



Fasteners & Metals Interlaboratory Testing Program

Summary Report Cycle 151, 3rd Qtr 2025

[About the Metals Program](#) [About CTS](#) [Key to Tables and Graphs](#)

Analysis	Test Group
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Dimensional Tests	
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1001	Dimensional: Outside Diameter of Plain Plug Gage
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Tensile Tests	
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1101	Tensile Strength: Lab-Machined Flat Aluminum
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1102	Yield Strength: Lab-Machined Flat Aluminum
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1103	Elongation: Lab-Machined Flat Aluminum
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1111	Tensile Strength: Pre-Machined Round Steel
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1112	Yield Strength: Pre-Machined Round Steel
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1113	Elongation: Pre-Machined Round Steel
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1114	Reduction of Area: Pre-Machined Round Steel
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1121	Tensile Strength: Lab-Machined Round Steel
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1122	Yield Strength: Lab-Machined Round Steel
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1123	Elongation: Lab-Machined Round Steel
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1124	Reduction of Area: Lab-Machined Round Steel
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Hardness / Metallography Tests	
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1301	Rockwell Hardness: C & B Scales
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1302	Rockwell Hardness: B Scale
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1321	Microhardness: Knoop Indenters (500 gf)
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1322	Microhardness: Knoop Indenters (200 gf)
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1323	Microhardness: Vickers Indenters (500 gf)
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1341	Brinell Hardness
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1421	Alpha Case Depth
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1422	Alloy Depletion: Inconel
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Chemical Analyses	
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1520 - 1529	Chemical Analysis: Titanium-based Alloy
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1600 - 1612	Chemical Analysis: Carbon & Low Alloy Steel
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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.

For further information contact:

COLLABORATIVE TESTING SERVICES, INC.
21331 Gentry Drive
Sterling, VA 20166

Phone: (571) 434-1925
FAX: (571) 434-1937
e-mail: metals@cts-interlab.com
www.collaborativetesting.com
Office Hours: 8:00 a.m. - 4:30 p.m. ET

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 Standard Deviation	- An indication of the precision of measurement between the laboratories. The greater the spread of the LAB MEANS about the GRAND MEAN, the larger the BETWEEN-LAB STANDARD DEVIATION (and vice versa).
Comparative Performance Value (CPV)	- An indication of how well a laboratory's results agree with the other participants. The CPV is a ratio indicating the number of standard deviations from the GRAND MEAN. $CPV = (LAB\ MEAN - GRAND\ MEAN) / BETWEEN-LAB\ STANDARD\ DEVIATION$. 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

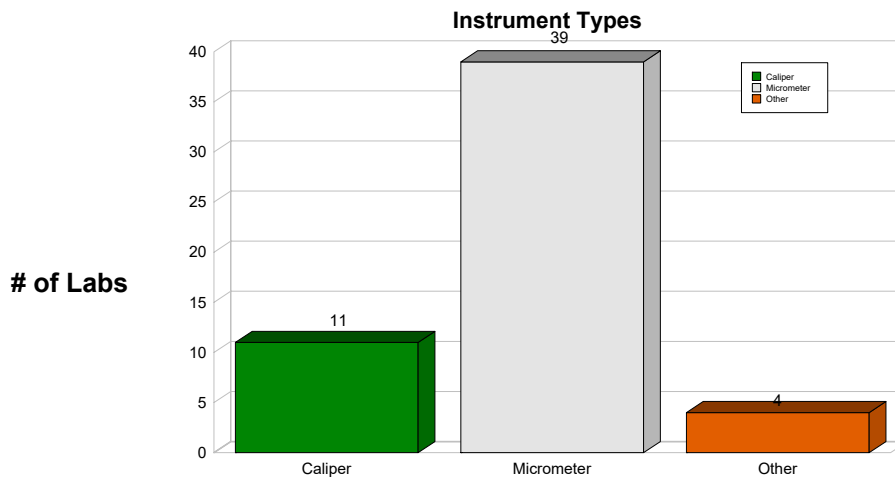
Data Flag Type	Statistically Included/Excluded	ACTION REQUIRED
*	INCLUDED	CAUTION - review testing procedure and monitor future results. Results fall outside the drawn 95% ellipse but within a 99% ellipse that is calculated but not drawn. Labs flagged with an * do not typically receive a specific note 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 except 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 151
3rd Qtr 2025

During Cycle 151, CTS conducted the Analysis #1001 - Round Dimensional. For this test all participants received two samples I11 and I12 with nominal diameters; 0.2496 in. and 0.2500 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. 54 laboratories that subscribed for this test reported testing results. The graph below shows a breakdown of the types of instruments used.



Analysis of the Results

The most convenient and common method of judging the quality of measurement results is by calculating the performance statistic, E_n , calculated as:

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

Where the assigned value, X_{ref} , is determined in a reference laboratory, U_{ref} is the expanded uncertainty of X_{ref} , and U_{lab} is the **Expanded Uncertainty** of a participant's result, X_{lab} . E_n is not calculated for Labs who did not report their Expanded Uncertainty.

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

H and **L** flags are applied when the Expanded Uncertainty data are unusual. These flags do not indicate that the U_{lab} is invalid. Circumstances particular to a laboratory may lead to unusual uncertainty estimates that are a true reflection of testing. However, the validity of the performance statistics calculated by CTS is directly tied to the validity of the reported expanded uncertainty. If an **H** or **L** flag is applied to a U_{lab} , CTS recommends a review of the uncertainty budget to ensure its accuracy.

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

X_{ref} and U_{ref} 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 151
3rd Qtr 2025

Dimensional: Outside Diameter of Plain Plug Gage
ISO GUM

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

Xref1 = 0.2496 in.

Xref2 = 0.2500 in.

Sample I11

Sample I12

WebCode	Data Flag (if assigned)	Reference Uncertainty (Uref)	Expanded Uncertainty (Ulab)	Lab Mean (Xlab)	Performance Statistic (En1)	Lab Mean (Xlab)	Performance Statistic (En2)	Instrument
3KG3YY	M	0.00004	Not Reported	0.24940		0.24980		Micrometer
3NENJB		0.00004	0.00037	0.24943	-0.45	0.24980	-0.53	Other
4HNREK		0.00004	0.00015	0.24958	-0.13	0.24999	-0.06	Micrometer
4R83QW		0.00004	0.00065	0.24953	-0.11	0.24998	-0.03	Micrometer
79U3WM		0.00004	0.00161	0.24900	-0.37	0.24950	-0.31	Caliper
8G4R8Z	X	0.00004	0.00018	0.25043	4.60	0.25072	4.03	Micrometer
93DGWE		0.00004	0.00013	0.24960	0.00	0.25000	0.00	Micrometer
9EAHFB		0.00004	0.00018	0.24956	-0.22	0.24998	-0.11	Micrometer
9NXG4U		0.00004	0.12000	H 0.24960	0.00	0.25000	0.00	Micrometer
A8648E		0.00004	0.00245	H 0.24961	0.00	0.25000	0.00	Micrometer
AH4WGQ	X	0.00004	0.00002	L 0.24936	-5.48	0.24975	-5.80	Micrometer
ANDVB6		0.00004	0.00023	0.24956	-0.18	0.24997	-0.15	Micrometer
B7PYB2		0.00004	0.00030	0.24953	-0.23	0.24992	-0.26	Micrometer
BGKERP	X	0.00004	0.00020	0.24932	-1.37	0.24966	-1.67	Micrometer
BMCG2G		0.00004	0.00005	L 0.24960	0.00	0.25000	0.00	Micrometer
C8ERKB	M	0.00004	Not Reported	0.24930		0.24977		Micrometer
C9ABMC		0.00004	0.00011	0.24958	-0.14	0.24998	-0.13	Micrometer
CZHUX8	X	0.00004	0.00009	0.24952	-0.81	0.24990	-1.02	Micrometer
DER8HC		0.00004	0.00009	0.24955	-0.49	0.24995	-0.48	Micrometer
DGZD4D		0.00004	0.00059	0.24962	0.03	0.25003	0.05	Micrometer
DJMW8W		0.00004	0.00014	0.24953	-0.48	0.24990	-0.69	Micrometer
EN2UCY		0.00004	0.00036	0.24958	-0.06	0.24992	-0.22	Micrometer
EQGJB2		0.00004	0.00200	0.24800	-0.80	0.24900	-0.50	Caliper
ERFPKU		0.00004	0.00040	0.24950	-0.25	0.25000	0.00	Micrometer
EX3A34		0.00004	0.00010	0.24950	-0.94	0.25000	0.00	Micrometer
F6GKLH		0.00004	0.00016	0.24966	0.36	0.25007	0.42	Micrometer
FVTNPM		0.00004	0.00340	H 0.24956	-0.01	0.24992	-0.02	Other
GGL3VW		0.00004	0.00059	0.24972	0.21	0.25008	0.13	Other
J6KEUD		0.00004	0.00006	L 0.24953	-0.97	0.24993	-0.97	Micrometer
JFNN6A		0.00004	0.00018	0.24950	-0.53	0.24988	-0.64	Micrometer
JYZBT3		0.00004	0.00394	H 0.24956	-0.01	0.24992	-0.02	Micrometer
KYFYN3	X	0.00004	0.00050	0.25010	1.00	0.25056	1.12	Other
L93D7Y	M	0.00004	Not Reported	0.24952		0.24990		Micrometer



Fasteners and Metals Interlaboratory Testing Program

Analysis 1001

Cycle 151
3rd Qtr 2025

Dimensional: Outside Diameter of Plain Plug Gage
ISO GUM

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

Xref1 = 0.2496 in.

Xref2 = 0.2500 in.

Sample I11

Sample I12

WebCode	Data Flag (if assigned)	Reference Uncertainty (Uref)	Expanded Uncertainty (Ulab)	Lab Mean (Xlab)	Performance Statistic (En1)	Lab Mean (Xlab)	Performance Statistic (En2)	Instrument
LYCRYF		0.00004	0.00065	0.24954	-0.09	0.24997	-0.05	Micrometer
MCVWL3		0.00004	0.00400	H 0.24936	-0.06	0.24974	-0.06	Micrometer
MQG8CD	M	0.00004	Not Reported	0.24950		0.25000		Caliper
N4EK7F		0.00004	0.00019	0.24950	-0.52	0.24990	-0.52	Micrometer
P26YXE		0.00004	0.00020	0.24950	-0.49	0.25000	0.00	Micrometer
PC8CRE		0.00004	0.00079	0.24961	0.01	0.25000	0.00	Caliper
QERJQ3		0.00004	0.00010	0.24957	-0.28	0.24996	-0.37	Micrometer
RBKJ7V		0.00004	0.00008	L 0.24954	-0.73	0.24993	-0.80	Micrometer
T82TGC		0.00004	0.00260	0.24960	0.00	0.24990	-0.04	Caliper
UEHL7G		0.00004	0.00032	0.24950	-0.31	0.25000	0.00	Caliper
UU8VWC	X	0.00004	0.00008	L 0.24943	-1.89	0.24983	-1.87	Micrometer
W7DLNQ		0.00004	0.00100	0.24900	-0.60	0.24950	-0.50	Caliper
WKCV66		0.00004	0.00050	0.24950	-0.20	0.25000	0.00	Caliper
WPQ7KU		0.00004	0.00116	0.24950	-0.09	0.25000	0.00	Caliper
WXKBDV		0.00004	0.00110	0.24956	-0.04	0.24998	-0.02	Micrometer
XL2J3Q		0.00004	1,400.00000	H 0.24930	0.00	0.24870	0.00	Caliper
XZ8A8J	X	0.00004	0.00015	0.24900	-3.86	0.25000	0.00	Micrometer
Y2CJCL		0.00004	0.00050	0.24930	-0.60	0.24950	-1.00	Micrometer
ZBGQRL		0.00004	120.40973	H 0.24944	0.00	0.24989	0.00	Micrometer
ZJ98GP		0.00004	0.00040	0.24954	-0.15	0.24995	-0.12	Micrometer
ZQ8T8P		0.00004	0.00130	0.24900	-0.46	0.24950	-0.38	Caliper

Summary Statistics

	<u>Sample I11</u>		<u>Sample I12</u>	
Grand Means	0.2495	inch	0.2499	inch
Std Dev Btwn Labs	0.0001	inch	0.0001	inch

Samples I11, I12 : 52100 Steel, 52100 Steel

Statistics based on 45 of 54 reporting participants



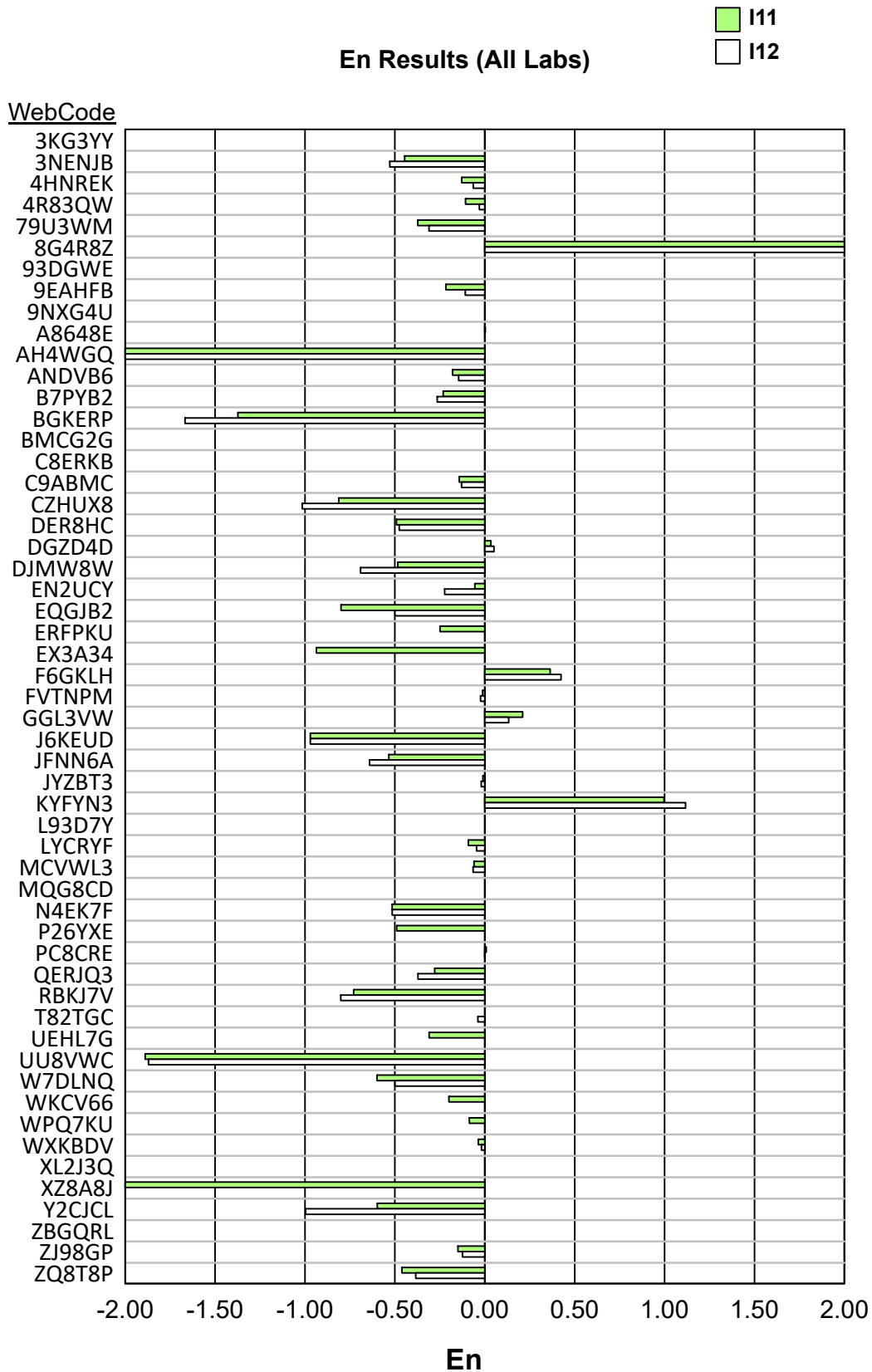
Comments on Assigned Data Flags for Test #1001

- 3KG3YY (M) - Expanded uncertainty data not reported
- 8G4R8Z (X) - En value for both samples was high.
- AH4WGQ (X) - En value for both samples was low.
- BGKERP (X) - En value for both samples was low.
- C8ERKB (M) - Expanded uncertainty data not reported
- CZHUX8 (X) - En value for sample I12 was low.
- KYFYN3 (X) - En value for sample I12 was high.
- L93D7Y (M) - Expanded uncertainty data not reported
- MQG8CD (M) - Expanded uncertainty data not reported
- UU8VWC (X) - En value for both samples was low.
- XZ8A8J (X) - En value for sample I11 was low.



Analysis 1001

Dimensional: Outside Diameter of Plain Plug Gage
ISO GUM





Fasteners and Metals Interlaboratory Testing Program

Analysis 1101

Tensile Strength: Lab-Machined Flat Aluminum
ASTM B557

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample R11			Sample R12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2WA7JT		48.90	1.09	1.80	47.50	0.24	0.44
4KR4L7		47.50	-0.31	-0.51	46.50	-0.76	-1.39
6PLGXA		47.90	0.09	0.15	47.10	-0.16	-0.29
6QWK67		47.40	-0.41	-0.68	47.40	0.14	0.26
6UVWZ7		47.50	-0.31	-0.51	47.50	0.24	0.44
772BPV		49.15	1.34	2.20	48.03	0.77	1.40
7RZH8L		47.80	-0.01	-0.02	47.70	0.44	0.80
7URJBP		47.70	-0.11	-0.18	47.30	0.04	0.07
7WDH9J		47.50	-0.31	-0.51	48.00	0.74	1.35
83JC6Z		47.50	-0.31	-0.51	47.00	-0.26	-0.48
84BAC8		48.02	0.21	0.35	48.02	0.76	1.39
8GFQ3A		47.34	-0.47	-0.78	47.08	-0.18	-0.33
8GJDFG		47.00	-0.81	-1.34	46.51	-0.75	-1.37
8H8UPN	X	45.82	-1.99	-3.29	44.11	-3.15	-5.77
8HWPF8		48.60	0.79	1.30	47.30	0.04	0.07
8MQJD9	X	51.09	3.28	5.41	51.31	4.05	7.41
947E4L		48.50	0.69	1.14	47.30	0.04	0.07
94BRU3		47.76	-0.05	-0.08	47.25	-0.01	-0.02
9KF2RG	*	47.25	-0.56	-0.92	48.24	0.98	1.79
9QKT6L		48.10	0.29	0.48	47.90	0.64	1.17
9YX8MG		49.30	1.49	2.46	47.70	0.44	0.80
AU3EBD		47.10	-0.71	-1.17	46.90	-0.36	-0.66
AVPBEX		48.60	0.79	1.30	47.80	0.54	0.99
AVVDHK	*	47.60	-0.21	-0.35	48.50	1.24	2.27
B3PQ47		47.57	-0.24	-0.39	46.85	-0.41	-0.76
BEJ8T8		48.30	0.49	0.81	47.60	0.34	0.62
BFEPV9		48.60	0.79	1.30	48.00	0.74	1.35
CQU2LB		47.50	-0.31	-0.51	46.90	-0.36	-0.66
CUN673	X	50.95	3.14	5.19	50.46	3.20	5.85
D4TCJG		47.50	-0.31	-0.51	46.60	-0.66	-1.21
D8DCM4		47.90	0.09	0.15	48.00	0.74	1.35
DJMW8W		47.49	-0.32	-0.53	47.22	-0.04	-0.07
DLD3JG		48.50	0.69	1.14	47.50	0.24	0.44
EDW493	X	51.12	3.31	5.47	51.93	4.67	8.55
ERB9MV		47.45	-0.36	-0.60	46.90	-0.36	-0.66
F2H9QH		47.50	-0.31	-0.51	46.70	-0.56	-1.03
FBNBQ9		47.20	-0.61	-1.01	46.60	-0.66	-1.21
FPPMM8		47.50	-0.31	-0.51	47.20	-0.06	-0.11
FVRYCD		47.60	-0.21	-0.35	46.80	-0.46	-0.84
G9A9D9		48.10	0.29	0.48	47.00	-0.26	-0.48
HTANCB		48.60	0.79	1.30	47.10	-0.16	-0.29
J8D9NL		47.53	-0.28	-0.46	46.89	-0.37	-0.68
JBNK8V	X	47.07	-0.75	-1.23	45.22	-2.04	-3.73
JGFKU3		47.50	-0.31	-0.51	47.20	-0.06	-0.11
JGK3R2		46.80	-1.01	-1.67	47.00	-0.26	-0.48
JX4X7A		47.80	-0.01	-0.02	47.10	-0.16	-0.29
K6GEA4		48.50	0.69	1.14	46.70	-0.56	-1.03



Fasteners and Metals Interlaboratory Testing Program

Analysis 1101

Tensile Strength: Lab-Machined Flat Aluminum
ASTM B557

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample R11			Sample R12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
K89AXX		47.43	-0.38	-0.63	46.56	-0.70	-1.29
K9ZBV9		47.70	-0.11	-0.18	47.40	0.14	0.26
KE7YE2	*	46.50	-1.31	-2.16	45.70	-1.56	-2.86
KRH8GU		48.13	0.32	0.53	47.58	0.32	0.58
LEHZU9		47.30	-0.51	-0.84	47.80	0.54	0.99
LQJJEN		47.45	-0.36	-0.60	46.97	-0.29	-0.53
MG4637		47.80	-0.01	-0.02	47.50	0.24	0.44
MV44UA		47.82	0.01	0.02	47.27	0.01	0.02
N3HCR6		48.70	0.89	1.47	47.80	0.54	0.99
PJNPXD		47.54	-0.27	-0.45	46.82	-0.44	-0.81
PKK8YF	X	42.58	-5.23	-8.63	43.12	-4.14	-7.58
PU8A9P	X	50.45	2.64	4.35	50.41	3.15	5.76
QAB4D4		48.20	0.39	0.64	47.60	0.34	0.62
RAPZ4U		47.40	-0.41	-0.68	46.82	-0.44	-0.81
RZMM7E		47.50	-0.31	-0.51	48.20	0.94	1.72
TPKM7F		49.10	1.29	2.13	47.50	0.24	0.44
U6R3PM		48.10	0.29	0.48	47.40	0.14	0.26
UEE9GY		48.70	0.89	1.47	47.80	0.54	0.99
VRY3A4	X	47.90	0.09	0.15	49.10	1.84	3.37
VTTTDX		48.19	0.38	0.63	47.49	0.23	0.41
VU6LC7		48.20	0.39	0.64	47.00	-0.26	-0.48
WT7XBM		47.80	-0.01	-0.02	47.90	0.64	1.17
WTQH77		46.48	-1.33	-2.19	46.56	-0.70	-1.29
WVC3CB	*	46.84	-0.97	-1.60	45.83	-1.43	-2.62
X7RAKB		48.25	0.44	0.73	47.43	0.17	0.31
XARREW		47.60	-0.21	-0.35	46.90	-0.36	-0.66
XEKMHP	X	52.70	4.89	8.07	53.00	5.74	10.51
Z2NG84		47.30	-0.51	-0.84	47.00	-0.26	-0.48
ZVM4GM	X	49.80	1.99	3.28	42.70	-4.56	-8.35

Summary Statistics

	Sample R11		Sample R12	
Grand Means	47.81	ksi	47.26	ksi
Std Dev Btwn Labs	0.61	ksi	0.55	ksi

Samples R11, R12 : 14G 6061-T6 (A), 16G 6061-T6 (B)

Statistics based on 66 of 76 reporting participants



Comments on Assigned Data Flags for Test #1101

- 8H8UPN (X) - Data for both samples are low.
- 8MQJD9 (X) - Data for both samples are high.
- CUN673 (X) - Data for both samples are high.
- EDW493 (X) - Data for both samples are high.
- JBNK8V (X) - Data for sample R12 are low.
- PKK8YF (X) - Data for both samples are low.
- PU8A9P (X) - Data for both samples are high.
- VRY3A4 (X) - Data for sample R12 are high.
- XEKMHP (X) - Data for both samples are high.
- ZVM4GM (X) - Data for sample R11 are high and data for sample R12 are low.



