30	0.4763	0.0119	0.96	OE
YGDHUV		0.4125	0.0003	0.03	0.4635	-0.0010	-0.08	OE
YKWJPH		0.4241	0.0119	1.05	0.4598	-0.0047	-0.38	OE
YXJRQP		0.4070	-0.0051	-0.45	0.4580	-0.0064	-0.52	XX
YZUUUU		0.4133	0.0012	0.10	0.4700	0.0056	0.45	OE
Z2HFTH		0.4057	-0.0065	-0.57	0.4557	-0.0088	-0.71	OE
ZHLZKE		0.4143	0.0022	0.19	0.4817	0.0172	1.40	CO
ZN9P6N		0.4133	0.0012	0.10	0.4733	0.0089	0.72	GD
ZYA7WE		0.4233	0.0112	0.98	0.4700	0.0056	0.45	GD

Carbon & Low Alloy Steel, CARBON (C)
CARBON (C)

WebCode	Data Flag	Sample L93			Sample L94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
ZYQGEJ		0.4070	-0.0051	-0.45	0.4577	-0.0067	-0.54	CO

Summary Statistics

	Sample L93		Sample L94	
Grand Means	0.4121	Percent	0.4644	Percent
Stnd Dev Btwn Labs	0.0114	Percent	0.0124	Percent

Samples L93, L94 : AISI 1040, AISI 1045

Statistics based on 137 of 142 reporting participants

Key to Method Codes Reported by Participants

AE	Spectrometry - Atomic Emission (AES)	CI	Combustion / IR
CO	Combustion	DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)	OE	Spectrometry - Optical Emission (OES)
XX	Please Indicate Method Used for Current Element		
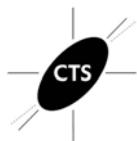
Comments on Assigned Data Flags for Test #1600

7UVQL3 (X) - Data for sample L93 are low.

G6JMBC (X) - Data for both samples are low. Possible Systematic Error.

WHFF4E (X) - Data for both samples are low. Possible Systematic Error.

WQQNUG (X) - Data for both samples are high. Possible Systematic Error.

**Fasteners and Metals Interlaboratory Testing Program**
Analysis 1600
Carbon & Low Alloy Steel, CARBON (C)
CARBON (C)
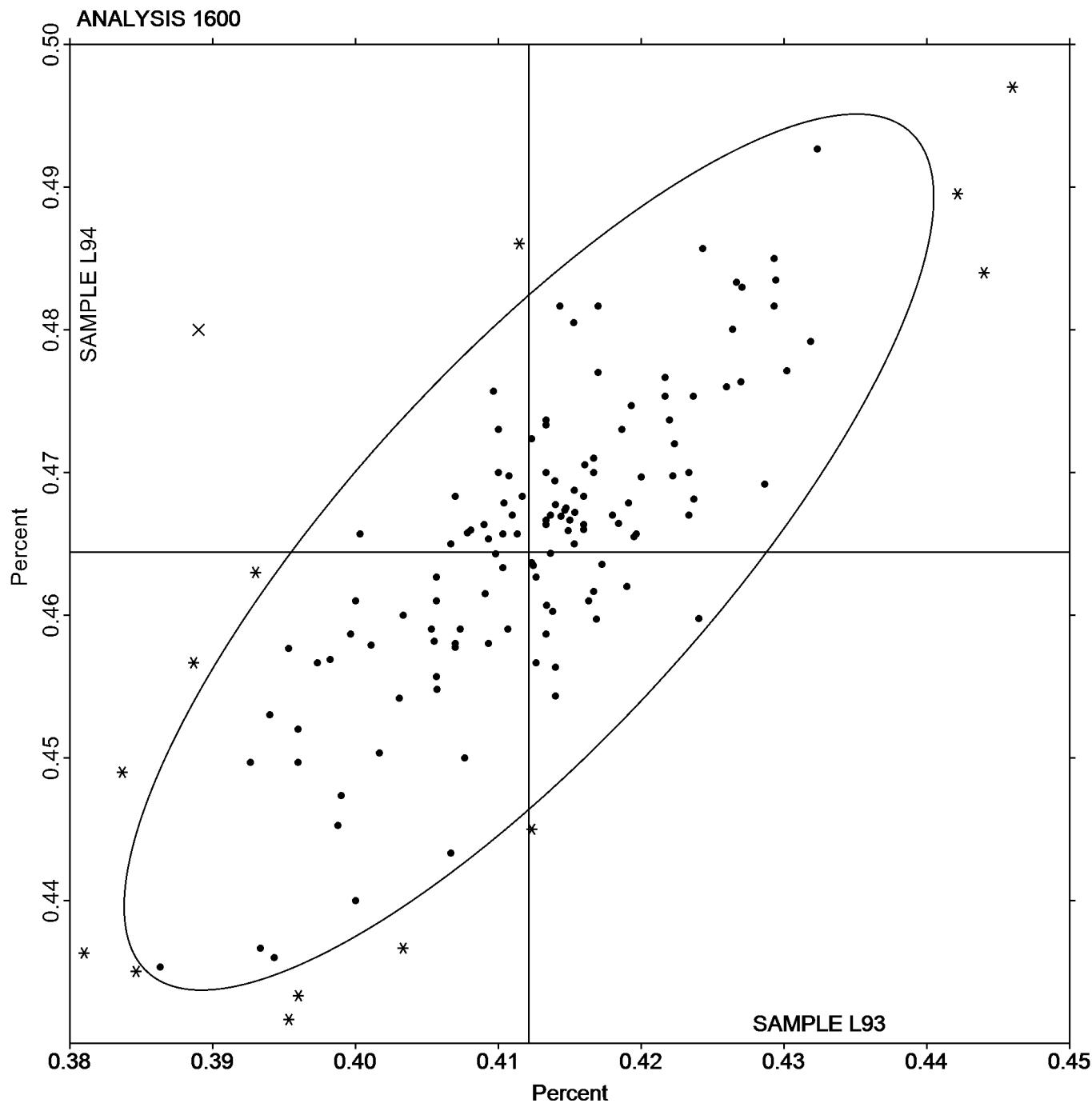
Cycle 143
3rd Qtr 2023
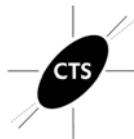
SAMPLE L93

0.4121 Percent

SAMPLE L94

0.4644 Percent
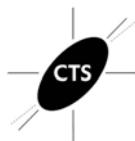
ANALYSIS 1600

Fasteners and Metals Interlaboratory Testing Program
Analysis 1601
Carbon & Low Alloy Steel, MANGANESE (Mn)
MANGANESE (Mn)

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample L93 Lab Mean	Diff. from Grand Mean	CPV	Sample L94 Lab Mean	Diff. from Grand Mean	CPV	Method
23P2U3		0.7630	-0.0037	-0.43	0.7083	-0.0009	-0.11	OE
2APFZX		0.7853	0.0186	2.18	0.7190	0.0098	1.26	OE
2LJQCB		0.7703	0.0036	0.42	0.7150	0.0058	0.75	OE
2NPGDY		0.7571	-0.0096	-1.13	0.6981	-0.0111	-1.43	OE
2WGLKE		0.7667	0.0000	0.00	0.7090	-0.0002	-0.03	OE
36AW3U		0.7800	0.0133	1.56	0.7100	0.0008	0.10	IC
39N2QB		0.7566	-0.0101	-1.18	0.7013	-0.0079	-1.02	OE
3A6QZV		0.7628	-0.0039	-0.46	0.7092	0.0000	0.00	OE
3BF6EB		0.7727	0.0060	0.70	0.7132	0.0040	0.51	OE
3RPPGA		0.7705	0.0038	0.45	0.7145	0.0053	0.68	OE
3TXWLM		0.7750	0.0083	0.97	0.7050	-0.0042	-0.54	GD
3VKKXN		0.7727	0.0060	0.70	0.7163	0.0071	0.92	IC
46PHCV		0.7690	0.0023	0.27	0.7079	-0.0013	-0.17	OE
4PVHC3	X	0.6973	-0.0694	-8.13	0.6813	-0.0279	-3.58	DR
4UCHXB		0.7705	0.0038	0.44	0.7132	0.0040	0.51	WD
689GWR		0.7617	-0.0050	-0.59	0.7040	-0.0052	-0.67	XX
6ATF29		0.7663	-0.0004	-0.04	0.7103	0.0011	0.15	OE
73VVP7		0.7667	0.0000	0.00	0.7133	0.0041	0.53	OE
76FWKR		0.7574	-0.0093	-1.09	0.7060	-0.0032	-0.41	XX
79X6UD	X	0.7467	-0.0200	-2.35	0.6800	-0.0292	-3.75	XX
7MFRBX	*	0.7457	-0.0210	-2.46	0.6857	-0.0235	-3.02	OE
7RCLW7	*	0.7907	0.0240	2.81	0.7327	0.0235	3.01	OE
7T4HLY		0.7641	-0.0026	-0.30	0.7044	-0.0048	-0.62	OE
7UVQL3		0.7667	0.0000	0.00	0.7133	0.0041	0.53	OE
7VNJGL	X	0.7913	0.0246	2.88	0.7200	0.0108	1.39	OE
7VUMJD		0.7700	0.0033	0.39	0.7123	0.0031	0.40	OE
839RTP		0.7513	-0.0154	-1.80	0.6983	-0.0109	-1.40	OE
83QBKU		0.7493	-0.0174	-2.04	0.6933	-0.0159	-2.04	OE
86RTMB		0.7683	0.0016	0.19	0.7093	0.0001	0.02	IC
8DR7U7		0.7713	0.0046	0.54	0.7120	0.0028	0.36	OE
8LJQQR		0.7660	-0.0007	-0.08	0.7130	0.0038	0.49	IC
94GB2K		0.7800	0.0133	1.56	0.7200	0.0108	1.39	OE
99TGHR		0.7644	-0.0023	-0.27	0.6994	-0.0098	-1.25	OE
9EGJHM		0.7613	-0.0054	-0.63	0.7093	0.0001	0.02	OE
A29QJ3		0.7693	0.0026	0.31	0.7133	0.0041	0.53	OE
A73EAH		0.7757	0.0090	1.05	0.7173	0.0081	1.05	XR
ALVAL9		0.7627	-0.0040	-0.47	0.7074	-0.0018	-0.24	OE
B46NG9		0.7737	0.0070	0.82	0.7173	0.0081	1.05	OE
BE6CBQ		0.7667	0.0000	0.00	0.7067	-0.0025	-0.33	OE
BJHWHC		0.7640	-0.0027	-0.32	0.7067	-0.0025	-0.33	OE
BNU3XJ		0.7667	0.0000	0.00	0.7100	0.0008	0.10	OE
BU3GMU		0.7530	-0.0137	-1.61	0.7070	-0.0022	-0.28	GD
BU6469		0.7580	-0.0087	-1.02	0.7128	0.0036	0.46	IC
C7Q9WH		0.7567	-0.0100	-1.18	0.7000	-0.0092	-1.18	OE
C9X8XX		0.7647	-0.0020	-0.24	0.7173	0.0081	1.05	IC
CATERB		0.7657	-0.0010	-0.12	0.7077	-0.0015	-0.20	OE
D7UMWJ		0.7523	-0.0144	-1.68	0.6993	-0.0099	-1.27	OE

Fasteners and Metals Interlaboratory Testing Program
Analysis 1601
Carbon & Low Alloy Steel, MANGANESE (Mn)
MANGANESE (Mn)
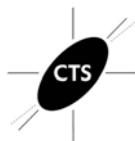
Cycle 143
3rd Qtr 2023

| WebCode | Data Flag | Sample L93 | | | Sample L94 | | | Method |
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
D9DNQ6		0.7687	0.0020	0.23	0.7133	0.0041	0.53	OE
DH4RUJ		0.7573	-0.0094	-1.10	0.7047	-0.0045	-0.58	OE
E4BAGK		0.7613	-0.0054	-0.63	0.7150	0.0058	0.75	GD
EDMG8L		0.7627	-0.0040	-0.47	0.7099	0.0007	0.09	OE
EHFEXX		0.7693	0.0026	0.31	0.7110	0.0018	0.23	OE
EN8LG8		0.7753	0.0086	1.01	0.7067	-0.0025	-0.33	OE
ENZNWV	X	0.7369	-0.0298	-3.49	0.7178	0.0086	1.11	OE
EQT9AU		0.7607	-0.0060	-0.71	0.7110	0.0018	0.23	OE
ETTTND		0.7873	0.0206	2.42	0.7247	0.0155	1.99	OE
FBA63P		0.7653	-0.0014	-0.16	0.7060	-0.0032	-0.41	OE
FBTXUM		0.7643	-0.0024	-0.28	0.7043	-0.0049	-0.63	OE
FFPCQP		0.7570	-0.0097	-1.14	0.6980	-0.0112	-1.44	OE
FHADKB	*	0.7887	0.0220	2.57	0.7290	0.0198	2.54	XX
FPGV6X	X	0.8000	0.0333	3.90	0.7300	0.0208	2.67	XX
FY7LRP		0.7729	0.0062	0.73	0.7047	-0.0045	-0.58	XX
G3GXZC	*	0.7730	0.0063	0.74	0.6920	-0.0172	-2.21	OE
G6JMBC		0.7737	0.0070	0.82	0.7137	0.0045	0.57	OE
GGC4ZD	X	0.8087	0.0420	4.92	0.7477	0.0385	4.94	XX
GNXF7M	*	0.7521	-0.0146	-1.71	0.6876	-0.0216	-2.77	OE
GNYWBD		0.7727	0.0060	0.70	0.7110	0.0018	0.23	GD
HYMW78		0.7580	-0.0087	-1.02	0.6993	-0.0099	-1.27	GD
J3CBKA		0.7700	0.0033	0.39	0.7040	-0.0052	-0.67	AE
JA37AR	*	0.7897	0.0230	2.69	0.6950	-0.0142	-1.82	OE
JCVPLQ		0.7693	0.0026	0.31	0.7123	0.0031	0.40	IC
JKUART		0.7666	-0.0001	-0.01	0.7053	-0.0039	-0.50	OE
JTHEAR		0.7663	-0.0004	-0.04	0.7133	0.0041	0.53	OE
JVNZZD	X	0.7333	-0.0334	-3.91	0.6733	-0.0359	-4.61	OE
K7MXLR		0.7757	0.0090	1.05	0.7170	0.0078	1.00	IC
KFAWCX		0.7650	-0.0017	-0.20	0.7103	0.0011	0.15	OE
KHJUV7		0.7734	0.0067	0.79	0.7120	0.0028	0.36	OE
KNMXJJ		0.7656	-0.0011	-0.13	0.7061	-0.0031	-0.40	OE
L7HQ6H		0.7623	-0.0044	-0.51	0.7033	-0.0059	-0.75	OE
L96EGH		0.7773	0.0106	1.24	0.7217	0.0125	1.60	IC
LZUDVG		0.7758	0.0091	1.06	0.7166	0.0074	0.96	OE
MH9Z3B		0.7547	-0.0120	-1.41	0.7013	-0.0079	-1.01	GD
ML7LRT		0.7700	0.0033	0.39	0.7100	0.0008	0.10	OE
MUJJC6		0.7573	-0.0094	-1.10	0.7087	-0.0005	-0.07	OE
N228RT		0.7787	0.0120	1.40	0.7147	0.0055	0.70	OE
N49KFL		0.7774	0.0107	1.25	0.7163	0.0071	0.91	OE
N6HPVV	X	0.7967	0.0300	3.51	0.7303	0.0211	2.72	XX
NKC2FT	X	0.7442	-0.0225	-2.64	0.6785	-0.0307	-3.94	OE
NZMXMY		0.7740	0.0073	0.85	0.7203	0.0111	1.43	XX
P2EZ4M		0.7623	-0.0044	-0.52	0.7033	-0.0059	-0.75	OE
P6VEWM		0.7717	0.0050	0.58	0.7043	-0.0049	-0.62	OE
PD6W3Z		0.7580	-0.0087	-1.02	0.7020	-0.0072	-0.92	OE
PFWTRT		0.7700	0.0033	0.39	0.7160	0.0068	0.87	IC
PG9BL4		0.7700	0.0033	0.39	0.7080	-0.0012	-0.15	OE

Fasteners and Metals Interlaboratory Testing Program
Analysis 1601
Carbon & Low Alloy Steel, MANGANESE (Mn)
MANGANESE (Mn)
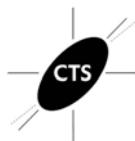
Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample L93			Sample L94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
PJATNK		0.7720	0.0053	0.62	0.7183	0.0091	1.17	OE
PP2RNA		0.7669	0.0002	0.03	0.7059	-0.0033	-0.43	OE
PWGJQT		0.7675	0.0008	0.10	0.7108	0.0016	0.21	IC
Q8JAW2		0.7644	-0.0023	-0.27	0.7072	-0.0020	-0.26	XX
Q9B7KV		0.7707	0.0040	0.47	0.7057	-0.0035	-0.45	AE
QHGB96		0.7630	-0.0037	-0.43	0.7043	-0.0049	-0.62	OE
R8DHGP		0.7511	-0.0156	-1.83	0.6918	-0.0174	-2.23	XX
RJ679J		0.7630	-0.0037	-0.43	0.7073	-0.0019	-0.24	OE
RTUWVB		0.7687	0.0020	0.23	0.7150	0.0058	0.75	OE
RTWKCP		0.7600	-0.0067	-0.79	0.7060	-0.0032	-0.41	OE
RVGL8B		0.7746	0.0079	0.92	0.7168	0.0076	0.98	IC
RX9GV6		0.7730	0.0063	0.74	0.7097	0.0005	0.06	OE
T2LGTW		0.7563	-0.0104	-1.22	0.7010	-0.0082	-1.05	OE
T7WLPQ		0.7550	-0.0117	-1.37	0.7033	-0.0059	-0.75	OE
T8Q94E		0.7686	0.0019	0.23	0.7124	0.0032	0.41	OE
TC37MV		0.7659	-0.0008	-0.10	0.7080	-0.0012	-0.16	OE
TCZPD4		0.7737	0.0070	0.82	0.7133	0.0041	0.53	XX
TGW9GM		0.7597	-0.0070	-0.82	0.6973	-0.0119	-1.52	OE
TWCEQ2		0.7627	-0.0040	-0.47	0.7087	-0.0005	-0.07	OE
TYBPJF		0.7697	0.0030	0.35	0.7237	0.0145	1.86	OE
U9KGP4		0.7643	-0.0024	-0.28	0.7093	0.0001	0.02	WD
UB76Z4		0.7603	-0.0064	-0.75	0.7100	0.0008	0.10	OE
UCF9VF		0.7740	0.0073	0.85	0.7120	0.0028	0.36	OE
UDWW6Z		0.7657	-0.0010	-0.12	0.7053	-0.0039	-0.50	OE
UGRBLH		0.7777	0.0110	1.28	0.7107	0.0015	0.19	IC
UL6WR4		0.7687	0.0020	0.23	0.7087	-0.0005	-0.07	OE
UXF2P4		0.7697	0.0030	0.35	0.7187	0.0095	1.22	OE
V6A4CU		0.7757	0.0090	1.05	0.7100	0.0008	0.10	OE
V83MNU		0.7533	-0.0134	-1.57	0.6947	-0.0145	-1.87	XX
WEDZQ3		0.7621	-0.0046	-0.54	0.7093	0.0001	0.01	OE
WEUUBR		0.7767	0.0100	1.17	0.7167	0.0075	0.96	OE
WFVEAT		0.7684	0.0017	0.20	0.7116	0.0024	0.31	XX
WGMDNR		0.7553	-0.0114	-1.33	0.7007	-0.0085	-1.10	OE
WHFF4E	X	0.8033	0.0366	4.29	0.7433	0.0341	4.39	OE
WJ8CT9		0.7717	0.0050	0.58	0.7080	-0.0012	-0.15	OE
WQQNUG	*	0.7503	-0.0164	-1.92	0.6870	-0.0222	-2.85	OE
XF34YH		0.7664	-0.0003	-0.04	0.7160	0.0068	0.88	OE
XHT68R		0.7805	0.0138	1.62	0.7178	0.0086	1.11	AE
XPULDQ		0.7811	0.0144	1.69	0.7266	0.0174	2.23	OE
XWDBAY		0.7630	-0.0037	-0.43	0.7140	0.0048	0.62	OE
YGDHUV		0.7623	-0.0045	-0.52	0.7082	-0.0010	-0.13	OE
YXJRQP		0.7693	0.0026	0.31	0.7083	-0.0009	-0.11	OE
YZUUUU		0.7667	0.0000	0.00	0.7067	-0.0025	-0.33	OE
Z2HFTH		0.7722	0.0055	0.64	0.7068	-0.0024	-0.30	OE
ZHLZKE		0.7790	0.0123	1.44	0.7233	0.0141	1.82	OE
ZN9P6N		0.7567	-0.0100	-1.18	0.7033	-0.0059	-0.75	GD
ZNC6KA	X	0.7518	-0.0149	-1.75	0.6832	-0.0260	-3.34	IC

Fasteners and Metals Interlaboratory Testing Program
Analysis 1601
Carbon & Low Alloy Steel, MANGANESE (Mn)
MANGANESE (Mn)

| WebCode | Data Flag | Sample L93 | | | Sample L94 | | | Method |
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
ZYA7WE		0.7467	-0.0200	-2.35	0.7000	-0.0092	-1.18	GD
ZYQGEJ	X	0.2378	-0.5289	-61.96	0.7051	-0.0041	-0.53	IC

Summary Statistics

	Sample L93		Sample L94	
Grand Means	0.7667	Percent	0.7092	Percent
Stnd Dev Btwn Labs	0.0085	Percent	0.0078	Percent

Samples L93, L94 : AISI 1040, AISI 1045

Statistics based on 129 of 143 reporting participants

Key to Method Codes Reported by Participants

AE	Spectrometry - Atomic Emission (AES)	DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1601

4PVHC3 (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample L94.

79X6UD (X) - Data for sample L94 are low.

7VNJGL (X) - Data for sample L93 are high.

ENZNWV (X) - Data for sample L93 are low. Inconsistent within the determinations of sample L94.

FPGV6X (X) - Data for sample L93 are high.

GGC4ZD (X) - Data for both samples are high. Possible Systematic Error.

JVNZZD (X) - Data for both samples are low. Possible Systematic Error.
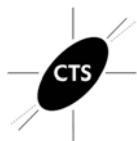
N6HPVV (X) - Data for sample L93 are high.

NKC2FT (X) - Data for sample L94 are low.

WHFF4E (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample L93.

ZNC6KA (X) - Data for sample L94 are low.

ZYQGEJ (X) - Data for sample L93 are extreme.

Fasteners and Metals Interlaboratory Testing Program
Analysis 1601
Carbon & Low Alloy Steel, MANGANESE (Mn)
MANGANESE (Mn)
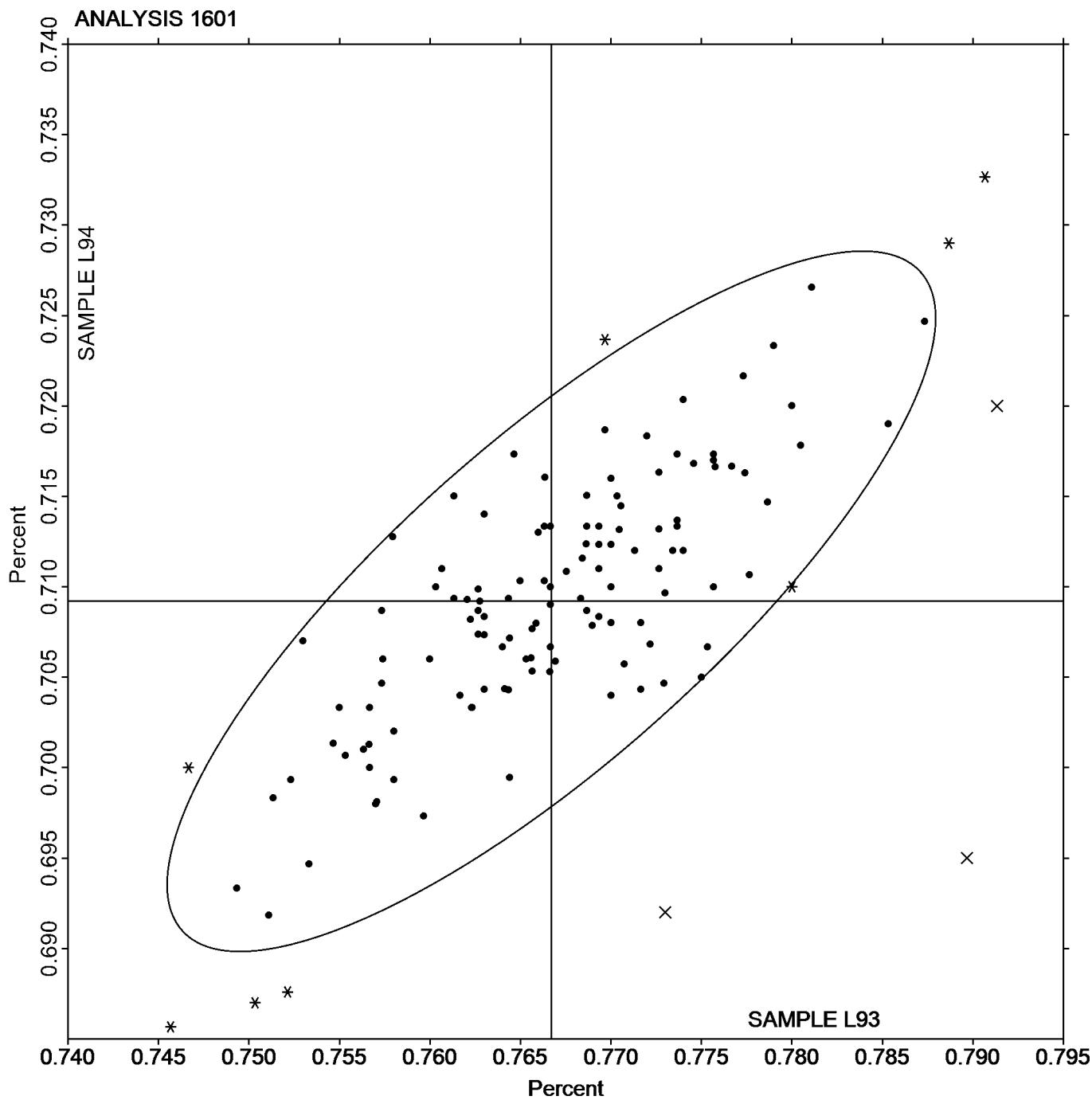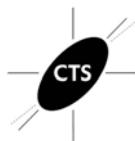
Cycle 143
3rd Qtr 2023

SAMPLE L93
0.7667 Percent

SAMPLE L94
0.7092 Percent

Fasteners and Metals Interlaboratory Testing Program
Analysis 1602
Carbon & Low Alloy Steel, PHOSPHORUS (P)
PHOSPHORUS (P)
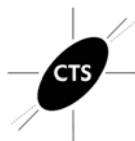
Cycle 143
3rd Qtr 2023

| WebCode | Data Flag | Sample L93 | | | Sample L94 | | | Method |
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
23P2U3		0.0142	-0.0001	-0.10	0.00627	-0.00007	-0.07	OE
2APFZX	X	0.0199	0.0056	5.16	0.00970	0.00337	3.52	OE
2LJQCB		0.0140	-0.0004	-0.35	0.00597	-0.00037	-0.38	OE
2NPGDY		0.0134	-0.0009	-0.84	0.00537	-0.00097	-1.01	OE
2WGLKE		0.0157	0.0013	1.22	0.00767	0.00133	1.40	OE
36AW3U		0.0130	-0.0013	-1.24	0.00500	-0.00133	-1.39	IC
39N2QB		0.0152	0.0009	0.82	0.00703	0.00070	0.73	OE
3A6QZV		0.0157	0.0014	1.25	0.00640	0.00007	0.07	OE
3BF6EB		0.0141	-0.0003	-0.25	0.00613	-0.00020	-0.21	OE
3RPPGA		0.0150	0.0007	0.60	0.00757	0.00124	1.30	OE
3TXWLM	*	0.0170	0.0027	2.46	0.00900	0.00267	2.79	GD
3VKKXN		0.0140	-0.0003	-0.32	0.00613	-0.00020	-0.21	IC
46PHCV		0.0148	0.0004	0.41	0.00759	0.00126	1.32	OE
4PVHC3	X	0.0104	-0.0040	-3.67	0.00350	-0.00283	-2.96	DR
4UCHXB		0.0147	0.0003	0.30	0.00653	0.00020	0.21	WD
689GWR		0.0146	0.0002	0.21	0.00670	0.00037	0.39	OE
6ATF29		0.0146	0.0003	0.27	0.00723	0.00090	0.94	OE
73VVP7	X	0.0291	0.0148	13.63	0.0184	0.01207	12.63	OE
76FWKR		0.0124	-0.0019	-1.79	0.00573	-0.00060	-0.63	XX
79X6UD		0.0140	-0.0003	-0.32	0.00600	-0.00033	-0.35	XX
7A92BB		0.0149	0.0005	0.48	0.00647	0.00013	0.14	OE
7MFRBX		0.0143	0.0000	-0.01	0.00600	-0.00033	-0.35	OE
7RCLW7		0.0143	0.0000	-0.01	0.00700	0.00067	0.70	OE
7T4HLY		0.0142	-0.0002	-0.18	0.00496	-0.00137	-1.44	OE
7UVQL3		0.0150	0.0007	0.61	0.00700	0.00067	0.70	OE
7VNJGL	X	0.0117	-0.0026	-2.41	0.00290	-0.00343	-3.59	OE
7VUMJD		0.0143	0.0000	-0.01	0.00600	-0.00033	-0.35	OE
839RTP		0.0127	-0.0017	-1.55	0.00400	-0.00233	-2.44	OE
83QBKU		0.0150	0.0007	0.61	0.00700	0.00067	0.70	XX
86RTMB		0.0140	-0.0003	-0.32	0.00567	-0.00067	-0.70	IC
8DR7U7	*	0.0128	-0.0016	-1.45	0.00827	0.00193	2.02	OE
8LJQQR		0.0130	-0.0013	-1.21	0.00473	-0.00160	-1.67	IC
94GB2K		0.0130	-0.0013	-1.24	0.00733	0.00100	1.05	OE
99TGHR		0.0143	0.0000	-0.04	0.00627	-0.00007	-0.07	OE
9EGJHM		0.0150	0.0007	0.61	0.00500	-0.00133	-1.39	OE
A29QJ3		0.0144	0.0001	0.08	0.00657	0.00023	0.25	OE
A73EAH	X	0.0160	0.0017	1.53	0.0283	0.02200	23.02	XR
ALVAL9		0.0145	0.0001	0.12	0.00647	0.00013	0.14	OE
B46NG9		0.0118	-0.0026	-2.38	0.00620	-0.00013	-0.14	OE
BE6CBQ		0.0136	-0.0007	-0.69	0.00603	-0.00030	-0.31	OE
BJHWHC		0.0140	-0.0004	-0.35	0.00590	-0.00043	-0.45	OE
BNU3XJ		0.0150	0.0007	0.61	0.00500	-0.00133	-1.39	OE
BU3GMU	X	0.0160	0.0017	1.53	0.0100	0.00367	3.84	GD
BU6469	X	0.0161	0.0018	1.62	0.0102	0.00387	4.05	IC
C7Q9WH		0.0164	0.0021	1.90	0.00623	-0.00010	-0.10	OE
C9X8XX		0.0133	-0.0010	-0.93	0.00767	0.00133	1.40	IC
CATERB		0.0148	0.0005	0.45	0.00643	0.00010	0.11	OE
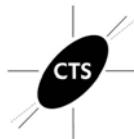
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Fasteners and Metals Interlaboratory Testing Program
Analysis 1602
Carbon & Low Alloy Steel, PHOSPHORUS (P)
PHOSPHORUS (P)

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample L93			Sample L94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
D7UMWJ		0.0120	-0.0023	-2.16	0.00433	-0.00200	-2.09	OE
D9DNQ6		0.0140	-0.0003	-0.32	0.00600	-0.00033	-0.35	OE
DH4RUJ		0.0133	-0.0010	-0.93	0.00667	0.00033	0.35	OE
E4BAGK	X	0.0177	0.0033	3.07	0.0120	0.00567	5.93	GD
EDMG8L		0.0147	0.0004	0.33	0.00647	0.00013	0.14	OE
EHFEXX		0.0155	0.0012	1.07	0.00683	0.00050	0.52	OE
EN8LG8		0.0148	0.0005	0.42	0.00617	-0.00017	-0.17	OE
ENZNWV	X	0.0165	0.0022	1.99	0.0109	0.00460	4.81	OE
EQT9AU		0.0124	-0.0019	-1.76	0.00737	0.00103	1.08	OE
ETTTND		0.0150	0.0007	0.61	0.00517	-0.00117	-1.22	OE
FBA63P		0.0150	0.0007	0.61	0.00700	0.00067	0.70	OE
FBTXUM		0.0143	-0.0001	-0.07	0.00556	-0.00078	-0.81	OE
FFPCQP		0.0153	0.0010	0.89	0.00640	0.00007	0.07	OE
FHADKB	X	0.00867	-0.0057	-5.24	0.00300	-0.00333	-3.49	XX
FPGV6X		0.0160	0.0017	1.53	0.00800	0.00167	1.75	DR
FY7LRP		0.0168	0.0025	2.27	0.00710	0.00077	0.80	XX
G3GXZC		0.0133	-0.0010	-0.96	0.00567	-0.00067	-0.70	OE
G6JMBC		0.0140	-0.0004	-0.35	0.00773	0.00140	1.47	OE
GGC4ZD		0.0136	-0.0007	-0.69	0.00560	-0.00073	-0.77	XX
GNXF7M		0.0132	-0.0011	-1.02	0.00670	0.00037	0.39	OE
GNYWBD	X	0.0185	0.0042	3.87	0.00907	0.00273	2.86	GD
HYMW78	*	0.0163	0.0020	1.84	0.00867	0.00233	2.44	GD
J3CBKA	X	0.0300	0.0157	14.46	0.0118	0.00550	5.76	AE
JA37AR		0.0139	-0.0004	-0.38	0.00547	-0.00087	-0.91	OE
JCVPLQ		0.0142	-0.0001	-0.10	0.00557	-0.00077	-0.80	IC
JKUART		0.0144	0.0000	0.02	0.00610	-0.00023	-0.24	OE
JTHEAR	*	0.0112	-0.0032	-2.93	0.00473	-0.00160	-1.67	OE
JVNZZD	X	0.0267	0.0123	11.38	0.0263	0.02000	20.93	OE
K7MXLR		0.0154	0.0011	0.98	0.00797	0.00163	1.71	IC
KFAWCX		0.0137	-0.0007	-0.62	0.00567	-0.00067	-0.70	OE
KHJUV7		0.0151	0.0007	0.67	0.00660	0.00027	0.28	OE
KNMXJJ		0.0137	-0.0007	-0.61	0.00466	-0.00168	-1.75	OE
L7HQ6H		0.0137	-0.0007	-0.62	0.00787	0.00153	1.61	OE
L96EGH		0.0140	-0.0003	-0.32	0.00613	-0.00020	-0.21	IC
LZUDVG		0.0146	0.0003	0.24	0.00623	-0.00010	-0.10	OE
MH9Z3B		0.0166	0.0023	2.09	0.00767	0.00133	1.40	GD
ML7LRT	*	0.0150	0.0007	0.61	0.00900	0.00267	2.79	OE
MUJJC6		0.0140	-0.0003	-0.28	0.00550	-0.00083	-0.87	OE
N228RT		0.0142	-0.0002	-0.16	0.00563	-0.00070	-0.73	OE
N49KFL		0.0144	0.0001	0.05	0.00520	-0.00113	-1.18	OE
N6HPVV	X	0.0183	0.0040	3.69	0.00933	0.00300	3.14	XX
NKC2FT		0.0141	-0.0002	-0.19	0.00600	-0.00033	-0.35	OE
NZMXMY	X	0.0143	0.0000	-0.01	0.00967	0.00333	3.49	XX
P2EZ4M		0.0142	-0.0001	-0.13	0.00607	-0.00027	-0.28	OE
P6VEWM		0.0133	-0.0010	-0.96	0.00590	-0.00043	-0.45	OE
PD6W3Z		0.0145	0.0001	0.12	0.00570	-0.00063	-0.66	OE
PFWTRT		0.0140	-0.0003	-0.32	0.00617	-0.00017	-0.17	IC

Fasteners and Metals Interlaboratory Testing Program
Analysis 1602
Carbon & Low Alloy Steel, PHOSPHORUS (P)
PHOSPHORUS (P)
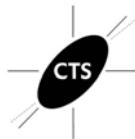
Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample L93			Sample L94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
PG9BL4		0.0157	0.0014	1.25	0.00660	0.00027	0.28	OE
PJATNK		0.0139	-0.0004	-0.38	0.00713	0.00080	0.84	OE
PP2RNA		0.0151	0.0007	0.67	0.00647	0.00013	0.14	OE
PWGJQT		0.0145	0.0002	0.15	0.00600	-0.00033	-0.35	IC
Q8JAW2		0.0149	0.0005	0.48	0.00653	0.00020	0.21	XX
Q9B7KV		0.0143	0.0000	-0.04	0.00747	0.00113	1.19	AE
QHGB96		0.0142	-0.0001	-0.13	0.00707	0.00073	0.77	OE
R8DHGP		0.0130	-0.0013	-1.22	0.00690	0.00057	0.60	XX
RJ679J		0.0143	0.0000	-0.01	0.00600	-0.00033	-0.35	OE
RTUWVB		0.0140	-0.0004	-0.35	0.00630	-0.00003	-0.03	OE
RTWKCP		0.0130	-0.0013	-1.24	0.00600	-0.00033	-0.35	OE
RVGL8B		0.0147	0.0004	0.33	0.00640	0.00007	0.07	IC
RX9GV6		0.0151	0.0007	0.67	0.00767	0.00133	1.40	OE
T2LGTW		0.0144	0.0001	0.05	0.00590	-0.00043	-0.45	OE
T7WLPQ		0.0143	0.0000	-0.01	0.00600	-0.00033	-0.35	OE
T8Q94E		0.0144	0.0001	0.06	0.00693	0.00059	0.62	OE
TC37MV		0.0147	0.0004	0.32	0.00676	0.00042	0.44	OE
TCZPD4		0.0143	0.0000	-0.01	0.00600	-0.00033	-0.35	XX
TGW9GM		0.0131	-0.0013	-1.18	0.00417	-0.00217	-2.27	OE
TWCEQ2		0.0139	-0.0004	-0.38	0.00480	-0.00153	-1.60	OE
TYBPJF		0.0169	0.0026	2.36	0.00703	0.00070	0.73	OE
U9KGP4	X	0.0140	-0.0003	-0.32	0.00900	0.00267	2.79	WD
UB76Z4		0.0141	-0.0002	-0.22	0.00683	0.00050	0.52	OE
UCF9VF		0.0155	0.0012	1.10	0.00683	0.00050	0.52	OE
UDWW6Z		0.0163	0.0020	1.84	0.00773	0.00140	1.47	OE
UGRBLH		0.0146	0.0002	0.21	0.00560	-0.00073	-0.77	IC
UL6WR4		0.0141	-0.0002	-0.22	0.00577	-0.00057	-0.59	OE
UXF2P4		0.0127	-0.0016	-1.49	0.00553	-0.00080	-0.84	OE
V6A4CU		0.0142	-0.0001	-0.13	0.00633	0.00000	0.00	OE
WEDZQ3		0.0165	0.0021	1.96	0.00710	0.00077	0.80	OE
WEUUBR		0.0147	0.0003	0.30	0.00600	-0.00033	-0.35	OE
WFVEAT		0.0145	0.0001	0.13	0.00600	-0.00033	-0.34	XX
WGMDNR		0.0157	0.0014	1.29	0.00670	0.00037	0.39	OE
WHFF4E	X	0.00920	-0.0051	-4.75	0.00277	-0.00357	-3.73	OE
WJ8CT9		0.0149	0.0005	0.48	0.00690	0.00057	0.59	OE
WQQNUG		0.0152	0.0008	0.76	0.00860	0.00227	2.37	OE
XF34YH		0.0125	-0.0019	-1.73	0.00540	-0.00093	-0.97	OE
XHT68R		0.0121	-0.0022	-2.04	0.00463	-0.00170	-1.78	AE
XPULDQ		0.0157	0.0014	1.25	0.00543	-0.00090	-0.94	OE
XWDBAY		0.0134	-0.0010	-0.90	0.00593	-0.00040	-0.42	OE
YGDHUV		0.0156	0.0013	1.16	0.00691	0.00058	0.61	OE
YKWJPH		0.0163	0.0020	1.84	0.00650	0.00017	0.18	OE
YXJRQP		0.0143	0.0000	-0.01	0.00600	-0.00033	-0.35	OE
YZUUUU		0.0145	0.0001	0.12	0.00640	0.00007	0.07	OE
Z2HFTH		0.0142	-0.0001	-0.13	0.00620	-0.00013	-0.14	OE
ZHLZKE		0.0137	-0.0006	-0.56	0.00633	0.00000	0.00	OE
ZN9P6N	X	0.0133	-0.0010	-0.93	0.0100	0.00367	3.84	GD

Fasteners and Metals Interlaboratory Testing Program
Analysis 1602
Cycle 143

3rd Qtr 2023

Carbon & Low Alloy Steel, PHOSPHORUS (P)
PHOSPHORUS (P)

WebCode	Data Flag	Sample L93			Sample L94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
ZNC6KA		0.0125	-0.0018	-1.70	0.00750	0.00117	1.22	IC
ZYA7WE		0.0137	-0.0007	-0.62	0.00600	-0.00033	-0.35	GD
ZYQGEJ		0.0127	-0.0016	-1.49	0.00467	-0.00167	-1.74	IC

Summary Statistics

	Sample L93		Sample L94	
Grand Means	0.0143	Percent	0.00633	Percent
Stnd Dev Btwn Labs	0.0011	Percent	0.00096	Percent

Samples L93, L94 : AISI 1040, AISI 1045

Statistics based on 125 of 144 reporting participants

Key to Method Codes Reported by Participants

AE	Spectrometry - Atomic Emission (AES)	DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1602

2APFZX (X) - Data for both samples are high.

4PVHC3 (X) - Data for both samples are low.

73VVP7 (X) - Data for both samples are high. Inconsistent within the determinations of both samples.

7VNJGL (X) - Data for sample L94 are low.

A73EAH (X) - Data for sample L94 are high. Inconsistent within the determinations of sample L94.

BU3GMU (X) - Data for sample L94 are high.

BU6469 (X) - Data for sample L94 are high. Inconsistent within the determinations of both samples.

E4BAGK (X) - Data for both samples are high.

ENZNWV (X) - Data for sample L94 are high. Inconsistent within the determinations of sample L94.

FHADKB (X) - Data for both samples are low. Inconsistent within the determinations of sample L93.

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

J3CBKA (X) - Data for both samples are high. Inconsistent within the determinations of both samples.

JVNZZD (X) - Data for both samples are high. Inconsistent within the determinations of both samples.

N6HPVV (X) - Data for both samples are high. Inconsistent within the determinations of both samples.

NZMXMY (X) - Data for sample L94 are high. Inconsistent within the determinations of sample L94.

U9KGP4 (X) - Data for sample L94 are high.

WHFF4E (X) - Data for both samples are low.

ZN9P6N (X) - Data for sample L94 are high. Inconsistent within the determinations of sample L93.

**Fasteners and Metals Interlaboratory Testing Program**
Analysis 1602
Carbon & Low Alloy Steel, PHOSPHORUS (P)
PHOSPHORUS (P)
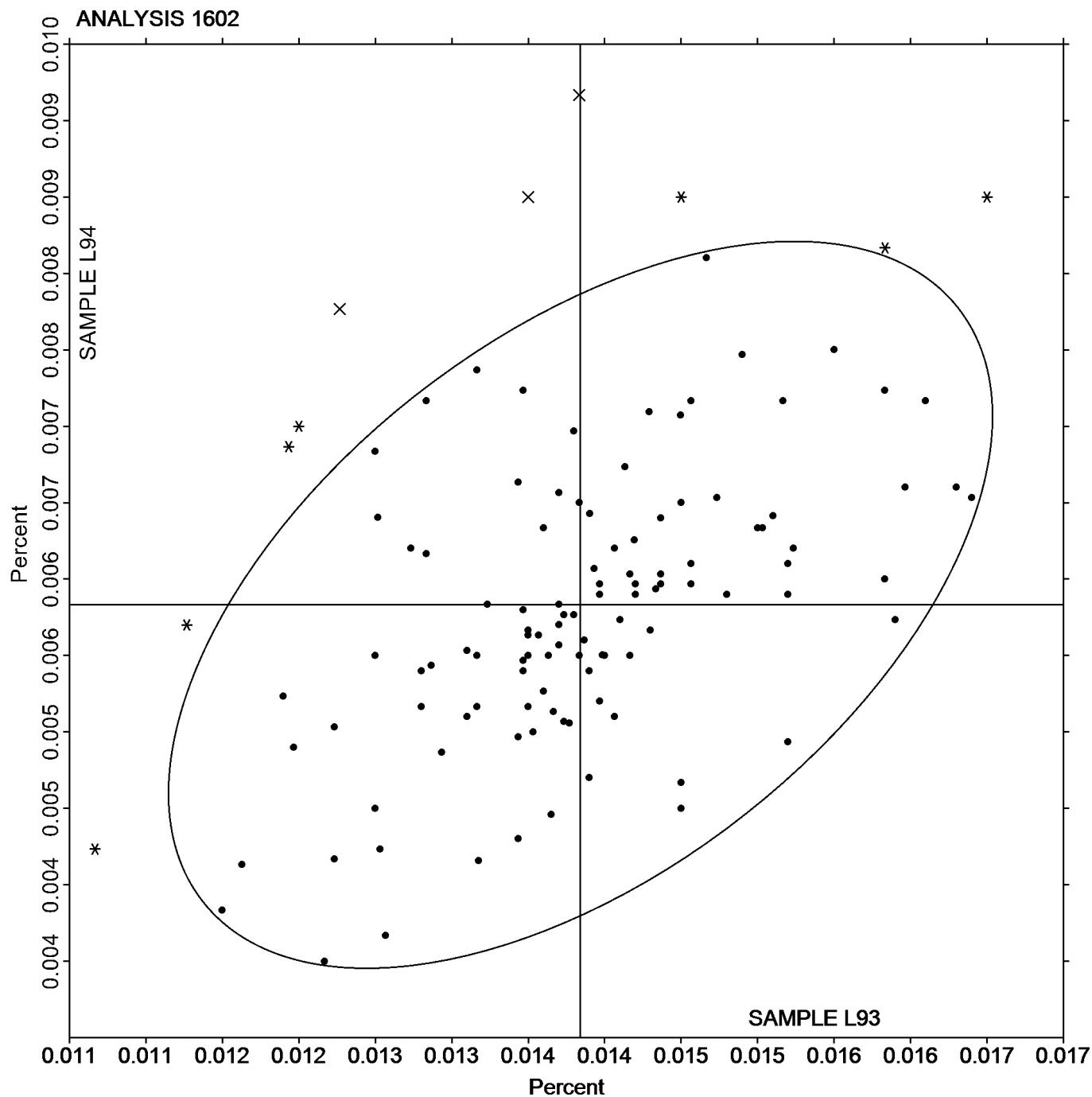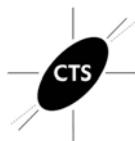
Cycle 143
3rd Qtr 2023

SAMPLE L93

0.0143 Percent

SAMPLE L94

0.00633 Percent

Fasteners and Metals Interlaboratory Testing Program
Analysis 1603
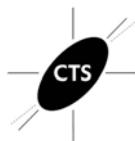
Cycle 143
3rd Qtr 2023

Carbon & Low Alloy Steel, SULFUR (S)
SULFUR (S)