Analysis 1101

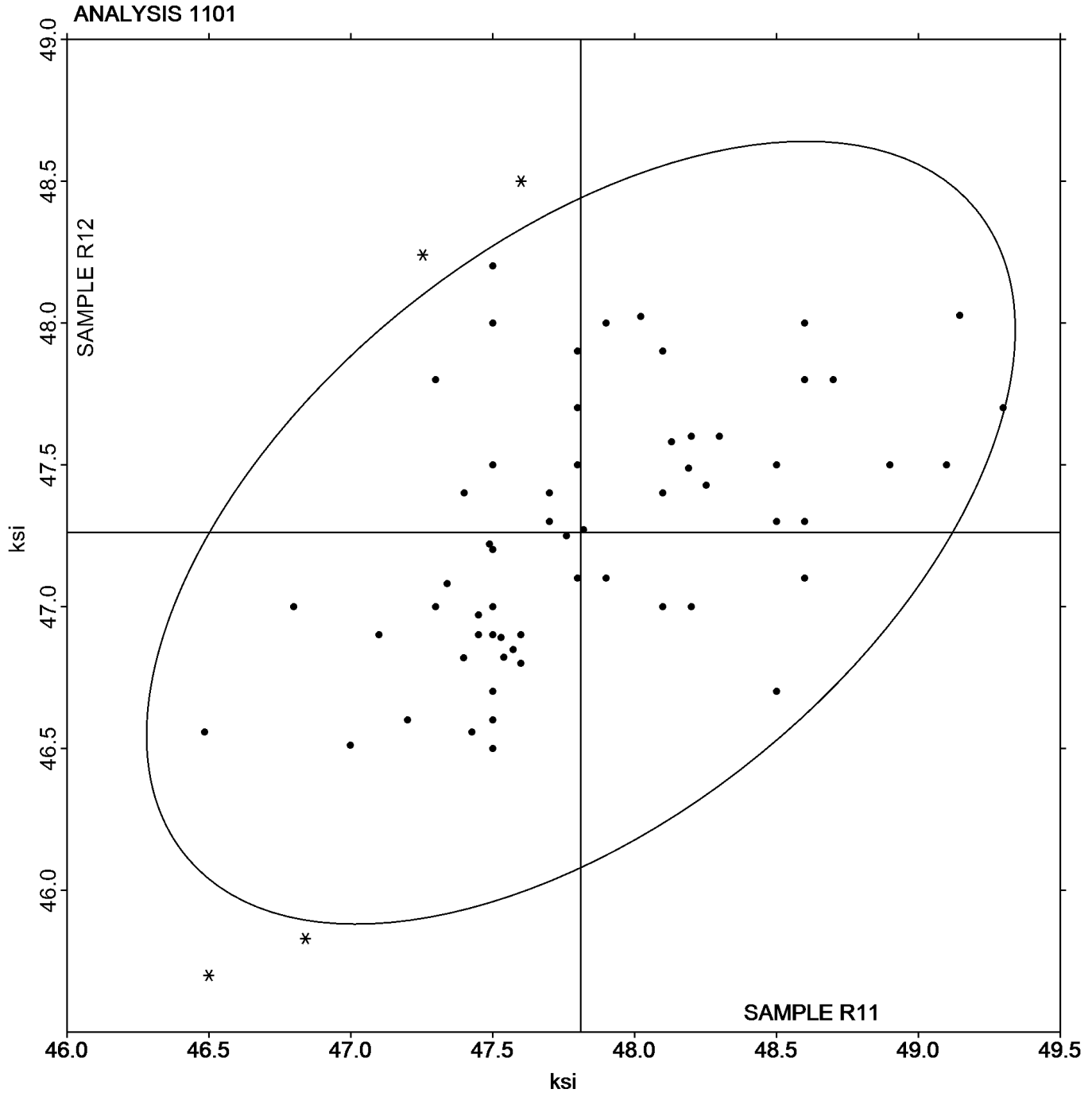
Tensile Strength: Lab-Machined Flat Aluminum
ASTM B557

SAMPLE R11

47.81 ksi

SAMPLE R12

47.26 ksi





Fasteners and Metals Interlaboratory Testing Program

Analysis 1102

Yield Strength: Lab-Machined Flat Aluminum
ASTM B557

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample R11			Sample R12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2WA7JT		41.50	0.87	0.76	39.70	0.31	0.24
4KR4L7		40.60	-0.03	-0.02	38.70	-0.69	-0.53
6PLGXA		40.80	0.17	0.15	39.40	0.01	0.01
6QWK67		40.40	-0.23	-0.20	39.70	0.31	0.24
6UVWZ7		40.50	-0.13	-0.11	40.50	1.11	0.86
772BPV	*	43.47	2.84	2.47	40.95	1.56	1.22
7RZH8L		40.80	0.17	0.15	39.90	0.51	0.40
7URJBP		41.00	0.37	0.33	39.60	0.21	0.17
7WDH9J		40.80	0.17	0.15	40.80	1.41	1.10
83JC6Z		40.60	-0.03	-0.02	39.40	0.01	0.01
84BAC8		41.23	0.61	0.53	40.64	1.25	0.97
8GFQ3A		40.51	-0.12	-0.10	39.39	0.01	0.00
8GJDFG		39.69	-0.94	-0.82	37.39	-2.00	-1.55
8H8UPN		38.68	-1.94	-1.69	36.29	-3.10	-2.41
8HWPF8		41.30	0.67	0.59	39.60	0.21	0.17
8MQJD9	*	43.56	2.94	2.55	43.14	3.76	2.92
947E4L		41.40	0.77	0.67	39.50	0.11	0.09
94BRU3		40.84	0.21	0.18	39.57	0.19	0.14
9KF2RG		40.07	-0.55	-0.48	40.39	1.01	0.78
9QKT6L		40.20	-0.43	-0.37	40.20	0.81	0.63
9YX8MG		42.10	1.47	1.28	40.10	0.71	0.55
AU3EBD	*	37.90	-2.73	-2.37	38.40	-0.99	-0.77
AVPBEX		41.60	0.97	0.85	40.00	0.61	0.48
AVVDHK		40.60	-0.03	-0.02	40.70	1.31	1.02
B3PQ47		40.76	0.13	0.11	39.31	-0.08	-0.06
BEJ8T8		41.30	0.67	0.59	39.70	0.31	0.24
BFEPV9		41.40	0.77	0.67	40.20	0.81	0.63
CQU2LB		40.70	0.07	0.06	39.10	-0.29	-0.22
CUN673		43.31	2.68	2.33	42.12	2.73	2.12
D4TCJG		40.40	-0.23	-0.20	38.90	-0.49	-0.38
D8DCM4		41.20	0.57	0.50	40.60	1.21	0.94
DJMW8W		40.13	-0.50	-0.43	39.35	-0.04	-0.03
DLD3JG		41.40	0.77	0.67	39.70	0.31	0.24
EDW493	X	43.23	2.61	2.27	44.70	5.31	4.13
ERB9MV	*	37.75	-2.88	-2.50	37.20	-2.19	-1.70
F2H9QH		40.50	-0.13	-0.11	39.00	-0.39	-0.30
FBNBQ9		40.20	-0.43	-0.37	38.40	-0.99	-0.77
FPPMM8		40.50	-0.13	-0.11	39.70	0.31	0.24
FVRYCD		40.50	-0.13	-0.11	39.00	-0.39	-0.30
G9A9D9	*	38.40	-2.23	-1.94	35.80	-3.59	-2.79
HTANCB		41.20	0.57	0.50	39.30	-0.09	-0.07
J8D9NL		40.59	-0.03	-0.03	39.06	-0.32	-0.25
JBNK8V		40.05	-0.58	-0.50	37.52	-1.87	-1.45
JGFKU3		39.30	-1.33	-1.15	39.40	0.01	0.01
JGK3R2		40.40	-0.23	-0.20	39.80	0.41	0.32
JX4X7A		40.10	-0.53	-0.46	37.70	-1.69	-1.31
K6GEA4		39.90	-0.73	-0.63	38.60	-0.79	-0.61



Fasteners and Metals Interlaboratory Testing Program

Analysis 1102

Yield Strength: Lab-Machined Flat Aluminum
ASTM B557

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample R11			Sample R12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
K89AXX		40.47	-0.16	-0.14	37.71	-1.68	-1.30
K9ZBV9		40.50	-0.13	-0.11	39.70	0.31	0.24
KE7YE2	*	37.50	-3.13	-2.72	36.90	-2.49	-1.93
KRH8GU		41.33	0.70	0.61	39.97	0.58	0.45
LEHZU9		40.20	-0.43	-0.37	40.10	0.71	0.55
LQJJEN		40.76	0.13	0.12	39.57	0.18	0.14
MG4637		40.80	0.17	0.15	39.60	0.21	0.17
MV44UA		40.86	0.23	0.20	39.50	0.11	0.09
N3HCR6		41.30	0.67	0.59	39.80	0.41	0.32
PJNPXD		40.38	-0.25	-0.21	39.13	-0.26	-0.20
PU8A9P		42.92	2.29	1.99	42.20	2.81	2.18
QAB4D4		40.90	0.27	0.24	39.80	0.41	0.32
RAPZ4U		39.10	-1.52	-1.32	37.28	-2.11	-1.64
RZMM7E		40.10	-0.53	-0.46	40.10	0.71	0.55
TPKM7F		41.90	1.27	1.11	39.70	0.31	0.24
U6R3PM		38.50	-2.13	-1.85	36.20	-3.19	-2.48
UEE9GY		41.60	0.97	0.85	40.00	0.61	0.48
VRY3A4	*	40.60	-0.03	-0.02	41.40	2.01	1.56
VTTTDX		41.11	0.49	0.42	39.89	0.51	0.39
VU6LC7	X	35.80	-4.83	-4.20	36.90	-2.49	-1.93
WT7XBM		40.30	-0.33	-0.28	39.40	0.01	0.01
WTQH77		39.49	-1.13	-0.98	38.78	-0.60	-0.47
WVC3CB		39.82	-0.81	-0.70	38.40	-0.99	-0.77
X7RAKB		40.66	0.03	0.03	39.22	-0.17	-0.13
XARREW		40.60	-0.03	-0.02	39.00	-0.39	-0.30
XEKMHP	X	44.50	3.87	3.37	43.50	4.11	3.20
Z2NG84		40.50	-0.13	-0.11	39.40	0.01	0.01
ZVM4GM	*	42.70	2.07	1.80	39.70	0.31	0.24

Summary Statistics

	Sample R11		Sample R12	
Grand Means	40.63	ksi	39.39	ksi
Std Dev Btwn Labs	1.15	ksi	1.29	ksi

Samples R11, R12 : 14G 6061-T6 (A), 16G 6061-T6 (B)

Statistics based on 72 of 75 reporting participants

Comments on Assigned Data Flags for Test #1102

EDW493 (X) - Data for sample R12 are high.

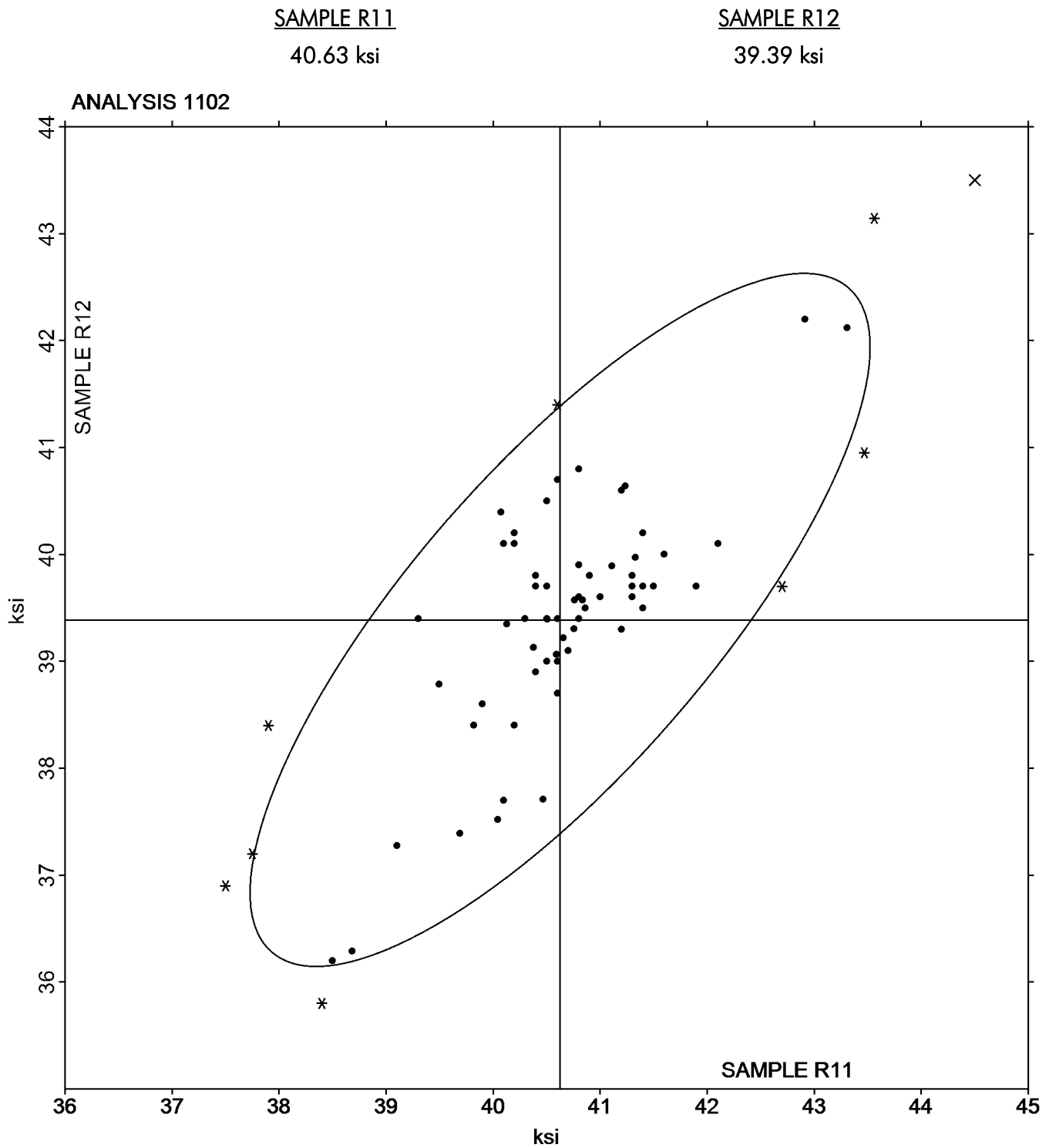
VU6LC7 (X) - Data for sample R11 are low.

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



Analysis 1102

Yield Strength: Lab-Machined Flat Aluminum
ASTM B557





Fasteners and Metals Interlaboratory Testing Program

Analysis 1103

Elongation: Lab-Machined Flat Aluminum
ASTM B557

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample R11			Sample R12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2WA7JT		14.50	0.14	0.14	14.50	-0.20	-0.18
4KR4L7		15.50	1.14	1.12	15.40	0.70	0.65
6PLGXA		13.40	-0.96	-0.95	14.60	-0.10	-0.09
6QWK67	X	15.00	0.64	0.63	12.50	-2.20	-2.04
6UVWZ7		13.30	-1.06	-1.04	13.00	-1.70	-1.57
772BPV	X	5.170	-9.19	-9.04	5.550	-9.15	-8.49
7RZH8L		14.00	-0.36	-0.35	15.00	0.30	0.28
7URJBP		13.00	-1.36	-1.34	14.50	-0.20	-0.18
7WDH9J		13.50	-0.86	-0.85	14.40	-0.30	-0.28
83JC6Z		14.70	0.34	0.33	16.10	1.40	1.30
84BAC8		16.00	1.64	1.61	16.40	1.70	1.58
8GFQ3A		14.00	-0.36	-0.35	14.80	0.10	0.10
8GJDFG		15.20	0.84	0.83	15.80	1.10	1.02
8H8UPN		13.80	-0.56	-0.55	14.20	-0.50	-0.46
8HWPF8		14.50	0.14	0.14	15.00	0.30	0.28
8MQJD9		14.81	0.44	0.44	15.49	0.79	0.73
947E4L		13.50	-0.86	-0.85	14.50	-0.20	-0.18
94BRU3		15.12	0.76	0.75	14.98	0.28	0.26
9KF2RG	X	6.900	-7.46	-7.34	7.400	-7.30	-6.77
9QKT6L		13.00	-1.36	-1.34	13.00	-1.70	-1.57
9YX8MG		16.10	1.74	1.71	16.30	1.60	1.49
AU3EBD		15.50	1.14	1.12	14.60	-0.10	-0.09
AVPBEX		15.20	0.84	0.83	15.80	1.10	1.02
AVVDHK		13.50	-0.86	-0.85	13.50	-1.20	-1.11
B3PQ47		14.50	0.14	0.14	15.30	0.60	0.56
BEJ8T8		14.70	0.34	0.33	15.40	0.70	0.65
BFEPV9		12.30	-2.06	-2.03	12.70	-2.00	-1.85
CQU2LB		12.80	-1.56	-1.54	13.60	-1.10	-1.02
CUN673		15.43	1.07	1.05	16.36	1.66	1.54
D4TCJG		14.50	0.14	0.14	13.50	-1.20	-1.11
D8DCM4		12.50	-1.86	-1.83	13.20	-1.50	-1.39
DJMW8W		13.88	-0.48	-0.47	14.01	-0.69	-0.64
DLD3JG		13.50	-0.86	-0.85	14.00	-0.70	-0.65
EDW493		16.07	1.71	1.68	15.62	0.92	0.86
ERB9MV		13.50	-0.86	-0.85	14.00	-0.70	-0.65
F2H9QH		13.16	-1.20	-1.18	14.17	-0.53	-0.49
FBNBQ9		15.40	1.04	1.02	15.20	0.50	0.47
FPPMM8	X	13.70	-0.66	-0.65	18.30	3.60	3.34
FVRYCD		14.00	-0.36	-0.35	14.00	-0.70	-0.65
G9A9D9		15.67	1.31	1.29	16.15	1.45	1.35
HTANCB		14.50	0.14	0.14	13.50	-1.20	-1.11
J8D9NL		12.90	-1.46	-1.44	13.50	-1.20	-1.11
JBNK8V		12.90	-1.46	-1.44	12.40	-2.30	-2.13
JGFKU3		14.00	-0.36	-0.35	15.00	0.30	0.28
JGK3R2		14.30	-0.06	-0.06	15.60	0.90	0.84
JX4X7A		14.00	-0.36	-0.35	13.00	-1.70	-1.57
K6GEA4		14.00	-0.36	-0.35	14.50	-0.20	-0.18



Fasteners and Metals Interlaboratory Testing Program

Analysis 1103

Elongation: Lab-Machined Flat Aluminum
ASTM B557

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample R11			Sample R12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
K89AXX		15.00	0.64	0.63	14.00	-0.70	-0.65
K9ZBV9		14.50	0.14	0.14	15.50	0.80	0.75
KE7YE2		16.10	1.74	1.71	16.88	2.18	2.03
KRH8GU		15.46	1.10	1.08	14.20	-0.50	-0.46
LEHZU9		14.00	-0.36	-0.35	14.00	-0.70	-0.65
LQJJEN		14.99	0.63	0.62	15.82	1.12	1.04
MG4637		14.50	0.14	0.14	14.00	-0.70	-0.65
MV44UA		13.20	-1.16	-1.14	14.13	-0.57	-0.53
N3HCR6		14.50	0.14	0.14	15.00	0.30	0.28
PJNPXD		12.98	-1.38	-1.36	14.46	-0.24	-0.22
PKK8YF		14.70	0.34	0.33	13.90	-0.80	-0.74
PU8A9P		15.11	0.75	0.73	13.77	-0.92	-0.86
QAB4D4		14.00	-0.36	-0.35	14.50	-0.20	-0.18
RAPZ4U		14.90	0.54	0.53	14.60	-0.10	-0.09
RZMM7E		15.40	1.04	1.02	15.60	0.90	0.84
TPKM7F		15.70	1.34	1.32	15.20	0.50	0.47
U6R3PM		14.90	0.54	0.53	15.70	1.00	0.93
UEE9GY		13.00	-1.36	-1.34	14.00	-0.70	-0.65
VRY3A4		14.50	0.14	0.14	14.60	-0.10	-0.09
VTTTDX		14.40	0.04	0.04	14.70	0.00	0.00
VU6LC7		14.10	-0.26	-0.26	15.30	0.60	0.56
WT7XBM	*	17.00	2.64	2.60	17.00	2.30	2.14
WTQH77		14.20	-0.16	-0.16	13.90	-0.80	-0.74
WVC3CB		13.29	-1.07	-1.05	13.20	-1.50	-1.39
X7RAKB		14.90	0.54	0.53	16.20	1.50	1.40
XARREW		13.50	-0.86	-0.85	14.50	-0.20	-0.18
XEKMHP		13.60	-0.76	-0.75	13.70	-1.00	-0.92
Z2NG84		14.40	0.04	0.04	15.70	1.00	0.93
ZVM4GM	*	16.50	2.14	2.11	17.50	2.80	2.60

Summary Statistics

	Sample R11		Sample R12	
Grand Means	14.36	Percent	14.70	Percent
Std Dev Btwn Labs	1.02	Percent	1.08	Percent

Samples R11, R12 : 14G 6061-T6 (A), 16G 6061-T6 (B)

Statistics based on 72 of 76 reporting participants

Comments on Assigned Data Flags for Test #1103

6QWK67 (X) - Inconsistent in testing between samples.

772BPV (X) - Data for both samples are low. Possible Systematic Error.

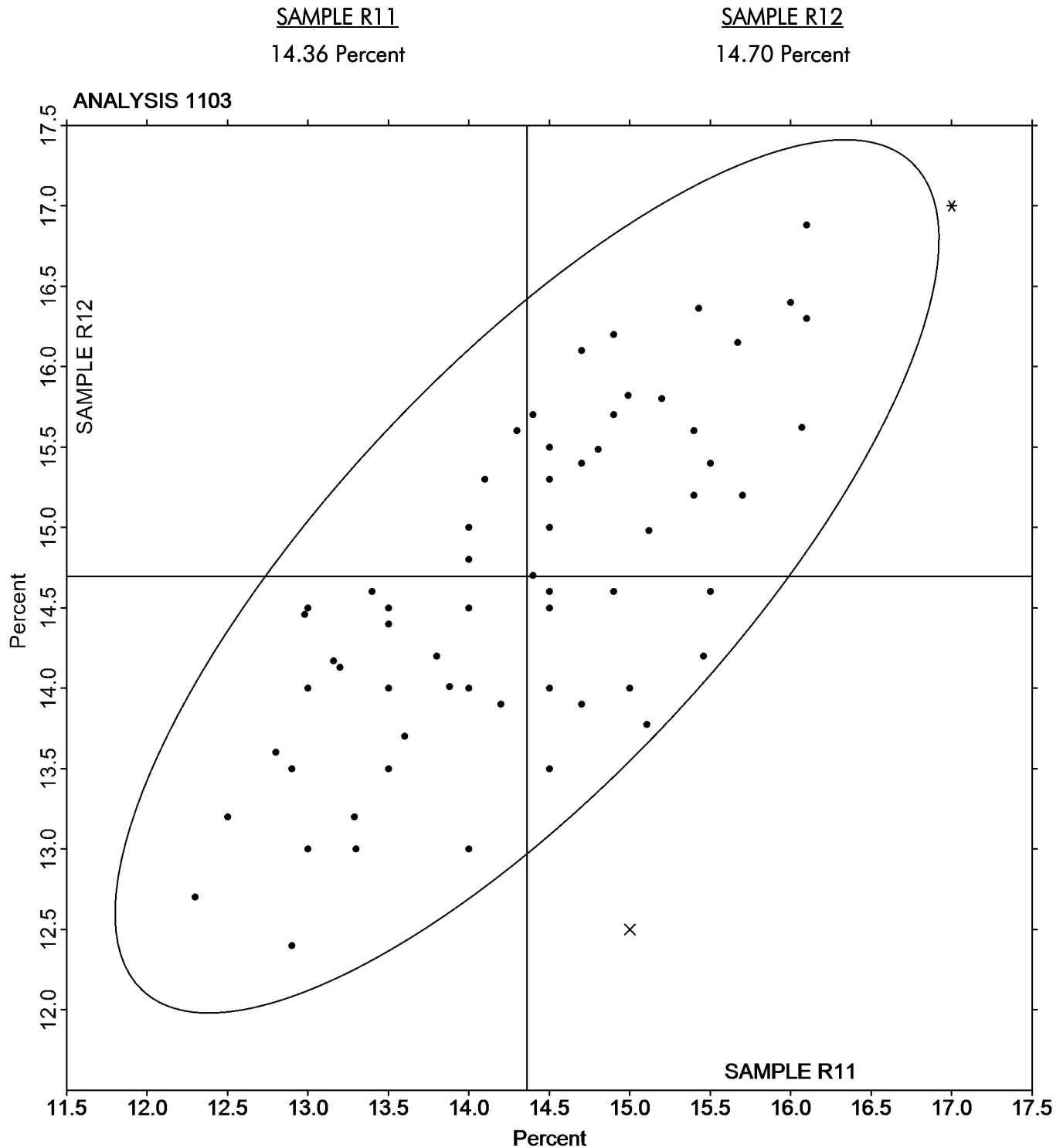
9KF2RG (X) - Data for both samples are low. Possible Systematic Error.

FPPMM8 (X) - Data for sample R12 are high.



Analysis 1103

Elongation: Lab-Machined Flat Aluminum
ASTM B557





Fasteners and Metals Interlaboratory Testing Program

Analysis 1111

Tensile Strength: Pre-Machined Round Steel
ASTM E8

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample A11			Sample A12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2DEEXV		136.29	-0.88	-0.98	140.23	0.19	0.17
37F9QJ		136.93	-0.24	-0.27	139.71	-0.33	-0.30
39LP3A		136.20	-0.97	-1.08	138.80	-1.24	-1.11
3TUWAV		137.50	0.32	0.36	140.40	0.36	0.32
4P4ARR		136.50	-0.67	-0.74	139.10	-0.94	-0.84
4ZKYTH	*	139.10	1.93	2.13	143.50	3.46	3.09
6JW26W	X	134.00	-3.17	-3.51	139.00	-1.04	-0.93
6KN228		136.20	-0.97	-1.07	139.02	-1.02	-0.91
79U3WM		137.14	-0.03	-0.03	139.65	-0.39	-0.35
7EX7HE		137.13	-0.04	-0.05	138.69	-1.35	-1.21
7FQZG4		136.87	-0.31	-0.34	140.61	0.57	0.51
8G4NHV	X	194.32	57.14	63.11	197.32	57.28	51.20
8H8UPN	*	136.19	-0.98	-1.09	140.96	0.92	0.82
93DGWE		137.00	-0.17	-0.19	140.00	-0.04	-0.04
9QKT6L		136.00	-1.17	-1.30	139.00	-1.04	-0.93
9WQNMZ		137.09	-0.09	-0.09	139.82	-0.23	-0.20
ATNC8Y		138.20	1.03	1.13	140.40	0.36	0.32
BJDALX		137.00	-0.17	-0.19	140.00	-0.04	-0.04
BUZ6X8		136.30	-0.87	-0.97	138.90	-1.14	-1.02
CYNAVU	*	139.22	2.04	2.26	142.95	2.91	2.60
D3378X		137.35	0.18	0.20	139.96	-0.08	-0.07
D8W3WN		137.40	0.23	0.25	139.60	-0.44	-0.39
DFMLBW		137.52	0.35	0.38	141.12	1.08	0.97
DJMW8W		137.00	-0.17	-0.19	141.00	0.96	0.86
DKHF9X		135.50	-1.67	-1.85	139.20	-0.84	-0.75
EAVYLU		136.70	-0.47	-0.52	139.20	-0.84	-0.75
ECHKJY		136.77	-0.40	-0.44	137.93	-2.11	-1.89
EHCCXM		137.34	0.16	0.18	139.53	-0.51	-0.46
EZTFHU	*	135.00	-2.17	-2.40	139.00	-1.04	-0.93
F6GKLH		138.65	1.47	1.63	141.06	1.02	0.91
F6K6FC		137.50	0.32	0.36	139.24	-0.80	-0.72
FAFRCL		137.30	0.13	0.14	140.00	-0.04	-0.04
FBKNE2	*	139.74	2.56	2.83	142.16	2.12	1.90
FCF8F3		137.40	0.22	0.25	140.37	0.33	0.29
FL2BLG		137.50	0.32	0.36	139.96	-0.08	-0.07
FL6VFC		138.70	1.53	1.69	141.60	1.56	1.39
GQCN4F		137.20	0.03	0.03	139.40	-0.64	-0.57
H8WVBX		137.00	-0.17	-0.19	139.00	-1.04	-0.93
HHECDP		136.50	-0.67	-0.74	139.10	-0.94	-0.84
HV7XQM		138.30	1.13	1.24	140.30	0.26	0.23
JRXXQW		136.00	-1.17	-1.30	139.00	-1.04	-0.93
JX4X7A		136.00	-1.17	-1.30	139.00	-1.04	-0.93
JYZBT3		138.08	0.90	1.00	140.76	0.72	0.64
LE23JW		137.47	0.29	0.32	140.16	0.12	0.11
LFDJWA	X	141.00	3.83	4.23	141.00	0.96	0.86
MR9AW9		136.50	-0.67	-0.74	138.80	-1.24	-1.11
NFRPBQ	X	136.92	-0.26	-0.28	144.46	4.42	3.95



Fasteners and Metals Interlaboratory Testing Program

Analysis 1111

Tensile Strength: Pre-Machined Round Steel
ASTM E8

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample A11			Sample A12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
PC8FGJ		136.56	-0.62	-0.68	140.52	0.48	0.43
PNGUNW		137.00	-0.17	-0.19	141.00	0.96	0.86
QHQZ2B	X	140.50	3.33	3.67	144.00	3.96	3.54
QP8DZA		136.68	-0.49	-0.54	140.25	0.21	0.19
R3QHPH	X	141.00	3.83	4.23	144.00	3.96	3.54
RATMG2		138.00	0.83	0.91	140.50	0.46	0.41
RBN6H3		137.79	0.61	0.68	139.12	-0.92	-0.82
RP3DGL		138.36	1.19	1.31	140.85	0.81	0.72
RT4KQA		137.84	0.67	0.74	140.54	0.50	0.45
TUH7AY		137.00	-0.17	-0.19	140.00	-0.04	-0.04
UHWGNY		136.48	-0.69	-0.77	139.82	-0.22	-0.20
VJJJRQ		137.71	0.54	0.59	141.45	1.41	1.26
VP9272		137.35	0.17	0.19	140.18	0.13	0.12
W7DLNQ		137.20	0.03	0.03	139.70	-0.34	-0.30
WZMDYP	*	137.90	0.73	0.80	142.80	2.76	2.47
XZ8A8J		136.49	-0.69	-0.76	138.46	-1.59	-1.42
Y2VAEE		136.50	-0.67	-0.74	139.00	-1.04	-0.93

Summary Statistics

	Sample A11		Sample A12	
Grand Means	137.17	ksi	140.04	ksi
Std Dev Btwn Labs	0.91	ksi	1.12	ksi

Samples A11, A12 : AISI 4340 (S), AISI 4340 (L)

Statistics based on 58 of 64 reporting participants

Comments on Assigned Data Flags for Test #1111

- 6JW26W (X) - Data for sample A11 are low.
- 8G4NHV (X) - Extreme data.
- LFDJWA (X) - Data for sample A11 are high.
- NFRPBQ (X) - Data for sample A12 are high.
- QHQZ2B (X) - Data for both samples are high.
- R3QHPH (X) - Data for both samples are high.



Analysis 1111

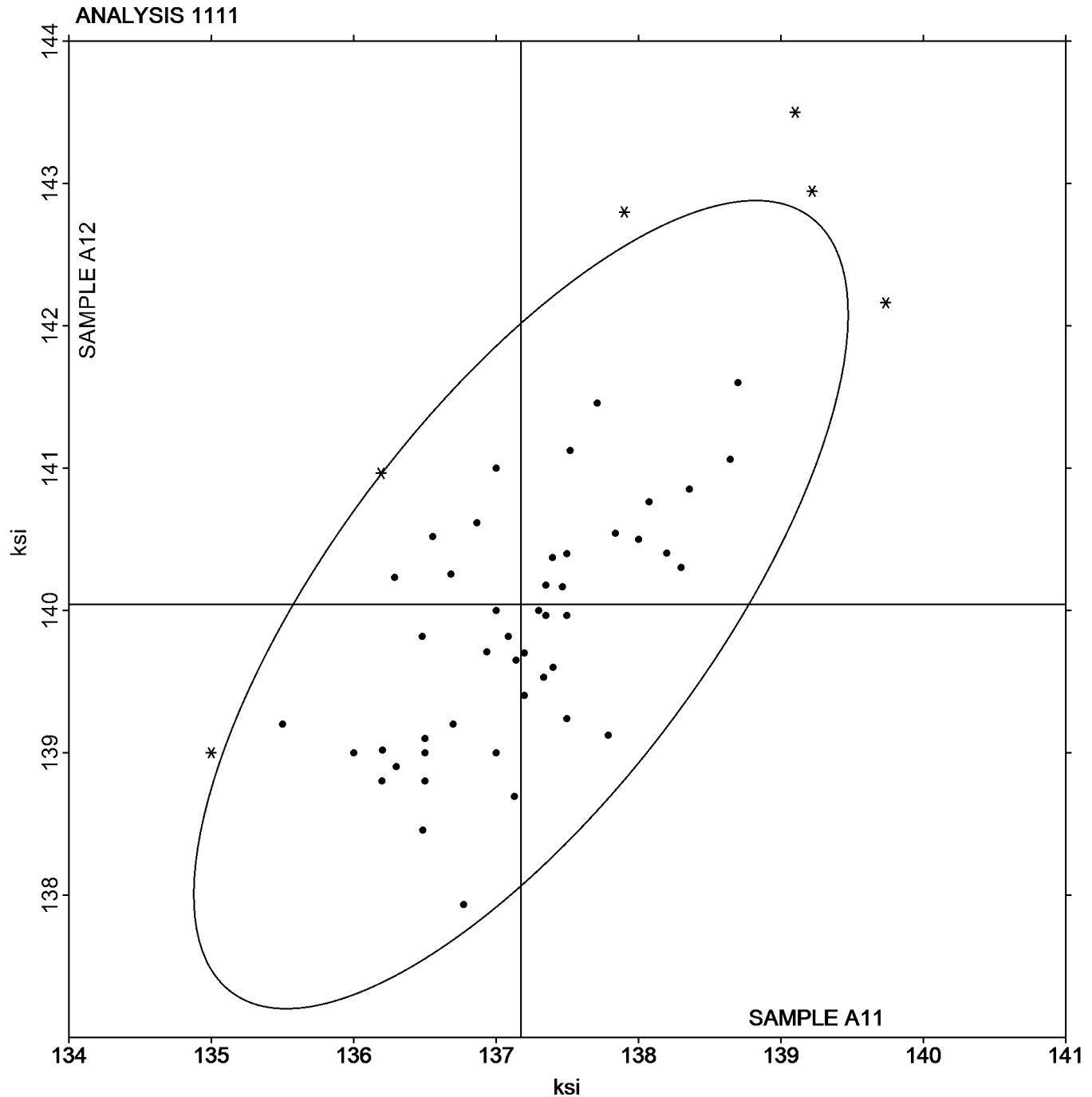
Tensile Strength: Pre-Machined Round Steel
ASTM E8

SAMPLE A11

137.17 ksi

SAMPLE A12

140.04 ksi





Fasteners and Metals Interlaboratory Testing Program

Analysis 1112

Yield Strength: Pre-Machined Round Steel
ASTM E8

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample A11			Sample A12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2DEEXV		108.44	-1.26	-0.77	112.10	0.21	0.11
37F9QJ		105.95	-3.75	-2.29	107.35	-4.54	-2.38
39LP3A		108.80	-0.90	-0.55	111.00	-0.89	-0.47
3TUWAV		109.36	-0.34	-0.21	111.97	0.08	0.04
4P4ARR		108.50	-1.20	-0.73	110.50	-1.39	-0.73
4ZKYTH		112.50	2.80	1.72	115.70	3.81	2.00
6JW26W	*	105.00	-4.70	-2.88	107.00	-4.89	-2.57
6KN228		110.55	0.85	0.52	112.66	0.77	0.40
79U3WM		110.15	0.45	0.28	111.41	-0.48	-0.25
7EX7HE		110.62	0.92	0.56	111.69	-0.20	-0.10
7FQZG4		110.23	0.53	0.33	112.56	0.67	0.35
8H8UPN	X	108.74	-0.96	-0.59	135.02	23.13	12.14
93DGWE		111.00	1.30	0.80	113.00	1.11	0.58
9QKT6L		109.00	-0.70	-0.43	110.00	-1.89	-0.99
9WQNMZ		109.88	0.18	0.11	112.99	1.10	0.58
ATNC8Y		110.20	0.50	0.31	111.40	-0.49	-0.26
BJDALX		110.00	0.30	0.18	112.00	0.11	0.06
BUZ6X8		110.10	0.40	0.25	111.80	-0.09	-0.05
CYNAVU		112.35	2.65	1.62	114.27	2.38	1.25
D3378X		110.66	0.97	0.59	112.84	0.95	0.50
D8W3WN		110.70	1.00	0.61	112.50	0.61	0.32
DFMLBW		111.32	1.62	0.99	114.50	2.61	1.37
DJMW8W		108.80	-0.90	-0.55	113.40	1.51	0.79
DKHF9X		108.20	-1.50	-0.92	111.90	0.01	0.01
EAVYLU		109.40	-0.30	-0.18	111.50	-0.39	-0.20
ECHKJY		106.02	-3.68	-2.25	109.07	-2.82	-1.48
EHCCXM		110.69	0.99	0.61	112.64	0.75	0.39
EZTFHU	*	106.00	-3.70	-2.27	110.00	-1.89	-0.99
F6GKLH	X	116.45	6.75	4.13	115.73	3.84	2.01
F6K6FC		112.99	3.29	2.01	114.58	2.69	1.41
FAFRCL		110.00	0.30	0.18	112.40	0.51	0.27
FBKNE2		112.30	2.60	1.59	115.05	3.16	1.66
FCF8F3		109.76	0.06	0.04	111.81	-0.08	-0.04
FL2BLG		108.20	-1.50	-0.92	112.26	0.37	0.20
FL6VFC		110.40	0.70	0.43	112.70	0.81	0.43
GQCN4F		109.20	-0.50	-0.31	110.70	-1.19	-0.62
H8WVBX		109.00	-0.70	-0.43	111.00	-0.89	-0.47
HHECDP		108.70	-1.00	-0.61	110.70	-1.19	-0.62
HV7XQM		112.40	2.70	1.65	112.50	0.61	0.32
JRJXQW		109.00	-0.70	-0.43	111.00	-0.89	-0.47
JX4X7A		109.00	-0.70	-0.43	111.00	-0.89	-0.47
JYZBT3		111.97	2.27	1.39	113.44	1.55	0.81
LE23JW		109.89	0.19	0.12	111.88	-0.01	0.00
MR9AW9		108.80	-0.90	-0.55	110.40	-1.49	-0.78
NFRPBQ	*	109.36	-0.34	-0.21	114.58	2.69	1.41
PC8FGJ		109.23	-0.47	-0.29	112.27	0.39	0.20
PNGUNW		110.00	0.30	0.18	113.00	1.11	0.58



Fasteners and Metals Interlaboratory Testing Program

Analysis 1112

Yield Strength: Pre-Machined Round Steel
ASTM E8

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample A11			Sample A12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
QHQQZ2B		112.65	2.95	1.81	115.84	3.95	2.07
QP8DZA		110.35	0.65	0.40	110.98	-0.90	-0.47
R3QHPH	X	54.08	-55.62	-34.06	49.49	-62.40	-32.75
RATMG2		110.10	0.40	0.25	112.20	0.31	0.16
RBN6H3		110.64	0.94	0.57	111.29	-0.60	-0.31
RP3DGL		110.04	0.34	0.21	112.69	0.80	0.42
RT4KQA		110.07	0.37	0.23	112.09	0.20	0.11
TUH7AY		111.00	1.30	0.80	113.00	1.11	0.58
UHWGNY		109.36	-0.34	-0.21	111.68	-0.21	-0.11
VJJJRQ	*	107.03	-2.67	-1.63	106.70	-5.18	-2.72
VP9272		109.52	-0.18	-0.11	111.73	-0.15	-0.08
W7DLNQ		109.30	-0.40	-0.24	110.60	-1.29	-0.68
WZMDYP		110.20	0.50	0.31	115.00	3.11	1.63
XZ8A8J	*	108.26	-1.44	-0.88	107.68	-4.21	-2.21
Y2VAEE		109.10	-0.60	-0.37	110.90	-0.99	-0.52

Summary Statistics

	Sample A11		Sample A12	
Grand Means	109.70	ksi	111.89	ksi
Std Dev Btwn Labs	1.63	ksi	1.91	ksi

Samples A11, A12 : AISI 4340 (S), AISI 4340 (L)

Statistics based on 59 of 62 reporting participants

Comments on Assigned Data Flags for Test #1112

8H8UPN (X) - Data for sample A12 are high.

F6GKLH (X) - Data for sample A11 are high.

R3QHPH (X) - Extreme data.



Analysis 1112

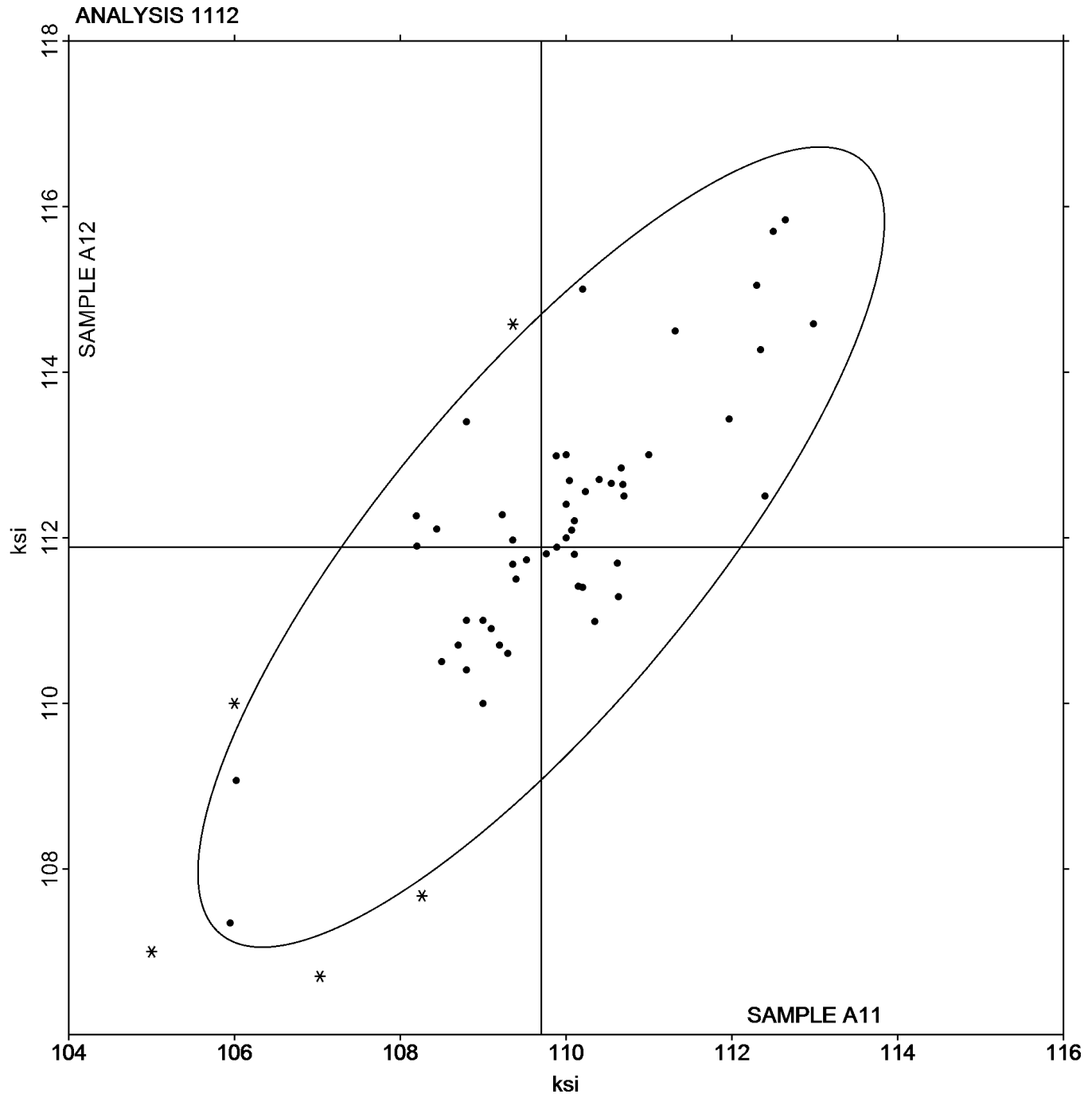
Yield Strength: Pre-Machined Round Steel
ASTM E8

SAMPLE A11

109.70 ksi

SAMPLE A12

111.89 ksi



**Fasteners and Metals Interlaboratory Testing Program****Analysis 1113****Elongation: Pre-Machined Round Steel
ASTM E8****Cycle 151
3rd Qtr 2025**

WebCode	Data Flag	Sample A11			Sample A12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2DEEXV		19.19	0.42	0.49	18.77	0.44	0.55
37F9QJ		19.03	0.26	0.30	19.09	0.76	0.95
39LP3A		19.00	0.23	0.27	18.00	-0.33	-0.41
3TUWAV		18.10	-0.67	-0.78	18.00	-0.33	-0.41
4P4ARR		18.97	0.20	0.23	18.66	0.33	0.41
4ZKYTH		20.00	1.23	1.43	20.20	1.87	2.34
6JW26W		19.30	0.53	0.61	17.50	-0.83	-1.04
6KN228		19.76	0.99	1.15	19.60	1.27	1.59
79U3WM		19.45	0.68	0.79	18.95	0.62	0.78
7EX7HE		19.15	0.38	0.44	18.90	0.57	0.72
7FQZG4		17.83	-0.94	-1.09	18.75	0.42	0.53
8H8UPN		18.40	-0.37	-0.43	17.40	-0.93	-1.16
93DGWE		19.00	0.23	0.27	18.00	-0.33	-0.41
9QKT6L		18.00	-0.77	-0.89	18.00	-0.33	-0.41
9WQNMZ	X	11.70	-7.07	-8.20	11.57	-6.76	-8.46
ATNC8Y		18.60	-0.17	-0.20	18.60	0.27	0.34
BJDALX		18.00	-0.77	-0.89	18.00	-0.33	-0.41
BUZ6X8		18.50	-0.27	-0.31	18.50	0.17	0.21
CYNAVU		18.50	-0.27	-0.31	18.80	0.47	0.59
D3378X		18.50	-0.27	-0.31	18.50	0.17	0.21
D8W3WN		18.50	-0.27	-0.31	17.20	-1.13	-1.41
DFMLBW		20.52	1.75	2.03	18.99	0.66	0.83
DJMW8W		18.80	0.03	0.03	18.40	0.07	0.09
DKHF9X		19.10	0.33	0.38	18.50	0.17	0.21
EAVYLU		17.80	-0.97	-1.12	18.10	-0.23	-0.29
ECHKJY		19.00	0.23	0.27	18.00	-0.33	-0.41
EHCCXM		19.10	0.33	0.38	18.55	0.22	0.28
EZTFHU		18.30	-0.47	-0.54	17.90	-0.43	-0.54
F6GKLH		17.00	-1.77	-2.05	18.00	-0.33	-0.41
F6K6FC		16.90	-1.87	-2.17	17.70	-0.63	-0.79
FAFRCL		20.10	1.33	1.54	19.30	0.97	1.22
FBKNE2		20.00	1.23	1.43	20.00	1.67	2.09
FCF8F3		18.91	0.14	0.16	18.15	-0.18	-0.23
FL2BLG		18.60	-0.17	-0.20	18.80	0.47	0.59
FL6VFC		18.80	0.03	0.03	18.40	0.07	0.09
GQCN4F		18.56	-0.21	-0.24	18.02	-0.31	-0.39
H8WVBX		18.90	0.13	0.15	18.10	-0.23	-0.29
HHECDP		18.30	-0.47	-0.54	16.80	-1.53	-1.91
HV7XQM		18.40	-0.37	-0.43	17.60	-0.73	-0.91
JRJXQW		18.00	-0.77	-0.89	18.00	-0.33	-0.41
JX4X7A		18.00	-0.77	-0.89	18.00	-0.33	-0.41
JYZBT3		20.40	1.63	1.89	19.00	0.67	0.84
LE23JW		18.00	-0.77	-0.89	17.45	-0.88	-1.10
MR9AW9		18.50	-0.27	-0.31	18.20	-0.13	-0.16
NFRPBQ		17.75	-1.02	-1.18	17.00	-1.33	-1.66
PC8FGJ		19.36	0.59	0.68	18.68	0.35	0.44
PNGUNW		18.00	-0.77	-0.89	16.50	-1.83	-2.29



Fasteners and Metals Interlaboratory Testing Program

Analysis 1113

Elongation: Pre-Machined Round Steel
ASTM E8

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample A11			Sample A12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
QHQQZ2B		18.20	-0.57	-0.66	18.30	-0.03	-0.04
QNFD3Y		19.00	0.23	0.27	18.50	0.17	0.21
QP8DZA		18.70	-0.07	-0.08	18.60	0.27	0.34
R3QHPH	X	14.50	-4.27	-4.95	18.50	0.17	0.21
RATMG2		18.75	-0.02	-0.02	18.75	0.42	0.53
RBN6H3		18.50	-0.27	-0.31	18.40	0.07	0.09
RP3DGL		19.33	0.56	0.65	19.28	0.95	1.19
RT4KQA		19.60	0.83	0.96	18.90	0.57	0.72
TUH7AY		19.30	0.53	0.61	18.40	0.07	0.09
UHWGNY		19.10	0.33	0.38	18.50	0.17	0.21
VJJJRQ	*	21.00	2.23	2.59	20.22	1.89	2.37
VP9272		18.40	-0.37	-0.43	18.20	-0.13	-0.16
W7DLNQ	*	19.20	0.43	0.50	16.90	-1.43	-1.79
WZMDYP		20.30	1.53	1.77	19.60	1.27	1.59
XZ8A8J	*	16.12	-2.65	-3.07	16.74	-1.59	-1.99
Y2VAEE		18.60	-0.17	-0.20	17.20	-1.13	-1.41

Summary Statistics

Sample A11			Sample A12		
Grand Means	18.77	Percent	18.33	Percent	
Std Dev Btwn Labs	0.86	Percent	0.80	Percent	

Samples A11, A12 : AISI 4340 (S), AISI 4340 (L)

Statistics based on 61 of 63 reporting participants

Comments on Assigned Data Flags for Test #1113

9WQNMZ (X) - Data for both samples are low.

R3QHPH (X) - Data for sample A11 are low.

Analysis 1113

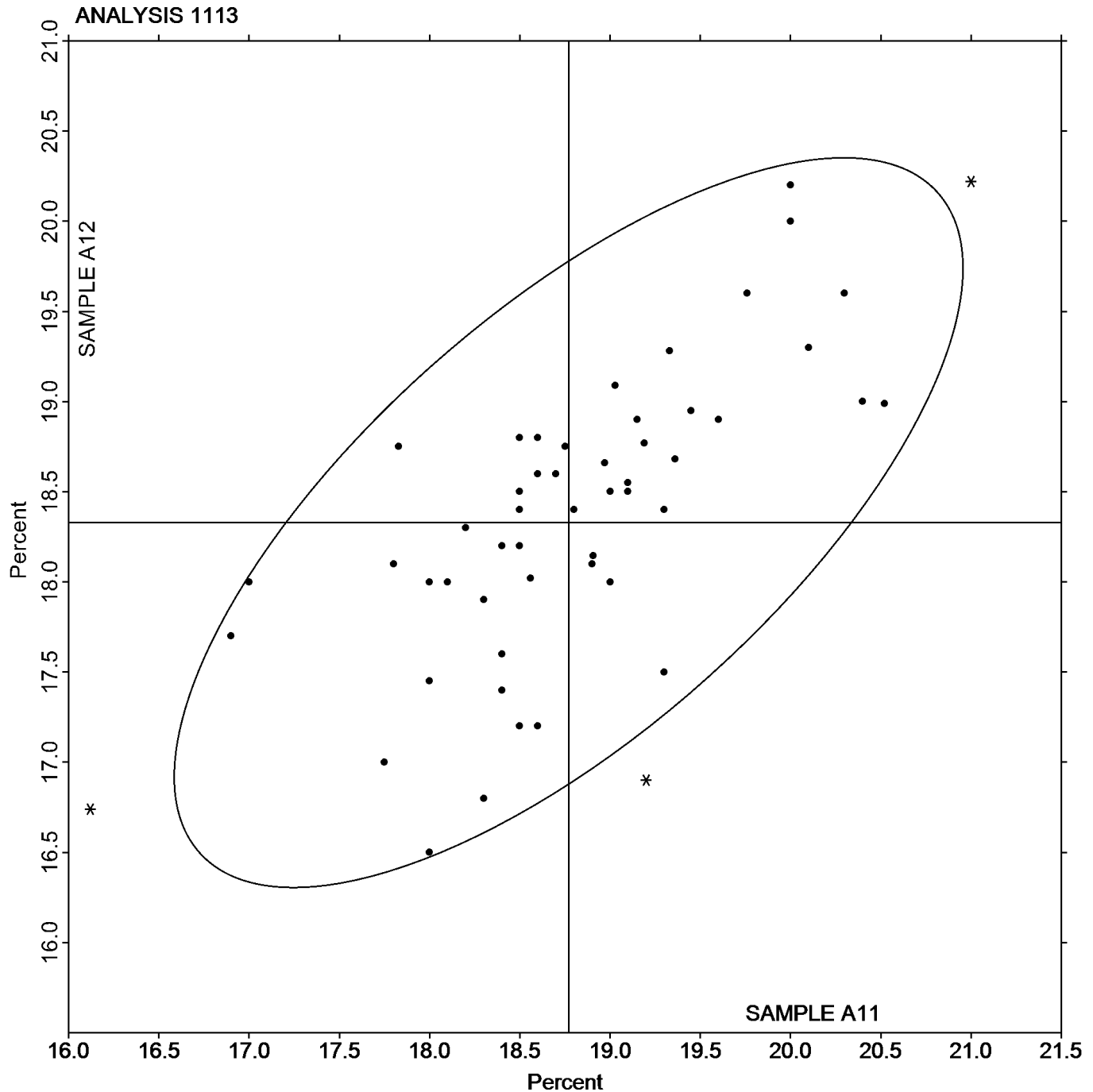
**Elongation: Pre-Machined Round Steel
ASTM E8**

SAMPLE A11

18.77 Percent

SAMPLE A12

18.33 Percent





Fasteners and Metals Interlaboratory Testing Program

Analysis 1114

Reduction of Area: Pre-Machined Round Steel ASTM E8

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample A11			Sample A12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2DEEXV		55.90	1.29	1.16	54.30	1.37	1.23
39LP3A		56.60	1.99	1.79	53.70	0.77	0.69
3TUWAV		54.50	-0.11	-0.10	53.30	0.37	0.33
4ZKYTH		53.60	-1.01	-0.90	50.80	-2.13	-1.91
6KN228		54.33	-0.28	-0.25	51.99	-0.94	-0.84
79U3WM		55.29	0.68	0.61	54.13	1.20	1.07
7EX7HE		55.12	0.51	0.46	53.06	0.13	0.12
7FQZG4	*	56.04	1.43	1.29	50.35	-2.58	-2.31
8H8UPN		53.60	-1.01	-0.90	53.20	0.27	0.24
93DGWE		54.00	-0.61	-0.54	52.00	-0.93	-0.83
9QKT6L		54.00	-0.61	-0.54	54.00	1.07	0.96
9WQNMZ		55.42	0.81	0.73	52.19	-0.74	-0.66
ATNC8Y		53.80	-0.81	-0.72	51.10	-1.83	-1.64
BJDALX		54.00	-0.61	-0.54	52.00	-0.93	-0.83
BUZ6X8		55.20	0.59	0.53	52.70	-0.23	-0.21
CYNAVU		55.20	0.59	0.53	52.70	-0.23	-0.21
D3378X		54.00	-0.61	-0.54	54.00	1.07	0.96
D8W3WN		53.90	-0.71	-0.63	53.30	0.37	0.33
DFMLBW		56.10	1.49	1.34	53.95	1.02	0.91
DJMW8W		56.30	1.69	1.52	54.20	1.27	1.14
DKHF9X		56.10	1.49	1.34	53.70	0.77	0.69
EAVYLU		52.80	-1.81	-1.62	53.10	0.17	0.15
ECHKJY		54.00	-0.61	-0.54	53.00	0.07	0.06
EHCCXM		54.14	-0.47	-0.42	52.51	-0.42	-0.37
EZTFHU	*	51.80	-2.81	-2.52	51.70	-1.23	-1.10
F6GKLH	X	55.00	0.39	0.35	61.00	8.07	7.22
F6K6FC		54.00	-0.61	-0.54	54.00	1.07	0.96
FAFRCL		55.20	0.59	0.53	53.10	0.17	0.15
FBKNE2		54.84	0.24	0.21	52.67	-0.26	-0.24
FCF8F3		55.76	1.16	1.04	52.54	-0.39	-0.35
FL2BLG	*	53.10	-1.51	-1.35	55.40	2.47	2.21
FL6VFC		53.60	-1.01	-0.90	53.40	0.47	0.42
GQCN4F		54.93	0.32	0.29	52.83	-0.10	-0.09
H8WVBX	X	56.00	1.39	1.25	59.80	6.87	6.15
HHECDP		53.10	-1.51	-1.35	54.10	1.17	1.05
HV7XQM	X	36.10	-18.51	-16.62	33.00	-19.93	-17.83
JRJXQW		56.00	1.39	1.25	52.00	-0.93	-0.83
JX4X7A		56.00	1.39	1.25	54.00	1.07	0.96
JYZBT3		54.90	0.29	0.26	54.10	1.17	1.05
LE23JW		55.47	0.86	0.77	53.68	0.75	0.67
MR9AW9		54.80	0.19	0.17	53.70	0.77	0.69
NFRPBQ	X	60.67	6.06	5.44	57.09	4.16	3.72
PC8FGJ		56.32	1.71	1.54	52.41	-0.52	-0.47
PNGUNW		53.10	-1.51	-1.35	52.60	-0.33	-0.30
QHQZ2B		53.90	-0.71	-0.63	51.20	-1.73	-1.55
QNFD3Y		51.95	-2.66	-2.39	52.03	-0.90	-0.80
QP8DZA		54.80	0.19	0.17	51.90	-1.03	-0.92



Fasteners and Metals Interlaboratory Testing Program

Analysis 1114

Reduction of Area: Pre-Machined Round Steel ASTM E8

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample A11			Sample A12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
R3QHPH		53.80	-0.81	-0.72	51.00	-1.93	-1.73
RATMG2		55.90	1.29	1.16	54.20	1.27	1.14
RBN6H3		54.20	-0.41	-0.37	53.10	0.17	0.15
RP3DGL		54.17	-0.44	-0.39	53.25	0.32	0.29
RT4KQA		53.30	-1.31	-1.17	55.20	2.27	2.03
TUH7AY	*	56.00	1.39	1.25	50.40	-2.53	-2.26
UHWGNY		55.00	0.39	0.35	53.50	0.57	0.51
VJJJRQ		54.93	0.32	0.29	51.88	-1.05	-0.94
VP9272		55.60	0.99	0.89	53.60	0.67	0.60
W7DLNQ		55.20	0.59	0.53	52.80	-0.13	-0.12
WZMDYP		54.80	0.19	0.17	53.30	0.37	0.33
XZ8A8J		53.77	-0.84	-0.75	51.81	-1.12	-1.00
Y2VAEE		53.80	-0.81	-0.72	53.40	0.47	0.42

Summary Statistics

	Sample A11		Sample A12	
Grand Means	54.61	Percent	52.93	Percent
Std Dev Btwn Labs	1.11	Percent	1.12	Percent

Samples A11, A12 : AISI 4340 (S), AISI 4340 (L)

Statistics based on 56 of 60 reporting participants

Comments on Assigned Data Flags for Test #1114

F6GKLH (X) - Data for sample A12 are high.