WebCode	Data Flag	Sample L93 Lab Mean	Sample L93 Diff. from Grand Mean	Sample L93 CPV	Sample L94 Lab Mean	Sample L94 Diff. from Grand Mean	Sample L94 CPV	Method
23P2U3		0.0247	-0.0003	-0.18	0.0210	0.0010	0.69	OE
2APFZX		0.0292	0.0041	2.32	0.0219	0.0019	1.31	OE
2LJQCB		0.0244	-0.0006	-0.35	0.0204	0.0003	0.23	OE
2NPGDY		0.0243	-0.0007	-0.39	0.0180	-0.0020	-1.37	OE
2WGLKE	*	0.0277	0.0026	1.48	0.0193	-0.0007	-0.48	OE
36AW3U		0.0260	0.0010	0.55	0.0200	0.0000	-0.02	CI
39N2QB		0.0247	-0.0003	-0.16	0.0204	0.0003	0.23	CI
3A6QZV		0.0261	0.0010	0.58	0.0205	0.0004	0.30	OE
3BF6EB		0.0259	0.0009	0.49	0.0208	0.0007	0.51	OE
3RPPGA		0.0249	-0.0001	-0.05	0.0214	0.0013	0.92	OE
3TXWLM		0.0270	0.0020	1.11	0.0210	0.0010	0.67	GD
3VKKXN		0.0250	-0.0001	-0.03	0.0203	0.0003	0.21	CI
46PHCV		0.0231	-0.0020	-1.10	0.0193	-0.0007	-0.50	CO
4PVHC3	X	0.0181	-0.0069	-3.89	0.0160	-0.0040	-2.77	DR
4UCHXB		0.0232	-0.0019	-1.05	0.0209	0.0009	0.61	CI
689GWR		0.0255	0.0005	0.27	0.0199	-0.0001	-0.07	XX
6ATF29		0.0250	0.0000	-0.01	0.0204	0.0004	0.25	CI
73VVP7	X	0.0403	0.0153	8.59	0.0328	0.0128	8.77	OE
76FWKR		0.0256	0.0006	0.32	0.0208	0.0007	0.51	XX
79X6UD		0.0273	0.0023	1.30	0.0213	0.0013	0.90	XX
7A92BB		0.0278	0.0027	1.54	0.0209	0.0009	0.60	OE
7MFRBX		0.0237	-0.0014	-0.76	0.0180	-0.0020	-1.39	OE
7RCLW7		0.0263	0.0013	0.73	0.0210	0.0010	0.67	OE
7T4HLY		0.0247	-0.0003	-0.17	0.0190	-0.0010	-0.68	OE
7UVQL3		0.0230	-0.0020	-1.14	0.0190	-0.0010	-0.71	OE
7VNJGL		0.0254	0.0003	0.19	0.0181	-0.0019	-1.30	OE
7VUMJD		0.0270	0.0020	1.11	0.0227	0.0026	1.81	OE
839RTP		0.0231	-0.0019	-1.06	0.0187	-0.0013	-0.91	OE
83QBKU		0.0260	0.0010	0.55	0.0213	0.0013	0.90	OE
86RTMB		0.0247	-0.0004	-0.20	0.0190	-0.0010	-0.71	CI
8DR7U7		0.0224	-0.0026	-1.46	0.0192	-0.0008	-0.57	OE
8LJQQR		0.0230	-0.0020	-1.14	0.0183	-0.0018	-1.21	XX
94GB2K		0.0237	-0.0014	-0.76	0.0187	-0.0014	-0.94	OE
99TGHR		0.0272	0.0022	1.24	0.0204	0.0004	0.28	OE
9EGJHM		0.0247	-0.0004	-0.20	0.0197	-0.0004	-0.25	OE
A29QJ3		0.0248	-0.0003	-0.15	0.0203	0.0003	0.19	OE
A73EAH	*	0.0207	-0.0044	-2.45	0.0200	0.0000	-0.02	XR
ALVAL9		0.0253	0.0003	0.15	0.0196	-0.0004	-0.30	OE
B46NG9		0.0247	-0.0004	-0.20	0.0202	0.0002	0.14	OE
BE6CBQ	X	0.0227	-0.0023	-1.31	0.0151	-0.0049	-3.36	OE
BJHWHC		0.0228	-0.0022	-1.23	0.0192	-0.0008	-0.55	OE
BNU3XJ		0.0257	0.0006	0.36	0.0207	0.0006	0.44	CI
BU3GMU	*	0.0200	-0.0050	-2.82	0.0170	-0.0030	-2.08	GD
BU6469	*	0.0201	-0.0049	-2.77	0.0158	-0.0042	-2.91	CI
C7Q9WH		0.0257	0.0006	0.36	0.0210	0.0010	0.67	OE
C9X8XX		0.0209	-0.0041	-2.30	0.0163	-0.0038	-2.59	CI
CATERB		0.0245	-0.0006	-0.31	0.0194	-0.0007	-0.46	CI

Fasteners and Metals Interlaboratory Testing Program
Analysis 1603
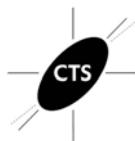
Cycle 143
3rd Qtr 2023

Carbon & Low Alloy Steel, SULFUR (S)
SULFUR (S)

| WebCode | Data Flag | Sample L93 | | | Sample L94 | | | Method |
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
D7UMWJ		0.0217	-0.0033	-1.85	0.0176	-0.0024	-1.65	OE
D9DNQ6		0.0253	0.0003	0.17	0.0203	0.0003	0.21	OE
DH4RUJ		0.0227	-0.0024	-1.32	0.0180	-0.0020	-1.39	OE
E4BAGK		0.0223	-0.0027	-1.51	0.0197	-0.0004	-0.25	GD
EDMG8L		0.0250	-0.0001	-0.03	0.0210	0.0010	0.69	OE
EHFEXX		0.0255	0.0005	0.27	0.0202	0.0002	0.14	OE
EN8LG8		0.0259	0.0008	0.47	0.0182	-0.0018	-1.26	OE
ENZNWV	X	0.0286	0.0035	1.99	0.0270	0.0069	4.77	OE
EQT9AU		0.0240	-0.0011	-0.59	0.0190	-0.0010	-0.68	OE
ETTTND		0.0274	0.0024	1.35	0.0214	0.0014	0.96	OE
FBA63P		0.0270	0.0020	1.11	0.0213	0.0013	0.90	OE
FBTXUM		0.0238	-0.0012	-0.66	0.0193	-0.0008	-0.52	OE
FFPCQP		0.0258	0.0008	0.43	0.0208	0.0008	0.53	CO
FHADKB		0.0207	-0.0044	-2.45	0.0173	-0.0027	-1.85	XX
FPGV6X	X	0.0200	-0.0050	-2.82	0.0130	-0.0070	-4.83	DR
FY7LRP		0.0279	0.0029	1.63	0.0196	-0.0004	-0.27	XX
G3GXZC		0.0236	-0.0015	-0.82	0.0182	-0.0018	-1.26	OE
G6JMBC	X	0.0217	-0.0033	-1.85	0.0148	-0.0053	-3.62	OE
GGC4ZD		0.0260	0.0010	0.57	0.0200	0.0000	0.00	XX
GNXF7M		0.0243	-0.0007	-0.39	0.0199	-0.0001	-0.09	OE
GNYWBD		0.0266	0.0015	0.86	0.0215	0.0015	1.01	GD
HYMW78		0.0267	0.0016	0.92	0.0213	0.0013	0.90	GD
J3CBKA	*	0.0297	0.0046	2.61	0.0237	0.0036	2.50	AE
JA37AR		0.0239	-0.0011	-0.63	0.0177	-0.0023	-1.60	OE
JCVPLQ		0.0235	-0.0015	-0.84	0.0191	-0.0010	-0.66	CI
JKUART		0.0273	0.0022	1.26	0.0215	0.0015	1.01	OE
JTHEAR		0.0225	-0.0025	-1.42	0.0178	-0.0022	-1.51	OE
JVNZZD	X	0.0250	0.0000	-0.01	0.0283	0.0083	5.70	OE
K7MXLR		0.0247	-0.0003	-0.18	0.0200	-0.0001	-0.04	CI
KFAWCX		0.0260	0.0010	0.55	0.0227	0.0026	1.81	OE
KHJUV7		0.0243	-0.0008	-0.43	0.0210	0.0009	0.64	OE
KNMXJJ		0.0251	0.0001	0.03	0.0200	-0.0001	-0.05	OE
L7HQ6H		0.0260	0.0010	0.55	0.0197	-0.0004	-0.25	OE
L96EGH		0.0255	0.0005	0.27	0.0204	0.0004	0.28	CO
LZUDVG		0.0256	0.0006	0.32	0.0208	0.0008	0.55	OE
MH9Z3B		0.0284	0.0034	1.89	0.0231	0.0030	2.09	GD
ML7LRT		0.0243	-0.0007	-0.39	0.0190	-0.0010	-0.71	OE
MUJJC6		0.0257	0.0007	0.40	0.0205	0.0004	0.30	OE
N228RT		0.0257	0.0007	0.38	0.0202	0.0002	0.12	OE
N49KFL		0.0264	0.0014	0.77	0.0218	0.0018	1.22	OE
N6HPVV		0.0290	0.0040	2.23	0.0220	0.0020	1.35	XX
NKC2FT		0.0238	-0.0012	-0.69	0.0180	-0.0021	-1.42	OE
NZMXMY		0.0250	0.0000	-0.01	0.0190	-0.0010	-0.71	XX
P2EZ4M		0.0257	0.0006	0.36	0.0198	-0.0002	-0.16	OE
P6VEWM		0.0229	-0.0021	-1.19	0.0198	-0.0002	-0.13	OE
PD6W3Z		0.0244	-0.0006	-0.33	0.0177	-0.0023	-1.58	OE
PFWTRT		0.0241	-0.0009	-0.52	0.0199	-0.0002	-0.11	CI

Fasteners and Metals Interlaboratory Testing Program
Analysis 1603
Carbon & Low Alloy Steel, SULFUR (S)
SULFUR (S)
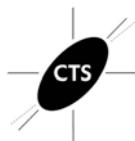
Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample L93			Sample L94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
PG9BL4		0.0246	-0.0004	-0.24	0.0202	0.0002	0.12	OE
PJATNK		0.0237	-0.0014	-0.76	0.0207	0.0006	0.44	OE
PP2RNA		0.0275	0.0024	1.37	0.0205	0.0005	0.32	OE
Q8JAW2		0.0250	0.0000	0.00	0.0203	0.0003	0.19	XX
Q9B7KV		0.0231	-0.0019	-1.08	0.0189	-0.0012	-0.80	CI
QHGB96		0.0239	-0.0011	-0.63	0.0193	-0.0008	-0.52	OE
R8DHGP		0.0242	-0.0008	-0.48	0.0206	0.0006	0.41	XX
RJ679J		0.0240	-0.0010	-0.58	0.0197	-0.0004	-0.25	OE
RTUWVB		0.0264	0.0014	0.79	0.0220	0.0020	1.35	OE
RTWKCP		0.0260	0.0010	0.55	0.0200	0.0000	-0.02	OE
RVGL8B		0.0256	0.0005	0.30	0.0212	0.0011	0.78	CI
RX9GV6		0.0254	0.0004	0.21	0.0198	-0.0002	-0.16	OE
T2LGTW		0.0272	0.0021	1.20	0.0217	0.0017	1.17	OE
T7WLPQ		0.0273	0.0023	1.30	0.0213	0.0013	0.90	OE
T8Q94E		0.0235	-0.0015	-0.83	0.0200	0.0000	-0.01	OE
TC37MV		0.0268	0.0017	0.98	0.0204	0.0004	0.27	OE
TCZPD4		0.0250	0.0000	-0.01	0.0203	0.0003	0.21	XX
TGW9GM		0.0236	-0.0014	-0.78	0.0190	-0.0010	-0.71	OE
TWCEQ2		0.0231	-0.0019	-1.08	0.0186	-0.0014	-0.98	OE
TYBPJF		0.0252	0.0002	0.10	0.0215	0.0015	1.01	OE
U9KGP4		0.0245	-0.0005	-0.30	0.0202	0.0002	0.12	CI
UB76Z4		0.0237	-0.0013	-0.74	0.0204	0.0003	0.23	OE
UCF9VF		0.0255	0.0004	0.25	0.0203	0.0002	0.16	CO
UDWW6Z		0.0271	0.0020	1.15	0.0224	0.0024	1.63	CO
UGRBLH		0.0237	-0.0014	-0.76	0.0197	-0.0003	-0.20	CI
UL6WR4		0.0239	-0.0011	-0.61	0.0196	-0.0004	-0.30	CI
UXF2P4		0.0249	-0.0001	-0.07	0.0183	-0.0018	-1.21	OE
V6A4CU		0.0253	0.0002	0.13	0.0205	0.0004	0.30	OE
V83MNU		0.0250	0.0000	-0.01	0.0217	0.0016	1.12	XX
WEDZQ3		0.0249	-0.0002	-0.09	0.0198	-0.0003	-0.18	OE
WEUUBR		0.0260	0.0010	0.55	0.0203	0.0003	0.21	OE
WGMDNR		0.0259	0.0009	0.51	0.0210	0.0010	0.67	OE
WHFF4E		0.0220	-0.0030	-1.68	0.0169	-0.0032	-2.17	OE
WJ8CT9		0.0249	-0.0002	-0.09	0.0196	-0.0004	-0.30	OE
WQQNUG	X	0.0447	0.0197	11.05	0.0321	0.0121	8.32	OE
XF34YH		0.0244	-0.0007	-0.37	0.0212	0.0012	0.80	OE
XHT68R		0.0272	0.0022	1.21	0.0215	0.0015	1.02	AE
XPULDQ		0.0285	0.0035	1.96	0.0228	0.0028	1.94	CI
XWDBAY		0.0241	-0.0009	-0.50	0.0170	-0.0031	-2.10	OE
YGDHUV		0.0266	0.0015	0.86	0.0215	0.0015	1.04	OE
YKWJPH	X	0.0294	0.0044	2.47	0.0205	0.0004	0.30	OE
YXJRQP		0.0245	-0.0006	-0.31	0.0199	-0.0002	-0.11	XX
YZUUUU		0.0292	0.0042	2.34	0.0237	0.0037	2.54	OE
Z2HFTH		0.0256	0.0005	0.30	0.0194	-0.0006	-0.41	OE
ZHLZKE		0.0241	-0.0010	-0.54	0.0219	0.0019	1.31	CO
ZN9P6N	X	0.0200	-0.0050	-2.82	0.0200	0.0000	-0.02	GD
ZNC6KA	X	0.0314	0.0063	3.56	0.0204	0.0003	0.23	IC

Fasteners and Metals Interlaboratory Testing Program
Analysis 1603
Carbon & Low Alloy Steel, SULFUR (S)
SULFUR (S)

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample L93			Sample L94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
ZYA7WE		0.0233	-0.0017	-0.95	0.0193	-0.0007	-0.48	GD
ZYQGEJ		0.0245	-0.0006	-0.31	0.0180	-0.0021	-1.42	IC

Summary Statistics

	Sample L93		Sample L94	
Grand Means	0.0250	Percent	0.0200	Percent
Stnd Dev Btwn Labs	0.0018	Percent	0.0015	Percent

Samples L93, L94 : AISI 1040, AISI 1045
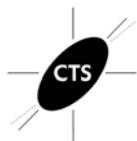
Statistics based on 131 of 143 reporting participants

Key to Method Codes Reported by Participants

AE	Spectrometry - Atomic Emission (AES)	CI	Combustion / IR
CO	Combustion	DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	XR	X-Ray Fluorescence - ED or WD not specified
XX	Please Indicate Method Used for Current Element		

Comments on Assigned Data Flags for Test #1603

4PVHC3 (X) - Data for sample L93 are low.

73VVP7 (X) - Data for both samples are high. Inconsistent within the determinations of both samples.

BE6CBQ (X) - Data for sample L94 are low.

ENZNWV (X) - Data for sample L94 are high.

FPGV6X (X) - Data for both samples are low.

G6JMBC (X) - Data for sample L94 are low.

JVNZZD (X) - Data for sample L94 are high.

WQQNUG (X) - Data for both samples are high. Inconsistent within the determinations of sample L93.

YKWJPH (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample L93.

ZN9P6N (X) - Data for sample L93 are low.

ZNC6KA (X) - Data for sample L93 are high.

Fasteners and Metals Interlaboratory Testing Program
Analysis 1603
Carbon & Low Alloy Steel, SULFUR (S)
SULFUR (S)
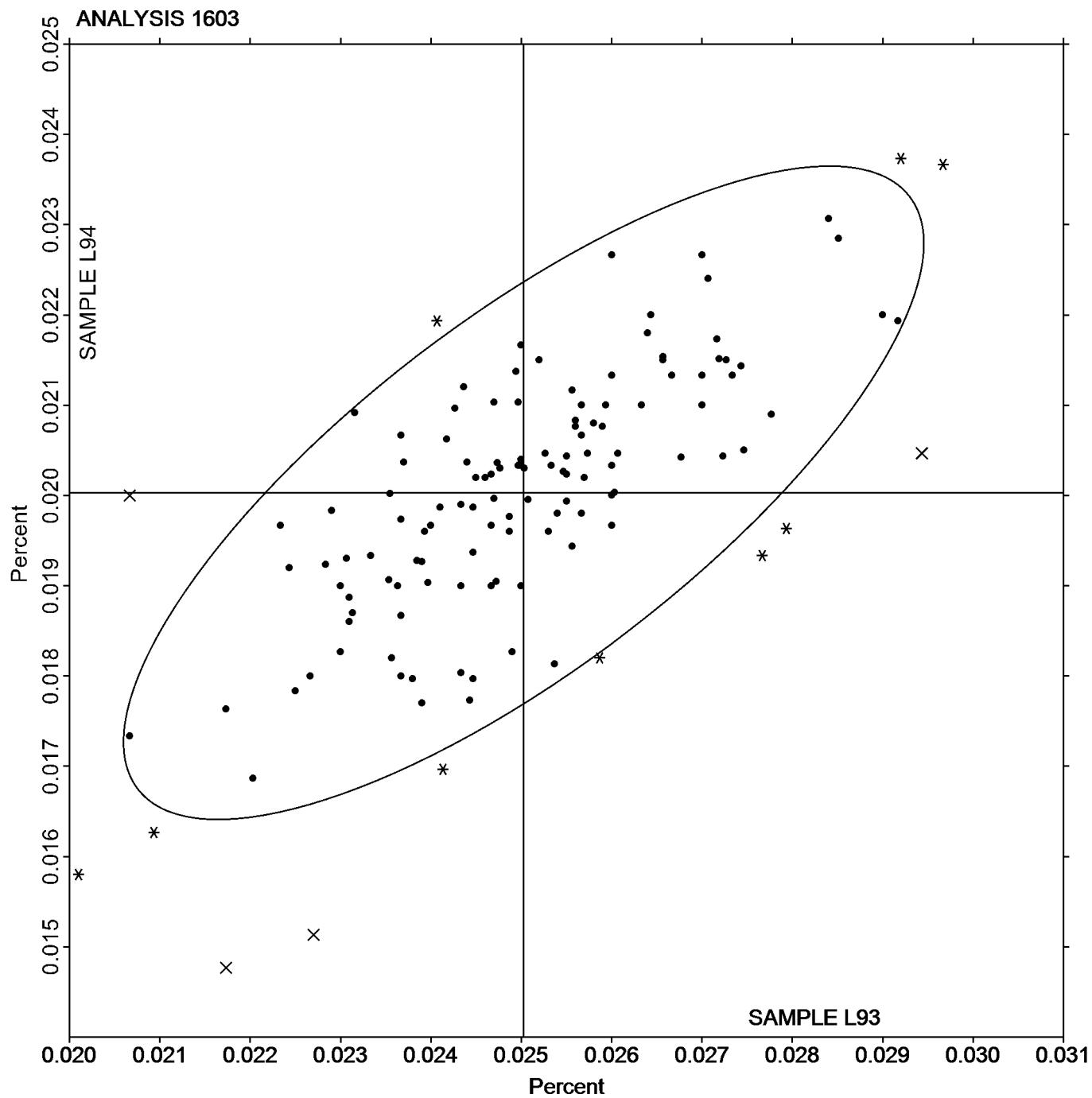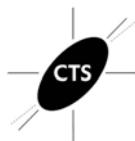
Cycle 143
3rd Qtr 2023

SAMPLE L93

0.0250 Percent

SAMPLE L94

0.0200 Percent

Fasteners and Metals Interlaboratory Testing Program
Analysis 1604
Carbon & Low Alloy Steel, SILICON (Si)
SILICON (Si)
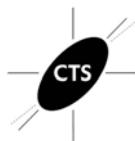
Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample L93			Sample L94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
23P2U3		0.2297	0.0006	0.12	0.2683	0.0006	0.09	OE
2APFZX		0.2230	-0.0060	-1.10	0.2630	-0.0048	-0.76	OE
2LJQCB		0.2307	0.0016	0.30	0.2690	0.0012	0.19	OE
2NPGDY		0.2318	0.0027	0.50	0.2721	0.0044	0.69	OE
2WGLKE		0.2353	0.0063	1.16	0.2727	0.0049	0.78	OE
36AW3U	X	0.1200	-0.1090	-19.98	0.1700	-0.0978	-15.60	IC
39N2QB		0.2224	-0.0066	-1.21	0.2630	-0.0048	-0.76	OE
3A6QZV		0.2238	-0.0052	-0.96	0.2603	-0.0074	-1.19	OE
3BF6EB		0.2350	0.0059	1.09	0.2789	0.0111	1.77	OE
3RPPGA		0.2248	-0.0042	-0.77	0.2623	-0.0055	-0.88	OE
3TXWLM	X	0.1920	-0.0370	-6.78	0.2400	-0.0278	-4.43	XX
3VKKXN		0.2290	0.0000	0.00	0.2627	-0.0051	-0.82	IC
46PHCV		0.2280	-0.0010	-0.19	0.2668	-0.0009	-0.15	OE
4PVHC3		0.2160	-0.0130	-2.39	0.2557	-0.0121	-1.93	DR
4UCHXB		0.2264	-0.0027	-0.49	0.2632	-0.0046	-0.74	WD
689GWR		0.2367	0.0076	1.40	0.2713	0.0036	0.57	XX
6ATF29		0.2244	-0.0046	-0.85	0.2690	0.0012	0.19	OE
73VVP7		0.2313	0.0023	0.42	0.2650	-0.0028	-0.44	OE
76FWKR		0.2250	-0.0040	-0.74	0.2632	-0.0045	-0.72	XX
79X6UD		0.2293	0.0003	0.06	0.2657	-0.0021	-0.34	XX
7A92BB		0.2289	-0.0002	-0.03	0.2644	-0.0034	-0.54	OE
7MFRBX		0.2357	0.0066	1.22	0.2747	0.0069	1.10	OE
7RCLW7		0.2347	0.0056	1.03	0.2720	0.0042	0.67	OE
7T4HLY		0.2313	0.0023	0.42	0.2680	0.0002	0.03	OE
7UVQL3		0.2233	-0.0057	-1.04	0.2567	-0.0111	-1.77	OE
7VNJGL		0.2299	0.0009	0.17	0.2663	-0.0015	-0.24	OE
7VUMJD		0.2283	-0.0007	-0.13	0.2663	-0.0014	-0.23	OE
839RTP		0.2183	-0.0107	-1.96	0.2600	-0.0078	-1.24	OE
83QBKU		0.2310	0.0020	0.36	0.2663	-0.0014	-0.23	OE
86RTMB		0.2233	-0.0057	-1.04	0.2677	-0.0001	-0.02	IC
8DR7U7	X	0.2297	0.0006	0.12	0.7120	0.4442	70.85	OE
8LJQQR		0.2240	-0.0050	-0.92	0.2567	-0.0111	-1.77	GR
94GB2K		0.2197	-0.0094	-1.71	0.2537	-0.0141	-2.25	OE
99TGHR		0.2295	0.0005	0.09	0.2663	-0.0015	-0.24	OE
9EGJHM		0.2250	-0.0040	-0.74	0.2693	0.0016	0.25	OE
A29QJ3		0.2320	0.0030	0.55	0.2700	0.0022	0.35	OE
A73EAH		0.2313	0.0023	0.42	0.2643	-0.0034	-0.55	XR
ALVAL9		0.2267	-0.0024	-0.43	0.2687	0.0009	0.15	OE
B46NG9		0.2293	0.0003	0.06	0.2693	0.0016	0.25	OE
BE6CBQ		0.2247	-0.0044	-0.80	0.2620	-0.0058	-0.92	OE
BJHWHC		0.2220	-0.0070	-1.29	0.2597	-0.0081	-1.29	OE
BNU3XJ		0.2300	0.0010	0.18	0.2700	0.0022	0.35	OE
BU3GMU		0.2320	0.0030	0.55	0.2720	0.0042	0.67	GD
BU6469	X	0.3333	0.1043	19.11	0.4067	0.1389	22.15	GR
C7Q9WH		0.2333	0.0043	0.79	0.2733	0.0056	0.89	OE
C9X8XX		0.2337	0.0046	0.85	0.2777	0.0099	1.58	IC
CATERB		0.2291	0.0000	0.01	0.2673	-0.0004	-0.07	OE

Fasteners and Metals Interlaboratory Testing Program
Analysis 1604
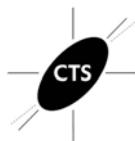
Cycle 143
3rd Qtr 2023

Carbon & Low Alloy Steel, SILICON (Si)
SILICON (Si)