H8WVBX (X) - Data for sample A12 are high.

HV7XQM (X) - Data for both samples are low.

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



Analysis 1114

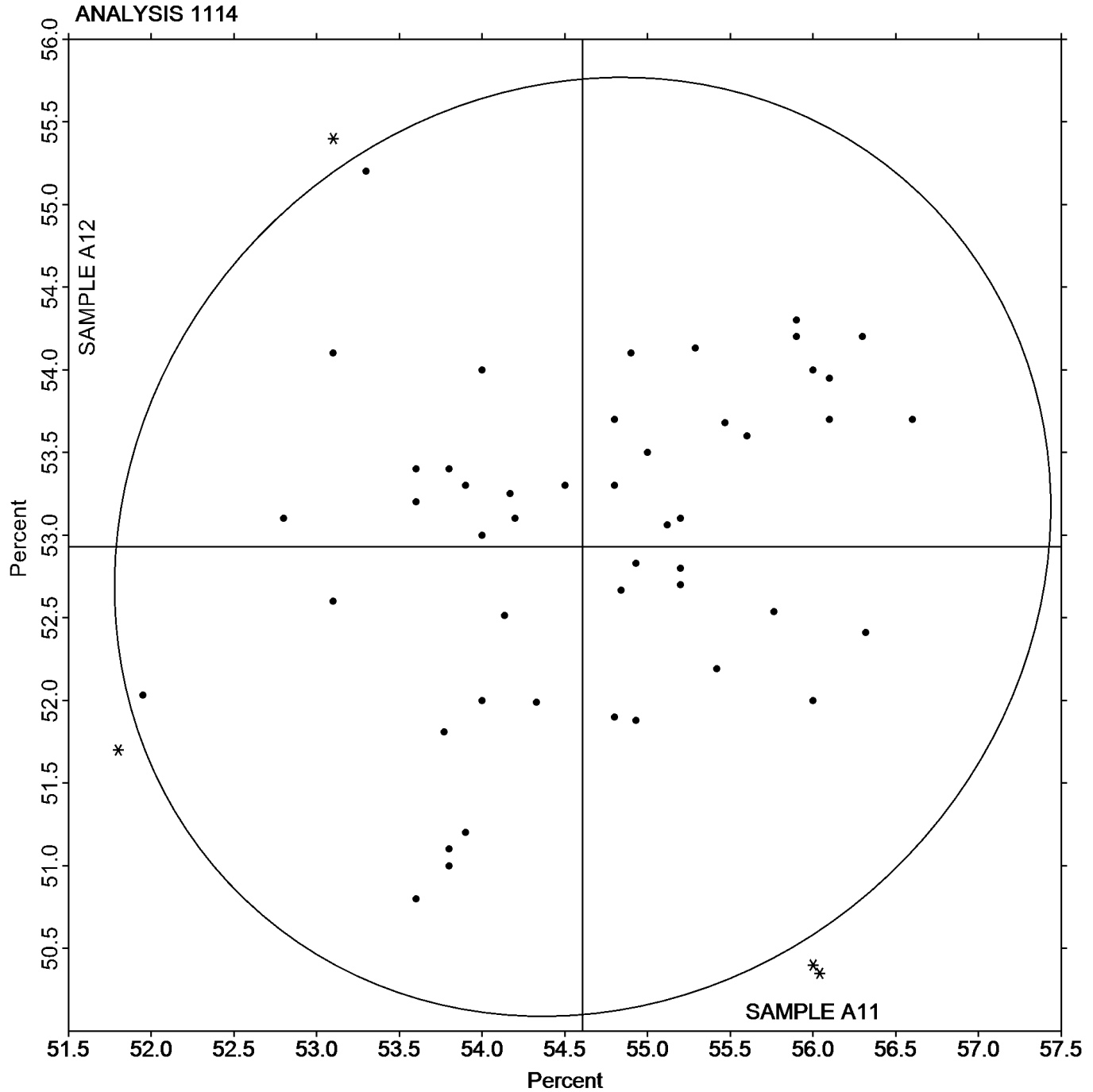
Reduction of Area: Pre-Machined Round Steel
ASTM E8

SAMPLE A11

54.61 Percent

SAMPLE A12

52.93 Percent





Fasteners and Metals Interlaboratory Testing Program

Analysis 1121

Tensile Strength: Lab-Machined Round Steel ASTM E8

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample P11			Sample P12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2FLWXC		136.70	-0.75	-0.61	141.10	0.32	0.25
2WRB4C		136.70	-0.75	-0.61	139.60	-1.18	-0.94
3NT7MG		137.20	-0.25	-0.20	139.60	-1.18	-0.94
3W9UDC		138.08	0.63	0.51	140.40	-0.38	-0.31
47UBPJ		137.08	-0.37	-0.30	140.50	-0.28	-0.22
4HPJA8		136.70	-0.75	-0.61	140.30	-0.48	-0.38
62D6N3		135.90	-1.55	-1.26	140.70	-0.08	-0.07
69XAN4		139.00	1.55	1.26	140.00	-0.78	-0.62
6LYWR7		135.60	-1.85	-1.50	139.30	-1.48	-1.18
6NQXV9		138.08	0.63	0.51	141.56	0.78	0.62
6VM2CQ		137.31	-0.14	-0.12	141.27	0.49	0.39
6YPX3K		135.55	-1.90	-1.54	140.89	0.11	0.09
7MA22M		138.60	1.15	0.93	141.10	0.31	0.25
7ZX9W4		137.20	-0.25	-0.20	140.00	-0.78	-0.62
8H8UPN		135.26	-2.19	-1.77	139.60	-1.18	-0.94
8L9VTR		139.54	2.09	1.69	141.17	0.38	0.30
8YYLFG		137.64	0.19	0.16	142.43	1.65	1.31
963NHW		136.10	-1.35	-1.09	139.90	-0.88	-0.70
9L98R9		135.70	-1.75	-1.42	139.30	-1.48	-1.18
9RFHEU		138.50	1.05	0.85	142.10	1.32	1.05
9YX8MG		137.90	0.45	0.36	142.00	1.22	0.97
AH4WGQ		138.30	0.85	0.69	141.10	0.32	0.25
ATNC8Y		137.50	0.05	0.04	140.50	-0.28	-0.22
BFEPV9	X	138.90	1.45	1.17	138.20	-2.58	-2.05
BK8WBV		136.20	-1.25	-1.01	141.90	1.12	0.89
BLYUJ3		139.24	1.79	1.45	142.43	1.65	1.31
BTHDM3		135.90	-1.55	-1.26	139.30	-1.48	-1.18
C9PWR8	*	136.00	-1.45	-1.17	137.00	-3.78	-3.01
CWKBVA		138.30	0.85	0.69	142.40	1.62	1.29
D7HTL3		137.70	0.25	0.20	143.30	2.52	2.00
D8DCM4		136.80	-0.65	-0.53	140.40	-0.38	-0.30
DGJ2JM		138.25	0.80	0.65	140.37	-0.41	-0.33
DJMW8W		138.00	0.55	0.45	139.50	-1.28	-1.02
DUNHBB		137.21	-0.24	-0.20	139.38	-1.40	-1.11
E4P8N6		137.80	0.35	0.28	140.70	-0.08	-0.07
EBPLCR		137.00	-0.45	-0.36	142.00	1.22	0.97
ERB9MV		136.50	-0.95	-0.77	139.70	-1.08	-0.86
FBNBQ9		136.80	-0.65	-0.53	138.90	-1.88	-1.50
FL6VFC		138.50	1.05	0.85	143.10	2.32	1.84
FMV2PB		138.40	0.95	0.77	141.20	0.42	0.33
FNU7FP		136.68	-0.77	-0.62	140.96	0.18	0.14
FPNVQK		135.83	-1.62	-1.32	139.20	-1.59	-1.26
G9A9D9		138.20	0.75	0.61	141.30	0.52	0.41
GZ2CWW		137.00	-0.45	-0.36	141.10	0.32	0.25
H2A6YM		139.02	1.57	1.27	141.60	0.82	0.65
HFTT8L		138.31	0.86	0.69	139.19	-1.60	-1.27
HHHZKH		136.82	-0.63	-0.51	141.24	0.46	0.37



Fasteners and Metals Interlaboratory Testing Program

Analysis 1121

Tensile Strength: Lab-Machined Round Steel
ASTM E8

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample P11			Sample P12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
HV7ZFQ	*	138.25	0.80	0.65	143.90	3.12	2.48
JBNK8V		136.72	-0.73	-0.60	141.37	0.58	0.46
JGFKU3		138.20	0.75	0.61	141.90	1.12	0.89
JLWV3Z		137.80	0.35	0.28	141.40	0.62	0.49
JPBR93		138.08	0.63	0.51	141.12	0.34	0.27
K4R3E6		136.86	-0.59	-0.48	139.85	-0.94	-0.74
K6GEA4		135.50	-1.95	-1.58	138.00	-2.78	-2.21
KBA9DW		140.22	2.77	2.24	143.29	2.51	1.99
KHRKEP		137.30	-0.15	-0.12	139.80	-0.98	-0.78
KTNPFP		135.18	-2.27	-1.84	141.12	0.34	0.27
KYD3JX		138.10	0.65	0.53	140.80	0.02	0.01
LCWGP6		137.80	0.35	0.28	140.70	-0.08	-0.07
LE23JW		136.08	-1.37	-1.11	140.12	-0.66	-0.53
LHQ7HV		137.35	-0.10	-0.08	139.37	-1.41	-1.12
LQHL4T		139.52	2.07	1.67	140.85	0.07	0.06
M6UKMK		137.80	0.35	0.28	140.50	-0.28	-0.22
MFB7VZ		138.70	1.25	1.01	141.80	1.02	0.81
MQG8CD		137.90	0.45	0.36	140.00	-0.78	-0.62
MUB7M3		136.80	-0.65	-0.53	140.70	-0.08	-0.07
N99L4N		137.10	-0.35	-0.28	141.20	0.42	0.33
NCBF2T		140.40	2.95	2.39	142.28	1.50	1.19
NUTGWV		136.30	-1.15	-0.93	140.90	0.12	0.09
NWY2N2		139.00	1.55	1.26	143.00	2.22	1.76
NYP3R6		135.00	-2.45	-1.98	140.00	-0.78	-0.62
PC8CRE		136.00	-1.45	-1.18	140.91	0.13	0.10
PJ8U7Q	*	139.10	1.65	1.34	139.30	-1.48	-1.18
PLEWBB		137.98	0.53	0.43	140.03	-0.75	-0.60
PXLZDK		136.91	-0.54	-0.44	139.23	-1.55	-1.23
Q6P2FY		136.99	-0.46	-0.37	139.57	-1.21	-0.96
QAFG3K		138.69	1.24	1.01	140.99	0.21	0.17
QC2FXV		137.91	0.46	0.37	142.23	1.45	1.15
QHLKLP		137.00	-0.45	-0.36	140.00	-0.78	-0.62
QPQGE2		138.95	1.50	1.21	141.56	0.78	0.62
RAPZ4U		136.16	-1.29	-1.04	139.70	-1.08	-0.86
RGA2LR		136.90	-0.55	-0.45	139.10	-1.68	-1.34
RYTZFG		138.00	0.55	0.45	140.90	0.12	0.09
T38RFX		136.90	-0.55	-0.45	141.00	0.22	0.17
T6W3BW	*	141.00	3.55	2.88	143.40	2.62	2.08
UD6EHE		137.69	0.24	0.19	141.66	0.88	0.70
UHWGNY		137.21	-0.24	-0.20	140.40	-0.38	-0.31
ULWPUU		137.42	-0.03	-0.02	140.47	-0.31	-0.25
VBUVWN		137.90	0.45	0.36	141.20	0.42	0.33
VP8A9U		138.80	1.35	1.09	143.42	2.64	2.10
VP9272		139.30	1.85	1.50	141.20	0.42	0.33
VU6LC7		136.37	-1.08	-0.87	140.47	-0.32	-0.25
W24AP4		136.85	-0.60	-0.49	140.22	-0.56	-0.45
W3GZWM		139.00	1.55	1.26	141.00	0.22	0.17



Fasteners and Metals Interlaboratory Testing Program

Analysis 1121

Tensile Strength: Lab-Machined Round Steel
ASTM E8

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample P11			Sample P12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
W7DLNQ	*	133.90	-3.55	-2.87	139.60	-1.18	-0.94
WAXGEA		137.29	-0.16	-0.13	141.14	0.36	0.29
WDWTBA		138.00	0.55	0.45	140.75	-0.03	-0.03
WVFMY6		137.60	0.15	0.12	140.90	0.12	0.09
WYCGNU		137.52	0.07	0.05	139.77	-1.01	-0.81
XBM4HC		139.00	1.55	1.26	140.00	-0.78	-0.62
XE7DAP		135.80	-1.65	-1.34	140.90	0.12	0.09
XKPLTF		136.60	-0.85	-0.69	137.80	-2.98	-2.37
YCWTW9	*	138.50	1.05	0.85	144.20	3.42	2.72
YQVLLW		136.98	-0.47	-0.38	141.84	1.05	0.84
YR6NAF		136.85	-0.60	-0.49	140.93	0.15	0.12
YZ3C88	X	144.40	6.95	5.63	147.50	6.72	5.34
ZCAKF3		136.61	-0.84	-0.68	141.25	0.47	0.37
ZF87E8		139.00	1.55	1.26	141.00	0.22	0.17
ZQ8T8P		137.81	0.36	0.29	142.50	1.71	1.36
ZV2TKZ		135.60	-1.85	-1.50	139.40	-1.38	-1.10

Summary Statistics

	Sample P11		Sample P12	
Grand Means	137.45	ksi	140.78	ksi
Std Dev Btwn Labs	1.23	ksi	1.26	ksi

Samples P11, P12 : AISI 4340 (E), AISI 4340 (F)

Statistics based on 108 of 110 reporting participants

Comments on Assigned Data Flags for Test #1121

BFEPV9 (X) - Inconsistent in testing between samples.

YZ3C88 (X) - Data for both samples are high.



Analysis 1121

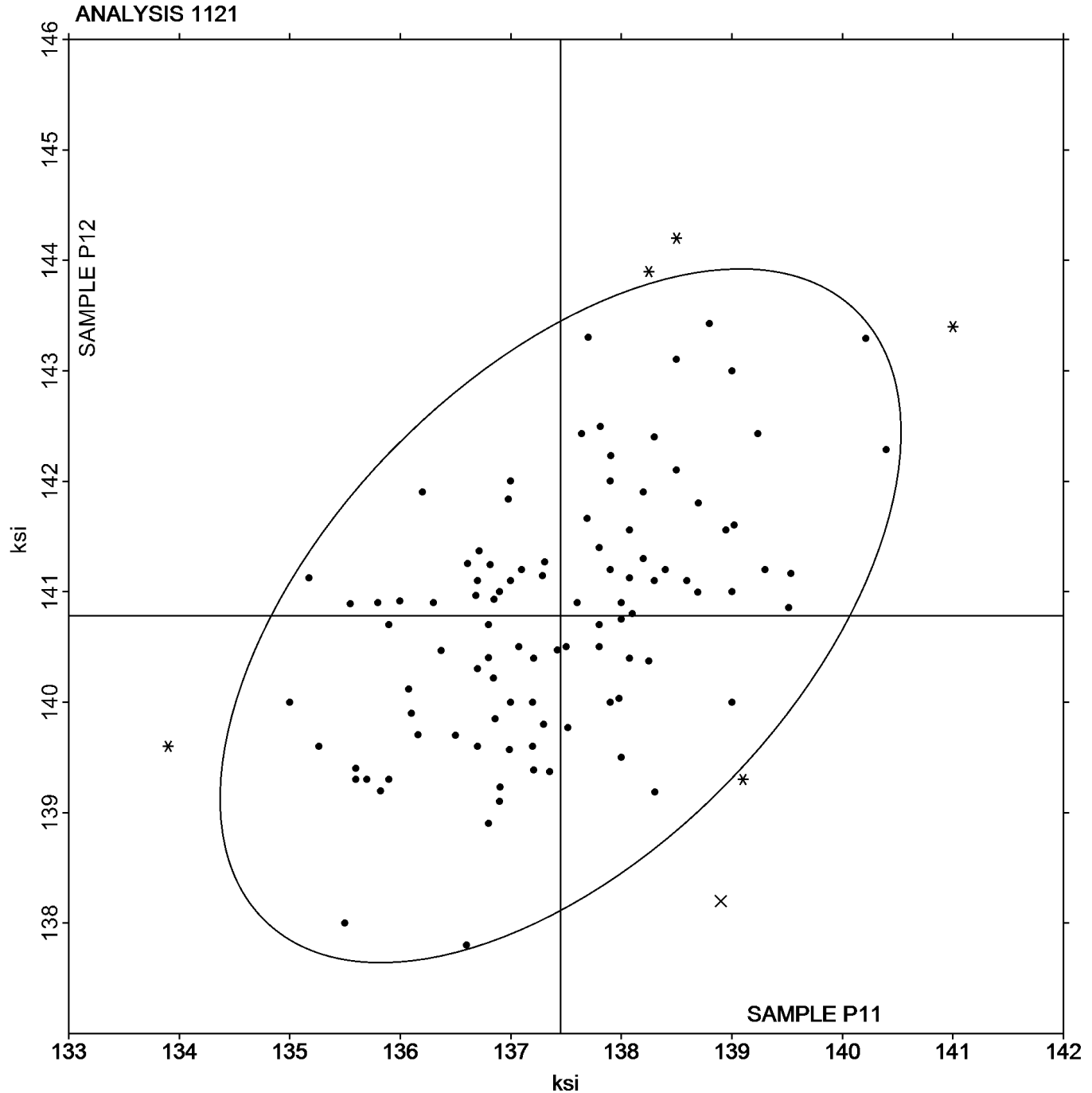
Tensile Strength: Lab-Machined Round Steel
ASTM E8

SAMPLE P11

137.45 ksi

SAMPLE P12

140.78 ksi





Fasteners and Metals Interlaboratory Testing Program

Analysis 1122

Yield Strength: Lab-Machined Round Steel
ASTM E8

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample P11			Sample P12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2FLWXC		109.80	-0.06	-0.05	113.60	0.78	0.56
2WRB4C		109.10	-0.76	-0.58	110.60	-2.22	-1.61
3NT7MG		109.90	0.04	0.03	112.70	-0.12	-0.09
3W9UDC		110.81	0.95	0.73	112.55	-0.27	-0.20
4HPJA8		108.60	-1.26	-0.97	113.30	0.48	0.34
62D6N3		109.60	-0.26	-0.20	112.90	0.08	0.05
69XAN4	X	136.00	26.14	20.10	121.00	8.18	5.91
6LYWR7		107.00	-2.86	-2.20	110.30	-2.52	-1.82
6NQXV9		111.10	1.24	0.95	113.28	0.45	0.33
6VM2CQ		111.00	1.14	0.88	113.91	1.09	0.79
6YPX3K		107.33	-2.53	-1.94	112.52	-0.30	-0.22
7MA22M		111.22	1.36	1.05	112.93	0.11	0.08
7ZX9W4		110.50	0.64	0.49	112.60	-0.22	-0.16
8H8UPN		108.27	-1.59	-1.22	111.42	-1.41	-1.02
8L9VTR		111.93	2.07	1.60	113.45	0.63	0.45
8YYLFG		109.65	-0.21	-0.16	113.71	0.89	0.64
963NHW		108.60	-1.26	-0.97	111.90	-0.92	-0.67
9L98R9		108.90	-0.96	-0.74	112.00	-0.82	-0.60
9RFHEU		107.60	-2.26	-1.74	112.40	-0.42	-0.31
9YX8MG		111.30	1.44	1.11	115.30	2.48	1.79
AH4WGQ		109.40	-0.46	-0.35	112.00	-0.82	-0.60
ATNC8Y		109.20	-0.66	-0.51	112.20	-0.62	-0.45
BFEPV9	*	112.30	2.44	1.88	111.50	-1.32	-0.96
BK8WBV		108.30	-1.56	-1.20	112.00	-0.82	-0.60
BLYUJ3	*	106.89	-2.96	-2.28	109.21	-3.61	-2.61
BTHDM3		108.70	-1.16	-0.89	112.30	-0.52	-0.38
C9PWR8	X	107.00	-2.86	-2.20	107.00	-5.82	-4.21
CWKBVA		110.30	0.44	0.34	115.40	2.58	1.86
D7HTL3		110.30	0.44	0.34	116.00	3.18	2.30
D8DCM4		110.50	0.64	0.49	113.90	1.08	0.78
DGJ2JM		110.79	0.93	0.72	112.83	0.00	0.00
DJMW8W		110.00	0.14	0.11	110.80	-2.02	-1.46
DUNHBB	X	104.86	-5.00	-3.84	103.85	-8.98	-6.49
E4P8N6		109.60	-0.26	-0.20	111.80	-1.02	-0.74
EBPLCR		110.00	0.14	0.11	115.00	2.18	1.57
ERB9MV	X	100.60	-9.26	-7.12	107.45	-5.37	-3.88
FBNBQ9	X	105.80	-4.06	-3.12	103.60	-9.22	-6.67
FL6VFC		109.90	0.04	0.03	110.30	-2.52	-1.82
FMV2PB		110.90	1.04	0.80	113.00	0.18	0.13
FNU7FP		109.04	-0.82	-0.63	112.83	0.00	0.00
FPNVQK		109.08	-0.78	-0.60	111.62	-1.20	-0.87
G9A9D9		110.70	0.84	0.65	112.80	-0.02	-0.02
GZ2CWW		109.90	0.04	0.03	113.10	0.28	0.20
H2A6YM		111.84	1.98	1.52	114.71	1.89	1.36
H77Q2Y	X	104.86	-5.00	-3.84	111.24	-1.58	-1.14
HFTT8L		109.11	-0.74	-0.57	110.66	-2.16	-1.56
HHHZKH		109.87	0.01	0.01	113.59	0.76	0.55



Fasteners and Metals Interlaboratory Testing Program

Analysis 1122

Yield Strength: Lab-Machined Round Steel
ASTM E8

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample P11			Sample P12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
HV7ZFQ		110.12	0.26	0.20	115.04	2.21	1.60
JBNK8V	X	21.09	-88.76	-68.26	22.32	-90.51	-65.42
JGFKU3	*	109.80	-0.06	-0.05	109.60	-3.22	-2.33
JLWV3Z		109.70	-0.16	-0.12	112.40	-0.42	-0.31
JPBR93		111.10	1.24	0.95	114.15	1.32	0.96
K4R3E6		109.45	-0.41	-0.32	111.75	-1.07	-0.77
K6GEA4		108.40	-1.46	-1.12	110.20	-2.62	-1.90
KBA9DW		111.34	1.48	1.14	113.18	0.35	0.25
KHRKEP	X	103.70	-6.16	-4.74	105.30	-7.52	-5.44
KTNPFP		107.91	-1.95	-1.50	113.28	0.45	0.33
KYD3JX		109.90	0.04	0.03	112.70	-0.12	-0.09
LCWGP6		112.00	2.14	1.65	114.60	1.78	1.28
LE23JW		108.54	-1.32	-1.01	111.83	-1.00	-0.72
LHQ7HV		111.15	1.29	0.99	112.99	0.16	0.12
LQHL4T		112.62	2.76	2.12	113.89	1.06	0.77
M6UKMK	*	110.00	0.14	0.11	116.00	3.18	2.30
MFB7VZ		110.80	0.94	0.72	114.20	1.38	0.99
MQG8CD		111.30	1.44	1.11	113.30	0.48	0.34
MUB7M3		110.30	0.44	0.34	113.60	0.78	0.56
N99L4N	X	116.60	6.74	5.18	111.80	-1.02	-0.74
NCBF2T		112.70	2.84	2.18	114.58	1.76	1.27
NUTGWV		108.10	-1.76	-1.35	110.70	-2.12	-1.54
NWY2N2		112.00	2.14	1.65	114.00	1.18	0.85
NYP3R6		108.00	-1.86	-1.43	113.00	0.18	0.13
PC8CRE		109.74	-0.12	-0.09	114.31	1.49	1.07
PJ8U7Q		110.50	0.64	0.49	110.60	-2.22	-1.61
PLEWBB		110.76	0.90	0.69	112.37	-0.46	-0.33
PXLZDK	X	101.86	-8.00	-6.15	105.24	-7.59	-5.49
Q6P2FY		109.24	-0.62	-0.47	112.04	-0.78	-0.56
QAFG3K		110.12	0.26	0.20	111.59	-1.24	-0.90
QC2FXV		109.02	-0.84	-0.64	112.79	-0.03	-0.02
QHLKLP		112.00	2.14	1.65	114.00	1.18	0.85
QPQGE2		111.83	1.97	1.51	114.58	1.76	1.27
RAPZ4U		108.88	-0.98	-0.75	112.43	-0.39	-0.28
RGA2LR		109.80	-0.06	-0.05	112.00	-0.82	-0.60
RYTZFG		110.00	0.14	0.11	111.90	-0.92	-0.67
T38RFX		110.90	1.04	0.80	114.10	1.28	0.92
T6W3BW	X	124.00	14.14	10.88	116.40	3.58	2.58
UD6EHE		107.43	-2.43	-1.87	112.55	-0.27	-0.20
UHWGNY		110.08	0.23	0.17	112.99	0.16	0.12
ULWPUU		108.97	-0.89	-0.69	111.77	-1.06	-0.76
VBUVWN		108.90	-0.96	-0.74	112.20	-0.62	-0.45
VP8A9U		111.10	1.24	0.96	114.84	2.01	1.45
VP9272		110.90	1.04	0.80	112.80	-0.02	-0.02
VU6LC7		108.79	-1.07	-0.82	113.11	0.28	0.21
W24AP4		110.39	0.53	0.41	113.48	0.66	0.48
W3GZWM		110.00	0.14	0.11	113.00	0.18	0.13



Fasteners and Metals Interlaboratory Testing Program

Analysis 1122

Yield Strength: Lab-Machined Round Steel
ASTM E8

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample P11			Sample P12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
W7DLNQ	X	105.70	-4.16	-3.20	111.60	-1.22	-0.88
WAXGEA		110.58	0.72	0.55	113.39	0.56	0.41
WDWTBA		111.10	1.24	0.96	113.40	0.57	0.41
WVFMY6		108.90	-0.96	-0.74	112.00	-0.82	-0.60
WYCGNU		109.87	0.01	0.01	112.75	-0.07	-0.05
XBM4HC		110.00	0.14	0.11	111.00	-1.82	-1.32
XE7DAP	*	107.00	-2.86	-2.20	113.60	0.78	0.56
XKPLTF	X	108.20	-1.66	-1.28	107.60	-5.22	-3.78
YCWTW9		110.60	0.74	0.57	115.60	2.78	2.01
YQVLLW		109.51	-0.35	-0.27	113.80	0.97	0.70
YR6NAF		108.07	-1.79	-1.37	111.67	-1.16	-0.84
YZ3C88	X	115.60	5.74	4.42	118.20	5.38	3.89
ZCAKF3		109.11	-0.75	-0.57	112.91	0.09	0.06
ZF87E8		110.00	0.14	0.11	112.00	-0.82	-0.60
ZQ8T8P		110.48	0.62	0.48	114.18	1.35	0.98
ZV2TKZ		107.80	-2.06	-1.58	111.50	-1.32	-0.96

Summary Statistics

	Sample P11		Sample P12	
Grand Means	109.86	ksi	112.82	ksi
Std Dev Btwn Labs	1.30	ksi	1.38	ksi

Samples P11, P12 : AISI 4340 (E), AISI 4340 (F)

Statistics based on 96 of 110 reporting participants

Comments on Assigned Data Flags for Test #1122

- 69XAN4 (X) - Data for both samples are high.
- C9PWR8 (X) - Data for sample P12 are low.
- DUNHBB (X) - Data for both samples are low.
- ERB9MV (X) - Data for both samples are low.
- FBNBQ9 (X) - Data for both samples are low.
- H77Q2Y (X) - Data for sample P11 are low.
- JBNK8V (X) - Extreme data.
- KHRKEP (X) - Data for both samples are low.
- N99L4N (X) - Data for sample P11 are high.
- PXLZDK (X) - Data for both samples are low.
- T6W3BW (X) - Data for sample P11 are high.
- W7DLNQ (X) - Data for sample P11 are low.
- XKPLTF (X) - Data for sample P12 are low.
- YZ3C88 (X) - Data for both samples are high.



Analysis 1122

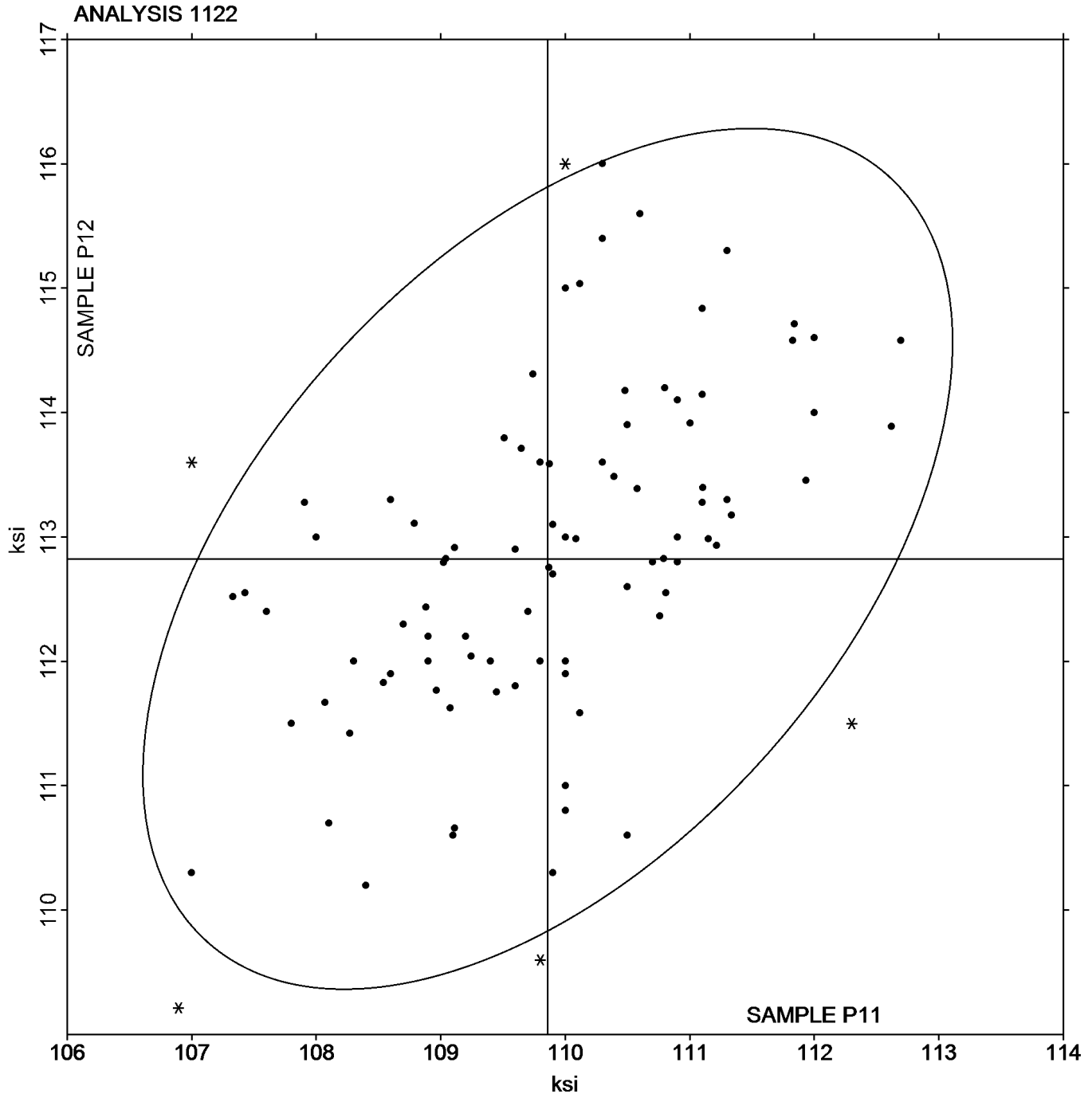
Yield Strength: Lab-Machined Round Steel
ASTM E8

SAMPLE P11

109.86 ksi

SAMPLE P12

112.82 ksi





Fasteners and Metals Interlaboratory Testing Program

Analysis 1123

Elongation: Lab-Machined Round Steel
ASTM E8

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample P11			Sample P12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2FLWXC		18.60	0.02	0.01	17.80	-0.24	-0.21
2WRB4C	*	21.10	2.52	2.23	18.30	0.26	0.23
3NT7MG		17.70	-0.88	-0.78	17.70	-0.34	-0.30
3W9UDC		16.70	-1.88	-1.67	16.70	-1.34	-1.18
47UBPJ	*	17.20	-1.38	-1.23	15.00	-3.04	-2.67
4HPJA8		18.80	0.22	0.19	19.40	1.36	1.20
62D6N3		17.10	-1.48	-1.32	18.20	0.16	0.14
69XAN4		19.00	0.42	0.37	17.00	-1.04	-0.91
6LYWR7	*	21.40	2.82	2.50	19.30	1.26	1.11
6NQXV9		18.00	-0.58	-0.52	17.00	-1.04	-0.91
6VM2CQ		18.90	0.32	0.28	19.50	1.46	1.29
6YPX3K		19.72	1.14	1.01	19.26	1.22	1.08
7MA22M		18.50	-0.08	-0.07	18.00	-0.04	-0.03
7ZX9W4		18.70	0.12	0.10	17.90	-0.14	-0.12
8H8UPN	X	21.10	2.52	2.23	17.90	-0.14	-0.12
8L9VTR		17.50	-1.08	-0.96	17.50	-0.54	-0.47
8YYLFG		18.80	0.22	0.19	18.20	0.16	0.14
963NHW		19.00	0.42	0.37	17.80	-0.24	-0.21
9L98R9		18.30	-0.28	-0.25	17.40	-0.64	-0.56
9RFHEU		20.70	2.12	1.88	19.90	1.86	1.64
9YX8MG		18.00	-0.58	-0.52	18.40	0.36	0.32
AH4WGQ		17.20	-1.38	-1.23	17.10	-0.94	-0.82
ATNC8Y		16.70	-1.88	-1.67	17.30	-0.74	-0.65
BFEPV9		17.10	-1.48	-1.32	16.30	-1.74	-1.53
BK8WBV		21.00	2.42	2.14	20.00	1.96	1.73
BLYUJ3	X	22.30	3.72	3.30	21.10	3.06	2.70
BTHDM3		18.60	0.02	0.01	18.30	0.26	0.23
C9PWR8	*	21.00	2.42	2.14	21.00	2.96	2.61
CWKBVA		18.00	-0.58	-0.52	18.00	-0.04	-0.03
D7HTL3		19.00	0.42	0.37	16.50	-1.54	-1.35
D8DCM4		18.10	-0.48	-0.43	17.10	-0.94	-0.82
DGJ2JM		17.50	-1.08	-0.96	16.80	-1.24	-1.09
DJMW8W		19.30	0.72	0.64	18.50	0.46	0.41
DUNHBB		18.00	-0.58	-0.52	19.00	0.96	0.85
E4P8N6		19.30	0.72	0.64	18.60	0.56	0.50
EBPLCR		18.00	-0.58	-0.52	16.00	-2.04	-1.79
ERB9MV		17.10	-1.48	-1.32	18.00	-0.04	-0.03
FBNBQ9		17.60	-0.98	-0.87	17.40	-0.64	-0.56
FL6VFC		18.60	0.02	0.01	18.40	0.36	0.32
FMV2PB		19.50	0.92	0.81	18.80	0.76	0.67
FNU7FP		18.30	-0.28	-0.25	17.80	-0.24	-0.21
FPNVQK		18.50	-0.08	-0.07	17.50	-0.54	-0.47
G9A9D9		19.55	0.97	0.86	18.98	0.94	0.83
GZ2CWW		18.30	-0.28	-0.25	17.40	-0.64	-0.56
H2A6YM		18.35	-0.23	-0.21	18.80	0.76	0.67
H77Q2Y		20.10	1.52	1.34	19.30	1.26	1.11
HFTT8L		18.86	0.28	0.24	19.45	1.41	1.24



Fasteners and Metals Interlaboratory Testing Program

Analysis 1123

Elongation: Lab-Machined Round Steel
ASTM E8

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample P11			Sample P12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
HHHZKH		18.00	-0.58	-0.52	17.00	-1.04	-0.91
HV7ZFQ		19.42	0.84	0.74	19.52	1.48	1.31
JBNK8V		18.25	-0.33	-0.30	17.20	-0.84	-0.74
JGFKU3		18.50	-0.08	-0.07	19.00	0.96	0.85
JLWV3Z		18.60	0.02	0.01	18.60	0.56	0.50
JPBR93		19.14	0.56	0.49	18.22	0.18	0.16
K4R3E6		19.90	1.32	1.17	19.60	1.56	1.38
K6GEA4		18.10	-0.48	-0.43	16.00	-2.04	-1.79
KBA9DW	*	15.59	-2.99	-2.66	15.22	-2.82	-2.48
KHRKEP		17.50	-1.08	-0.96	15.80	-2.24	-1.97
KTNPFP	*	21.90	3.32	2.94	20.00	1.96	1.73
KYD3JX		19.60	1.02	0.90	19.40	1.36	1.20
LCWGP6		18.30	-0.28	-0.25	18.90	0.86	0.76
LE23JW		18.15	-0.43	-0.39	17.40	-0.64	-0.56
LHQ7HV		17.05	-1.53	-1.36	16.50	-1.54	-1.35
LQHL4T		18.76	0.18	0.16	18.68	0.64	0.57
M6UKMK		19.40	0.82	0.72	19.40	1.36	1.20
MFB7VZ		19.00	0.42	0.37	18.00	-0.04	-0.03
MQG8CD	X	18.00	-0.58	-0.52	20.50	2.46	2.17
MUB7M3		17.30	-1.28	-1.14	17.40	-0.64	-0.56
N99L4N	X	21.70	3.12	2.76	22.30	4.26	3.75
NCBF2T		20.08	1.50	1.33	17.56	-0.48	-0.42
NUTGWV		20.00	1.42	1.26	17.90	-0.14	-0.12
NWY2N2		17.80	-0.78	-0.70	17.80	-0.24	-0.21
NYP3R6		17.10	-1.48	-1.32	17.40	-0.64	-0.56
PC8CRE		17.08	-1.50	-1.33	16.82	-1.22	-1.07
PJ8U7Q		18.50	-0.08	-0.07	18.90	0.86	0.76
PLEWBB		17.50	-1.08	-0.96	17.50	-0.54	-0.47
PXLZDK		19.44	0.86	0.76	18.80	0.76	0.67
Q6P2FY		19.80	1.22	1.08	19.80	1.76	1.55
QAFG3K		18.10	-0.48	-0.43	17.90	-0.14	-0.12
QC2FXV		18.50	-0.08	-0.07	18.40	0.36	0.32
QHLKLP		17.15	-1.43	-1.27	17.05	-0.99	-0.87
QPQGE2		18.80	0.22	0.19	17.60	-0.44	-0.38
RAPZ4U		19.00	0.42	0.37	19.00	0.96	0.85
RGA2LR		17.90	-0.68	-0.61	17.70	-0.34	-0.30
RYTZFG		18.00	-0.58	-0.52	16.50	-1.54	-1.35
T38RFX		18.50	-0.08	-0.07	16.40	-1.64	-1.44
T6W3BW		20.20	1.62	1.43	20.00	1.96	1.73
UD6EHE		18.25	-0.33	-0.30	18.02	-0.02	-0.01
UHWGNY		18.00	-0.58	-0.52	17.40	-0.64	-0.56
ULWPUU		19.30	0.72	0.64	18.80	0.76	0.67
VBUVWN		19.10	0.52	0.46	18.60	0.56	0.50
VP8A9U		17.36	-1.22	-1.09	16.40	-1.64	-1.44
VP9272		17.80	-0.78	-0.70	18.20	0.16	0.14
VU6LC7		19.00	0.42	0.37	19.00	0.96	0.85
W24AP4		19.00	0.42	0.37	17.50	-0.54	-0.47



Fasteners and Metals Interlaboratory Testing Program

Analysis 1123

Elongation: Lab-Machined Round Steel
ASTM E8

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample P11			Sample P12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
W3GZWM		19.00	0.42	0.37	19.00	0.96	0.85
W7DLNQ	X	20.50	1.92	1.70	16.70	-1.34	-1.18
WAXGEA	X	14.80	-3.78	-3.36	20.00	1.96	1.73
WDWTBA		19.20	0.62	0.55	19.20	1.16	1.02
WVFMV6		18.50	-0.08	-0.07	18.50	0.46	0.41
WYCGNU		20.00	1.42	1.26	19.00	0.96	0.85
XBM4HC		19.50	0.92	0.81	18.60	0.56	0.50
XE7DAP		18.30	-0.28	-0.25	17.10	-0.94	-0.82
XKPLTF		20.40	1.82	1.61	20.00	1.96	1.73
YCWTW9		17.80	-0.78	-0.70	17.00	-1.04	-0.91
YQVLLW		18.45	-0.13	-0.12	17.75	-0.29	-0.25
YR6NAF		19.60	1.02	0.90	19.40	1.36	1.20
YZ3C88		17.90	-0.68	-0.61	17.60	-0.44	-0.38
ZCAKF3		17.20	-1.38	-1.23	17.10	-0.94	-0.82
ZF87E8		16.50	-2.08	-1.85	16.60	-1.44	-1.26
ZQ8T8P		18.00	-0.58	-0.52	17.60	-0.44	-0.38
ZV2TKZ		20.00	1.42	1.26	18.00	-0.04	-0.03

Summary Statistics

	Sample P11		Sample P12	
Grand Means	18.58	Percent	18.04	Percent
Stnd Dev Btrwn Labs	1.13	Percent	1.14	Percent

Samples P11, P12 : AISI 4340 (E), AISI 4340 (F)

Statistics based on 105 of 111 reporting participants

Comments on Assigned Data Flags for Test #1123

8H8UPN (X) - Inconsistent in testing between samples.

BLYUJ3 (X) - Data for sample P11 are high.

MQG8CD (X) - Inconsistent in testing between samples.

N99L4N (X) - Data for both samples are high. Possible Systematic Error.

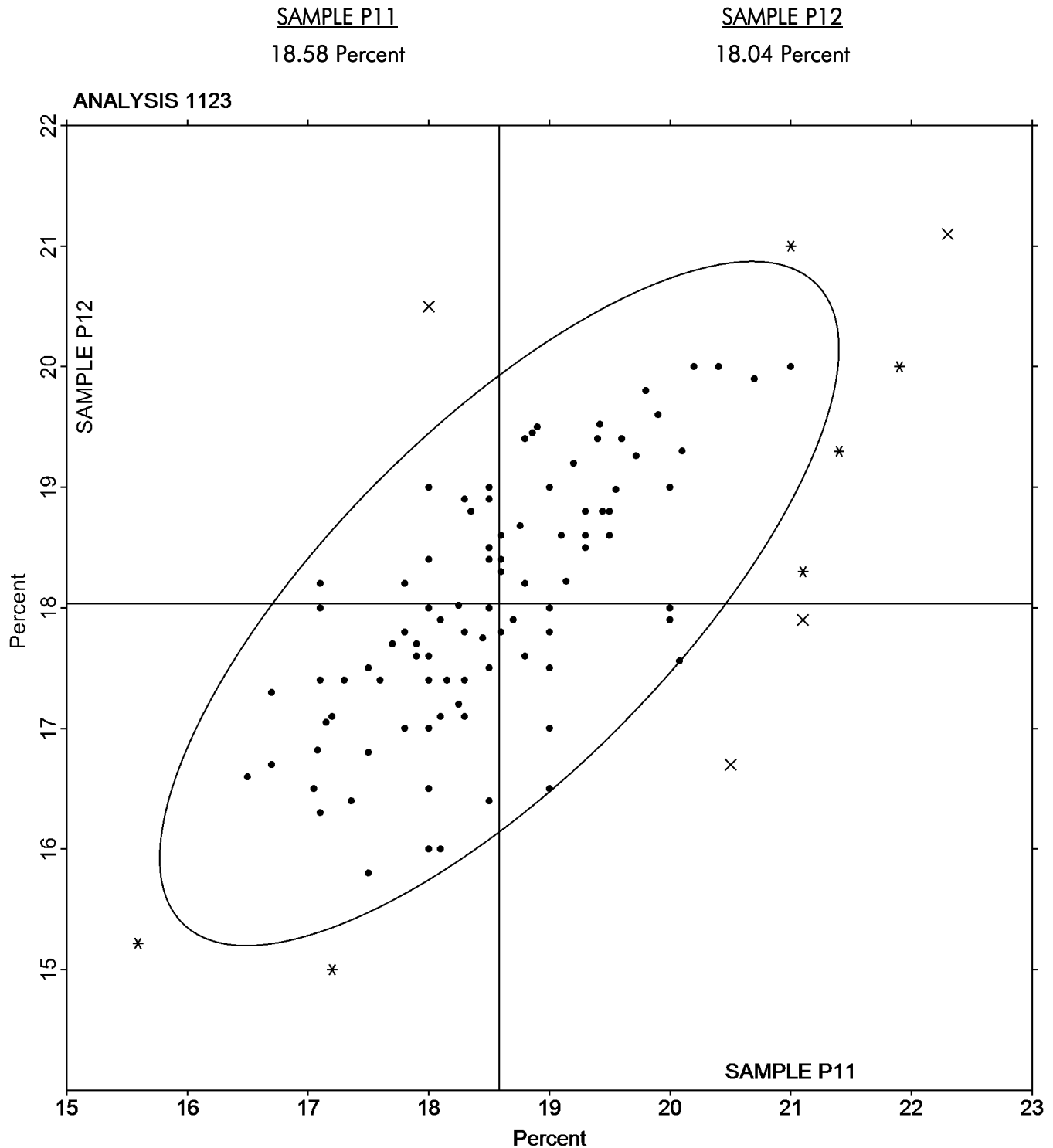
W7DLNQ (X) - Inconsistent in testing between samples.

WAXGEA (X) - Data for sample P11 are low.



Analysis 1123

Elongation: Lab-Machined Round Steel
ASTM E8





Fasteners and Metals Interlaboratory Testing Program

Analysis 1124

Reduction of Area: Lab-Machined Round Steel ASTM E8

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample P11			Sample P12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2FLWXC		56.60	1.41	1.40	52.80	-0.27	-0.29
2WRB4C		55.20	0.01	0.01	52.30	-0.77	-0.83
3NT7MG		54.90	-0.29	-0.28	52.20	-0.87	-0.93
3W9UDC		54.60	-0.59	-0.58	53.80	0.73	0.77
47UBPJ	X	54.70	-0.49	-0.48	48.60	-4.47	-4.77
4HPJA8		56.50	1.31	1.30	52.90	-0.17	-0.19
62D6N3		55.10	-0.09	-0.08	52.00	-1.07	-1.15
69XAN4		55.00	-0.19	-0.18	53.00	-0.07	-0.08
6LYWR7		56.40	1.21	1.20	53.00	-0.07	-0.08
6NQXV9		56.00	0.81	0.81	53.00	-0.07	-0.08
6VM2CQ		55.38	0.19	0.19	53.77	0.70	0.74
6YPX3K		55.31	0.12	0.12	53.82	0.75	0.80
7MA22M		54.79	-0.40	-0.39	51.55	-1.53	-1.63
7ZX9W4		54.80	-0.39	-0.38	52.50	-0.57	-0.61
8H8UPN		55.60	0.41	0.41	52.40	-0.67	-0.72
8L9VTR		54.30	-0.89	-0.88	52.40	-0.67	-0.72
8YYLFG		55.70	0.51	0.51	53.90	0.83	0.88
963NHW	X	51.00	-4.19	-4.15	54.70	1.63	1.74
9L98R9		56.00	0.81	0.81	52.30	-0.77	-0.83
9RFHEU		56.10	0.91	0.91	53.80	0.73	0.77
9YX8MG		54.00	-1.19	-1.17	53.70	0.63	0.67
AH4WGQ		55.80	0.61	0.61	53.60	0.53	0.56
ATNC8Y		54.50	-0.69	-0.68	53.30	0.23	0.24
BFEPV9		53.80	-1.39	-1.37	54.40	1.33	1.42
BK8WBV		56.00	0.81	0.81	52.00	-1.07	-1.15
BTHDM3		54.10	-1.09	-1.08	53.00	-0.07	-0.08
C9PWR8	*	58.00	2.81	2.79	55.00	1.93	2.06
CWKBVA		55.00	-0.19	-0.18	51.00	-2.07	-2.21
D7HTL3		54.80	-0.39	-0.38	53.20	0.13	0.13
D8DCM4		53.88	-1.31	-1.29	52.24	-0.83	-0.89
DGJ2JM		55.10	-0.09	-0.08	52.70	-0.37	-0.40
DJMW8W	*	57.60	2.41	2.39	55.40	2.33	2.48
DUNHBB	X	56.00	0.81	0.81	61.00	7.93	8.46
EBPLCR		54.00	-1.19	-1.17	53.00	-0.07	-0.08
ERB9MV	X	46.50	-8.69	-8.61	54.00	0.93	0.99
FBNBQ9		55.60	0.41	0.41	54.20	1.13	1.20
FL6VFC		53.30	-1.89	-1.87	53.00	-0.07	-0.08
FNU7FP		55.20	0.01	0.01	53.40	0.33	0.35
FPNVQK		55.90	0.71	0.71	53.50	0.43	0.45
G9A9D9		55.32	0.13	0.13	52.33	-0.74	-0.79
GZ2CWW		57.00	1.81	1.80	53.00	-0.07	-0.08
H2A6YM	X	58.02	2.83	2.81	55.79	2.72	2.90
H77Q2Y		55.20	0.01	0.01	53.20	0.13	0.13
HFTT8L		55.28	0.09	0.09	53.94	0.87	0.92
HHHZKH	X	54.60	-0.59	-0.58	49.00	-4.07	-4.35
HV7Zfq		54.73	-0.46	-0.45	53.40	0.33	0.35
JBNK8V		56.00	0.81	0.81	53.20	0.13	0.13



Fasteners and Metals Interlaboratory Testing Program

Analysis 1124

Reduction of Area: Lab-Machined Round Steel ASTM E8

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample P11			Sample P12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
JGFKU3		54.70	-0.49	-0.48	51.90	-1.17	-1.25
JPBR93		55.27	0.08	0.08	52.56	-0.51	-0.55
K4R3E6		55.50	0.31	0.31	53.90	0.83	0.88
K6GEA4	*	52.80	-2.39	-2.36	53.40	0.33	0.35
KBA9DW		54.00	-1.19	-1.17	53.00	-0.07	-0.08
KHRKEP	X	50.50	-4.69	-4.64	39.10	-13.97	-14.91
KTNPFP		55.60	0.41	0.41	53.80	0.73	0.77
KYD3JX		55.50	0.31	0.31	53.00	-0.07	-0.08
LCWGP6		55.20	0.01	0.01	53.30	0.23	0.24
LE23JW		55.82	0.63	0.63	52.68	-0.39	-0.42
LHQ7HV		55.31	0.12	0.12	55.15	2.08	2.22
LQHL4T	*	56.88	1.69	1.68	55.63	2.56	2.73
M6UKMK		54.90	-0.29	-0.28	51.40	-1.67	-1.79
MFB7VZ		54.00	-1.19	-1.17	54.00	0.93	0.99
MQG8CD		53.30	-1.89	-1.87	52.60	-0.47	-0.51
MUB7M3		56.00	0.81	0.81	53.90	0.83	0.88
N99L4N	X	51.00	-4.19	-4.15	48.20	-4.87	-5.20
NCBF2T		55.69	0.50	0.50	52.20	-0.87	-0.93
NWY2N2	X	50.90	-4.29	-4.25	52.20	-0.87	-0.93
NYP3R6		55.70	0.51	0.51	52.80	-0.27	-0.29
PC8CRE	X	50.81	-4.38	-4.34	52.21	-0.86	-0.92
PLEWBB		53.90	-1.29	-1.27	53.20	0.13	0.13
PXLZDK	X	33.55	-21.64	-21.45	31.86	-21.21	-22.63
Q6P2FY		56.00	0.81	0.81	53.30	0.23	0.24
QAFG3K		55.02	-0.17	-0.16	50.92	-2.15	-2.30
QC2FXV		54.39	-0.80	-0.79	52.65	-0.42	-0.45
QHLKLP		55.80	0.61	0.61	52.80	-0.27	-0.29
QPQGE2		54.00	-1.19	-1.17	53.00	-0.07	-0.08
RAPZ4U		55.90	0.71	0.71	53.00	-0.07	-0.08
RGA2LR		55.80	0.61	0.61	52.60	-0.47	-0.51
T38RFX	X	49.60	-5.59	-5.54	40.70	-12.37	-13.20
T6W3BW		54.80	-0.39	-0.38	53.70	0.63	0.67
UD6EHE		54.07	-1.12	-1.11	53.51	0.44	0.47
UHWGNY		55.40	0.21	0.21	52.50	-0.57	-0.61
ULWPUU		55.90	0.71	0.71	53.20	0.13	0.13
VP8A9U		53.72	-1.47	-1.45	51.25	-1.82	-1.95
VP9272		53.80	-1.39	-1.37	52.70	-0.37	-0.40
VU6LC7		53.00	-2.19	-2.17	52.00	-1.07	-1.15
W24AP4		56.80	1.61	1.60	52.50	-0.57	-0.61
W3GZWM		55.00	-0.19	-0.18	53.00	-0.07	-0.08
W7DLNQ		56.60	1.41	1.40	53.10	0.03	0.03
WAXGEA	X	47.70	-7.49	-7.42	54.40	1.33	1.42
WDWTBA		54.30	-0.89	-0.88	53.76	0.69	0.73
WVFM6		55.00	-0.19	-0.18	53.00	-0.07	-0.08
WYCGNU		56.00	0.81	0.81	53.00	-0.07	-0.08
XBM4HC		55.00	-0.19	-0.18	53.10	0.03	0.03
XE7DAP		55.60	0.41	0.41	51.60	-1.47	-1.57