WebCode	Data Flag	Sample L93 Lab Mean	Sample L93 Diff. from Grand Mean	Sample L93 CPV	Sample L94 Lab Mean	Sample L94 Diff. from Grand Mean	Sample L94 CPV	Method
D7UMWJ		0.2173	-0.0117	-2.14	0.2590	-0.0088	-1.40	OE
D9DNQ6		0.2277	-0.0014	-0.25	0.2687	0.0009	0.14	OE
E4BAGK		0.2293	0.0003	0.06	0.2610	-0.0068	-1.08	GD
EDMG8L		0.2329	0.0038	0.70	0.2719	0.0041	0.65	OE
EHFEXX		0.2283	-0.0007	-0.13	0.2680	0.0002	0.04	OE
EN8LG8		0.2330	0.0040	0.73	0.2765	0.0087	1.39	OE
ENZNWV	*	0.2300	0.0010	0.18	0.2761	0.0083	1.32	OE
EQT9AU	*	0.2437	0.0146	2.68	0.2867	0.0189	3.01	OE
ETTTND		0.2343	0.0053	0.97	0.2717	0.0039	0.62	OE
FBA63P		0.2263	-0.0027	-0.49	0.2663	-0.0014	-0.23	OE
FBTXUM		0.2252	-0.0038	-0.70	0.2622	-0.0056	-0.89	OE
FFPCQP		0.2330	0.0040	0.73	0.2740	0.0062	0.99	OE
FHADKB		0.2293	0.0003	0.06	0.2693	0.0016	0.25	XX
FPGV6X		0.2370	0.0080	1.46	0.2760	0.0082	1.31	DR
FY7LRP		0.2412	0.0122	2.24	0.2795	0.0117	1.87	XX
G3GXZC		0.2280	-0.0010	-0.19	0.2597	-0.0081	-1.29	OE
G6JMBC		0.2303	0.0013	0.24	0.2687	0.0009	0.14	OE
GGC4ZD	*	0.2150	-0.0140	-2.57	0.2503	-0.0174	-2.78	XX
GNXF7M		0.2407	0.0117	2.15	0.2845	0.0167	2.67	OE
GNYWBD		0.2313	0.0023	0.42	0.2750	0.0072	1.15	GD
HYMW78		0.2350	0.0060	1.09	0.2760	0.0082	1.31	GD
J3CBKA		0.2153	-0.0137	-2.51	0.2540	-0.0138	-2.20	AE
JA37AR	*	0.2340	0.0050	0.91	0.2540	-0.0138	-2.20	OE
JCVPLQ		0.2257	-0.0034	-0.62	0.2640	-0.0038	-0.60	IC
JKUART		0.2200	-0.0090	-1.65	0.2584	-0.0093	-1.49	OE
JTHEAR		0.2290	0.0000	0.00	0.2700	0.0022	0.35	OE
JVNZZD		0.2263	-0.0027	-0.49	0.2663	-0.0014	-0.23	OE
K7MXLR		0.2297	0.0006	0.12	0.2737	0.0059	0.94	IC
KFAWCX		0.2380	0.0090	1.64	0.2763	0.0086	1.36	OE
KHJUV7		0.2295	0.0005	0.09	0.2690	0.0013	0.20	OE
KNMXJJ	*	0.2412	0.0121	2.22	0.2686	0.0008	0.13	OE
L7HQ6H		0.2180	-0.0110	-2.02	0.2567	-0.0111	-1.77	OE
L96EGH		0.2337	0.0046	0.85	0.2723	0.0046	0.73	GR
LZUDVG		0.2263	-0.0028	-0.51	0.2632	-0.0045	-0.72	OE
MH9Z3B		0.2350	0.0060	1.09	0.2740	0.0062	0.99	GD
ML7LRT		0.2333	0.0043	0.79	0.2700	0.0022	0.35	OE
MUJJC6		0.2313	0.0023	0.42	0.2713	0.0036	0.57	OE
N228RT		0.2290	0.0000	0.00	0.2663	-0.0014	-0.23	OE
N49KFL		0.2379	0.0089	1.63	0.2737	0.0059	0.94	OE
N6HPVV		0.2257	-0.0034	-0.62	0.2630	-0.0048	-0.76	XX
NKC2FT		0.2264	-0.0027	-0.49	0.2590	-0.0088	-1.41	OE
NZMXMY		0.2303	0.0013	0.24	0.2690	0.0012	0.19	XX
P2EZ4M		0.2375	0.0084	1.55	0.2764	0.0086	1.37	OE
P6VEWM	*	0.2277	-0.0014	-0.25	0.2523	-0.0154	-2.46	OE
PD6W3Z		0.2243	-0.0047	-0.86	0.2627	-0.0051	-0.82	OE
PFWTRT		0.2313	0.0023	0.42	0.2673	-0.0004	-0.07	IC
PG9BL4		0.2260	-0.0030	-0.55	0.2650	-0.0028	-0.44	OE

Fasteners and Metals Interlaboratory Testing Program
Analysis 1604

Cycle 143

3rd Qtr 2023

Carbon & Low Alloy Steel, SILICON (Si)
SILICON (Si)

WebCode	Data Flag	Sample L93			Sample L94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
PJATNK		0.2303	0.0013	0.24	0.2717	0.0039	0.62	OE
PP2RNA		0.2273	-0.0017	-0.32	0.2663	-0.0014	-0.23	OE
PWGJQT		0.2206	-0.0084	-1.54	0.2634	-0.0044	-0.70	IC
Q8JAW2	X	0.2773	0.0483	8.85	0.2662	-0.0015	-0.25	XX
Q9B7KV		0.2299	0.0008	0.15	0.2653	-0.0025	-0.40	AE
QHGB96		0.2283	-0.0007	-0.13	0.2660	-0.0018	-0.28	XX
R8DHGP		0.2308	0.0018	0.33	0.2707	0.0029	0.47	XX
RJ679J		0.2270	-0.0020	-0.37	0.2667	-0.0011	-0.18	OE
RTUWVB		0.2304	0.0013	0.25	0.2700	0.0023	0.36	OE
RTWKCP		0.2200	-0.0090	-1.65	0.2610	-0.0068	-1.08	OE
RVGL8B		0.2284	-0.0007	-0.12	0.2630	-0.0048	-0.76	IC
RX9GV6		0.2327	0.0036	0.67	0.2733	0.0056	0.89	OE
T2LGTW		0.2237	-0.0054	-0.98	0.2600	-0.0078	-1.24	OE
T7WLPQ		0.2183	-0.0107	-1.96	0.2557	-0.0121	-1.93	OE
T8Q94E		0.2312	0.0022	0.41	0.2696	0.0018	0.29	OE
TC37MV		0.2325	0.0035	0.64	0.2698	0.0021	0.33	OE
TCZPD4		0.2377	0.0086	1.58	0.2760	0.0082	1.31	XX
TGW9GM		0.2337	0.0046	0.85	0.2710	0.0032	0.51	OE
TWCEQ2		0.2290	0.0000	0.00	0.2693	0.0016	0.25	OE
TYBPJF		0.2317	0.0026	0.48	0.2727	0.0049	0.78	OE
U9KGP4		0.2310	0.0020	0.36	0.2697	0.0019	0.30	WD
UB76Z4		0.2300	0.0010	0.18	0.2687	0.0009	0.14	XX
UCF9VF		0.2277	-0.0014	-0.25	0.2670	-0.0008	-0.12	OE
UDWW6Z		0.2340	0.0050	0.91	0.2723	0.0046	0.73	OE
UGRBLH		0.2353	0.0063	1.16	0.2770	0.0092	1.47	IC
UL6WR4		0.2260	-0.0030	-0.55	0.2633	-0.0044	-0.71	OE
UXF2P4		0.2203	-0.0087	-1.59	0.2603	-0.0074	-1.19	OE
V6A4CU		0.2267	-0.0024	-0.43	0.2647	-0.0031	-0.50	OE
V83MNU		0.2243	-0.0047	-0.86	0.2660	-0.0018	-0.28	XX
WEDZQ3		0.2258	-0.0032	-0.59	0.2648	-0.0030	-0.47	OE
WEUUBR		0.2410	0.0120	2.19	0.2777	0.0099	1.58	OE
WGMDNR		0.2283	-0.0007	-0.13	0.2687	0.0009	0.14	OE
WHFF4E		0.2200	-0.0090	-1.65	0.2580	-0.0098	-1.56	OE
WJ8CT9		0.2300	0.0010	0.18	0.2673	-0.0004	-0.07	OE
WQQNUG		0.2360	0.0070	1.28	0.2770	0.0092	1.47	OE
XF34YH		0.2285	-0.0006	-0.10	0.2683	0.0006	0.09	OE
XHT68R		0.2276	-0.0015	-0.27	0.2652	-0.0026	-0.42	AE
XPULDQ	X	0.2227	-0.0063	-1.15	0.2493	-0.0185	-2.95	OE
XWDBAY		0.2290	0.0000	0.00	0.2670	-0.0008	-0.12	OE
YGDHUV		0.2337	0.0046	0.85	0.2732	0.0054	0.86	OE
YXJRQP		0.2310	0.0020	0.36	0.2683	0.0006	0.09	OE
YZUUUU		0.2300	0.0010	0.18	0.2733	0.0056	0.89	OE
Z2HFTH		0.2330	0.0040	0.73	0.2694	0.0016	0.26	OE
ZHLZKE		0.2283	-0.0007	-0.13	0.2693	0.0016	0.25	OE
ZN9P6N		0.2367	0.0076	1.40	0.2767	0.0089	1.42	GD
ZNC6KA	X	0.2376	0.0085	1.57	0.2923	0.0246	3.92	IC
ZYA7WE		0.2267	-0.0024	-0.43	0.2667	-0.0011	-0.18	GD

Fasteners and Metals Interlaboratory Testing Program
Analysis 1604

Cycle 143

3rd Qtr 2023

Carbon & Low Alloy Steel, SILICON (Si)
SILICON (Si)

| WebCode | Data Flag | Sample L93 | | | Sample L94 | | | Method |
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
ZYQGEJ	*	0.2378	0.0088	1.61	0.2626	-0.0052	-0.83	IC

Summary Statistics

	Sample L93		Sample L94	
Grand Means	0.2290	Percent	0.2678	Percent
Stnd Dev Btwn Labs	0.0055	Percent	0.0063	Percent

Samples L93, L94 : AISI 1040, AISI 1045

Statistics based on 131 of 142 reporting participants

Key to Method Codes Reported by Participants

AE	Spectrometry - Atomic Emission (AES)	DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)	GR	Gravimetry
IC	Spectrometry - Inductively Coupled Plasma (ICP)	OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)	XR	X-Ray Fluorescence - ED or WD not specified
XX	Please Indicate Method Used for Current Element		

Comments on Assigned Data Flags for Test #1604

36AW3U (X) - Data for both samples are low. Possible Systematic Error.

3TXWLM (X) - Data for both samples are low. Possible Systematic Error.
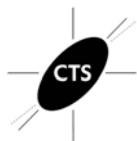
8DR7U7 (X) - Data for sample L94 are extreme.

BU6469 (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.

Q8JAW2 (X) - Data for sample L93 are high.

XPULDQ (X) - Data for sample L94 are low.

ZNC6KA (X) - Data for sample L94 are high.

**Fasteners and Metals Interlaboratory Testing Program**
Analysis 1604
Carbon & Low Alloy Steel, SILICON (Si)
SILICON (Si)
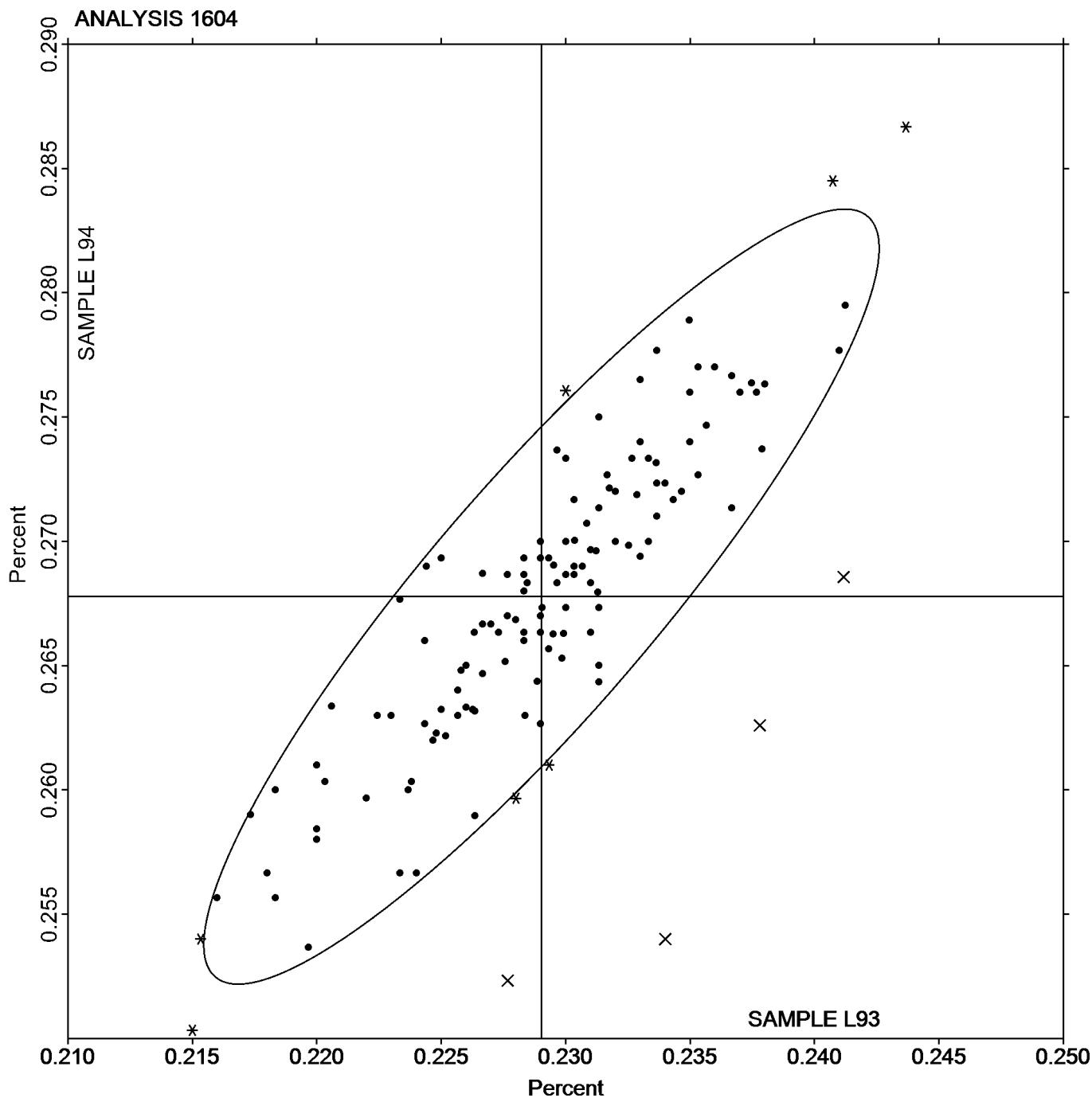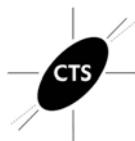
Cycle 143
3rd Qtr 2023

SAMPLE L93

0.2290 Percent

SAMPLE L94

0.2678 Percent
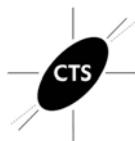
ANALYSIS 1604

Fasteners and Metals Interlaboratory Testing Program
Analysis 1605
Carbon & Low Alloy Steel, MOLYBDENUM (Mo)
MOLYBDENUM (Mo)

WebCode	Data Flag	Sample L93			Sample L94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
23P2U3		0.0270	0.0012	0.97	0.0317	0.0013	1.00	OE
2APFZX	*	0.0230	-0.0028	-2.28	0.0300	-0.0004	-0.26	OE
2LJQCB		0.0253	-0.0005	-0.44	0.0305	0.0001	0.11	OE
2NPGDY		0.0249	-0.0009	-0.71	0.0294	-0.0010	-0.72	OE
2WGLKE	X	0.0263	0.0005	0.43	0.0280	-0.0024	-1.78	OE
36AW3U	X	0.0300	0.0042	3.41	0.0300	-0.0004	-0.26	IC
39N2QB		0.0256	-0.0002	-0.17	0.0297	-0.0007	-0.49	OE
3A6QZV		0.0262	0.0004	0.29	0.0304	0.0000	0.01	OE
3BF6EB		0.0255	-0.0003	-0.28	0.0299	-0.0004	-0.32	OE
3RPPGA		0.0249	-0.0009	-0.76	0.0294	-0.0010	-0.75	OE
3TXWLM	X	0.0310	0.0052	4.23	0.0360	0.0056	4.27	GD
3VKKXN		0.0254	-0.0004	-0.33	0.0303	0.0000	-0.01	IC
46PHCV		0.0265	0.0007	0.56	0.0316	0.0013	0.96	OE
4PVHC3		0.0289	0.0031	2.54	0.0335	0.0032	2.41	DR
4UCHXB		0.0262	0.0004	0.29	0.0301	-0.0003	-0.21	WD
689GWR		0.0259	0.0001	0.08	0.0302	-0.0002	-0.14	XX
6ATF29		0.0262	0.0004	0.29	0.0309	0.0005	0.39	WD
73VVP7	X	0.0281	0.0023	1.84	0.0310	0.0006	0.49	OE
76FWKR	X	0.0221	-0.0037	-3.01	0.0278	-0.0026	-1.95	XX
79X6UD		0.0240	-0.0018	-1.47	0.0283	-0.0020	-1.52	XX
7A92BB		0.0274	0.0016	1.32	0.0323	0.0019	1.47	OE
7MFRBX	X	0.0210	-0.0048	-3.91	0.0253	-0.0050	-3.79	OE
7RCLW7		0.0247	-0.0011	-0.93	0.0300	-0.0004	-0.26	OE
7T4HLY		0.0261	0.0003	0.26	0.0305	0.0001	0.09	OE
7UVQL3	X	0.0333	0.0075	6.12	0.0333	0.0030	2.26	OE
7VNJGL		0.0260	0.0002	0.16	0.0303	0.0000	-0.01	OE
7VUMJD		0.0250	-0.0008	-0.66	0.0297	-0.0007	-0.52	OE
839RTP		0.0243	-0.0015	-1.20	0.0297	-0.0007	-0.52	OE
83QBKU		0.0237	-0.0021	-1.74	0.0287	-0.0017	-1.27	OE
86RTMB		0.0253	-0.0005	-0.38	0.0300	-0.0004	-0.26	IC
8DR7U7		0.0269	0.0011	0.89	0.0317	0.0013	1.00	OE
8LJQQR		0.0246	-0.0012	-0.98	0.0296	-0.0008	-0.59	IC
94GB2K		0.0273	0.0015	1.24	0.0317	0.0013	1.00	OE
99TGHR		0.0251	-0.0007	-0.60	0.0294	-0.0010	-0.72	OE
9EGJHM		0.0250	-0.0008	-0.66	0.0290	-0.0014	-1.02	OE
A29QJ3		0.0251	-0.0007	-0.55	0.0301	-0.0002	-0.16	OE
A73EAH		0.0290	0.0032	2.60	0.0340	0.0036	2.76	XR
ALVAL9		0.0256	-0.0002	-0.19	0.0301	-0.0003	-0.21	OE
B46NG9		0.0244	-0.0014	-1.14	0.0282	-0.0022	-1.65	OE
BE6CBQ		0.0251	-0.0007	-0.55	0.0297	-0.0007	-0.52	OE
BJHWHC		0.0250	-0.0008	-0.68	0.0297	-0.0006	-0.47	OE
BNU3XJ		0.0280	0.0022	1.79	0.0330	0.0026	2.00	OE
BU3GMU		0.0260	0.0002	0.16	0.0310	0.0006	0.49	GD
BU6469		0.0247	-0.0011	-0.93	0.0295	-0.0009	-0.64	IC
C7Q9WH		0.0263	0.0005	0.43	0.0303	0.0000	-0.01	OE
C9X8XX	X	0.0697	0.0439	35.68	0.1183	0.0880	66.53	IC
CATERB		0.0265	0.0007	0.54	0.0320	0.0016	1.25	OE

Fasteners and Metals Interlaboratory Testing Program
Analysis 1605
Carbon & Low Alloy Steel, MOLYBDENUM (Mo)
MOLYBDENUM (Mo)
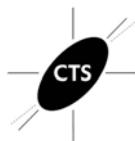
Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample L93 Lab Mean	Diff. from Grand Mean	CPV	Sample L94 Lab Mean	Diff. from Grand Mean	CPV	Method
D7UMWJ		0.0243	-0.0015	-1.20	0.0293	-0.0010	-0.77	OE
E4BAGK		0.0250	-0.0008	-0.66	0.0290	-0.0014	-1.02	GD
EDMG8L		0.0253	-0.0005	-0.44	0.0303	0.0000	-0.01	OE
EHFEXX		0.0264	0.0006	0.51	0.0315	0.0012	0.89	OE
EN8LG8		0.0277	0.0019	1.51	0.0325	0.0021	1.63	OE
ENZNWV	X	0.0268	0.0010	0.78	0.0329	0.0025	1.90	OE
EQT9AU	*	0.0291	0.0033	2.65	0.0344	0.0040	3.04	OE
ETTTND		0.0274	0.0016	1.32	0.0319	0.0015	1.17	OE
FBA63P	*	0.0260	0.0002	0.16	0.0287	-0.0017	-1.27	OE
FBTXUM		0.0232	-0.0026	-2.14	0.0269	-0.0035	-2.62	OE
FFPCQP		0.0257	-0.0001	-0.09	0.0304	0.0000	0.04	OE
FHADKB		0.0267	0.0009	0.70	0.0300	-0.0004	-0.26	XX
FPGV6X		0.0247	-0.0011	-0.90	0.0289	-0.0015	-1.10	DR
FY7LRP		0.0248	-0.0010	-0.79	0.0290	-0.0014	-1.02	XX
G3GXZC		0.0271	0.0013	1.08	0.0308	0.0004	0.32	OE
G6JMBC		0.0255	-0.0003	-0.28	0.0293	-0.0011	-0.82	OE
GGC4ZD		0.0246	-0.0012	-0.98	0.0288	-0.0015	-1.15	XX
GNXF7M		0.0253	-0.0005	-0.41	0.0292	-0.0011	-0.84	OE
GNYWBD	*	0.0241	-0.0017	-1.39	0.0275	-0.0028	-2.13	GD
HYMW78		0.0270	0.0012	0.97	0.0310	0.0006	0.49	GD
J3CBKA		0.0260	0.0002	0.16	0.0297	-0.0007	-0.52	AE
JA37AR		0.0246	-0.0012	-0.95	0.0293	-0.0011	-0.79	OE
JCVPLQ		0.0262	0.0004	0.32	0.0309	0.0005	0.39	IC
JKUART		0.0270	0.0012	0.97	0.0315	0.0011	0.87	OE
JTHEAR		0.0272	0.0014	1.13	0.0316	0.0013	0.97	OE
JVNZZD		0.0236	-0.0022	-1.82	0.0279	-0.0025	-1.85	OE
K7MXLR		0.0259	0.0001	0.10	0.0306	0.0003	0.21	IC
KFAWCX		0.0243	-0.0015	-1.20	0.0280	-0.0024	-1.78	OE
KHJUV7		0.0253	-0.0005	-0.44	0.0297	-0.0007	-0.52	OE
KNMXJJ		0.0242	-0.0016	-1.28	0.0294	-0.0009	-0.69	OE
L7HQ6H		0.0267	0.0009	0.70	0.0300	-0.0004	-0.26	OE
L96EGH		0.0263	0.0005	0.43	0.0310	0.0006	0.49	IC
LZUDVG		0.0259	0.0001	0.10	0.0303	-0.0001	-0.06	OE
MH9Z3B	*	0.0293	0.0035	2.87	0.0334	0.0031	2.33	GD
ML7LRT	*	0.0270	0.0012	0.97	0.0300	-0.0004	-0.26	OE
MUJJC6		0.0266	0.0008	0.65	0.0313	0.0009	0.72	OE
N228RT		0.0251	-0.0007	-0.55	0.0296	-0.0007	-0.54	OE
N49KFL		0.0251	-0.0007	-0.57	0.0297	-0.0007	-0.49	OE
N6HPVV		0.0257	-0.0001	-0.11	0.0290	-0.0014	-1.02	XX
NKC2FT		0.0272	0.0014	1.11	0.0316	0.0012	0.95	OE
NZMXMY		0.0253	-0.0005	-0.38	0.0303	0.0000	-0.01	XX
P2EZ4M		0.0265	0.0007	0.57	0.0311	0.0007	0.57	OE
P6VEWM		0.0260	0.0002	0.16	0.0317	0.0013	1.00	OE
PD6W3Z	X	0.0192	-0.0066	-5.35	0.0230	-0.0074	-5.58	OE
PFWTRT		0.0261	0.0003	0.24	0.0308	0.0004	0.32	IC
PG9BL4		0.0250	-0.0008	-0.66	0.0300	-0.0004	-0.26	OE
PJATNK		0.0267	0.0009	0.70	0.0317	0.0013	1.00	OE

Fasteners and Metals Interlaboratory Testing Program
Analysis 1605
Carbon & Low Alloy Steel, MOLYBDENUM (Mo)
MOLYBDENUM (Mo)