Fasteners and Metals Interlaboratory Testing Program

Analysis 1124

Reduction of Area: Lab-Machined Round Steel
ASTM E8

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample P11			Sample P12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
XKPLTF	*	55.90	0.71	0.71	55.70	2.63	2.80
YCWTW9		54.60	-0.59	-0.58	51.80	-1.27	-1.36
YQVLLW		55.50	0.31	0.31	53.70	0.63	0.67
YR6NAF		56.40	1.21	1.20	53.90	0.83	0.88
YZ3C88		54.10	-1.09	-1.08	52.20	-0.87	-0.93
ZCAKF3		56.32	1.13	1.12	53.78	0.71	0.75
ZF87E8		53.70	-1.49	-1.47	52.60	-0.47	-0.51
ZQ8T8P		53.80	-1.39	-1.37	52.40	-0.67	-0.72
ZV2TKZ		56.00	0.81	0.81	54.80	1.73	1.84

Summary Statistics

	Sample P11		Sample P12	
Grand Means	55.19	Percent	53.07	Percent
Std Dev Btwn Labs	1.01	Percent	0.94	Percent

Samples P11, P12 : AISI 4340 (E), AISI 4340 (F)

Statistics based on 90 of 103 reporting participants

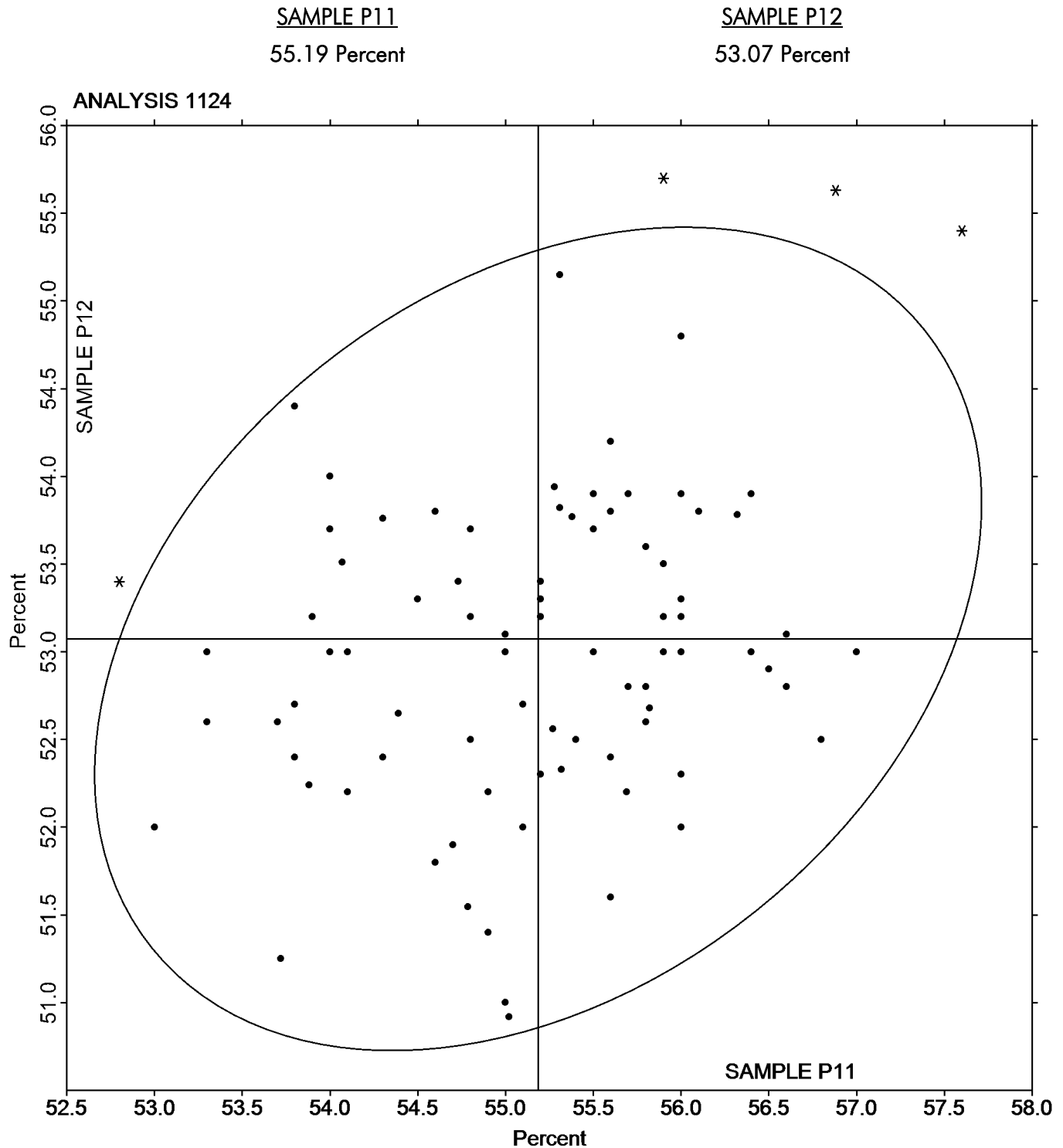
Comments on Assigned Data Flags for Test #1124

- 47UBPJ (X) - Data for sample P12 are low.
- 963NHW (X) - Data for sample P11 are low.
- DUNHBB (X) - Data for sample P12 are high.
- ERB9MV (X) - Data for sample P11 are low.
- H2A6YM (X) - Data for both samples are high.
- HHHZKH (X) - Data for sample P12 are low.
- KHRKEP (X) - Data for both samples are low.
- N99L4N (X) - Data for both samples are low.
- NWY2N2 (X) - Data for sample P11 are low.
- PC8CRE (X) - Data for sample P11 are low.
- PXLZDK (X) - Extreme data.
- T38RFX (X) - Data for both samples are low.
- WAXGEA (X) - Data for sample P11 are low.



Analysis 1124

Reduction of Area: Lab-Machined Round Steel
ASTM E8





Fasteners and Metals Interlaboratory Testing Program

Analysis 1301

Rockwell Hardness: C & B Scales
ASTM E18

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample N11			Sample N12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2AY4NX		93.90	-0.47	-0.78	94.67	-0.01	-0.01
2CMFPN		94.44	0.07	0.12	95.00	0.32	0.58
2DEEXV		93.58	-0.79	-1.32	94.24	-0.44	-0.78
2FLWXC		95.14	0.77	1.29	95.34	0.66	1.19
2WRB4C		94.38	0.01	0.02	94.56	-0.12	-0.21
2X7FX4	X	92.98	-1.39	-2.32	94.56	-0.12	-0.21
37YDXC		94.64	0.27	0.46	94.84	0.16	0.30
3NT7MG		95.04	0.67	1.12	95.52	0.84	1.51
3U6RX9		93.56	-0.81	-1.35	93.84	-0.84	-1.50
4HPJA8		94.80	0.43	0.72	95.20	0.52	0.94
4KR4L7		93.80	-0.57	-0.95	93.70	-0.98	-1.75
4ZKYTH	X	14.60	-79.77	-133.42	94.98	0.30	0.55
6CC628		95.42	1.05	1.76	95.76	1.08	1.94
6K798P		94.58	0.21	0.36	94.72	0.04	0.08
6NQXV9	*	92.96	-1.41	-2.35	93.90	-0.78	-1.39
6QDE6F		94.74	0.37	0.62	94.70	0.02	0.04
6RNJJ6		93.84	-0.53	-0.88	94.36	-0.32	-0.56
6YPX3K		94.34	-0.03	-0.05	94.50	-0.18	-0.31
7DKEWX		93.90	-0.47	-0.78	93.96	-0.72	-1.28
7DNU76		93.44	-0.93	-1.55	93.42	-1.26	-2.25
7EX7HE		94.89	0.52	0.88	95.17	0.49	0.89
7FRTFC		94.24	-0.13	-0.21	94.56	-0.12	-0.21
89MD8F		95.16	0.79	1.33	95.38	0.70	1.26
8AZ3AT		93.50	-0.87	-1.45	93.94	-0.74	-1.32
8DFE7A		94.44	0.07	0.12	94.66	-0.02	-0.03
8H8UPN		94.68	0.31	0.53	95.38	0.70	1.26
8K334Z		94.66	0.29	0.49	94.40	-0.28	-0.49
92JVYG		93.84	-0.53	-0.88	93.74	-0.94	-1.68
94BRU3		93.60	-0.77	-1.28	94.12	-0.56	-0.99
94LQNC		94.03	-0.33	-0.56	94.39	-0.28	-0.50
9DCCUA		95.38	1.01	1.69	95.66	0.98	1.76
9YX8MG	*	92.92	-1.45	-2.42	93.86	-0.82	-1.46
A7XLB4		94.18	-0.19	-0.31	94.48	-0.20	-0.35
AATF96		94.72	0.35	0.59	95.16	0.48	0.87
APM62G		95.10	0.73	1.22	95.34	0.66	1.19
AUHYWW		94.07	-0.30	-0.50	94.45	-0.23	-0.40
AVPBEX		94.76	0.39	0.66	95.28	0.60	1.08
B7PYB2		93.32	-1.05	-1.75	93.86	-0.82	-1.46
BMCG2G		94.20	-0.17	-0.28	94.30	-0.38	-0.67
BN4MBF	X	95.64	1.27	2.13	94.70	0.02	0.04
BTHDM3		94.28	-0.09	-0.15	94.64	-0.04	-0.06
C2TWJ7		95.08	0.71	1.19	95.56	0.88	1.59
C9PWR8		93.84	-0.53	-0.88	94.20	-0.48	-0.85
CALAEZ		95.18	0.81	1.36	95.42	0.74	1.33
D8DCM4		95.32	0.95	1.59	95.28	0.60	1.08
D8W3WN		94.64	0.27	0.46	94.76	0.08	0.15
DDZ28E		93.98	-0.39	-0.65	94.58	-0.10	-0.17



Fasteners and Metals Interlaboratory Testing Program

Analysis 1301

Rockwell Hardness: C & B Scales
ASTM E18

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample N11			Sample N12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
DGZD4D	*	94.94	0.57	0.96	95.82	1.14	2.05
EAVYLU	*	95.76	1.39	2.33	95.44	0.76	1.37
ECHKJY		93.72	-0.65	-1.08	94.26	-0.42	-0.74
EDU84X		94.44	0.07	0.12	94.78	0.10	0.19
EHQYZM		93.84	-0.53	-0.88	94.24	-0.44	-0.78
EPRZNH	*	93.82	-0.55	-0.92	94.94	0.26	0.47
EX3A34		93.88	-0.49	-0.82	94.18	-0.50	-0.89
EZ9WE8		94.24	-0.13	-0.21	94.60	-0.08	-0.13
F7ADL8		94.65	0.28	0.48	95.58	0.90	1.62
F7BBQB	X	95.18	0.81	1.36	94.48	-0.20	-0.35
FCF8F3		93.43	-0.93	-1.56	93.72	-0.96	-1.71
FL6VFC		94.86	0.49	0.82	95.46	0.78	1.41
FP2N6Z		94.38	0.01	0.02	94.56	-0.12	-0.21
GZ2CWW		94.58	0.21	0.36	94.62	-0.06	-0.10
H2A6YM	X	92.67	-1.70	-2.84	92.07	-2.61	-4.67
H76TNH		94.98	0.61	1.02	95.14	0.46	0.83
HFTT8L		95.24	0.87	1.46	94.98	0.30	0.55
HV7XQM		94.48	0.11	0.19	94.48	-0.20	-0.35
JBNK8V	*	93.09	-1.27	-2.13	94.23	-0.45	-0.80
JDLQW2		94.34	-0.03	-0.05	94.66	-0.02	-0.03
JFNN6A		94.42	0.05	0.08	94.81	0.14	0.25
JGFKU3		94.76	0.39	0.66	94.52	-0.16	-0.28
JRJXQW		94.38	0.01	0.02	94.66	-0.02	-0.03
JX4X7A		94.94	0.57	0.96	95.18	0.50	0.90
JXMLN6		93.72	-0.65	-1.08	93.96	-0.72	-1.28
KYULYP		94.07	-0.30	-0.50	94.49	-0.18	-0.33
LB6BF7		94.40	0.03	0.05	94.46	-0.22	-0.39
LCWGP6		94.36	-0.01	-0.01	94.54	-0.14	-0.24
LE23JW		94.56	0.19	0.32	94.46	-0.22	-0.39
LHQ7HV		93.92	-0.45	-0.75	94.07	-0.61	-1.09
MCVWL3		94.50	0.13	0.22	94.66	-0.02	-0.03
MEHKX3		94.84	0.47	0.79	94.82	0.14	0.26
MFB7VZ	X	96.14	1.77	2.96	96.76	2.08	3.74
MQG8CD		95.34	0.97	1.63	95.40	0.72	1.30
MZLZRK		95.00	0.63	1.06	95.80	1.12	2.02
N2PDJX		94.24	-0.13	-0.21	94.50	-0.18	-0.31
NCBF2T		94.08	-0.29	-0.48	94.38	-0.30	-0.53
NTW2EG		94.06	-0.31	-0.51	94.72	0.04	0.08
NYP3R6		94.82	0.45	0.76	95.20	0.52	0.94
PULTRM		94.66	0.29	0.49	94.80	0.12	0.22
PY22H8		94.30	-0.07	-0.11	94.64	-0.04	-0.06
QAFG3K		93.70	-0.67	-1.12	93.70	-0.98	-1.75
QHLKLP		95.28	0.91	1.53	95.40	0.72	1.30
QMLMWK		93.54	-0.83	-1.38	93.74	-0.94	-1.68
QP8DZA		94.86	0.49	0.82	95.14	0.46	0.83
QUKCFA		95.18	0.81	1.36	94.98	0.30	0.55
R3QHPH		93.86	-0.51	-0.85	94.05	-0.63	-1.12



Fasteners and Metals Interlaboratory Testing Program

Analysis 1301

Rockwell Hardness: C & B Scales
ASTM E18

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample N11			Sample N12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
RAPZ4U		94.92	0.55	0.92	95.02	0.34	0.62
RBKJ7V		95.18	0.81	1.36	95.28	0.60	1.08
RE9V8L		95.04	0.67	1.12	94.76	0.08	0.15
RT4KQA		94.38	0.01	0.02	94.92	0.24	0.44
RYTZFG		95.14	0.77	1.29	94.72	0.04	0.08
RZMM7E		94.44	0.07	0.12	94.44	-0.24	-0.42
T6DEQG		93.78	-0.59	-0.98	94.04	-0.64	-1.14
T82TGC		93.28	-1.09	-1.82	93.58	-1.10	-1.96
TFBHVB		94.35	-0.02	-0.04	94.57	-0.11	-0.19
TUH7AY		94.68	0.31	0.52	94.62	-0.06	-0.10
U7PBX7		93.78	-0.59	-0.99	94.38	-0.30	-0.53
UHWGNY		94.66	0.29	0.49	94.70	0.02	0.04
VA2XPG		93.72	-0.65	-1.08	94.30	-0.38	-0.67
VR2V7Q		94.38	0.01	0.02	94.74	0.06	0.12
VTULC7		94.11	-0.26	-0.43	95.01	0.33	0.59
VU6LC7		94.98	0.61	1.02	95.72	1.04	1.87
W3GZWM		94.48	0.11	0.19	94.94	0.26	0.47
WDWTBA	*	92.63	-1.74	-2.90	93.23	-1.44	-2.58
WGBPFB		94.18	-0.19	-0.31	94.08	-0.60	-1.07
WPQ7KU		94.34	-0.03	-0.05	94.88	0.20	0.37
WVFMY6		94.27	-0.10	-0.17	94.83	0.16	0.28
WZMDYP	X	94.94	0.57	0.96	14.52	-80.16	-143.62
X39KWR		94.68	0.31	0.52	95.18	0.50	0.90
XE7DAP		93.60	-0.77	-1.28	94.08	-0.60	-1.07
XL2J3Q		94.46	0.09	0.15	95.10	0.42	0.76
XY99ZR		94.80	0.43	0.72	95.40	0.72	1.30
Y8YAUB	X	93.74	-0.63	-1.05	92.86	-1.82	-3.25
ZF87E8		94.26	-0.11	-0.18	94.30	-0.38	-0.67
ZJ98GP		94.18	-0.19	-0.31	94.64	-0.04	-0.06
ZWFZ7G		94.60	0.23	0.39	94.76	0.08	0.15
ZZF7PT		94.74	0.37	0.62	95.20	0.52	0.94

Summary Statistics

	Sample N11		Sample N12	
Grand Means	94.37	HRB	94.68	HRB
Std Dev Btwn Labs	0.60	HRB	0.56	HRB

Samples N11, N12 : Steel, Steel

Statistics based on 117 of 125 reporting participants



Analysis 1301

Rockwell Hardness: C & B Scales
ASTM E18

Comments on Assigned Data Flags for Test #1301

2X7FX4 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample N11.

4ZKYTH (X) - Data for sample N11 are extreme.

BN4MBF (X) - Inconsistent in testing between samples.

F7BBQB (X) - Inconsistent in testing between samples.

H2A6YM (X) - Data for both samples are low. Possible Systematic Error.

MFB7VZ (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.

WZMDYP (X) - Data for sample N12 are extreme.

Y8YAUB (X) - Data for sample N12 are low. Inconsistent within the determinations of both samples.



Analysis 1301

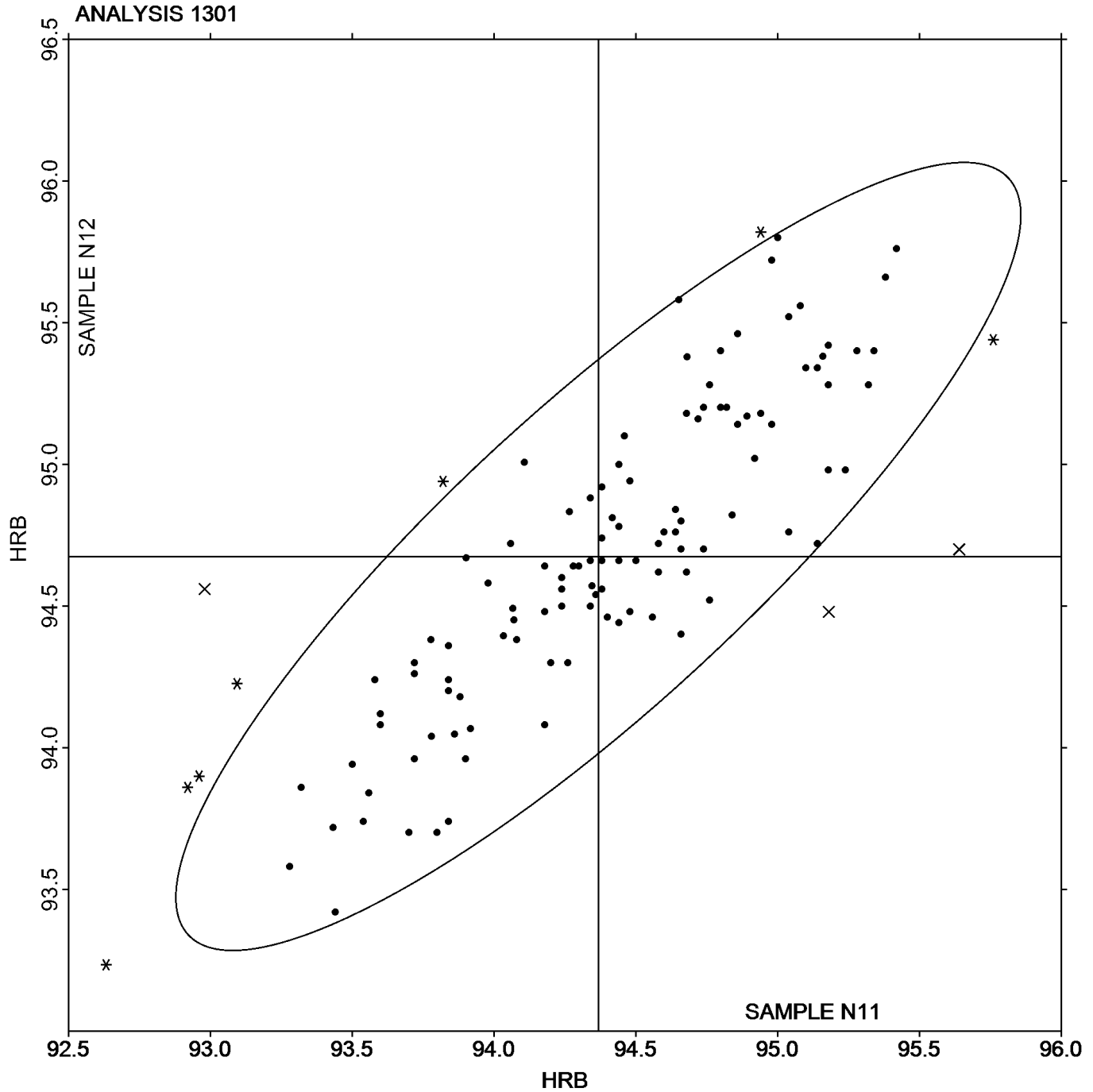
Rockwell Hardness: C & B Scales
ASTM E18

SAMPLE N11

94.37 HRB

SAMPLE N12

94.68 HRB





Fasteners and Metals Interlaboratory Testing Program

Analysis 1302

Rockwell Hardness: B Scale
ASTM E18

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample N11			Sample N12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2X7HM9	X	91.20	-3.24	-5.00	91.40	-3.26	-5.46
36JVYC		94.25	-0.19	-0.30	94.39	-0.27	-0.46
37F9QJ		94.28	-0.16	-0.24	94.36	-0.30	-0.51
3LCLZ2		94.12	-0.32	-0.49	94.52	-0.14	-0.24
4F3M7M		94.32	-0.12	-0.18	94.64	-0.02	-0.04
4H7HLJ		93.99	-0.44	-0.69	94.37	-0.29	-0.49
4HNREK		94.22	-0.22	-0.34	94.12	-0.54	-0.91
62E3YY		95.42	0.98	1.52	95.40	0.74	1.23
683QM2		93.96	-0.48	-0.74	94.34	-0.32	-0.54
6JW26W		93.78	-0.66	-1.02	93.98	-0.68	-1.15
6VM2CQ		94.70	0.26	0.40	95.24	0.58	0.96
7JNKAF		94.52	0.08	0.13	94.22	-0.44	-0.74
963NHW		94.72	0.28	0.44	95.10	0.44	0.73
9ZTPPH		94.52	0.08	0.13	94.76	0.10	0.16
A3DWLK		94.44	0.00	0.00	94.54	-0.12	-0.21
AT6BEH		95.00	0.56	0.87	95.00	0.34	0.56
ATNC8Y		94.24	-0.20	-0.31	94.76	0.10	0.16
AU3EBD	X	101.20	6.76	10.44	97.05	2.39	3.99
AUHYWW		94.20	-0.24	-0.37	94.45	-0.21	-0.36
AVPBEX		94.84	0.40	0.62	95.14	0.48	0.80
AVQ9PU		94.78	0.34	0.53	95.20	0.54	0.90
AY9AYT		93.96	-0.48	-0.74	93.96	-0.70	-1.18
AYEKQK		94.04	-0.40	-0.61	94.36	-0.30	-0.51
B7N7EE		95.04	0.60	0.93	95.08	0.42	0.70
BBJ4RW		94.34	-0.10	-0.15	94.42	-0.24	-0.41
BEJ8T8		94.76	0.32	0.50	95.42	0.76	1.26
BJDALX		93.90	-0.54	-0.83	94.30	-0.36	-0.61
BUZ6X8		94.64	0.20	0.31	94.88	0.22	0.36
C6PKYT		94.76	0.32	0.50	94.86	0.20	0.33
C8ERKB		94.44	0.00	0.00	94.94	0.28	0.46
C8HEXH		95.36	0.92	1.42	95.26	0.60	1.00
CHCWDW		94.35	-0.09	-0.14	94.85	0.19	0.32
DMQMDC		93.70	-0.74	-1.14	94.42	-0.24	-0.41
DUNHBB		94.34	-0.10	-0.15	94.70	0.04	0.06
ENFDWV		94.34	-0.10	-0.15	94.26	-0.40	-0.68
EZUDTP		95.74	1.30	2.01	95.98	1.32	2.20
FKADDA		94.48	0.04	0.06	95.06	0.40	0.66
FWN8QN		95.42	0.98	1.52	95.54	0.88	1.46
H4VTLW		95.00	0.56	0.87	95.00	0.34	0.56
HJQ76X		93.92	-0.52	-0.80	94.12	-0.54	-0.91
K6GEA4		95.08	0.64	0.99	95.14	0.48	0.80
KBA9DW		95.05	0.61	0.95	95.40	0.73	1.22
KDZC4H		95.48	1.04	1.61	95.76	1.10	1.83
KKZRTQ		94.94	0.50	0.78	95.00	0.34	0.56
KRDURC		93.88	-0.56	-0.86	94.36	-0.30	-0.51
KVFL6J		94.08	-0.36	-0.55	94.24	-0.42	-0.71
L93D7Y		94.28	-0.16	-0.24	94.24	-0.42	-0.71



Fasteners and Metals Interlaboratory Testing Program

Analysis 1302

Rockwell Hardness: B Scale
ASTM E18

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample N11			Sample N12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
MGAEYD		94.10	-0.34	-0.52	94.40	-0.26	-0.44
MTZ6QG		95.22	0.78	1.21	95.50	0.84	1.40
NFRPBQ	X	62.52	-31.92	-49.29	62.98	-31.68	-53.02
P94G9C		93.62	-0.82	-1.26	93.88	-0.78	-1.31
PC8CRE	X	93.90	-0.54	-0.83	93.34	-1.32	-2.22
PNGUNW	*	92.72	-1.72	-2.65	93.44	-1.22	-2.05
QC2FXV		95.54	1.10	1.70	95.72	1.06	1.77
QHQQZ2B		94.32	-0.12	-0.18	94.14	-0.52	-0.88
R9YWD9		94.63	0.20	0.30	94.60	-0.06	-0.11
RGWCGU		95.40	0.96	1.49	95.34	0.68	1.13
T38RFX		93.80	-0.64	-0.99	94.20	-0.46	-0.78
T6W3BW		93.90	-0.54	-0.83	94.00	-0.66	-1.11
UEHL7G		94.40	-0.04	-0.06	94.60	-0.06	-0.11
URKA3G	*	92.75	-1.69	-2.61	93.43	-1.24	-2.07
VJJJRQ		94.34	-0.10	-0.15	94.72	0.06	0.09
VNDJ6Z	X	91.44	-3.00	-4.63	92.08	-2.58	-4.32
W7DLNQ		93.24	-1.20	-1.85	93.48	-1.18	-1.98
WAB977		93.76	-0.68	-1.05	94.36	-0.30	-0.51
WKTTFG		95.58	1.14	1.76	95.94	1.28	2.13
WPQ7KU		94.00	-0.44	-0.68	94.32	-0.34	-0.58
WT7XBM		93.16	-1.28	-1.97	93.54	-1.12	-1.88
Y8YAUB		94.18	-0.26	-0.40	93.98	-0.68	-1.15
Y8Z2RH		95.36	0.92	1.42	95.56	0.90	1.50
YQVLLW	*	95.20	0.76	1.18	94.70	0.04	0.06
YV6Z6F		94.52	0.08	0.13	94.30	-0.36	-0.61
Z822LQ		94.42	-0.02	-0.03	94.96	0.30	0.49

Summary Statistics

	Sample N11		Sample N12	
Grand Means	94.44	HRB	94.66	HRB
Std Dev Btwn Labs	0.65	HRB	0.60	HRB

Samples N11, N12 : Steel, Steel

Statistics based on 68 of 73 reporting participants

Comments on Assigned Data Flags for Test #1302

- 2X7HM9 (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of both samples.
- AU3EBD (X) - Data for both samples are high. Possible Systematic Error.
- NFRPBQ (X) - Extreme data.
- PC8CRE (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample N12.
- VNDJ6Z (X) - Data for both samples are low. Possible Systematic Error.