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample L93			Sample L94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
PP2RNA		0.0255	-0.0003	-0.22	0.0300	-0.0003	-0.24	OE
PWGJQT		0.0264	0.0006	0.48	0.0312	0.0008	0.62	IC
Q8JAW2		0.0259	0.0001	0.05	0.0304	0.0000	0.01	XX
Q9B7KV		0.0280	0.0022	1.81	0.0321	0.0018	1.35	AE
QHGB96		0.0258	0.0000	0.00	0.0304	0.0000	0.04	OE
R8DHGP		0.0258	0.0000	-0.03	0.0306	0.0003	0.20	XX
RJ679J		0.0260	0.0002	0.16	0.0307	0.0003	0.24	OE
RTUWVB		0.0258	0.0000	0.00	0.0308	0.0004	0.32	OE
RTWKCP	X	0.0150	-0.0108	-8.79	0.0200	-0.0104	-7.83	OE
RVGL8B		0.0257	-0.0001	-0.06	0.0301	-0.0003	-0.19	IC
T2LGTW		0.0261	0.0003	0.24	0.0308	0.0004	0.34	OE
T7WLPQ		0.0253	-0.0005	-0.38	0.0300	-0.0004	-0.26	OE
T8Q94E		0.0271	0.0013	1.02	0.0320	0.0016	1.22	OE
TCZPD4		0.0243	-0.0015	-1.20	0.0293	-0.0010	-0.77	XX
TGW9GM		0.0276	0.0018	1.43	0.0318	0.0014	1.07	OE
TWCEQ2		0.0247	-0.0011	-0.90	0.0289	-0.0015	-1.12	OE
TYBPJF		0.0257	-0.0001	-0.09	0.0305	0.0001	0.11	OE
U9KGP4		0.0260	0.0002	0.16	0.0313	0.0010	0.74	OE
UB76Z4		0.0255	-0.0003	-0.22	0.0311	0.0008	0.59	OE
UCF9VF		0.0253	-0.0005	-0.41	0.0302	-0.0001	-0.09	OE
UDWW6Z		0.0281	0.0023	1.87	0.0322	0.0018	1.40	OE
UGRBLH		0.0250	-0.0008	-0.66	0.0303	0.0000	-0.01	IC
UL6WR4		0.0267	0.0009	0.75	0.0313	0.0009	0.72	OE
UXF2P4		0.0248	-0.0010	-0.82	0.0294	-0.0010	-0.72	OE
V6A4CU		0.0257	-0.0001	-0.11	0.0303	-0.0001	-0.04	OE
WEDZQ3		0.0263	0.0005	0.40	0.0302	-0.0002	-0.11	OE
WEUUBR	X	0.0200	-0.0058	-4.72	0.0300	-0.0004	-0.26	OE
WFVEAT		0.0251	-0.0007	-0.56	0.0300	-0.0004	-0.30	XX
WGMDNR		0.0259	0.0001	0.10	0.0301	-0.0003	-0.19	OE
WHFF4E	X	0.0177	-0.0081	-6.62	0.0212	-0.0092	-6.94	OE
WJ8CT9		0.0253	-0.0005	-0.38	0.0300	-0.0004	-0.26	OE
WQQNUG	*	0.0243	-0.0015	-1.25	0.0271	-0.0033	-2.46	OE
XF34YH		0.0247	-0.0011	-0.93	0.0292	-0.0012	-0.89	OE
XHT68R		0.0248	-0.0010	-0.80	0.0292	-0.0012	-0.87	AE
XPULDQ		0.0269	0.0011	0.86	0.0314	0.0011	0.82	OE
XWDBAY		0.0261	0.0003	0.24	0.0312	0.0008	0.64	OE
YGDHUV		0.0262	0.0004	0.36	0.0310	0.0006	0.48	OE
YKWJPH		0.0275	0.0017	1.41	0.0313	0.0009	0.69	OE
YXJRQP		0.0227	-0.0031	-2.55	0.0270	-0.0034	-2.53	OE
YZUUUU		0.0254	-0.0004	-0.30	0.0300	-0.0003	-0.24	OE
Z2HFTH		0.0281	0.0023	1.84	0.0322	0.0018	1.40	OE
ZHLZKE		0.0253	-0.0005	-0.38	0.0300	-0.0004	-0.26	OE
ZN9P6N	X	0.0200	-0.0058	-4.72	0.0200	-0.0104	-7.83	GD
ZNC6KA		0.0228	-0.0030	-2.44	0.0269	-0.0035	-2.61	IC
ZYA7WE		0.0250	-0.0008	-0.66	0.0300	-0.0004	-0.26	GD
ZYQGEJ		0.0259	0.0001	0.08	0.0307	0.0003	0.24	IC

Fasteners and Metals Interlaboratory Testing Program
Analysis 1605
Carbon & Low Alloy Steel, MOLYBDENUM (Mo)
MOLYBDENUM (Mo)

Cycle 143

3rd Qtr 2023

Summary Statistics

	Sample L93		**Sample L94**	
Grand Means	0.0258	Percent	0.0304	Percent
Stnd Dev Btwn Labs	0.0012	Percent	0.0013	Percent

Samples L93, L94 : AISI 1040, AISI 1045

Statistics based on 122 of 140 reporting participants

Key to Method Codes Reported by Participants

AE	Spectrometry - Atomic Emission (AES)	DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1605

2WGLKE (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample L93.

36AW3U (X) - Data for sample L93 are high.

3TXWLM (X) - Data for both samples are high. Possible Systematic Error.

73VVP7 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample L94.

76FWKR (X) - Data for sample L93 are low.

7MFRBX (X) - Data for both samples are low. Possible Systematic Error.

7UVQL3 (X) - Data for sample L93 are high. Inconsistent within the determinations of both samples.

C9X8XX (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.

ENZNWV (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample L94.
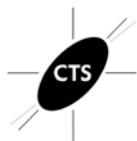
PD6W3Z (X) - Data for both samples are low. Possible Systematic Error.

RTWKCP (X) - Data for both samples are low. Possible Systematic Error.

WEUUBR (X) - Data for sample L93 are low.

WHFF4E (X) - Data for both samples are low. Possible Systematic Error.

ZN9P6N (X) - Data for both samples are low. Possible Systematic Error.

Fasteners and Metals Interlaboratory Testing Program
Analysis 1605
Carbon & Low Alloy Steel, MOLYBDENUM (Mo)
MOLYBDENUM (Mo)
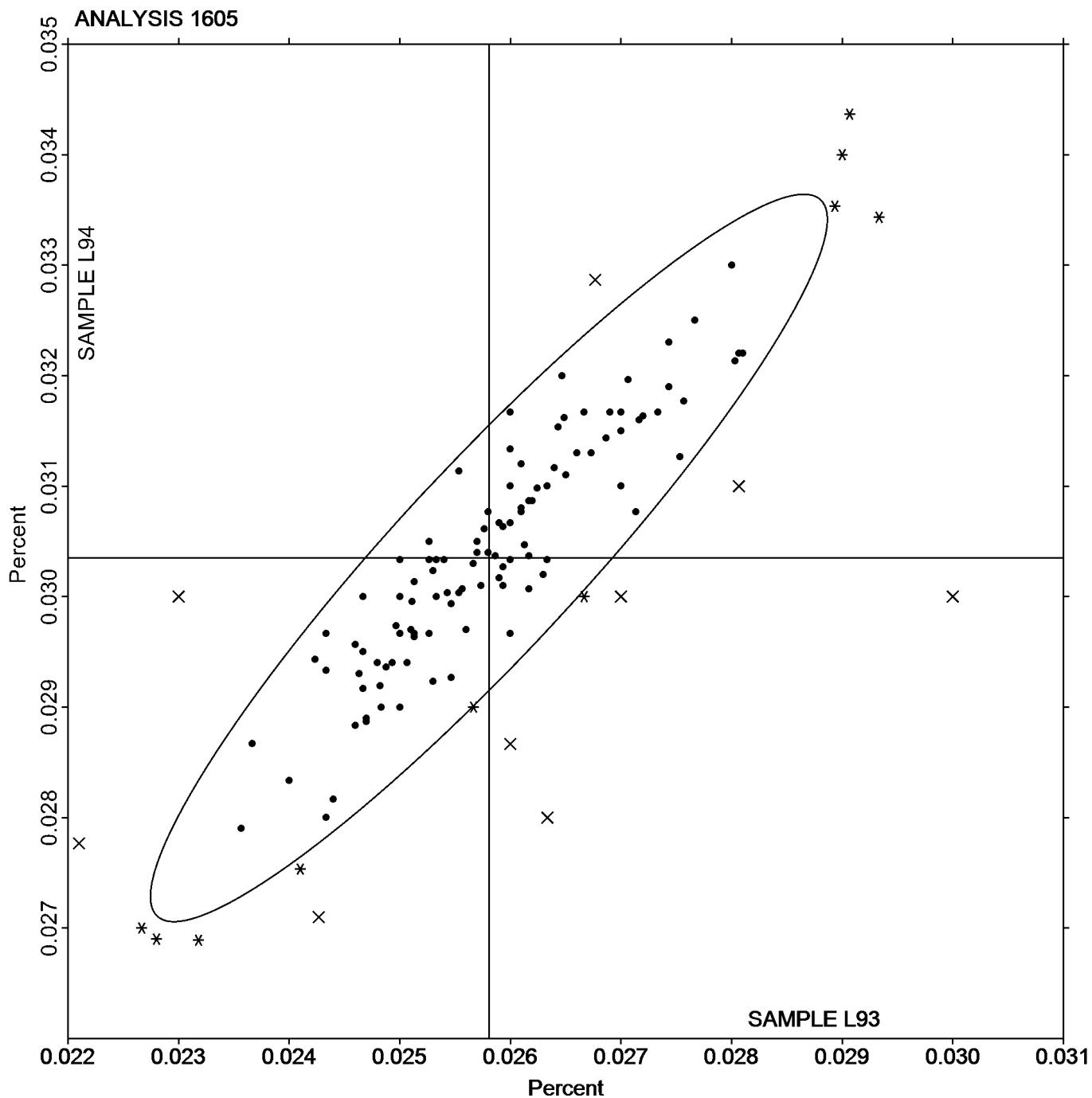
Cycle 143
3rd Qtr 2023
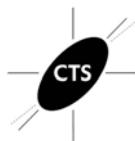
SAMPLE L93

0.0258 Percent

SAMPLE L94

0.0304 Percent

Fasteners and Metals Interlaboratory Testing Program
Analysis 1606
Carbon & Low Alloy Steel, NICKEL (Ni)
NICKEL (Ni)
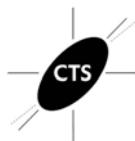
Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample L93 Lab Mean	Sample L93 Diff. from Grand Mean	Sample L93 CPV	Sample L94 Lab Mean	Sample L94 Diff. from Grand Mean	Sample L94 CPV	Method
23P2U3		0.0730	0.0008	0.35	0.1010	0.0013	0.52	OE
2APFZX		0.0717	-0.0006	-0.26	0.0993	-0.0003	-0.14	IC
2LJQCB		0.0720	-0.0002	-0.10	0.1007	0.0010	0.39	OE
2NPGDY		0.0723	0.0000	0.02	0.0998	0.0001	0.03	OE
2WGLKE		0.0737	0.0014	0.65	0.1037	0.0040	1.58	OE
36AW3U	X	0.0800	0.0078	3.52	0.1000	0.0003	0.13	IC
39N2QB	*	0.0702	-0.0020	-0.91	0.1017	0.0021	0.81	OE
3A6QZV		0.0722	-0.0001	-0.03	0.0997	0.0000	0.01	OE
3BF6EB		0.0710	-0.0012	-0.54	0.0989	-0.0008	-0.31	OE
3RPPGA		0.0745	0.0023	1.05	0.1021	0.0025	0.97	OE
3TXWLM	X	0.0560	-0.0162	-7.36	0.0840	-0.0157	-6.22	XX
3VKKXN		0.0730	0.0008	0.35	0.1013	0.0017	0.65	IC
46PHCV		0.0731	0.0009	0.41	0.1008	0.0012	0.46	OE
4PVHC3		0.0712	-0.0011	-0.48	0.0961	-0.0036	-1.43	DR
4UCHXB		0.0730	0.0008	0.35	0.1013	0.0016	0.64	WD
689GWR		0.0730	0.0008	0.35	0.1003	0.0007	0.26	XX
6ATF29		0.0723	0.0001	0.03	0.0973	-0.0024	-0.96	OE
73VVP7	X	0.0623	-0.0099	-4.49	0.0880	-0.0117	-4.63	OE
76FWKR		0.0728	0.0006	0.26	0.1019	0.0022	0.88	XX
79X6UD	X	0.0850	0.0128	5.79	0.1197	0.0200	7.92	XX
7A92BB		0.0735	0.0012	0.56	0.0988	-0.0009	-0.35	OE
7MFRBX		0.0727	0.0004	0.20	0.1000	0.0003	0.13	OE
7RCLW7	X	0.0610	-0.0112	-5.09	0.0900	-0.0097	-3.84	OE
7T4HLY		0.0735	0.0013	0.57	0.1004	0.0007	0.29	OE
7UVQL3	X	0.0667	-0.0056	-2.52	0.0867	-0.0130	-5.16	OE
7VNJGL		0.0707	-0.0016	-0.71	0.0963	-0.0033	-1.33	OE
7VUMJD		0.0727	0.0004	0.20	0.1013	0.0017	0.65	OE
839RTP	X	0.0597	-0.0126	-5.70	0.0827	-0.0170	-6.75	OE
83QBKU		0.0723	0.0001	0.05	0.1010	0.0013	0.52	OE
86RTMB		0.0720	-0.0002	-0.10	0.0977	-0.0020	-0.80	IC
8DR7U7		0.0732	0.0010	0.44	0.0989	-0.0008	-0.32	OE
8LJQQR		0.0706	-0.0016	-0.74	0.0984	-0.0012	-0.50	IC
94GB2K		0.0757	0.0034	1.56	0.1037	0.0040	1.58	OE
99TGHR		0.0734	0.0012	0.53	0.0993	-0.0004	-0.15	OE
9EGJHM	*	0.0773	0.0051	2.31	0.1033	0.0037	1.45	OE
A29QJ3		0.0720	-0.0002	-0.10	0.1003	0.0007	0.26	OE
A73EAH		0.0717	-0.0006	-0.26	0.0990	-0.0007	-0.27	XR
ALVAL9		0.0724	0.0002	0.08	0.0998	0.0001	0.05	OE
B46NG9		0.0730	0.0008	0.35	0.1010	0.0013	0.52	OE
BE6CBQ		0.0741	0.0018	0.83	0.0998	0.0001	0.03	OE
BJHWHC		0.0710	-0.0012	-0.56	0.0997	0.0000	-0.01	OE
BNU3XJ		0.0710	-0.0012	-0.56	0.0970	-0.0027	-1.06	OE
BU3GMU	*	0.0660	-0.0062	-2.82	0.0940	-0.0057	-2.25	GD
BU6469		0.0705	-0.0018	-0.80	0.0982	-0.0015	-0.60	IC
C7Q9WH		0.0733	0.0011	0.50	0.1003	0.0007	0.26	OE
C9X8XX	X	0.0763	0.0041	1.86	0.1197	0.0200	7.92	IC
CATERB		0.0727	0.0004	0.20	0.1003	0.0007	0.26	OE

Fasteners and Metals Interlaboratory Testing Program
Analysis 1606
Carbon & Low Alloy Steel, NICKEL (Ni)
NICKEL (Ni)
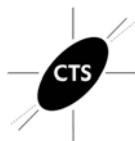
Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample L93 Lab Mean	Sample L93 Diff. from Grand Mean	Sample L93 CPV	Sample L94 Lab Mean	Sample L94 Diff. from Grand Mean	Sample L94 CPV	Method
D7UMWJ	X	0.0593	-0.0129	-5.85	0.0820	-0.0177	-7.01	OE
E4BAGK		0.0773	0.0051	2.31	0.1033	0.0037	1.45	GD
EDMG8L		0.0717	-0.0006	-0.26	0.1000	0.0003	0.13	OE
EHFEXX		0.0730	0.0008	0.35	0.1010	0.0013	0.52	OE
EN8LG8		0.0720	-0.0003	-0.12	0.1001	0.0005	0.18	OE
ENZNWV		0.0707	-0.0015	-0.69	0.0994	-0.0002	-0.10	OE
EQT9AU		0.0709	-0.0014	-0.62	0.0989	-0.0008	-0.32	OE
ETTTND		0.0717	-0.0006	-0.26	0.0987	-0.0010	-0.40	OE
FBA63P		0.0710	-0.0012	-0.56	0.0990	-0.0007	-0.27	OE
FBTXUM		0.0724	0.0001	0.07	0.0995	-0.0002	-0.09	OE
FFPCQP		0.0750	0.0028	1.26	0.1030	0.0033	1.32	OE
FHADKB		0.0703	-0.0019	-0.86	0.0983	-0.0013	-0.53	XX
FPGV6X	*	0.0670	-0.0052	-2.37	0.0920	-0.0077	-3.05	DR
FY7LRP		0.0731	0.0009	0.39	0.0992	-0.0004	-0.18	XX
G3GXZC		0.0750	0.0028	1.26	0.1057	0.0060	2.37	OE
G6JMBC		0.0720	-0.0002	-0.10	0.0987	-0.0010	-0.40	OE
GGC4ZD		0.0679	-0.0044	-1.98	0.0961	-0.0036	-1.42	XX
GNYWBD		0.0726	0.0004	0.18	0.1003	0.0007	0.26	GD
HYMW78		0.0743	0.0021	0.95	0.1013	0.0017	0.65	GD
J3CBKA		0.0663	-0.0059	-2.67	0.0940	-0.0057	-2.25	AE
JA37AR		0.0717	-0.0006	-0.26	0.0990	-0.0007	-0.27	OE
JCVPLQ		0.0720	-0.0002	-0.10	0.0990	-0.0007	-0.27	IC
JKUART		0.0761	0.0039	1.75	0.1045	0.0048	1.91	OE
JTHEAR		0.0728	0.0006	0.26	0.1017	0.0020	0.79	OE
JVNZZD	X	0.0637	-0.0086	-3.88	0.0897	-0.0100	-3.97	OE
K7MXLR		0.0750	0.0028	1.26	0.1030	0.0033	1.32	IC
KFAWCX		0.0713	-0.0009	-0.41	0.0963	-0.0033	-1.33	OE
KHJUV7		0.0747	0.0025	1.12	0.1021	0.0025	0.97	OE
KNMXJJ		0.0763	0.0040	1.83	0.1034	0.0038	1.49	OE
L7HQ6H	*	0.0680	-0.0042	-1.92	0.0983	-0.0013	-0.53	OE
L96EGH		0.0710	-0.0012	-0.56	0.0980	-0.0017	-0.67	IC
LZUDVG		0.0716	-0.0006	-0.27	0.0995	-0.0002	-0.09	OE
MH9Z3B	X	0.0796	0.0073	3.33	0.1120	0.0123	4.88	GD
ML7LRT		0.0720	-0.0002	-0.10	0.1000	0.0003	0.13	OE
MUJJC6		0.0705	-0.0017	-0.77	0.0986	-0.0010	-0.42	OE
N228RT	*	0.0780	0.0058	2.62	0.1070	0.0073	2.90	OE
N49KFL		0.0757	0.0035	1.57	0.1013	0.0016	0.64	XX
N6HPVV	X	0.0667	-0.0056	-2.52	0.0910	-0.0087	-3.44	XX
NKC2FT		0.0745	0.0023	1.04	0.1015	0.0019	0.73	OE
NZMXMY		0.0700	-0.0022	-1.01	0.0960	-0.0037	-1.46	XX
P2EZ4M		0.0721	-0.0002	-0.07	0.0986	-0.0011	-0.44	OE
P6VEWM		0.0723	0.0001	0.05	0.0993	-0.0003	-0.14	OE
PD6W3Z		0.0722	0.0000	0.00	0.1007	0.0010	0.39	OE
PFWTRT		0.0715	-0.0007	-0.32	0.0991	-0.0006	-0.24	IC
PG9BL4		0.0700	-0.0022	-1.01	0.0960	-0.0037	-1.46	OE
PJATNK		0.0707	-0.0016	-0.71	0.0980	-0.0017	-0.67	OE
PP2RNA		0.0725	0.0002	0.11	0.1010	0.0013	0.52	OE

Fasteners and Metals Interlaboratory Testing Program
Analysis 1606

Carbon & Low Alloy Steel, NICKEL (Ni)
NICKEL (Ni)

WebCode	Data Flag	Sample L93			Sample L94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
PWGJQT		0.0714	-0.0009	-0.39	0.0981	-0.0016	-0.63	IC
Q8JAW2		0.0728	0.0006	0.27	0.1010	0.0013	0.52	XX
Q9B7KV	X	0.0756	0.0034	1.54	0.0984	-0.0013	-0.51	AE
QHGB96		0.0720	-0.0002	-0.10	0.0987	-0.0010	-0.40	OE
R8DHGP		0.0717	-0.0005	-0.22	0.0994	-0.0003	-0.10	XX
RJ679J	X	0.0720	-0.0002	-0.10	0.1070	0.0073	2.90	OE
RTUWVB		0.0704	-0.0019	-0.85	0.0965	-0.0032	-1.27	OE
RTWKCP	X	0.0850	0.0128	5.79	0.1110	0.0113	4.49	OE
RVGL8B		0.0719	-0.0003	-0.13	0.0998	0.0001	0.05	IC
RX9GV6		0.0733	0.0011	0.50	0.1003	0.0007	0.26	OE
T2LGTW		0.0723	0.0001	0.05	0.1017	0.0020	0.79	OE
T7WLPQ		0.0730	0.0008	0.35	0.1007	0.0010	0.39	OE
T8Q94E		0.0731	0.0008	0.38	0.1014	0.0017	0.69	OE
TCZPD4	X	0.0423	-0.0299	-13.56	0.0837	-0.0160	-6.35	XX
TGW9GM		0.0717	-0.0006	-0.26	0.0997	0.0000	0.01	OE
TWCEQ2		0.0733	0.0011	0.50	0.1007	0.0010	0.39	OE
TYBPJF		0.0690	-0.0032	-1.46	0.0949	-0.0048	-1.90	OE
U9KGP4		0.0693	-0.0029	-1.31	0.0990	-0.0007	-0.27	OE
UB76Z4		0.0722	0.0000	0.00	0.0990	-0.0007	-0.27	OE
UCF9VF		0.0731	0.0009	0.39	0.1006	0.0009	0.35	OE
UDWW6Z	*	0.0780	0.0058	2.62	0.1037	0.0040	1.58	OE
UGRBLH		0.0740	0.0018	0.80	0.1037	0.0040	1.58	IC
UL6WR4		0.0720	-0.0002	-0.10	0.0990	-0.0007	-0.27	OE
UXF2P4		0.0697	-0.0026	-1.16	0.0960	-0.0037	-1.46	OE
V6A4CU		0.0713	-0.0009	-0.41	0.0987	-0.0010	-0.40	OE
V83MNU		0.0687	-0.0036	-1.62	0.0953	-0.0043	-1.72	XX
WEDZQ3		0.0723	0.0000	0.02	0.1003	0.0006	0.23	OE
WEUUBR		0.0700	-0.0022	-1.01	0.1000	0.0003	0.13	OE
WFVEAT		0.0772	0.0050	2.27	0.1045	0.0048	1.92	XX
WGMDNR		0.0710	-0.0013	-0.57	0.0993	-0.0003	-0.14	OE
WHFF4E		0.0717	-0.0006	-0.26	0.0983	-0.0013	-0.53	OE
WJ8CT9		0.0733	0.0011	0.50	0.1010	0.0013	0.52	OE
WQQNUG		0.0686	-0.0037	-1.66	0.0941	-0.0056	-2.23	OE
XF34YH		0.0713	-0.0009	-0.41	0.1014	0.0017	0.68	OE
XHT68R		0.0686	-0.0036	-1.63	0.0949	-0.0048	-1.91	AE
XPULDQ	X	0.0774	0.0051	2.33	0.1094	0.0097	3.85	OE
XWDBAY	*	0.0768	0.0046	2.07	0.0969	-0.0027	-1.09	OE
YGDHUV		0.0729	0.0007	0.31	0.0999	0.0002	0.07	OE
YKWJPH		0.0742	0.0020	0.89	0.1013	0.0016	0.63	OE
YXJRQP		0.0743	0.0021	0.95	0.1027	0.0030	1.18	OE
YZUUUU		0.0747	0.0024	1.10	0.1000	0.0003	0.13	OE
Z2HFTH	X	0.0890	0.0168	7.60	0.1162	0.0165	6.53	OE
ZHLZKE		0.0727	0.0004	0.20	0.1000	0.0003	0.13	OE
ZN9P6N		0.0700	-0.0022	-1.01	0.1000	0.0003	0.13	GD
ZNC6KA	*	0.0665	-0.0057	-2.60	0.0927	-0.0070	-2.77	IC
ZYA7WE		0.0730	0.0008	0.35	0.0990	-0.0007	-0.27	GD
ZYQGEJ		0.0727	0.0005	0.23	0.1013	0.0016	0.64	IC

Carbon & Low Alloy Steel, NICKEL (Ni)
NICKEL (Ni)

Summary Statistics

	Sample L93		**Sample L94**	
Grand Means	0.0722	Percent	0.0997	Percent
Stnd Dev Btwn Labs	0.0022	Percent	0.0025	Percent

Samples L93, L94 : AISI 1040, AISI 1045
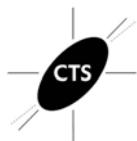
Statistics based on 121 of 141 reporting participants

Key to Method Codes Reported by Participants

AE	Spectrometry - Atomic Emission (AES)	DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1606

36AW3U (X) - Data for sample L93 are high.

3TXWLM (X) - Data for both samples are low. Possible Systematic Error.

73VVP7 (X) - Data for both samples are low. Possible Systematic Error.

79X6UD (X) - Data for both samples are high. Possible Systematic Error.

7RCLW7 (X) - Data for both samples are low. Possible Systematic Error.

7UVQL3 (X) - Data for sample L94 are low. Inconsistent within the determinations of both samples.

839RTP (X) - Data for both samples are low. Possible Systematic Error.

C9X8XX (X) - Data for sample L94 are high. Inconsistent within the determinations of both samples.

D7UMWJ (X) - Data for both samples are low. Possible Systematic Error.

JVNZZD (X) - Data for both samples are low. Possible Systematic Error.

MH9Z3B (X) - Data for both samples are high. Possible Systematic Error.

N6HPVV (X) - Data for sample L94 are low.

Q9B7KV (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample L93.

RJ679J (X) - Data for sample L94 are high.

RTWKCP (X) - Data for both samples are high. Possible Systematic Error.

TCZPD4 (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of both samples.

XPULDQ (X) - Data for sample L94 are high.

Z2HFTH (X) - Data for both samples are high. Possible Systematic Error.

Fasteners and Metals Interlaboratory Testing Program
Analysis 1606
Carbon & Low Alloy Steel, NICKEL (Ni)
NICKEL (Ni)
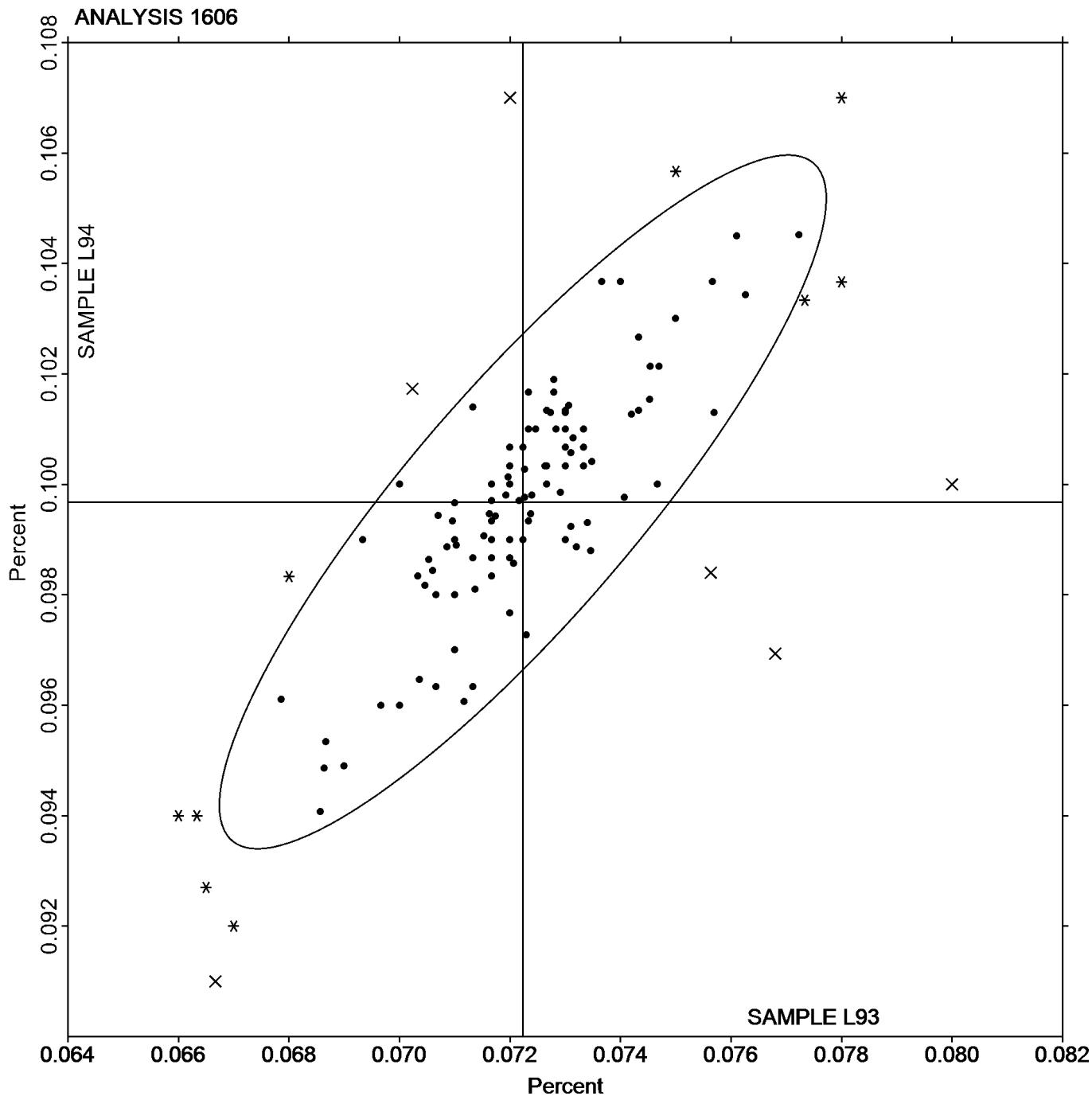
Cycle 143
3rd Qtr 2023
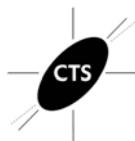
SAMPLE L93

0.0722 Percent

SAMPLE L94

0.0997 Percent

Fasteners and Metals Interlaboratory Testing Program
Analysis 1607
Carbon & Low Alloy Steel, CHROMIUM (Cr)
CHROMIUM (Cr)
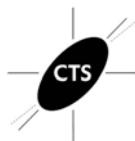
Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample L93 Lab Mean	Sample L93 Diff. from Grand Mean	Sample L93 CPV	Sample L94 Lab Mean	Sample L94 Diff. from Grand Mean	Sample L94 CPV	Method
23P2U3		0.1457	0.0000	-0.02	0.0720	0.0003	0.16	OE
2APFZX		0.1420	-0.0037	-1.13	0.0680	-0.0037	-1.75	OE
2LJQCB		0.1480	0.0023	0.70	0.0720	0.0003	0.16	OE
2NPGDY		0.1393	-0.0064	-1.97	0.0696	-0.0021	-0.99	OE
2WGLKE		0.1503	0.0046	1.41	0.0727	0.0010	0.48	OE
36AW3U		0.1500	0.0043	1.31	0.0700	-0.0017	-0.79	IC
39N2QB		0.1429	-0.0028	-0.87	0.0704	-0.0013	-0.60	OE
3A6QZV		0.1442	-0.0015	-0.46	0.0692	-0.0025	-1.18	OE
3BF6EB		0.1450	-0.0007	-0.22	0.0706	-0.0010	-0.49	OE
3RPPGA		0.1485	0.0028	0.84	0.0734	0.0017	0.83	OE
3TXWLM		0.1480	0.0023	0.70	0.0720	0.0003	0.16	GD
3VKKXN		0.1480	0.0023	0.70	0.0720	0.0003	0.16	IC
46PHCV		0.1477	0.0020	0.62	0.0722	0.0005	0.25	OE
4PVHC3	X	0.1893	0.0436	13.31	0.0633	-0.0084	-4.00	DR
4UCHXB		0.1458	0.0001	0.03	0.0717	0.0000	0.00	WD
689GWR		0.1450	-0.0007	-0.22	0.0720	0.0003	0.16	XX
6ATF29		0.1489	0.0032	0.98	0.0732	0.0016	0.75	WD
73VVP7		0.1437	-0.0020	-0.63	0.0690	-0.0027	-1.27	OE
76FWKR		0.1443	-0.0014	-0.42	0.0686	-0.0031	-1.46	XX
79X6UD	X	0.1317	-0.0140	-4.29	0.0670	-0.0047	-2.23	XX
7A92BB	*	0.1407	-0.0050	-1.53	0.0738	0.0021	1.02	OE
7MFRBX		0.1420	-0.0037	-1.13	0.0693	-0.0023	-1.11	OE
7RCLW7	*	0.1527	0.0070	2.12	0.0670	-0.0047	-2.23	OE
7T4HLY		0.1482	0.0025	0.75	0.0774	0.0058	2.76	OE
7UVQL3	X	0.1400	-0.0057	-1.74	0.0600	-0.0117	-5.58	OE
7VNJGL		0.1505	0.0048	1.46	0.0747	0.0030	1.44	OE
7VUMJD		0.1460	0.0003	0.09	0.0740	0.0023	1.12	OE
839RTP		0.1423	-0.0034	-1.03	0.0707	-0.0010	-0.48	OE
83QBKU		0.1520	0.0063	1.92	0.0733	0.0017	0.80	OE
86RTMB		0.1450	-0.0007	-0.22	0.0700	-0.0017	-0.79	IC
8DR7U7		0.1433	-0.0024	-0.73	0.0705	-0.0012	-0.57	OE
8LJQQR		0.1473	0.0016	0.49	0.0737	0.0020	0.96	IC
94GB2K	X	0.1400	-0.0057	-1.74	0.0500	-0.0217	-10.37	OE
99TGHR		0.1482	0.0025	0.77	0.0718	0.0001	0.05	OE
9EGJHM		0.1443	-0.0014	-0.42	0.0703	-0.0013	-0.63	OE
A29QJ3		0.1470	0.0013	0.39	0.0717	0.0000	0.00	OE
A73EAH		0.1467	0.0010	0.29	0.0697	-0.0020	-0.95	XR
ALVAL9		0.1451	-0.0006	-0.19	0.0716	0.0000	-0.01	OE
B46NG9	X	0.1487	0.0030	0.90	0.0560	-0.0157	-7.50	OE
BE6CBQ	X	0.1367	-0.0090	-2.76	0.0643	-0.0073	-3.51	OE
BJHWHC		0.1493	0.0036	1.10	0.0737	0.0020	0.96	OE
BNU3XJ		0.1500	0.0043	1.31	0.0713	-0.0003	-0.16	OE
BU3GMU	X	0.1570	0.0113	3.44	0.0790	0.0073	3.51	GD
BU6469		0.1428	-0.0029	-0.89	0.0699	-0.0018	-0.86	IC
C7Q9WH		0.1400	-0.0057	-1.74	0.0703	-0.0013	-0.63	OE
C9X8XX	X	0.1507	0.0050	1.51	0.0833	0.0117	5.59	IC
CATERB		0.1457	0.0000	-0.02	0.0710	-0.0007	-0.32	OE

Fasteners and Metals Interlaboratory Testing Program
Analysis 1607
Carbon & Low Alloy Steel, CHROMIUM (Cr)
CHROMIUM (Cr)
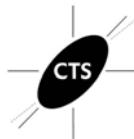
Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample L93			Sample L94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
D7UMWJ		0.1430	-0.0027	-0.83	0.0707	-0.0010	-0.48	OE
E4BAGK		0.1523	0.0066	2.02	0.0743	0.0027	1.28	GD
EDMG8L		0.1435	-0.0022	-0.67	0.0707	-0.0010	-0.48	OE
EHFEXX		0.1457	0.0000	-0.02	0.0723	0.0007	0.32	OE
EN8LG8	*	0.1523	0.0066	2.02	0.0701	-0.0016	-0.76	OE
ENZNWV	*	0.1384	-0.0073	-2.24	0.0717	0.0001	0.04	OE
EQT9AU		0.1430	-0.0027	-0.83	0.0712	-0.0004	-0.20	OE
ETTTND		0.1443	-0.0014	-0.42	0.0750	0.0033	1.60	OE
FBA63P		0.1470	0.0013	0.39	0.0700	-0.0017	-0.79	OE
FBTXUM		0.1418	-0.0039	-1.19	0.0670	-0.0047	-2.23	OE
FFPCQP		0.1520	0.0063	1.92	0.0763	0.0046	2.22	OE
FHADKB		0.1470	0.0013	0.39	0.0730	0.0013	0.64	XX
FPGV6X		0.1380	-0.0077	-2.35	0.0705	-0.0012	-0.56	DR
FY7LRP		0.1528	0.0071	2.17	0.0758	0.0041	1.98	XX
G3GXZC		0.1437	-0.0020	-0.63	0.0703	-0.0013	-0.63	OE
G6JMBC		0.1460	0.0003	0.09	0.0747	0.0030	1.44	OE
GGC4ZD		0.1527	0.0070	2.12	0.0754	0.0038	1.81	XX
GNXF7M	X	0.1324	-0.0133	-4.05	0.0616	-0.0100	-4.80	OE
GNYWBD		0.1470	0.0013	0.39	0.0757	0.0040	1.93	GD
HYMW78		0.1507	0.0050	1.51	0.0767	0.0050	2.40	GD
J3CBKA		0.1453	-0.0004	-0.12	0.0703	-0.0013	-0.63	AE
JA37AR		0.1503	0.0046	1.41	0.0730	0.0013	0.64	OE
JCVPLQ		0.1460	0.0003	0.09	0.0697	-0.0020	-0.95	IC
JKUART		0.1434	-0.0023	-0.70	0.0716	0.0000	-0.01	OE
JTHEAR	X	0.1570	0.0113	3.44	0.0693	-0.0023	-1.11	OE
JVNZZD		0.1440	-0.0017	-0.52	0.0703	-0.0013	-0.63	OE
K7MXLR		0.1460	0.0003	0.09	0.0700	-0.0017	-0.79	IC
KFAWCX		0.1427	-0.0030	-0.93	0.0710	-0.0007	-0.32	OE
KHJUV7		0.1488	0.0031	0.95	0.0758	0.0041	1.98	XX
KNMXJJ		0.1457	0.0000	0.01	0.0721	0.0004	0.21	OE
L7HQ6H	*	0.1420	-0.0037	-1.13	0.0750	0.0033	1.60	OE
L96EGH		0.1467	0.0010	0.29	0.0733	0.0017	0.80	IC
LZUDVG		0.1461	0.0004	0.12	0.0707	-0.0010	-0.46	OE
MH9Z3B		0.1400	-0.0057	-1.74	0.0687	-0.0030	-1.42	GD
ML7LRT	*	0.1500	0.0043	1.31	0.0670	-0.0047	-2.23	OE
MUJJC6		0.1440	-0.0017	-0.52	0.0706	-0.0011	-0.52	OE
N228RT		0.1443	-0.0014	-0.42	0.0667	-0.0050	-2.39	OE
N49KFL		0.1508	0.0051	1.55	0.0752	0.0035	1.70	OE
N6HPVV	X	0.1510	0.0053	1.61	0.0640	-0.0077	-3.67	XX
NKC2FT		0.1465	0.0008	0.23	0.0720	0.0003	0.15	OE
NZMXMY		0.1483	0.0026	0.80	0.0720	0.0003	0.16	XX
P2EZ4M		0.1534	0.0077	2.33	0.0754	0.0037	1.77	OE
P6VEWM	*	0.1477	0.0020	0.60	0.0667	-0.0050	-2.39	OE
PD6W3Z		0.1457	0.0000	-0.02	0.0719	0.0002	0.12	OE
PFWTRT		0.1497	0.0040	1.21	0.0735	0.0018	0.88	IC
PG9BL4		0.1460	0.0003	0.09	0.0720	0.0003	0.16	OE
PJATNK		0.1420	-0.0037	-1.13	0.0700	-0.0017	-0.79	OE

Fasteners and Metals Interlaboratory Testing Program
Analysis 1607
Carbon & Low Alloy Steel, CHROMIUM (Cr)
CHROMIUM (Cr)

Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample L93			Sample L94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
PP2RNA		0.1431	-0.0026	-0.80	0.0713	-0.0004	-0.17	OE
PWGJQT		0.1499	0.0042	1.27	0.0748	0.0031	1.49	IC
Q8JAW2		0.1447	-0.0010	-0.31	0.0716	0.0000	-0.01	XX
Q9B7KV		0.1481	0.0024	0.73	0.0708	-0.0008	-0.40	AE
QHGB96		0.1453	-0.0004	-0.12	0.0713	-0.0003	-0.16	OE
R8DHGP		0.1452	-0.0005	-0.16	0.0714	-0.0002	-0.12	XX
RJ679J		0.1453	-0.0004	-0.12	0.0703	-0.0013	-0.63	OE
RTUWVB		0.1423	-0.0034	-1.03	0.0703	-0.0014	-0.67	OE
RTWKCP	X	0.1820	0.0363	11.07	0.1060	0.0343	16.44	OE
RVGL8B		0.1444	-0.0013	-0.41	0.0696	-0.0020	-0.97	IC
RX9GV6		0.1470	0.0013	0.39	0.0720	0.0003	0.16	OE
T2LGTW		0.1463	0.0006	0.19	0.0703	-0.0013	-0.63	OE
T7WLPQ		0.1437	-0.0020	-0.63	0.0713	-0.0003	-0.16	OE
T8Q94E		0.1456	-0.0001	-0.04	0.0734	0.0017	0.81	OE
TCZPD4		0.1443	-0.0014	-0.42	0.0743	0.0027	1.28	XX
TGW9GM		0.1453	-0.0004	-0.12	0.0693	-0.0024	-1.13	OE
TWCEQ2		0.1473	0.0016	0.49	0.0713	-0.0003	-0.16	OE
TYBPJF		0.1457	0.0000	-0.02	0.0700	-0.0017	-0.79	OE
U9KGP4		0.1420	-0.0037	-1.13	0.0710	-0.0007	-0.32	XX
UB76Z4		0.1437	-0.0020	-0.63	0.0685	-0.0031	-1.50	OE
UCF9VF		0.1457	0.0000	-0.02	0.0714	-0.0003	-0.12	OE
UDWW6Z	X	0.1550	0.0093	2.83	0.0673	-0.0043	-2.07	OE
UGRBLH		0.1483	0.0026	0.80	0.0730	0.0013	0.64	IC
UL6WR4		0.1500	0.0043	1.31	0.0697	-0.0020	-0.95	OE
UXF2P4		0.1447	-0.0010	-0.32	0.0713	-0.0003	-0.16	OE
V6A4CU		0.1440	-0.0017	-0.52	0.0717	0.0000	0.00	OE
V83MNU		0.1393	-0.0064	-1.95	0.0690	-0.0027	-1.27	XX
WEDZQ3		0.1462	0.0005	0.15	0.0727	0.0011	0.51	OE
WEUUBR		0.1400	-0.0057	-1.74	0.0700	-0.0017	-0.79	OE
WGMDNR		0.1473	0.0016	0.49	0.0723	0.0006	0.29	OE
WHFF4E		0.1463	0.0006	0.19	0.0717	0.0000	0.00	OE
WJ8CT9		0.1470	0.0013	0.39	0.0710	-0.0007	-0.32	OE
WQQNUG		0.1467	0.0010	0.29	0.0709	-0.0008	-0.38	OE
XF34YH		0.1432	-0.0025	-0.78	0.0699	-0.0017	-0.83	OE
XHT68R	X	0.1320	-0.0137	-4.17	0.0674	-0.0043	-2.06	AE
XPULDQ	*	0.1523	0.0066	2.01	0.0779	0.0062	2.97	OE
XWDBAY		0.1400	-0.0057	-1.74	0.0696	-0.0021	-0.99	OE
YGDHUV		0.1433	-0.0025	-0.75	0.0705	-0.0011	-0.55	OE
YKWJPH		0.1460	0.0003	0.08	0.0719	0.0003	0.13	OE
YXJRQP		0.1440	-0.0017	-0.52	0.0707	-0.0010	-0.48	OE
YZUUUU		0.1433	-0.0024	-0.73	0.0703	-0.0013	-0.63	OE
Z2HFTH	X	0.1280	-0.0177	-5.41	0.0377	-0.0340	-16.28	OE
ZHLZKE		0.1450	-0.0007	-0.22	0.0717	0.0000	0.00	OE
ZN9P6N		0.1400	-0.0057	-1.74	0.0700	-0.0017	-0.79	GD
ZNC6KA	*	0.1467	0.0010	0.29	0.0662	-0.0055	-2.61	IC
ZYA7WE		0.1500	0.0043	1.31	0.0730	0.0013	0.64	GD
ZYQGEJ	X	0.1503	0.0046	1.39	0.0625	-0.0091	-4.37	IC

Fasteners and Metals Interlaboratory Testing Program
Analysis 1607

Cycle 143
3rd Qtr 2023

Carbon & Low Alloy Steel, CHROMIUM (Cr)
CHROMIUM (Cr)

Summary Statistics

	Sample L93		**Sample L94**	
Grand Means	0.1457	Percent	0.0717	Percent
Stnd Dev Btwn Labs	0.0033	Percent	0.0021	Percent

Samples L93, L94 : AISI 1040, AISI 1045
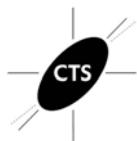
Statistics based on 119 of 141 reporting participants

Key to Method Codes Reported by Participants

AE	Spectrometry - Atomic Emission (AES)	DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1607

4PVHC3 (X) - Data for sample L93 are high and data for sample L94 are low.

79X6UD (X) - Data for sample L93 are low.

7UVQL3 (X) - Data for sample L94 are low. Inconsistent within the determinations of both samples.

94GB2K (X) - Data for sample L94 are low.

B46NG9 (X) - Data for sample L94 are low.

BE6CBQ (X) - Data for sample L94 are low.

BU3GMU (X) - Data for both samples are high.

C9X8XX (X) - Data for sample L94 are high. Inconsistent within the determinations of both samples.

GNXF7M (X) - Data for both samples are low.

JTHEAR (X) - Data for sample L93 are high.

N6HPVV (X) - Data for sample L94 are low.

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

UDWW6Z (X) - Data for sample L93 are high.

XHT68R (X) - Data for sample L93 are low.

Z2HFTH (X) - Data for both samples are low.

ZYQGEJ (X) - Data for sample L94 are low.