Analysis 1302

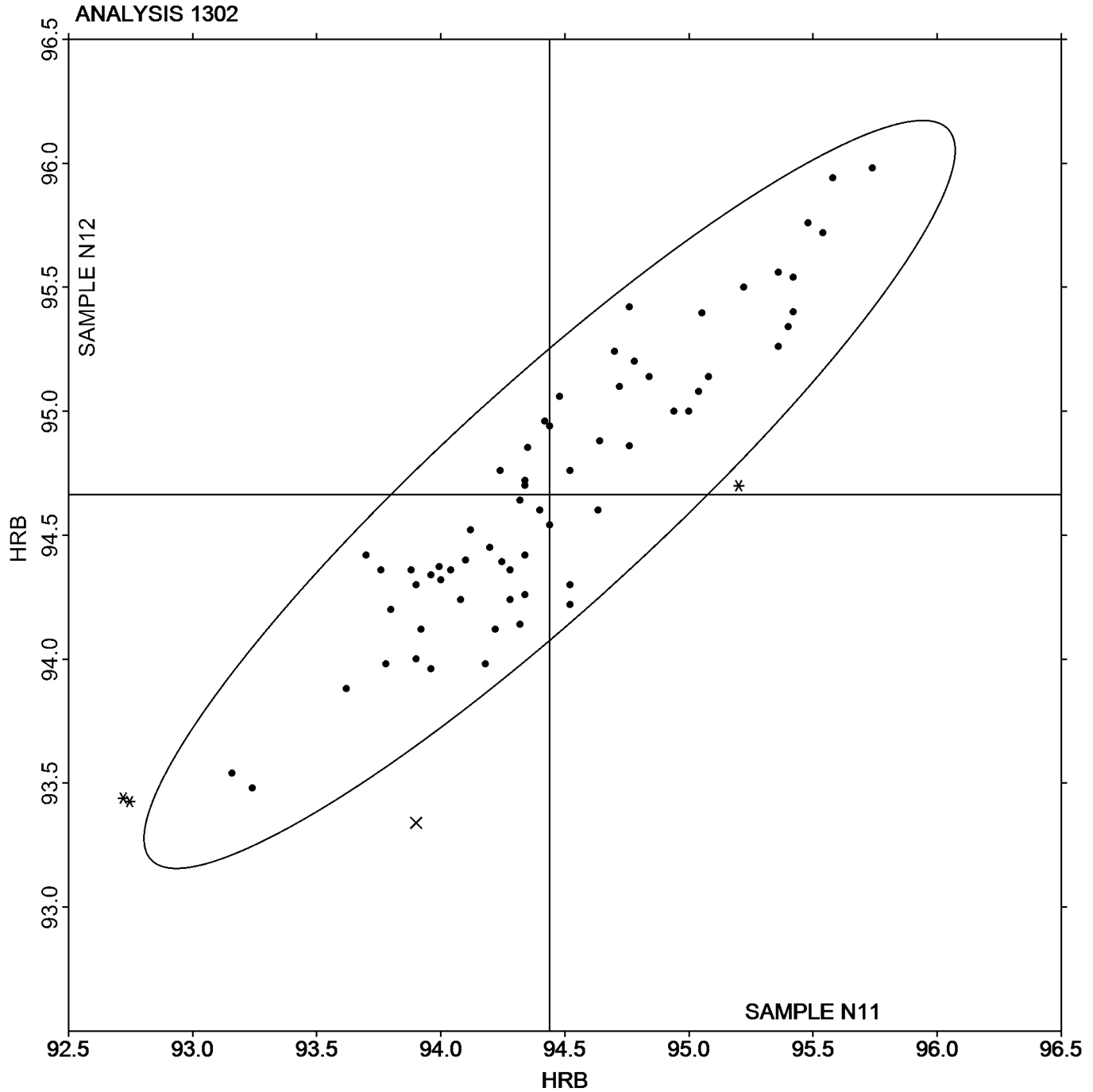
Rockwell Hardness: B Scale
ASTM E18

SAMPLE N11

94.44 HRB

SAMPLE N12

94.66 HRB





Fasteners and Metals Interlaboratory Testing Program

Analysis 1321

Microhardness: Knoop Indenters (500 gf)
ASTM E384

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample S11			Sample S12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2A2NHR		425.40	-10.02	-0.85	470.00	-2.23	-0.20
2DEEXV		445.60	10.18	0.86	463.00	-9.23	-0.83
2X7FX4		440.00	4.58	0.39	484.60	12.37	1.12
2ZDXVZ		460.86	25.44	2.15	491.68	19.45	1.75
32Y7AT		446.20	10.78	0.91	486.80	14.57	1.31
3ADQZK		425.04	-10.38	-0.88	482.72	10.49	0.95
3DYPXF		426.80	-8.62	-0.73	461.20	-11.03	-0.99
3TT4CM		443.40	7.98	0.67	484.40	12.17	1.10
4KR4L7		449.60	14.18	1.20	487.40	15.17	1.37
4NCCKL		428.00	-7.42	-0.63	462.80	-9.43	-0.85
683QM2		439.06	3.64	0.31	481.44	9.21	0.83
6FFVA8		447.36	11.94	1.01	497.86	25.63	2.31
6JW26W		440.80	5.38	0.45	468.00	-4.23	-0.38
6K798P		432.80	-2.62	-0.22	470.80	-1.43	-0.13
6NQXV9		424.00	-11.42	-0.96	459.40	-12.83	-1.16
6YM7B6		435.36	-0.06	-0.01	479.54	7.31	0.66
7FRTFC		429.60	-5.82	-0.49	486.00	13.77	1.24
7JNKAF		433.76	-1.66	-0.14	473.96	1.73	0.16
89MD8F		442.40	6.98	0.59	477.60	5.37	0.48
8AZ3AT		432.00	-3.42	-0.29	474.20	1.97	0.18
8H8UPN		442.40	6.98	0.59	477.80	5.57	0.50
94BRU3		422.00	-13.42	-1.13	455.00	-17.23	-1.55
9DCCUA		422.80	-12.62	-1.07	479.20	6.97	0.63
9DXL8K		432.60	-2.82	-0.24	473.80	1.57	0.14
9NWJTY		433.80	-1.62	-0.14	465.40	-6.83	-0.62
AATF96		443.92	8.50	0.72	467.84	-4.39	-0.40
APM62G		421.12	-14.30	-1.21	461.20	-11.03	-0.99
AT6BEH	X	443.20	7.78	0.66	528.60	56.37	5.08
AUHYWW		436.00	0.58	0.05	478.40	6.17	0.56
AVPBEX		426.40	-9.02	-0.76	458.60	-13.63	-1.23
BFEPV9		424.80	-10.62	-0.90	467.40	-4.83	-0.44
BJDALX		424.00	-11.42	-0.96	465.00	-7.23	-0.65
C4U3WR	X	418.60	-16.82	-1.42	435.40	-36.83	-3.32
CMUQQB		432.00	-3.42	-0.29	471.40	-0.83	-0.07
CQU2LB		421.20	-14.22	-1.20	476.40	4.17	0.38
D8DCM4	X	428.36	-7.06	-0.60	499.14	26.91	2.43
D8W3WN		435.00	-0.42	-0.04	464.20	-8.03	-0.72
DBX2CM		430.20	-5.22	-0.44	461.80	-10.43	-0.94
E66LXZ		447.00	11.58	0.98	483.40	11.17	1.01
EBPLCR		431.60	-3.82	-0.32	458.40	-13.83	-1.25
EDU84X		430.20	-5.22	-0.44	469.00	-3.23	-0.29
EHQYZM		449.76	14.34	1.21	486.68	14.45	1.30
EX3A34		441.50	6.08	0.51	464.09	-8.14	-0.73
EYDED7		433.80	-1.62	-0.14	463.00	-9.23	-0.83
FAFRCL	*	405.90	-29.52	-2.49	442.54	-29.69	-2.68
FCF8F3		436.00	0.58	0.05	467.60	-4.63	-0.42
FE9ZFR		434.40	-1.02	-0.09	462.80	-9.43	-0.85



Fasteners and Metals Interlaboratory Testing Program

Analysis 1321

Microhardness: Knoop Indenters (500 gf)
ASTM E384

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample S11			Sample S12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
FFWGPZ		418.92	-16.50	-1.39	461.60	-10.63	-0.96
FTNYME		423.60	-11.82	-1.00	475.60	3.37	0.30
G43FQ6		431.00	-4.42	-0.37	486.20	13.97	1.26
G8H34A		435.98	0.56	0.05	463.36	-8.87	-0.80
JBNK8V		430.42	-5.00	-0.42	473.46	1.23	0.11
JMMBYU		410.60	-24.82	-2.10	455.40	-16.83	-1.52
JX4X7A	X	128.16	-307.26	-25.94	122.88	-349.35	-31.50
K89AXX		436.80	1.38	0.12	477.80	5.57	0.50
KCGQA8		414.98	-20.44	-1.73	457.32	-14.91	-1.34
KD9WJ7		424.36	-11.06	-0.93	467.18	-5.05	-0.46
KHRKEP		462.00	26.58	2.24	484.40	12.17	1.10
KYULYP		423.60	-11.82	-1.00	470.40	-1.83	-0.16
L7BEQE		441.38	5.96	0.50	478.54	6.31	0.57
L93D7Y		444.40	8.98	0.76	496.80	24.57	2.22
LHQ7HV		453.82	18.40	1.55	481.64	9.41	0.85
MDA46X		438.20	2.78	0.23	468.20	-4.03	-0.36
MQG8CD		442.40	6.98	0.59	469.80	-2.43	-0.22
N2PDJX		455.44	20.02	1.69	485.16	12.93	1.17
N4EK7F	X	478.98	43.56	3.68	509.70	37.47	3.38
NM7R6J		454.06	18.64	1.57	486.68	14.45	1.30
PC8CRE		438.60	3.18	0.27	471.40	-0.83	-0.07
PEVPT7		450.76	15.34	1.30	478.34	6.11	0.55
PKXZFP		423.60	-11.82	-1.00	472.80	0.57	0.05
QAFG3K		438.96	3.54	0.30	473.68	1.45	0.13
RAPZ4U		444.00	8.58	0.72	487.40	15.17	1.37
RATMG2		450.80	15.38	1.30	471.20	-1.03	-0.09
RZMM7E		441.98	6.56	0.55	465.66	-6.57	-0.59
T38RFX		456.00	20.58	1.74	478.20	5.97	0.54
TB4N3Z		439.42	4.00	0.34	485.68	13.45	1.21
TPKM7F		426.20	-9.22	-0.78	454.20	-18.03	-1.63
U2BXVX		421.40	-14.02	-1.18	470.60	-1.63	-0.15
UUBB7J		447.31	11.89	1.00	490.77	18.54	1.67
VU6LC7		450.80	15.38	1.30	477.40	5.17	0.47
VXNMDK	*	457.80	22.38	1.89	471.80	-0.43	-0.04
WPQ7KU		429.88	-5.54	-0.47	465.66	-6.57	-0.59
XL2J3Q		413.20	-22.22	-1.88	450.40	-21.83	-1.97
Y8YAUB		446.26	10.84	0.92	463.98	-8.25	-0.74
YR6NAF		427.94	-7.48	-0.63	462.50	-9.73	-0.88
YUC2XA		443.00	7.58	0.64	477.00	4.77	0.43
ZDJUDG		418.60	-16.82	-1.42	450.00	-22.23	-2.00
ZWFZ7G		434.34	-1.08	-0.09	477.80	5.57	0.50
ZZF7PT		426.00	-9.42	-0.80	466.80	-5.43	-0.49



Fasteners and Metals Interlaboratory Testing Program

Analysis 1321

Microhardness: Knoop Indenters (500 gf)
ASTM E384

Cycle 151
3rd Qtr 2025

Summary Statistics

	<u>Sample S11</u>		<u>Sample S12</u>	
Grand Means	435.42	HK 500 gf	472.23	HK 500 gf
Stnd Dev Btwn Labs	11.84	HK 500 gf	11.09	HK 500 gf

Samples S11, S12 : Steel, Steel

Statistics based on 84 of 89 reporting participants

Comments on Assigned Data Flags for Test #1321

AT6BEH (X) - Data for sample S12 are high. Inconsistent within the determinations of both samples.

C4U3WR (X) - Data for sample S12 are low.

D8DCM4 (X) - Inconsistent in testing between samples.

JX4X7A (X) - Extreme data.

N4EK7F (X) - Data for both samples are high. Inconsistent within the determinations of sample S12.

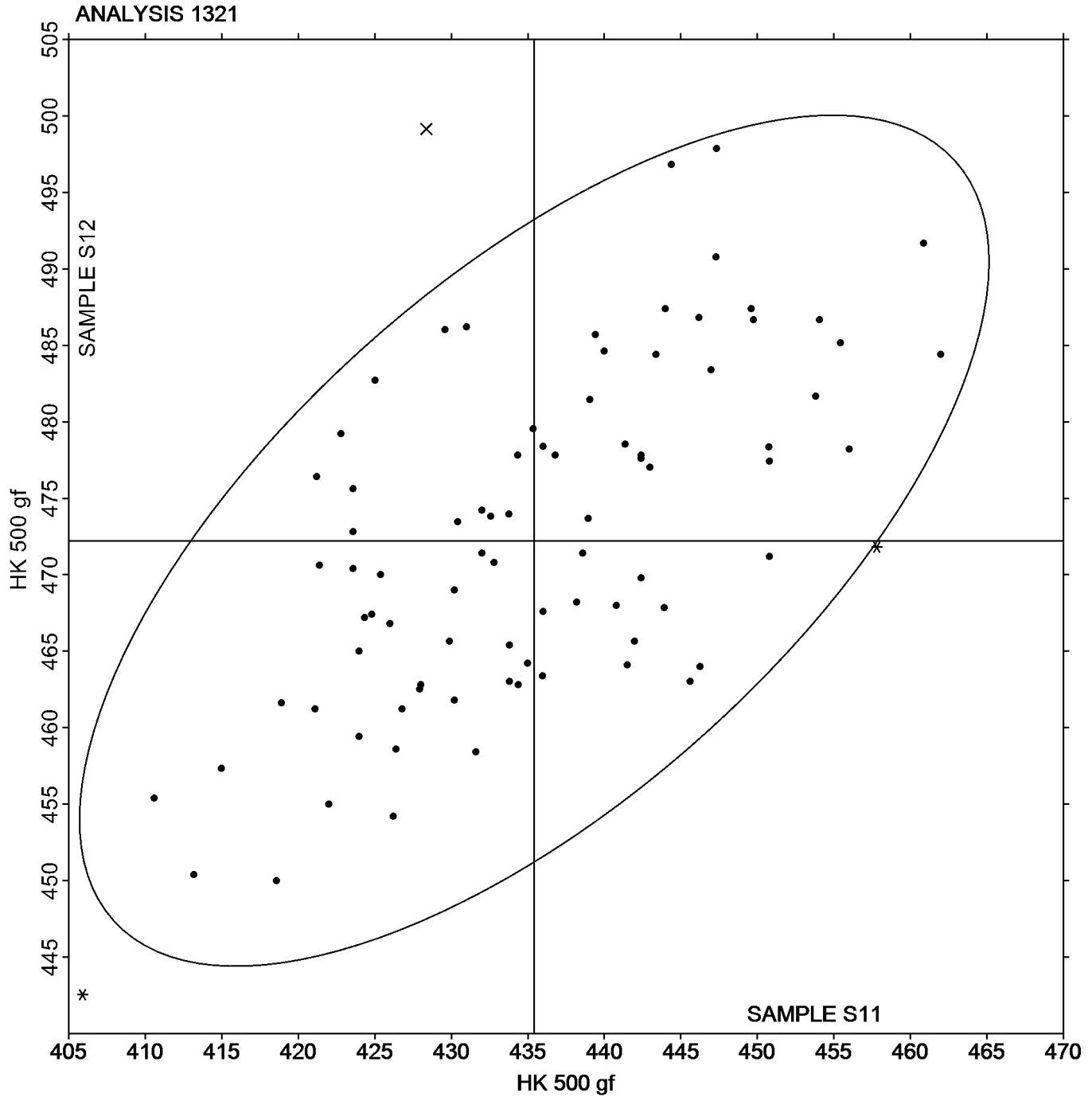


Analysis 1321

Microhardness: Knoop Indenters (500 gf)
ASTM E384

SAMPLE S11
435.42 HK 500 gf

SAMPLE S12
472.23 HK 500 gf





Fasteners and Metals Interlaboratory Testing Program

Analysis 1322

Microhardness: Knoop Indenters (200 gf)
ASTM E384

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample S11			Sample S12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2X7FX4		454.40	10.98	0.91	505.00	22.82	1.56
2ZDXVZ		460.96	17.54	1.45	508.06	25.88	1.77
32Y7AT		453.00	9.58	0.79	500.80	18.62	1.27
3DYPXF		455.00	11.58	0.96	488.80	6.62	0.45
3TT4CM		455.60	12.18	1.01	489.20	7.02	0.48
4KR4L7		459.20	15.78	1.31	492.60	10.42	0.71
6JW26W		445.80	2.38	0.20	470.20	-11.98	-0.82
6K798P		440.20	-3.22	-0.27	479.80	-2.38	-0.16
6NQXV9		447.00	3.58	0.30	493.40	11.22	0.77
7FRFC		440.00	-3.42	-0.28	491.40	9.22	0.63
8AZ3AT		450.00	6.58	0.55	493.80	11.62	0.79
8H8UPN		448.80	5.38	0.45	481.20	-0.98	-0.07
94BRU3		427.40	-16.02	-1.33	448.00	-34.18	-2.34
9DXL8K		436.40	-7.02	-0.58	475.80	-6.38	-0.44
9NWJTY		438.80	-4.62	-0.38	470.60	-11.58	-0.79
AUHYWW		448.00	4.58	0.38	488.80	6.62	0.45
AVPBEX		444.20	0.78	0.06	480.00	-2.18	-0.15
BFEPV9		436.40	-7.02	-0.58	476.40	-5.78	-0.40
BJDALX		436.00	-7.42	-0.61	472.00	-10.18	-0.70
C4U3WR		438.60	-4.82	-0.40	465.60	-16.58	-1.13
CQU2LB		432.20	-11.22	-0.93	483.80	1.62	0.11
D8DCM4	X	433.74	-9.68	-0.80	514.56	32.38	2.21
D8W3WN		439.80	-3.62	-0.30	480.60	-1.58	-0.11
EBPLCR		423.60	-19.82	-1.64	464.40	-17.78	-1.22
EDU84X		438.80	-4.62	-0.38	481.00	-1.18	-0.08
EHQYZM		454.10	10.68	0.89	510.34	28.16	1.93
EYDED7		441.00	-2.42	-0.20	470.20	-11.98	-0.82
FAFRCL	*	409.86	-33.56	-2.78	450.36	-31.82	-2.18
JBNK8V		443.92	0.50	0.04	480.51	-1.67	-0.11
JMMBYU	*	409.60	-33.82	-2.80	465.20	-16.98	-1.16
JX4X7A	X	80.06	-363.36	-30.11	76.32	-405.86	-27.76
K89AXX		451.20	7.78	0.64	475.60	-6.58	-0.45
KCGQA8		433.68	-9.74	-0.81	480.02	-2.16	-0.15
KD9WJ7		429.94	-13.48	-1.12	460.06	-22.12	-1.51
KYULYP		441.00	-2.42	-0.20	498.00	15.82	1.08
L7BEQE		442.86	-0.56	-0.05	474.32	-7.86	-0.54
L93D7Y		453.40	9.98	0.83	500.40	18.22	1.25
LHQ7HV		453.96	10.54	0.87	494.07	11.89	0.81
MDA46X		444.20	0.78	0.06	489.40	7.22	0.49
MQG8CD		457.00	13.58	1.13	493.40	11.22	0.77
N4EK7F	X	499.48	56.06	4.65	549.78	67.60	4.62
NM7R6J	X	479.08	35.66	2.96	543.86	61.68	4.22
PC8CRE		452.60	9.18	0.76	486.40	4.22	0.29
PKXZFP		446.00	2.58	0.21	486.00	3.82	0.26
RAPZ4U		441.40	-2.02	-0.17	490.80	8.62	0.59
RATMG2		457.00	13.58	1.13	488.60	6.42	0.44
RZMM7E		453.84	10.42	0.86	472.56	-9.62	-0.66



Fasteners and Metals Interlaboratory Testing Program
Analysis 1322

Cycle 151
3rd Qtr 2025

Microhardness: Knoop Indenters (200 gf)
ASTM E384

WebCode	Data Flag	Sample S11			Sample S12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
TB4N3Z		442.14	-1.28	-0.11	489.48	7.30	0.50
TPKM7F		441.80	-1.62	-0.13	482.00	-0.18	-0.01
UUBB7J	*	474.51	31.09	2.58	519.12	36.94	2.53
VU6LC7		448.80	5.38	0.45	486.60	4.42	0.30
VXNMDK	*	458.40	14.98	1.24	470.20	-11.98	-0.82
WPQ7KU		429.86	-13.56	-1.12	482.44	0.26	0.02
Y8YAUB		444.72	1.30	0.11	487.38	5.20	0.36
YR6NAF		428.58	-14.84	-1.23	465.40	-16.78	-1.15
ZWFZ7G		434.94	-8.48	-0.70	470.60	-11.58	-0.79
ZZF7PT		430.80	-12.62	-1.05	454.80	-27.38	-1.87

Summary Statistics

	Sample S11		Sample S12	
Grand Means	443.42	HK 200 gf	482.18	HK 200 gf
Std Dev Btwn Labs	12.07	HK 200 gf	14.62	HK 200 gf

Samples S11, S12 : Steel, Steel

Statistics based on 53 of 57 reporting participants

Comments on Assigned Data Flags for Test #1322

D8DCM4 (X) - Inconsistent in testing between samples.

JX4X7A (X) - Extreme data.

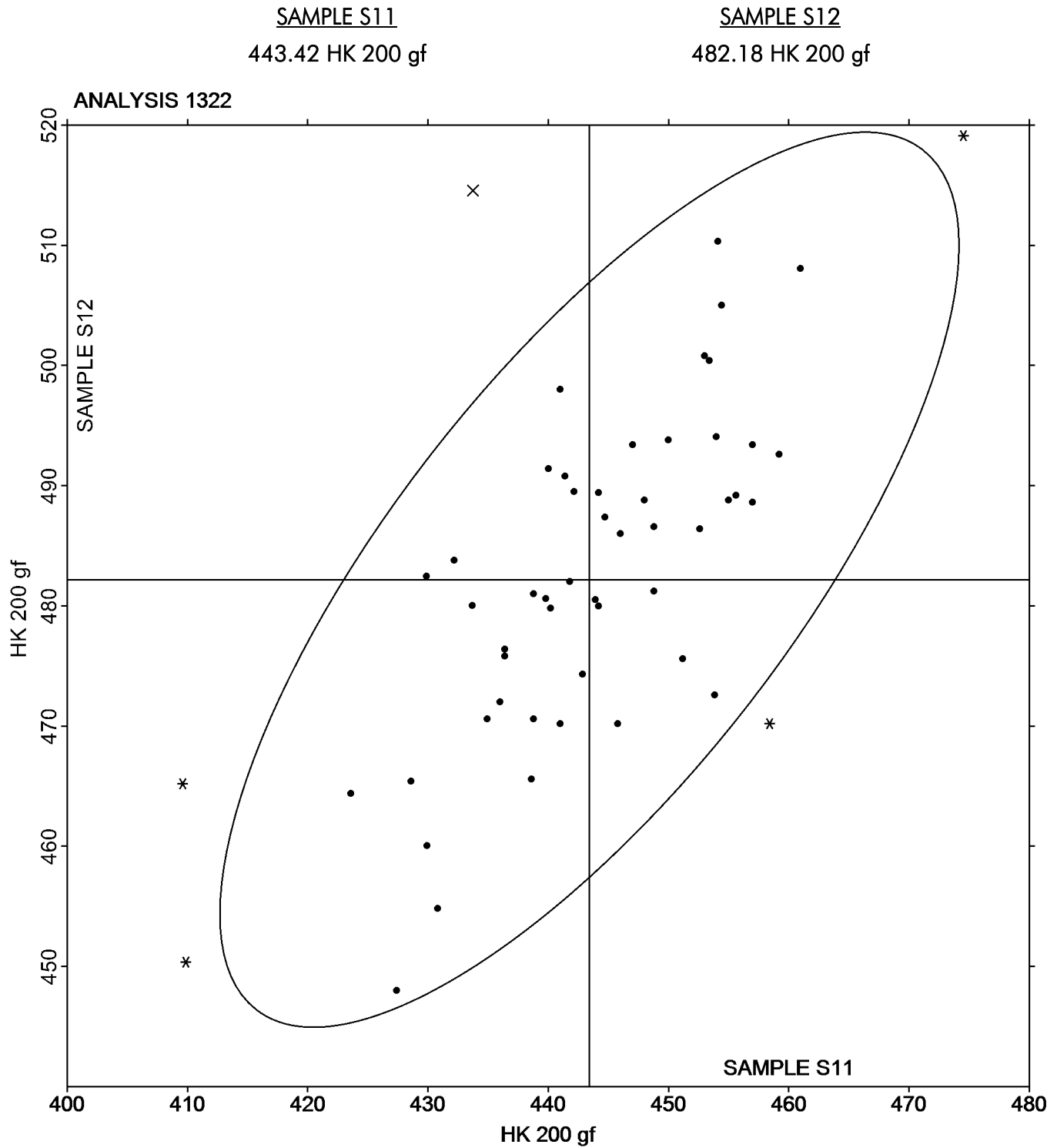
N4EK7F (X) - Data for both samples are high. Inconsistent within the determinations of sample S11.

NM7R6J (X) - Data for both samples are high.