Fasteners and Metals Interlaboratory Testing Program
Analysis 1607
Carbon & Low Alloy Steel, CHROMIUM (Cr)
CHROMIUM (Cr)
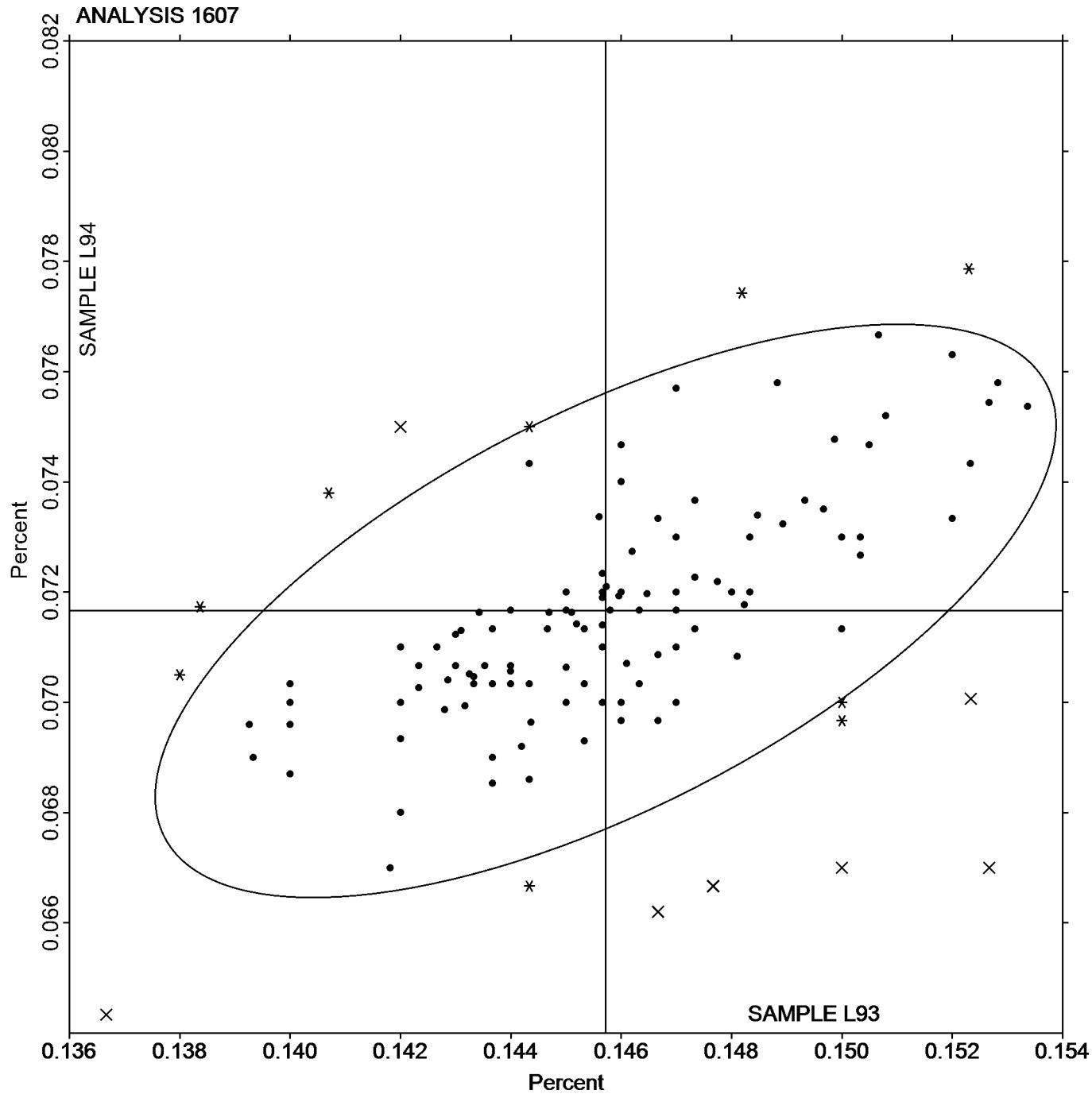
Cycle 143
3rd Qtr 2023
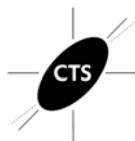
SAMPLE L93
0.1457 Percent

SAMPLE L94
0.0717 Percent

Fasteners and Metals Interlaboratory Testing Program
Analysis 1608
Carbon & Low Alloy Steel, COPPER (Cu)
COPPER (Cu)
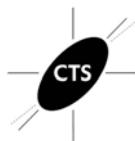
Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample L93			Sample L94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
23P2U3		0.2243	0.0053	1.35	0.2473	0.0071	1.57	OE
2APFZX		0.2207	0.0017	0.42	0.2383	-0.0019	-0.43	OE
2LJQCB		0.2173	-0.0017	-0.42	0.2407	0.0004	0.09	OE
2NPGDY		0.2225	0.0035	0.88	0.2451	0.0048	1.07	OE
2WGLKE		0.2177	-0.0013	-0.34	0.2397	-0.0006	-0.13	OE
36AW3U		0.2200	0.0010	0.25	0.2400	-0.0003	-0.06	IC
39N2QB		0.2225	0.0035	0.89	0.2417	0.0015	0.33	OE
3A6QZV	*	0.2249	0.0059	1.50	0.2407	0.0004	0.10	OE
3BF6EB		0.2187	-0.0003	-0.08	0.2405	0.0003	0.06	OE
3RPPGA		0.2180	-0.0010	-0.25	0.2415	0.0013	0.28	OE
3TXWLM		0.2090	-0.0100	-2.53	0.2290	-0.0113	-2.51	GD
3VKKXN		0.2210	0.0020	0.51	0.2420	0.0017	0.39	IC
46PHCV		0.2134	-0.0056	-1.41	0.2352	-0.0051	-1.13	OE
4PVHC3	X	0.1907	-0.0283	-7.16	0.2117	-0.0286	-6.37	DR
4UCHXB		0.2205	0.0015	0.38	0.2435	0.0033	0.73	WD
689GWR		0.2213	0.0023	0.59	0.2403	0.0001	0.01	XX
6ATF29		0.2195	0.0005	0.13	0.2387	-0.0016	-0.36	WD
73VVP7	*	0.2220	0.0030	0.76	0.2370	-0.0033	-0.73	OE
76FWKR		0.2278	0.0088	2.23	0.2501	0.0098	2.18	XX
79X6UD		0.2140	-0.0050	-1.26	0.2350	-0.0053	-1.17	XX
7A92BB		0.2170	-0.0020	-0.51	0.2385	-0.0018	-0.39	OE
7MFRBX		0.2223	0.0033	0.84	0.2437	0.0034	0.76	OE
7RCLW7		0.2163	-0.0027	-0.67	0.2383	-0.0019	-0.43	OE
7T4HLY		0.2149	-0.0041	-1.04	0.2380	-0.0023	-0.51	OE
7UVQL3		0.2133	-0.0057	-1.43	0.2333	-0.0069	-1.54	OE
7VNJGL		0.2119	-0.0071	-1.79	0.2307	-0.0096	-2.14	OE
7VUMJD		0.2140	-0.0050	-1.26	0.2373	-0.0029	-0.65	OE
839RTP		0.2127	-0.0063	-1.60	0.2333	-0.0069	-1.54	OE
83QBKU		0.2270	0.0080	2.02	0.2487	0.0084	1.87	OE
86RTMB		0.2177	-0.0013	-0.34	0.2350	-0.0053	-1.17	IC
8DR7U7		0.2180	-0.0010	-0.25	0.2383	-0.0019	-0.43	OE
8LJQQR		0.2203	0.0013	0.34	0.2423	0.0021	0.46	IC
94GB2K	X	0.2040	-0.0150	-3.79	0.2253	-0.0149	-3.33	OE
99TGHR		0.2208	0.0018	0.46	0.2374	-0.0028	-0.63	OE
9EGJHM		0.2217	0.0027	0.67	0.2443	0.0041	0.90	OE
A29QJ3		0.2200	0.0010	0.25	0.2420	0.0017	0.39	OE
A73EAH		0.2197	0.0007	0.17	0.2410	0.0007	0.16	XR
ALVAL9		0.2208	0.0018	0.46	0.2405	0.0002	0.05	OE
B46NG9		0.2203	0.0013	0.34	0.2407	0.0004	0.09	OE
BE6CBQ		0.2123	-0.0067	-1.68	0.2303	-0.0099	-2.21	OE
BJHWHC		0.2233	0.0043	1.10	0.2450	0.0047	1.05	OE
BNU3XJ		0.2200	0.0010	0.25	0.2400	-0.0003	-0.06	OE
BU3GMU		0.2220	0.0030	0.76	0.2440	0.0037	0.83	GD
BU6469		0.2135	-0.0055	-1.39	0.2352	-0.0051	-1.13	IC
C7Q9WH		0.2267	0.0077	1.94	0.2467	0.0064	1.42	OE
C9X8XX	*	0.2203	0.0013	0.34	0.2467	0.0064	1.42	IC
CATERB		0.2160	-0.0030	-0.76	0.2370	-0.0033	-0.73	OE

Fasteners and Metals Interlaboratory Testing Program
Analysis 1608
Carbon & Low Alloy Steel, COPPER (Cu)
COPPER (Cu)
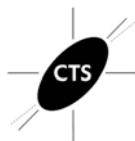
Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample L93			Sample L94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
D7UMWJ		0.2127	-0.0063	-1.60	0.2343	-0.0059	-1.32	OE
E4BAGK	X	0.2313	0.0123	3.12	0.2400	-0.0003	-0.06	GD
EDMG8L		0.2207	0.0017	0.43	0.2435	0.0032	0.72	OE
EHFEXX		0.2143	-0.0047	-1.18	0.2347	-0.0056	-1.25	OE
EN8LG8		0.2213	0.0023	0.59	0.2410	0.0007	0.16	OE
ENZNWV		0.2184	-0.0006	-0.15	0.2444	0.0041	0.91	OE
EQT9AU		0.2177	-0.0013	-0.34	0.2387	-0.0016	-0.36	OE
ETTTND		0.2157	-0.0033	-0.84	0.2410	0.0007	0.16	OE
FBA63P		0.2160	-0.0030	-0.76	0.2383	-0.0019	-0.43	OE
FBTXUM		0.2219	0.0029	0.72	0.2422	0.0020	0.43	OE
FFPCQP		0.2240	0.0050	1.26	0.2460	0.0057	1.28	OE
FHADKB	X	0.2010	-0.0180	-4.55	0.2197	-0.0206	-4.59	XX
FPGV6X		0.2140	-0.0050	-1.26	0.2350	-0.0053	-1.17	DR
FY7LRP		0.2249	0.0059	1.48	0.2437	0.0034	0.76	XX
G3GXZC		0.2207	0.0017	0.42	0.2417	0.0014	0.31	OE
G6JMBC		0.2167	-0.0023	-0.59	0.2370	-0.0033	-0.73	OE
GGC4ZD		0.2187	-0.0003	-0.08	0.2407	0.0004	0.09	XX
GNXF7M		0.2125	-0.0065	-1.65	0.2362	-0.0040	-0.90	OE
GNYWBD		0.2210	0.0020	0.51	0.2407	0.0004	0.09	GD
HYMW78		0.2160	-0.0030	-0.76	0.2373	-0.0029	-0.65	GD
J3CBKA	X	0.2037	-0.0153	-3.87	0.2197	-0.0206	-4.59	AE
JA37AR		0.2250	0.0060	1.52	0.2450	0.0047	1.05	OE
JCVPLQ		0.2190	0.0000	0.00	0.2403	0.0001	0.01	IC
JKUART		0.2283	0.0093	2.35	0.2508	0.0105	2.34	OE
JTHEAR		0.2187	-0.0003	-0.08	0.2410	0.0007	0.16	OE
JVNZZD		0.2257	0.0067	1.69	0.2480	0.0077	1.72	OE
K7MXLR		0.2183	-0.0007	-0.17	0.2400	-0.0003	-0.06	IC
KFAWCX		0.2217	0.0027	0.67	0.2417	0.0014	0.31	OE
KHJUV7		0.2176	-0.0014	-0.36	0.2391	-0.0012	-0.26	OE
KNMXJJ		0.2279	0.0089	2.24	0.2472	0.0070	1.55	OE
L7HQ6H		0.2093	-0.0097	-2.44	0.2300	-0.0103	-2.29	OE
L96EGH		0.2197	0.0007	0.17	0.2413	0.0011	0.24	IC
LZUDVG		0.2206	0.0016	0.41	0.2429	0.0026	0.58	OE
MH9Z3B	X	0.2323	0.0133	3.37	0.2540	0.0137	3.06	GD
ML7LRT		0.2200	0.0010	0.25	0.2400	-0.0003	-0.06	OE
MUJJC6		0.2177	-0.0013	-0.34	0.2387	-0.0016	-0.36	OE
N228RT		0.2123	-0.0067	-1.68	0.2300	-0.0103	-2.29	OE
N49KFL		0.2167	-0.0023	-0.58	0.2355	-0.0048	-1.06	OE
N6HPVV		0.2143	-0.0047	-1.18	0.2340	-0.0063	-1.40	XX
NKC2FT		0.2219	0.0029	0.74	0.2461	0.0059	1.31	OE
NZMXMY		0.2140	-0.0050	-1.26	0.2350	-0.0053	-1.17	XX
P2EZ4M	X	0.2276	0.0086	2.17	0.2583	0.0180	4.01	OE
P6VEWM		0.2167	-0.0023	-0.59	0.2323	-0.0079	-1.77	OE
PD6W3Z		0.2223	0.0033	0.84	0.2440	0.0037	0.83	OE
PFWTRT		0.2207	0.0017	0.42	0.2420	0.0017	0.39	IC
PG9BL4		0.2230	0.0040	1.01	0.2420	0.0017	0.39	OE
PJATNK		0.2223	0.0033	0.84	0.2453	0.0051	1.13	OE

Fasteners and Metals Interlaboratory Testing Program
Analysis 1608
Carbon & Low Alloy Steel, COPPER (Cu)
COPPER (Cu)

Cycle 143
3rd Qtr 2023

| WebCode | Data Flag | Sample L93 | | | Sample L94 | | | Method |
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
PP2RNA		0.2192	0.0002	0.05	0.2429	0.0026	0.59	OE
PWGJQT		0.2211	0.0021	0.53	0.2429	0.0026	0.58	IC
Q8JAW2		0.2195	0.0005	0.14	0.2413	0.0010	0.22	XX
Q9B7KV		0.2206	0.0016	0.40	0.2434	0.0031	0.69	AE
QHGB96		0.2203	0.0013	0.34	0.2360	-0.0043	-0.95	OE
R8DHGP		0.2157	-0.0033	-0.82	0.2393	-0.0010	-0.21	XX
RJ679J		0.2187	-0.0003	-0.08	0.2407	0.0004	0.09	OE
RTUWVB		0.2228	0.0038	0.95	0.2472	0.0069	1.54	OE
RTWKCP		0.2100	-0.0090	-2.27	0.2320	-0.0083	-1.84	OE
RVGL8B		0.2207	0.0017	0.44	0.2427	0.0024	0.54	IC
T2LGTW		0.2193	0.0003	0.08	0.2403	0.0001	0.01	OE
T7WLPQ		0.2170	-0.0020	-0.50	0.2407	0.0004	0.09	OE
T8Q94E		0.2173	-0.0017	-0.42	0.2406	0.0003	0.08	OE
TCZPD4		0.2117	-0.0073	-1.85	0.2343	-0.0059	-1.32	XX
TGW9GM		0.2190	0.0000	0.00	0.2390	-0.0013	-0.28	OE
TWCEQ2		0.2213	0.0023	0.59	0.2430	0.0027	0.61	OE
TYBPJF	X	0.2077	-0.0113	-2.86	0.2223	-0.0179	-3.99	OE
U9KGP4		0.2143	-0.0047	-1.18	0.2343	-0.0059	-1.32	WD
UB76Z4		0.2143	-0.0047	-1.18	0.2360	-0.0043	-0.95	OE
UCF9VF		0.2183	-0.0007	-0.17	0.2393	-0.0009	-0.21	OE
UDWW6Z		0.2187	-0.0003	-0.08	0.2397	-0.0006	-0.13	OE
UGRBLH		0.2217	0.0027	0.67	0.2427	0.0024	0.53	IC
UL6WR4		0.2263	0.0073	1.85	0.2477	0.0074	1.65	OE
UXF2P4		0.2177	-0.0013	-0.34	0.2383	-0.0019	-0.43	OE
V6A4CU		0.2213	0.0023	0.59	0.2417	0.0014	0.31	OE
V83MNU		0.2167	-0.0023	-0.59	0.2387	-0.0016	-0.36	XX
WEDZQ3		0.2256	0.0066	1.68	0.2501	0.0099	2.20	OE
WEUUBR		0.2200	0.0010	0.25	0.2400	-0.0003	-0.06	OE
WGMDNR		0.2137	-0.0053	-1.35	0.2350	-0.0053	-1.17	OE
WHFF4E		0.2190	0.0000	0.00	0.2420	0.0017	0.39	OE
WJ8CT9		0.2203	0.0013	0.34	0.2387	-0.0016	-0.36	OE
WQQNUG		0.2190	0.0000	0.00	0.2410	0.0007	0.16	OE
XF34YH	*	0.2199	0.0009	0.23	0.2310	-0.0093	-2.07	OE
XHT68R		0.2203	0.0013	0.34	0.2419	0.0016	0.36	AE
XPULDQ		0.2190	0.0000	-0.01	0.2428	0.0025	0.56	OE
XWDBAY		0.2250	0.0060	1.52	0.2503	0.0101	2.24	XX
YGDHUV		0.2197	0.0007	0.17	0.2402	-0.0001	-0.01	OE
YKWJPH	X	0.2358	0.0168	4.25	0.2562	0.0159	3.55	OE
YXJRQP		0.2193	0.0003	0.08	0.2410	0.0007	0.16	OE
YZUUUU		0.2200	0.0010	0.25	0.2400	-0.0003	-0.06	OE
Z2HFTH	*	0.2282	0.0092	2.33	0.2454	0.0052	1.15	OE
ZHLZKE		0.2193	0.0003	0.08	0.2423	0.0021	0.46	OE
ZN9P6N	X	0.1967	-0.0223	-5.64	0.2167	-0.0236	-5.25	GD
ZNC6KA		0.2199	0.0009	0.23	0.2380	-0.0023	-0.51	IC
ZYA7WE	*	0.2100	-0.0090	-2.27	0.2400	-0.0003	-0.06	GD
ZYQGEJ	*	0.2194	0.0004	0.11	0.2331	-0.0071	-1.59	IC

Fasteners and Metals Interlaboratory Testing Program
Analysis 1608
Carbon & Low Alloy Steel, COPPER (Cu)
COPPER (Cu)

Cycle 143
3rd Qtr 2023

Summary Statistics

	Sample L93		Sample L94	
Grand Means	0.2190	Percent	0.2403	Percent
Stnd Dev Btwn Labs	0.0040	Percent	0.0045	Percent

Samples L93, L94 : AISI 1040, AISI 1045

Statistics based on 124 of 140 reporting participants

Key to Method Codes Reported by Participants

AE	Spectrometry - Atomic Emission (AES)	DR	Spectrometry - Direct Reading OE (DROES)
GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1608

4PVHC3 (X) - Data for both samples are low. Possible Systematic Error.

94GB2K (X) - Data for both samples are low. Possible Systematic Error.

E4BAGK (X) - Data for sample L93 are high.

FHADKB (X) - Data for both samples are low. Possible Systematic Error.

J3CBKA (X) - Data for both samples are low. Possible Systematic Error.

MH9Z3B (X) - Data for both samples are high. Possible Systematic Error.

P2EZ4M (X) - Data for sample L94 are high. Inconsistent within the determinations of sample L94.

TYBPJF (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample L93.

YKWJPH (X) - Data for both samples are high. Possible Systematic Error.
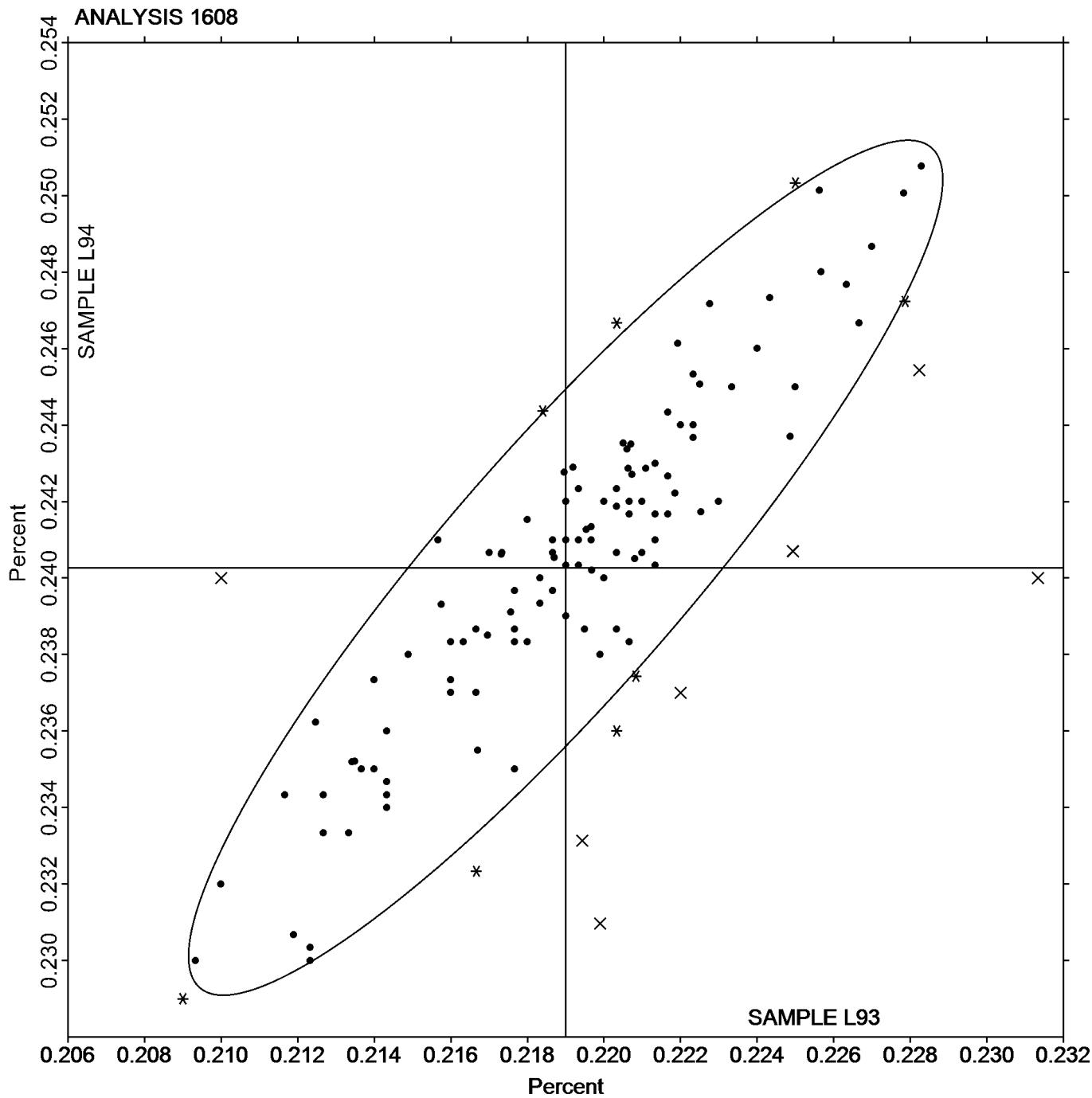
ZN9P6N (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of both samples.

**Fasteners and Metals Interlaboratory Testing Program**
Analysis 1608
Carbon & Low Alloy Steel, COPPER (Cu)
COPPER (Cu)
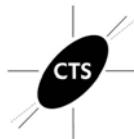
Cycle 143
3rd Qtr 2023

SAMPLE L93

0.2190 Percent

SAMPLE L94

0.2403 Percent

Fasteners and Metals Interlaboratory Testing Program
Analysis 1610
Carbon & Low Alloy Steel, TIN (Sn)
TIN (Sn)
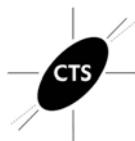
Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample L93			Sample L94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2LJQCB		0.00923	-0.00023	-0.33	0.00727	-0.00023	-0.35	OE
2NPGDY		0.00943	-0.00003	-0.05	0.00733	-0.00016	-0.25	OE
2WGLKE		0.00767	-0.00180	-2.52	0.00580	-0.00170	-2.60	OE
39N2QB		0.00970	0.00024	0.33	0.00724	-0.00026	-0.40	IC
3A6QZV		0.00920	-0.00027	-0.37	0.00727	-0.00023	-0.35	OE
3BF6EB		0.00907	-0.00040	-0.56	0.00720	-0.00030	-0.45	OE
3RPPGA		0.0103	0.00080	1.12	0.00834	0.00085	1.30	OE
46PHCV		0.0100	0.00053	0.75	0.00800	0.00050	0.77	OE
4PVHC3	X	0.0166	0.00717	10.06	0.0138	0.00627	9.61	DR
4UCHXB		0.00983	0.00037	0.51	0.00823	0.00074	1.13	WD
689GWR		0.00983	0.00037	0.51	0.00790	0.00040	0.62	XX
6ATF29		0.00973	0.00027	0.37	0.00747	-0.00003	-0.04	OE
7A92BB		0.0104	0.00097	1.36	0.00753	0.00004	0.06	OE
7MFRBX		0.0110	0.00153	2.15	0.00900	0.00150	2.30	OE
7RCLW7	X	0.0100	0.00053	0.75	0.0100	0.00250	3.84	OE
7T4HLY		0.00824	-0.00123	-1.73	0.00621	-0.00129	-1.98	OE
7UVQL3	X	0.0103	0.00087	1.22	0.00967	0.00217	3.33	OE
7VUMJD		0.00900	-0.00047	-0.65	0.00733	-0.00016	-0.25	OE
839RTP		0.00900	-0.00047	-0.65	0.00700	-0.00050	-0.76	OE
83QBKU		0.0110	0.00153	2.15	0.00900	0.00150	2.30	OE
86RTMB		0.0103	0.00087	1.22	0.00767	0.00017	0.26	IC
8LJQQR		0.00900	-0.00047	-0.65	0.00717	-0.00033	-0.50	IC
94GB2K		0.0103	0.00087	1.22	0.00800	0.00050	0.77	OE
99TGHR		0.00917	-0.00030	-0.42	0.00720	-0.00030	-0.45	OE
9EGJHM		0.00967	0.00020	0.28	0.00800	0.00050	0.77	OE
A29QJ3		0.00933	-0.00013	-0.19	0.00737	-0.00013	-0.20	OE
A73EAH		0.00833	-0.00113	-1.59	0.00600	-0.00150	-2.29	XR
ALVAL9		0.00953	0.00007	0.09	0.00750	0.00000	0.01	OE
B46NG9		0.00940	-0.00007	-0.09	0.00747	-0.00003	-0.04	OE
BE6CBQ		0.00947	0.00000	0.00	0.00673	-0.00076	-1.17	OE
BJHWHC		0.00970	0.00023	0.33	0.00783	0.00034	0.52	OE
BNU3XJ		0.0100	0.00053	0.75	0.00800	0.00050	0.77	OE
C9X8XX	X	0.0117	0.00220	3.09	0.0127	0.00517	7.92	IC
CATERB		0.00963	0.00017	0.23	0.00763	0.00014	0.21	OE
D7UMWJ		0.00867	-0.00080	-1.12	0.00700	-0.00050	-0.76	OE
E4BAGK	X	0.0107	0.00120	1.68	0.00233	-0.00516	-7.91	GD
EDMG8L		0.00983	0.00037	0.51	0.00777	0.00027	0.42	OE
EHFEXX		0.00897	-0.00050	-0.70	0.00713	-0.00036	-0.56	OE
EN8LG8		0.0101	0.00067	0.94	0.00753	0.00004	0.06	OE
FBA63P		0.0100	0.00053	0.75	0.00800	0.00050	0.77	OE
FBTXUM		0.00921	-0.00026	-0.36	0.00701	-0.00049	-0.74	OE
FFPCQP		0.00960	0.00013	0.19	0.00760	0.00010	0.16	OE
FHADKB		0.0100	0.00053	0.75	0.00800	0.00050	0.77	XX
FPGV6X		0.00900	-0.00047	-0.65	0.00700	-0.00050	-0.76	XX
G3GXZC	*	0.0100	0.00053	0.75	0.00690	-0.00060	-0.91	OE
G6JMBC		0.00837	-0.00110	-1.54	0.00653	-0.00096	-1.47	OE
J3CBKA		0.0103	0.00087	1.22	0.00807	0.00057	0.87	AE

Fasteners and Metals Interlaboratory Testing Program
Analysis 1610
Carbon & Low Alloy Steel, TIN (Sn)
TIN (Sn)
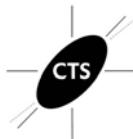
Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample L93			Sample L94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
JCVPLQ		0.00883	-0.00063	-0.89	0.00683	-0.00066	-1.02	IC
JKUART		0.00917	-0.00030	-0.42	0.00720	-0.00030	-0.45	OE
JTHEAR		0.00967	0.00020	0.28	0.00777	0.00027	0.42	OE
JVNZZD	X	0.0126	0.00310	4.35	0.00970	0.00220	3.38	OE
K7MXLR		0.0105	0.00103	1.45	0.00833	0.00084	1.28	IC
KFAWCX		0.00967	0.00020	0.28	0.00800	0.00050	0.77	OE
KHJUV7		0.00923	-0.00023	-0.33	0.00697	-0.00053	-0.81	OE
L7HQ6H		0.00963	0.00017	0.23	0.00743	-0.00006	-0.10	OE
LZUDVG		0.00983	0.00037	0.51	0.00760	0.00010	0.16	OE
ML7LRT		0.00933	-0.00013	-0.19	0.00800	0.00050	0.77	OE
N6HPVV		0.00900	-0.00047	-0.65	0.00700	-0.00050	-0.76	XX
NKC2FT		0.00917	-0.00030	-0.42	0.00730	-0.00020	-0.30	OE
NZMXMY		0.00933	-0.00013	-0.19	0.00700	-0.00050	-0.76	XX
P2EZ4M	*	0.00900	-0.00047	-0.65	0.00927	0.00177	2.71	OE
P6VEWM	X	0.00833	-0.00113	-1.59	0.00300	-0.00450	-6.89	OE
PD6W3Z		0.0107	0.00120	1.68	0.00847	0.00097	1.49	OE
PFWTRT		0.00863	-0.00083	-1.17	0.00683	-0.00066	-1.02	AA
PG9BL4		0.00880	-0.00067	-0.93	0.00710	-0.00040	-0.61	OE
PWGJQT		0.00957	0.00010	0.14	0.00753	0.00004	0.06	IC
Q8JAW2		0.00987	0.00040	0.56	0.00800	0.00050	0.77	XX
Q9B7KV	*	0.00733	-0.00213	-2.99	0.00567	-0.00183	-2.80	AE
QHGB96		0.00933	-0.00013	-0.19	0.00717	-0.00033	-0.50	OE
R8DHGP		0.00904	-0.00042	-0.59	0.00805	0.00055	0.84	XX
RJ679J		0.00767	-0.00180	-2.52	0.00600	-0.00150	-2.29	OE
RTWKCP		0.00900	-0.00047	-0.65	0.00700	-0.00050	-0.76	OE
RVGL8B		0.00967	0.00020	0.28	0.00740	-0.00010	-0.15	XX
T2LGTW		0.00893	-0.00053	-0.75	0.00720	-0.00030	-0.45	OE
T7WLPQ		0.00833	-0.00113	-1.59	0.00733	-0.00016	-0.25	OE
T8Q94E	*	0.00931	-0.00015	-0.21	0.00861	0.00111	1.70	OE
TCZPD4		0.00967	0.00020	0.28	0.00800	0.00050	0.77	XX
TGW9GM		0.0111	0.00167	2.34	0.00897	0.00147	2.25	OE
TWCEQ2		0.00910	-0.00037	-0.51	0.00733	-0.00016	-0.25	OE
TYBPJF		0.00907	-0.00040	-0.56	0.00780	0.00030	0.47	OE
U9KGP4		0.00987	0.00040	0.56	0.00827	0.00077	1.18	AA
UB76Z4		0.00883	-0.00063	-0.89	0.00733	-0.00016	-0.25	OE
UDWW6Z		0.00860	-0.00087	-1.22	0.00660	-0.00090	-1.37	OE
UGRBLH	X	0.00860	-0.00087	-1.22	0.0108	0.00327	5.01	IC
UL6WR4		0.00963	0.00017	0.23	0.00733	-0.00016	-0.25	OE
UXF2P4		0.00953	0.00007	0.09	0.00780	0.00030	0.47	OE
WEDZQ3		0.00953	0.00007	0.09	0.00760	0.00010	0.16	OE
WEUUBR		0.00933	-0.00013	-0.19	0.00767	0.00017	0.26	OE
WHFF4E	X	0.00537	-0.00410	-5.75	0.00347	-0.00403	-6.17	OE
WQQNUG		0.0100	0.00057	0.80	0.00827	0.00077	1.18	OE
XWDBAY		0.0106	0.00110	1.54	0.00847	0.00097	1.49	OE
YGDHUV		0.00951	0.00005	0.07	0.00753	0.00003	0.05	OE
YKWJPH		0.00973	0.00027	0.37	0.00720	-0.00030	-0.45	OE
YXJRQP		0.0100	0.00053	0.75	0.00733	-0.00016	-0.25	OE

Fasteners and Metals Interlaboratory Testing Program
Analysis 1610
Carbon & Low Alloy Steel, TIN (Sn)
TIN (Sn)

| WebCode | Data Flag | Sample L93 | | | Sample L94 | | | Method |
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
YZUUUU		0.0101	0.00067	0.94	0.00823	0.00074	1.13	OE
Z2HFTH	X	0.000667	-0.00880	-12.35	0.000500	-0.00700	-10.72	OE
ZHLZKE		0.0103	0.00087	1.22	0.00833	0.00084	1.28	OE
ZN9P6N	X	0.00333	-0.00613	-8.60	0.00333	-0.00416	-6.38	GD
ZYA7WE	X	0.00900	-0.00047	-0.65	0.00900	0.00150	2.30	GD
ZYQGEJ		0.00917	-0.00030	-0.42	0.00757	0.00007	0.11	IC

Summary Statistics

	Sample L93		Sample L94	
Grand Means	0.00947	Percent	0.00750	Percent
Stnd Dev Btwn Labs	0.00071	Percent	0.00065	Percent

Samples L93, L94 : AISI 1040, AISI 1045

Statistics based on 85 of 100 reporting participants

Key to Method Codes Reported by Participants

AA	Spectrometry - Atomic Absorption (AAS)	AE	Spectrometry - Atomic Emission (AES)
DR	Spectrometry - Direct Reading OE (DROES)	GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)	OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)	XR	X-Ray Fluorescence - ED or WD not specified
XX	Please Indicate Method Used for Current Element		

Comments on Assigned Data Flags for Test #1610

4PVHC3 (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample L93.

7RCLW7 (X) - Data for sample L94 are high.

7UVQL3 (X) - Data for sample L94 are high.

C9X8XX (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.

E4BAGK (X) - Data for sample L94 are low. Inconsistent within the determinations of both samples.

JVNZZD (X) - Data for both samples are high. Possible Systematic Error.

P6VEWM (X) - Data for sample L94 are low.

UGRBLH (X) - Data for sample L94 are high.

WHFF4E (X) - Data for both samples are low. Possible Systematic Error.

Z2HFTH (X) - Data for both samples are low. Possible Systematic Error.

ZN9P6N (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of both samples.

ZYA7WE (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both samples.

Fasteners and Metals Interlaboratory Testing Program
Analysis 1610
Carbon & Low Alloy Steel, TIN (Sn)
TIN (Sn)
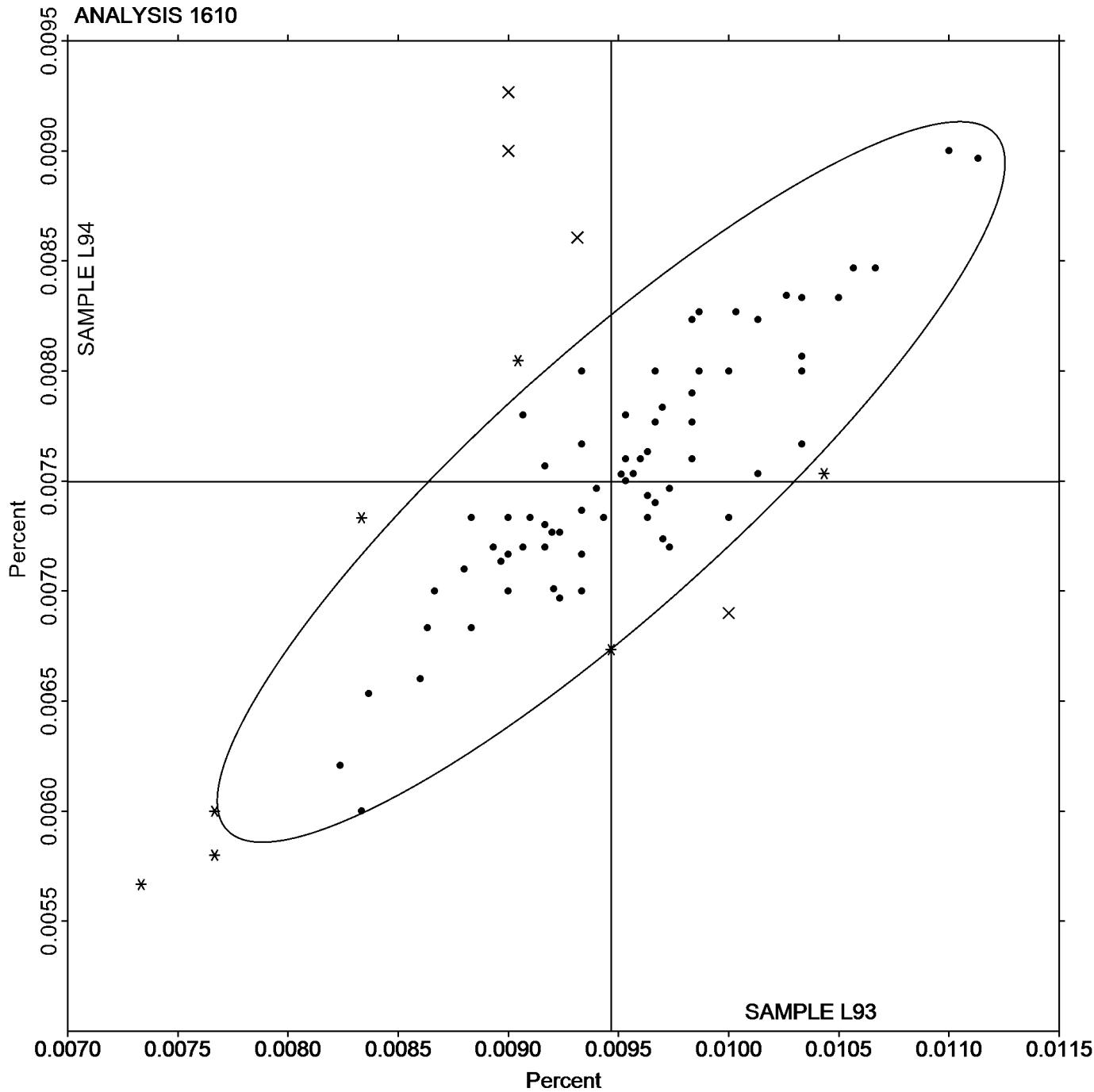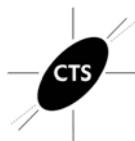
Cycle 143
3rd Qtr 2023

SAMPLE L93

0.00947 Percent

SAMPLE L94

0.00750 Percent

Fasteners and Metals Interlaboratory Testing Program
Analysis 1612
Carbon & Low Alloy Steel, NITROGEN (N)
NITROGEN (N)
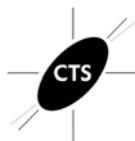
Cycle 143
3rd Qtr 2023

WebCode	Data Flag	Sample L93			Sample L94			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2LJQCB		0.0115	0.0002	0.27	0.00940	0.00028	0.45	OE
2NPGDY		0.0114	0.0001	0.18	0.00947	0.00034	0.56	OE
39N2QB		0.0115	0.0002	0.23	0.00919	0.00006	0.10	IR
3BF6EB		0.0103	-0.0010	-1.42	0.00817	-0.00096	-1.57	OE
3VKKXN		0.0118	0.0005	0.74	0.00947	0.00034	0.56	CO
46PHCV	X	0.0156	0.0043	6.08	0.0128	0.00368	6.02	XX
4PVHC3	X	0.00517	-0.0061	-8.63	0.00613	-0.00299	-4.90	DR
689GWR		0.0120	0.0007	0.97	0.00877	-0.00036	-0.59	XX
6ATF29		0.0114	0.0001	0.13	0.00950	0.00038	0.62	CO
7A92BB	X	0.0110	-0.0003	-0.39	0.00630	-0.00282	-4.62	OE
7MFRBX		0.0109	-0.0004	-0.57	0.00867	-0.00046	-0.75	OE
7T4HLY	*	0.0113	0.0000	0.04	0.00766	-0.00146	-2.40	OE
7UVQL3	X	0.00203	-0.0093	-13.04	0.00297	-0.00616	-10.08	OE
839RTP	X	0.00867	-0.0026	-3.71	0.00910	-0.00002	-0.04	OE
86RTMB		0.0120	0.0007	0.97	0.00967	0.00054	0.89	XX
8LJQQR		0.0103	-0.0010	-1.37	0.00833	-0.00079	-1.30	CI
99TGHR	X	0.00840	-0.0029	-4.09	0.00757	-0.00156	-2.55	OE
9EGJHM		0.0121	0.0008	1.07	0.0106	0.00144	2.36	OE
A29QJ3		0.0114	0.0001	0.18	0.00940	0.00028	0.45	OE
B46NG9		0.0106	-0.0007	-1.00	0.00897	-0.00016	-0.26	OE
BNU3XJ		0.0113	0.0000	0.04	0.00897	-0.00016	-0.26	XX
C9X8XX		0.0121	0.0008	1.07	0.00963	0.00051	0.83	CO
CATERB		0.0122	0.0009	1.30	0.00967	0.00054	0.89	CO
D7UMWJ	X	0.00853	-0.0028	-3.90	0.00897	-0.00016	-0.26	OE
EDMG8L		0.0116	0.0003	0.46	0.00937	0.00024	0.40	OE
EHFEXX	*	0.00937	-0.0019	-2.73	0.00823	-0.00089	-1.46	OE
EN8LG8		0.0117	0.0004	0.60	0.00933	0.00021	0.34	OE
FBA63P	X	0.00737	-0.0039	-5.54	0.00830	-0.00082	-1.35	OE
FFPCQP		0.0113	0.0000	-0.01	0.00960	0.00048	0.78	CO
FPGV6X		0.0123	0.0010	1.39	0.00900	-0.00012	-0.20	XX
G6JMBC	X	0.0388	0.0275	38.70	0.00897	-0.00016	-0.26	OE
JCVPLQ		0.0119	0.0006	0.83	0.00963	0.00051	0.83	XX
JKUART		0.0105	-0.0008	-1.14	0.00857	-0.00056	-0.91	OE
JTHEAR		0.0109	-0.0004	-0.53	0.00900	-0.00012	-0.20	OE
KFAWCX	X	0.00600	-0.0053	-7.46	0.00700	-0.00212	-3.48	OE
KHJUV7		0.00957	-0.0017	-2.45	0.00753	-0.00159	-2.61	OE
L7HQ6H		0.0116	0.0003	0.36	0.00947	0.00034	0.56	CO
L96EGH		0.0114	0.0001	0.08	0.00910	-0.00002	-0.04	CO
LZUDVG		0.0115	0.0002	0.22	0.00917	0.00004	0.07	OE
NKC2FT		0.0104	-0.0009	-1.32	0.00857	-0.00056	-0.91	OE
P2EZ4M	X	0.00827	-0.0030	-4.28	0.00640	-0.00272	-4.46	OE
P6VEWM		0.00997	-0.0013	-1.89	0.00777	-0.00136	-2.22	OE
PD6W3Z		0.0116	0.0003	0.36	0.00950	0.00038	0.62	OE
PFWTRT		0.0119	0.0006	0.88	0.00967	0.00054	0.89	XX
PG9BL4		0.0122	0.0009	1.25	0.0101	0.00098	1.60	OE
Q9B7KV		0.0115	0.0002	0.27	0.00953	0.00041	0.67	XX
QHGB96		0.0110	-0.0003	-0.43	0.00860	-0.00052	-0.86	CO

Fasteners and Metals Interlaboratory Testing Program
Analysis 1612
Carbon & Low Alloy Steel, NITROGEN (N)
NITROGEN (N)

Cycle 143

3rd Qtr 2023

WebCode	Data Flag	Sample L93 Lab Mean	Sample L93 Diff. from Grand Mean	Sample L93 CPV	Sample L94 Lab Mean	Sample L94 Diff. from Grand Mean	Sample L94 CPV	Method
R8DHGP	*	0.0120	0.0007	0.96	0.00828	-0.00085	-1.39	XX
RJ679J		0.0122	0.0009	1.21	0.00993	0.00081	1.33	CO
RVGL8B		0.0118	0.0005	0.69	0.00943	0.00031	0.51	CO
T2LGTW		0.0116	0.0003	0.36	0.00940	0.00028	0.45	XX
TGW9GM	X	0.0130	0.0017	2.33	0.0122	0.00308	5.04	OE
TYBPJF		0.0102	-0.0011	-1.51	0.00797	-0.00116	-1.90	OE
U9KGP4		0.0119	0.0006	0.78	0.00973	0.00061	1.00	CO
UB76Z4		0.0105	-0.0008	-1.09	0.00870	-0.00042	-0.69	OE
UCF9VF		0.0121	0.0008	1.11	0.00950	0.00038	0.62	OE
UDWW6Z		0.0116	0.0003	0.36	0.00943	0.00031	0.51	XX
UGRBLH	X	0.00913	-0.0022	-3.06	0.00673	-0.00239	-3.92	CO
UL6WR4		0.0119	0.0006	0.83	0.00907	-0.00006	-0.09	CO
WEUUBR		0.0110	-0.0003	-0.43	0.00967	0.00054	0.89	OE
WGMDNR		0.0109	-0.0004	-0.62	0.00850	-0.00062	-1.02	OE
YGDHUV		0.0114	0.0001	0.08	0.00917	0.00004	0.07	CI
YKWJPH		0.0115	0.0002	0.32	0.00950	0.00038	0.62	OE
YXJRQP		0.0118	0.0005	0.64	0.00950	0.00038	0.62	XX
YZUUUU		0.0101	-0.0012	-1.65	0.00850	-0.00062	-1.02	OE
ZHLZKE		0.0109	-0.0004	-0.62	0.00860	-0.00052	-0.86	CO
ZYQGEJ	*	0.0117	0.0004	0.55	0.00830	-0.00082	-1.35	CO

Summary Statistics

	Sample L93		Sample L94	
Grand Means	0.0113	Percent	0.00912	Percent
Stnd Dev Btwn Labs	0.0007	Percent	0.00061	Percent

Samples L93, L94 : AISI 1040, AISI 1045

Statistics based on 52 of 67 reporting participants

Key to Method Codes Reported by Participants

CI	Combustion / IR	CO	Combustion
DR	Spectrometry - Direct Reading OE (DROES)	IR	IR (Absorption / Detection)
OE	Spectrometry - Optical Emission (OES)	XX	Please Indicate Method Used for Current Element

Fasteners and Metals Interlaboratory Testing Program
Cycle 143

Analysis 1612
3rd Qtr 2023

Carbon & Low Alloy Steel, NITROGEN (N)
NITROGEN (N)

Comments on Assigned Data Flags for Test #1612

46PHCV (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.

4PVHC3 (X) - Data for both samples are low. Possible Systematic Error.

7A92BB (X) - Data for sample L94 are low.

7UVQL3 (X) - Data for both samples are low. Possible Systematic Error.

839RTP (X) - Data for sample L93 are low.

99TGHR (X) - Data for sample L93 are low.

D7UMWJ (X) - Data for sample L93 are low.

FBA63P (X) - Data for sample L93 are low.
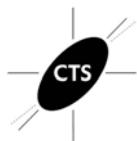
G6JMBC (X) - Data for sample L93 are high. Inconsistent within the determinations of both samples.

KFAWCX (X) - Data for both samples are low. Possible Systematic Error.

P2EZ4M (X) - Data for both samples are low. Possible Systematic Error.

TGW9GM (X) - Data for sample L94 are high.

UGRBLH (X) - Data for both samples are low. Possible Systematic Error.

**Fasteners and Metals Interlaboratory Testing Program**
Analysis 1612
Carbon & Low Alloy Steel, NITROGEN (N)
NITROGEN (N)
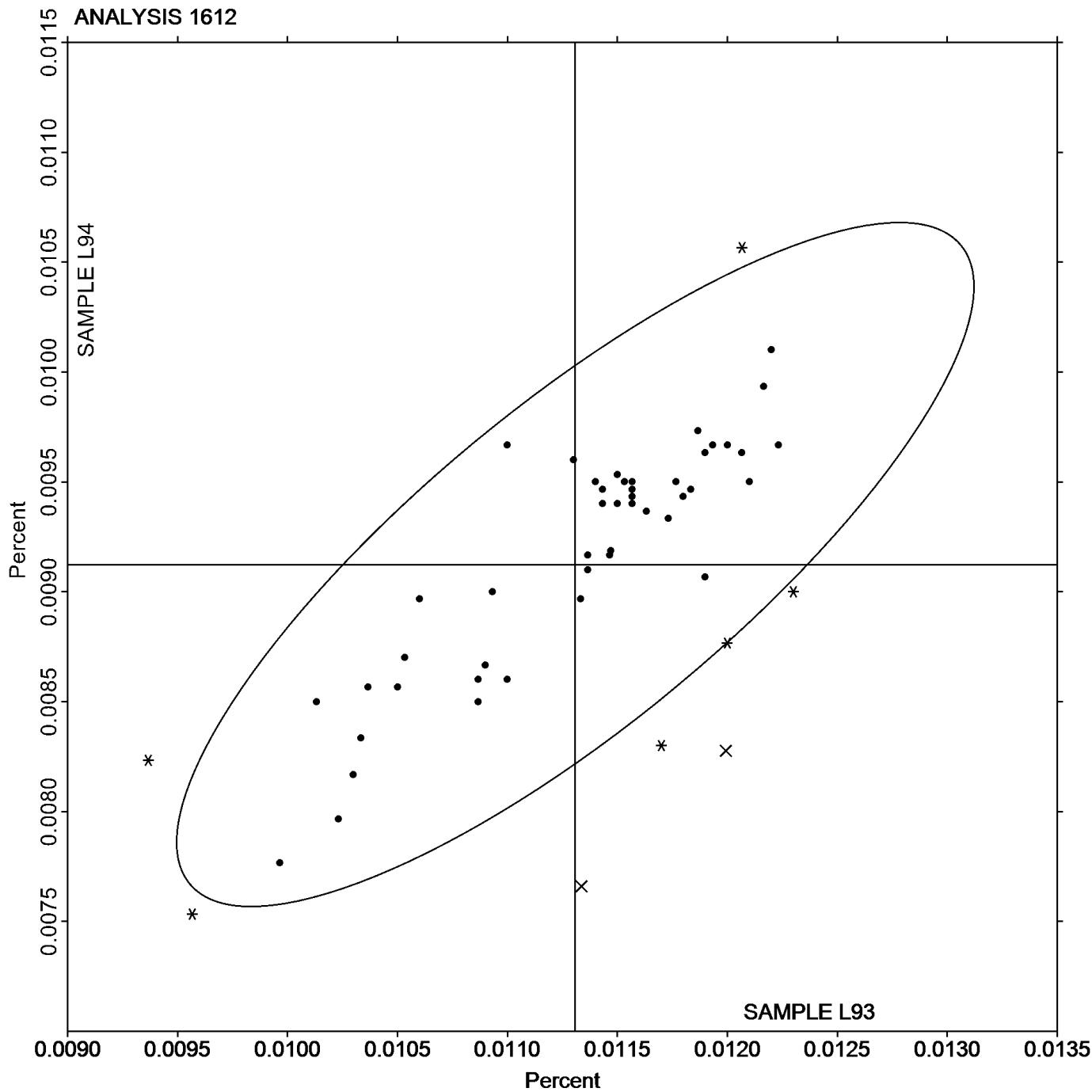
Cycle 143
3rd Qtr 2023

SAMPLE L93

0.0113 Percent

SAMPLE L94

0.00912 Percent

ANALYSIS 1612

SAMPLE L94

Percent

SAMPLE L93

Percent

Fasteners and Metals Interlaboratory Testing Program
Analysis 1612
Carbon & Low Alloy Steel, NITROGEN (N)
NITROGEN (N)

Cycle 143
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-End of Report-