Analysis 1322

Microhardness: Knoop Indenters (200 gf)
ASTM E384





Fasteners and Metals Interlaboratory Testing Program

Analysis 1323

Microhardness: Vickers Indenters (500 gf)
ASTM E384

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample S11			Sample S12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2DEEXV		413.40	-1.10	-0.12	434.20	-19.16	-1.75
2FLWXC		398.40	-16.10	-1.76	445.80	-7.56	-0.69
2WRB4C		408.40	-6.10	-0.67	444.80	-8.56	-0.78
2X7FX4		401.60	-12.90	-1.41	439.60	-13.76	-1.26
2ZDXVZ		411.32	-3.18	-0.35	457.76	4.40	0.40
32Y7AT		410.60	-3.90	-0.43	461.60	8.24	0.75
3CK2YA		395.60	-18.90	-2.06	430.80	-22.56	-2.06
3DYPXF		418.60	4.10	0.45	459.20	5.84	0.53
3NT7MG		419.00	4.50	0.49	456.00	2.64	0.24
3TT4CM		425.20	10.70	1.17	465.40	12.04	1.10
46JBNH		423.64	9.14	1.00	454.40	1.04	0.10
47UBPJ		404.72	-9.78	-1.07	445.66	-7.70	-0.70
4KR4L7		419.00	4.50	0.49	462.00	8.64	0.79
4ZKYTH		400.80	-13.70	-1.49	439.00	-14.36	-1.31
683QM2		427.98	13.48	1.47	458.44	5.08	0.46
6FFVA8		417.74	3.24	0.35	463.12	9.76	0.89
6JW26W		411.80	-2.70	-0.29	437.60	-15.76	-1.44
6K798P		400.40	-14.10	-1.54	435.80	-17.56	-1.60
6NQXV9		412.80	-1.70	-0.19	444.20	-9.16	-0.84
6PLGXA		415.86	1.36	0.15	448.22	-5.14	-0.47
6VM2CQ		426.56	12.06	1.32	459.06	5.70	0.52
79U3WM		404.60	-9.90	-1.08	463.00	9.64	0.88
7A3CMY		419.20	4.70	0.51	452.20	-1.16	-0.11
7EX7HE		418.00	3.50	0.38	437.80	-15.56	-1.42
7FQZG4		419.96	5.46	0.60	460.06	6.70	0.61
7FRTFC		421.00	6.50	0.71	466.80	13.44	1.23
89MD8F		405.00	-9.50	-1.04	458.60	5.24	0.48
8AZ3AT		410.00	-4.50	-0.49	460.80	7.44	0.68
8H8UPN		406.60	-7.90	-0.86	445.00	-8.36	-0.76
92JVYG		410.78	-3.72	-0.41	453.04	-0.32	-0.03
93DGWE		428.86	14.36	1.57	474.80	21.44	1.96
94BRU3		404.80	-9.70	-1.06	448.00	-5.36	-0.49
9DXL8K		413.60	-0.90	-0.10	454.80	1.44	0.13
9EAHFB		404.08	-10.42	-1.14	435.46	-17.90	-1.63
9NWJTY		407.40	-7.10	-0.77	435.60	-17.76	-1.62
9NXG4U	M	415.20	0.70	0.08	No Data Reported		
9YX8MG		400.40	-14.10	-1.54	439.60	-13.76	-1.26
ANDVB6		408.20	-6.30	-0.69	437.60	-15.76	-1.44
APM62G		418.68	4.18	0.46	459.90	6.54	0.60
AUHYWW		419.00	4.50	0.49	456.20	2.84	0.26
AVPBEX		406.20	-8.30	-0.91	448.80	-4.56	-0.42
B7PYB2		408.36	-6.14	-0.67	453.22	-0.14	-0.01
B9QAXN		417.20	2.70	0.29	460.40	7.04	0.64
BFEPV9		399.80	-14.70	-1.60	439.00	-14.36	-1.31
BJDALX		407.00	-7.50	-0.82	452.00	-1.36	-0.12
BQVGDQ		421.44	6.94	0.76	448.22	-5.14	-0.47
BUZ6X8		424.80	10.30	1.12	462.20	8.84	0.81



Fasteners and Metals Interlaboratory Testing Program

Analysis 1323

Microhardness: Vickers Indenters (500 gf)
ASTM E384

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample S11			Sample S12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
BV7UWA		408.42	-6.08	-0.66	450.70	-2.66	-0.24
BXYFU8		401.80	-12.70	-1.38	434.20	-19.16	-1.75
C4U3WR	X	441.80	27.30	2.98	404.80	-48.56	-4.43
C9ABMC		420.60	6.10	0.67	473.00	19.64	1.79
CQU2LB		408.40	-6.10	-0.67	454.40	1.04	0.10
D8DCM4		405.56	-8.94	-0.97	465.54	12.18	1.11
D8W3WN		423.40	8.90	0.97	454.40	1.04	0.10
DFMLBW		414.24	-0.26	-0.03	456.21	2.85	0.26
DUNHBB		418.00	3.50	0.38	452.00	-1.36	-0.12
E66LXZ		414.80	0.30	0.03	462.80	9.44	0.86
EBPLCR		394.00	-20.50	-2.24	430.60	-22.76	-2.08
EDU84X		409.80	-4.70	-0.51	450.00	-3.36	-0.31
EX3A34		420.35	5.85	0.64	456.44	3.08	0.28
EYDED7		405.20	-9.30	-1.01	432.80	-20.56	-1.88
EZTFHU	X	449.80	35.30	3.85	477.40	24.04	2.20
F844RL		414.20	-0.30	-0.03	451.20	-2.16	-0.20
FAFRCL		396.02	-18.48	-2.02	431.24	-22.12	-2.02
FCF8F3		407.80	-6.70	-0.73	441.60	-11.76	-1.07
FFWGPZ		419.32	4.82	0.53	461.00	7.64	0.70
FQXVU8		425.00	10.50	1.15	457.80	4.44	0.41
H2A6YM		413.40	-1.10	-0.12	459.40	6.04	0.55
H76TNH		406.18	-8.32	-0.91	452.60	-0.76	-0.07
HJAVEQ		398.40	-16.10	-1.76	449.00	-4.36	-0.40
J4C442		417.76	3.26	0.36	467.15	13.79	1.26
JBNK8V		415.03	0.53	0.06	463.60	10.24	0.94
JF4TXF		416.20	1.70	0.19	459.60	6.24	0.57
JMMBYU		407.20	-7.30	-0.80	442.00	-11.36	-1.04
JR4E7Z	*	439.00	24.50	2.67	460.60	7.24	0.66
JX4X7A	X	47.26	-367.24	-40.05	45.50	-407.86	-37.25
JYZBT3		413.22	-1.28	-0.14	461.96	8.60	0.79
K89AXX		420.00	5.50	0.60	462.60	9.24	0.84
KD9WJ7		403.46	-11.04	-1.20	436.12	-17.24	-1.57
KKEHH2		424.80	10.30	1.12	459.00	5.64	0.52
KKYYX4		410.92	-3.58	-0.39	441.74	-11.62	-1.06
KRDURC		418.00	3.50	0.38	448.00	-5.36	-0.49
KYD3JX		423.06	8.56	0.93	451.08	-2.28	-0.21
KYULYP		397.20	-17.30	-1.89	449.00	-4.36	-0.40
L7BEQE		411.60	-2.90	-0.32	457.80	4.44	0.41
L93D7Y	*	433.00	18.50	2.02	485.60	32.24	2.94
LHQ7HV		417.54	3.04	0.33	457.52	4.16	0.38
M378LT		420.40	5.90	0.64	453.60	0.24	0.02
MDA46X		416.20	1.70	0.19	455.60	2.24	0.20
MQG8CD		417.20	2.70	0.29	458.00	4.64	0.42
NCBF2T		421.60	7.10	0.77	459.20	5.84	0.53
NK3VQW		411.26	-3.24	-0.35	452.70	-0.66	-0.06
NM7R6J		415.06	0.56	0.06	467.18	13.82	1.26
NTW2EG	*	424.60	10.10	1.10	438.60	-14.76	-1.35



Fasteners and Metals Interlaboratory Testing Program

Analysis 1323

Microhardness: Vickers Indenters (500 gf)
ASTM E384

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample S11			Sample S12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
PC8CRE	X	455.20	40.70	4.44	481.80	28.44	2.60
PC8FGJ		422.00	7.50	0.82	476.60	23.24	2.12
PEVPT7		425.76	11.26	1.23	457.12	3.76	0.34
PJ8U7Q		419.80	5.30	0.58	459.80	6.44	0.59
PKXZFP		402.60	-11.90	-1.30	451.00	-2.36	-0.22
PULTRM		414.44	-0.06	-0.01	451.10	-2.26	-0.21
QHQQZ2B		411.80	-2.70	-0.29	463.20	9.84	0.90
QNFD3Y		419.86	5.36	0.58	463.18	9.82	0.90
RAPZ4U		414.80	0.30	0.03	444.80	-8.56	-0.78
RATMG2		420.00	5.50	0.60	452.20	-1.16	-0.11
RZMM7E		413.60	-0.90	-0.10	462.00	8.64	0.79
T38RFX	*	427.40	12.90	1.41	481.40	28.04	2.56
TB4N3Z		413.20	-1.30	-0.14	454.34	0.98	0.09
TLZWHW		415.66	1.16	0.13	450.10	-3.26	-0.30
TPKM7F		406.80	-7.70	-0.84	451.00	-2.36	-0.22
U2BXVX		408.60	-5.90	-0.64	438.60	-14.76	-1.35
UEHL7G		428.38	13.88	1.51	454.22	0.86	0.08
UHWGNY	*	411.12	-3.38	-0.37	429.40	-23.96	-2.19
UU8VWC		414.62	0.12	0.01	450.56	-2.80	-0.26
UUBB7J		409.03	-5.47	-0.60	453.52	0.16	0.01
VU6LC7		425.16	10.66	1.16	458.67	5.31	0.49
VXNMDK		434.00	19.50	2.13	462.40	9.04	0.83
W7DLNQ		398.80	-15.70	-1.71	450.60	-2.76	-0.25
WRFGFT		431.63	17.13	1.87	463.56	10.21	0.93
WXKBDV		426.60	12.10	1.32	474.20	20.84	1.90
XL2J3Q		413.20	-1.30	-0.14	450.40	-2.96	-0.27
XVDDJD		434.80	20.30	2.21	465.40	12.04	1.10
Y7MCMK		427.08	12.58	1.37	468.58	15.22	1.39
Y8YAUB		415.14	0.64	0.07	447.24	-6.12	-0.56
YR6NAF		421.00	6.50	0.71	459.18	5.82	0.53
YUC2XA		419.20	4.70	0.51	453.80	0.44	0.04
ZV2TKZ		423.40	8.90	0.97	449.20	-4.16	-0.38
ZZF7PT		411.80	-2.70	-0.29	451.40	-1.96	-0.18

Summary Statistics

	Sample S11		Sample S12	
Grand Means	414.50	HV 500 gf	453.36	HV 500 gf
Std Dev Btwn Labs	9.17	HV 500 gf	10.95	HV 500 gf

Samples S11, S12 : Steel, Steel

Statistics based on 122 of 127 reporting participants



Analysis 1323

Microhardness: Vickers Indenters (500 gf)
ASTM E384

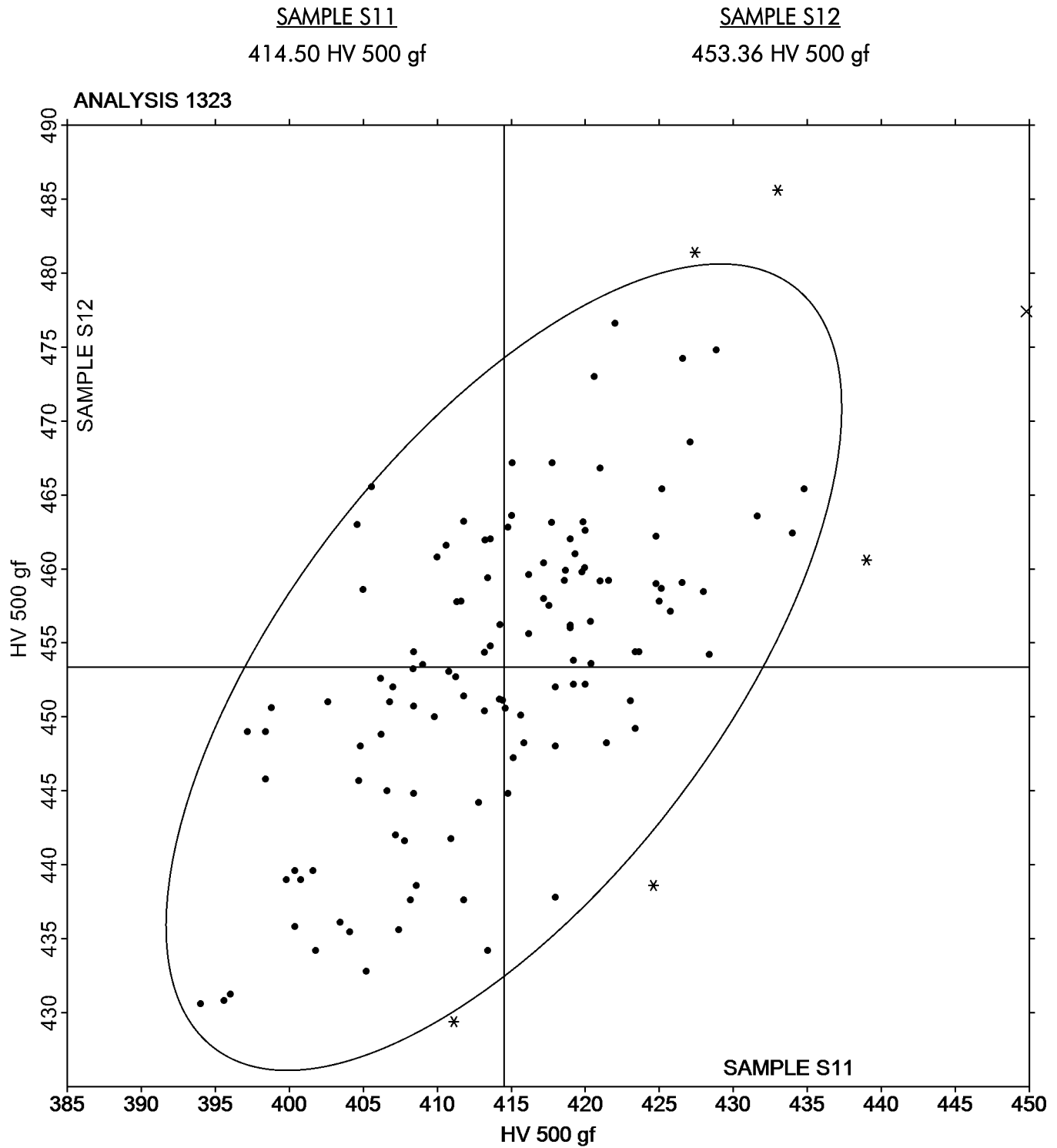
Comments on Assigned Data Flags for Test #1323

- 9NXG4U (M) - Participant did not submit data for sample S12.
- C4U3WR (X) - Data for sample S11 are high and data for sample S12 are low.
- EZTFHU (X) - Data for sample S11 are high.
- JX4X7A (X) - Extreme data.
- PC8CRE (X) - Data for sample S11 are high.



Analysis 1323

Microhardness: Vickers Indenters (500 gf)
ASTM E384





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

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample D11			Sample D12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2FLWXC		327.20	2.97	0.44	361.00	4.99	0.60
2WRB4C		323.40	-0.83	-0.12	352.80	-3.21	-0.39
37YDXC		337.96	13.73	2.06	372.02	16.02	1.93
3ADQZK		323.40	-0.83	-0.12	356.20	0.19	0.02
4KB4FB	X	305.20	-19.03	-2.85	323.40	-32.61	-3.93
4KR4L7		310.70	-13.53	-2.03	350.04	-5.97	-0.72
4ZKYTH		325.40	1.17	0.17	351.00	-5.01	-0.60
62E3YY		340.60	16.37	2.45	367.00	10.99	1.32
6JW26W	X	306.40	-17.83	-2.67	327.00	-29.01	-3.49
6K798P		318.80	-5.43	-0.81	347.40	-8.61	-1.04
6NQXV9		313.00	-11.23	-1.68	343.40	-12.61	-1.52
6VM2CQ		321.00	-3.23	-0.48	363.00	6.99	0.84
6YM7B6		321.00	-3.23	-0.48	363.00	6.99	0.84
6YPX3K		333.80	9.57	1.43	353.80	-2.21	-0.27
7JNKAF		321.00	-3.23	-0.48	341.00	-15.01	-1.81
7MA22M		337.20	12.97	1.94	367.60	11.59	1.40
7ZYZUB		337.00	12.77	1.91	360.80	4.79	0.58
8AZ3AT		321.40	-2.83	-0.42	358.80	2.79	0.34
8GFQ3A		320.98	-3.25	-0.49	348.72	-7.29	-0.88
8H8UPN		327.20	2.97	0.44	361.00	4.99	0.60
8KGTTP		323.00	-1.23	-0.18	354.20	-1.81	-0.22
94LQNC		316.00	-8.23	-1.23	345.20	-10.81	-1.30
963NHW		331.80	7.57	1.13	365.00	8.99	1.08
96H6B4		315.80	-8.43	-1.26	359.60	3.59	0.43
9L98R9		332.20	7.97	1.19	364.80	8.79	1.06
9NXG4U		317.20	-7.03	-1.05	341.20	-14.81	-1.78
AT6BEH		329.20	4.97	0.74	347.40	-8.61	-1.04
AUHYWW		319.00	-5.23	-0.78	350.40	-5.61	-0.68
BK8WBV		320.40	-3.83	-0.57	361.60	5.59	0.67
BTHDM3		321.00	-3.23	-0.48	363.00	6.99	0.84
C2TWJ7		326.54	2.31	0.35	363.20	7.19	0.87
CYNAVU		331.10	6.87	1.03	364.10	8.09	0.97
DFMLBW		326.80	2.57	0.38	360.00	3.99	0.48
DUNHBB		325.20	0.97	0.14	360.60	4.59	0.55
E4P8N6		321.92	-2.31	-0.35	356.96	0.95	0.11
ECHKJY		334.62	10.39	1.56	362.70	6.69	0.81
EDU84X		324.20	-0.03	0.00	353.20	-2.81	-0.34
ERB9MV		321.00	-3.23	-0.48	362.00	5.99	0.72
F844RL		320.20	-4.03	-0.60	350.00	-6.01	-0.72
FBNBQ9		329.00	4.77	0.71	365.40	9.39	1.13
FCF8F3		323.09	-1.15	-0.17	359.91	3.91	0.47
FKADDA		327.00	2.77	0.41	352.00	-4.01	-0.48
FMV2PB		321.00	-3.23	-0.48	363.00	6.99	0.84
FVTNPM		323.46	-0.77	-0.12	357.64	1.63	0.20
HV7XQM		321.00	-3.23	-0.48	352.60	-3.41	-0.41
JLWV3Z		324.16	-0.07	-0.01	341.64	-14.37	-1.73
JX4X7A		320.00	-4.23	-0.63	352.60	-3.41	-0.41



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

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample D11			Sample D12		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
JYZBT3		324.20	-0.03	0.00	360.40	4.39	0.53
K89AXX		325.40	1.17	0.17	363.00	6.99	0.84
KBA9DW		329.20	4.97	0.74	357.80	1.79	0.22
KYULYP		319.00	-5.23	-0.78	346.00	-10.01	-1.21
LE23JW		332.00	7.77	1.16	365.00	8.99	1.08
LHNEQE		314.80	-9.43	-1.41	339.40	-16.61	-2.00
LHQ7HV		326.20	1.97	0.29	344.40	-11.61	-1.40
LQHL4T		324.96	0.73	0.11	366.92	10.91	1.31
M6UKMK		332.20	7.97	1.19	368.20	12.19	1.47
MEHKX3		321.00	-3.23	-0.48	349.80	-6.21	-0.75
MFB7VZ		333.00	8.77	1.31	363.00	6.99	0.84
MQG8CD		322.60	-1.63	-0.24	363.60	7.59	0.91
NUTGWV		319.60	-4.63	-0.69	345.52	-10.49	-1.26
NYP3R6		329.80	5.57	0.83	354.00	-2.01	-0.24
PC8CRE		333.80	9.57	1.43	353.80	-2.21	-0.27
PULTRM		321.00	-3.23	-0.48	350.00	-6.01	-0.72
QAFG3K		318.20	-6.03	-0.90	355.00	-1.01	-0.12
QP8DZA		308.04	-16.19	-2.43	347.04	-8.97	-1.08
QPQGE2		316.80	-7.43	-1.11	351.20	-4.81	-0.58
RAPZ4U		311.80	-12.43	-1.86	345.00	-11.01	-1.33
RE9V8L		323.20	-1.03	-0.15	358.00	1.99	0.24
RP7ZUT		326.60	2.37	0.35	362.60	6.59	0.79
RT4KQA		315.80	-8.43	-1.26	346.80	-9.21	-1.11
RYTZFG		321.80	-2.43	-0.36	352.00	-4.01	-0.48
T38RFX		326.00	1.77	0.26	368.00	11.99	1.44
T6W3BW		331.73	7.50	1.12	360.27	4.26	0.51
TJXUW2	*	320.80	-3.43	-0.51	337.20	-18.81	-2.27
TUH7AY		323.00	-1.23	-0.18	356.40	0.39	0.05
VBUVWN		321.28	-2.95	-0.44	359.98	3.97	0.48
VP9272		333.60	9.37	1.40	363.00	6.99	0.84
VTULC7		330.40	6.17	0.92	357.06	1.05	0.13
VU6LC7		335.00	10.77	1.61	363.00	6.99	0.84
WAXGEA		314.32	-9.91	-1.49	354.74	-1.27	-0.15
WGBPFB		330.60	6.37	0.95	367.20	11.19	1.35
WRFGFT		327.00	2.77	0.41	349.80	-6.21	-0.75
WVFMY6		316.70	-7.53	-1.13	346.96	-9.05	-1.09
WYCGNU	X	341.00	16.77	2.51	388.00	31.99	3.85
X7RAKB		324.80	0.57	0.08	359.60	3.59	0.43
XE7DAP		320.60	-3.63	-0.54	363.60	7.59	0.91
XPNV4G		315.40	-8.83	-1.32	349.20	-6.81	-0.82
YV6Z6F		329.00	4.77	0.71	352.00	-4.01	-0.48
Z8C39P		323.60	-0.63	-0.09	346.40	-9.61	-1.16
ZCAKF3		317.00	-7.23	-1.08	354.40	-1.61	-0.19
ZF87E8	*	337.00	12.77	1.91	377.80	21.79	2.63
ZQ8T8P		321.00	-3.23	-0.48	341.00	-15.01	-1.81



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

Cycle 151
3rd Qtr 2025

Summary Statistics

	<u>Sample D11</u>		<u>Sample D12</u>	
Grand Means	324.23	HBW	356.01	HBW
Std Dev Btwn Labs	6.68	HBW	8.30	HBW

Samples D11, D12 : Steel, Steel

Statistics based on 89 of 92 reporting participants

Samples D11, D12 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

4KB4FB (X) - Data for both samples are low.

6JW26W (X) - Data for sample D12 are low.

WYCGNU (X) - Data for sample D12 are high.



Analysis 1341

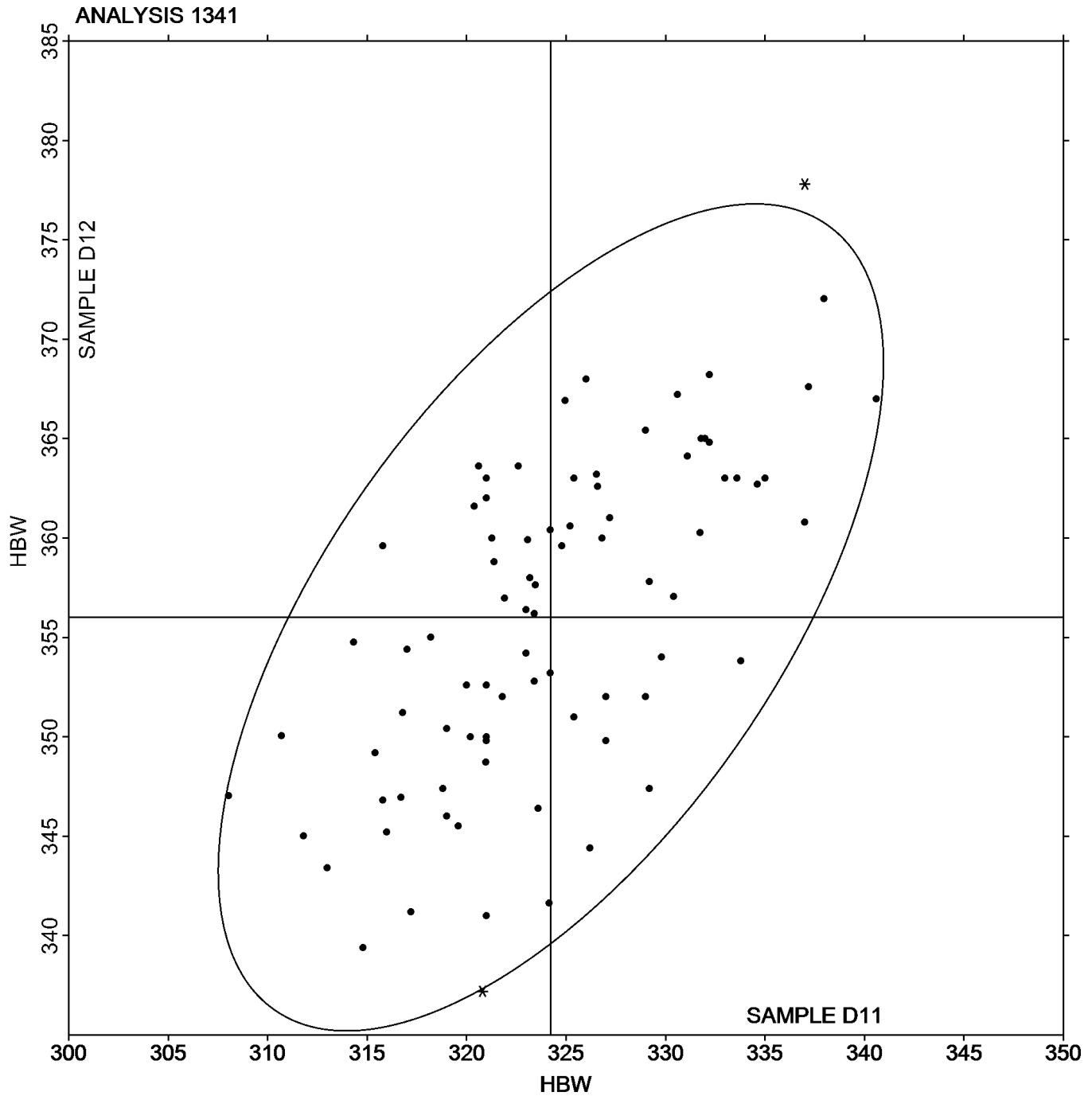
Brinell Hardness
ASTM E10

SAMPLE D11

324.23 HBW

SAMPLE D12

356.01 HBW





Fasteners and Metals Interlaboratory Testing Program

Analysis 1421

Alpha Case Depth
ASTM E3, E407

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample W09			Sample W10		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2A2NHR		0.000262	-0.000017	-0.21	0.000282	-0.000017	-0.20
2DEEXV		0.000228	-0.000051	-0.63	0.000224	-0.000075	-0.88
4NCCKL		0.000279	0.000000	0.00	0.000285	-0.000014	-0.17
66BPJY		0.000280	0.000000	0.00	0.000271	-0.000028	-0.33
7FRTFC		0.000278	-0.000001	-0.02	0.000309	0.000010	0.12
8AZ3AT		0.000278	-0.000001	-0.02	0.000299	0.000000	0.00
8WTY3D		0.000202	-0.000078	-0.96	0.000229	-0.000070	-0.83
8X44EF		0.000302	0.000023	0.28	0.000302	0.000003	0.04
92JVYG		0.000269	-0.000010	-0.13	0.000296	-0.000003	-0.04
9NXG4U		0.000307	0.000027	0.33	0.000322	0.000023	0.27
CMUQQB		0.000280	0.000001	0.01	0.000290	-0.000009	-0.11
DWBUC2		0.000292	0.000012	0.15	0.000301	0.000002	0.03
E66LXZ		0.000364	0.000085	1.04	0.000370	0.000071	0.83
EZTFHU		0.000454	0.000175	2.15	0.000483	0.000184	2.16
F6K6FC		0.000270	-0.000010	-0.12	0.000272	-0.000027	-0.31
FTNYME		0.000237	-0.000042	-0.52	0.000283	-0.000016	-0.19
GZ2CWW		0.000262	-0.000018	-0.22	0.000287	-0.000012	-0.14
HEVFFE	*	0.000200	-0.000079	-0.98	0.000300	0.000001	0.01
HKK37D		0.000246	-0.000034	-0.42	0.000238	-0.000061	-0.72
KCGQA8		0.000262	-0.000017	-0.21	0.000262	-0.000037	-0.43
MQG8CD	*	0.000520	0.000241	2.95	0.000560	0.000261	3.06
NFRPBQ		0.000261	-0.000018	-0.23	0.000265	-0.000034	-0.40
PU8A9P	*	0.000040	-0.000239	-2.94	0.000038	-0.000261	-3.06
U6R3PM		0.000279	-0.000001	-0.01	0.000286	-0.000013	-0.15
WRFGFT		0.000335	0.000055	0.68	0.000350	0.000051	0.60
WYCGNU		0.000294	0.000014	0.18	0.000294	-0.000005	-0.06
XGQAZ9		0.000318	0.000039	0.47	0.000374	0.000075	0.88
ZDJUDG		0.000307	0.000028	0.34	0.000299	0.000000	0.01
ZK26NW	*	0.000200	-0.000079	-0.98	0.000300	0.000001	0.01

Summary Statistics

	Sample W09		Sample W10	
Grand Means	0.000279	inches	0.000299	inches
Std Dev Btwn Labs	0.000081	inches	0.000085	inches

Samples W09, W10 : Ti-6Al-4V, Ti-6Al-4V

Statistics based on 29 of 29 reporting participants



Analysis 1421

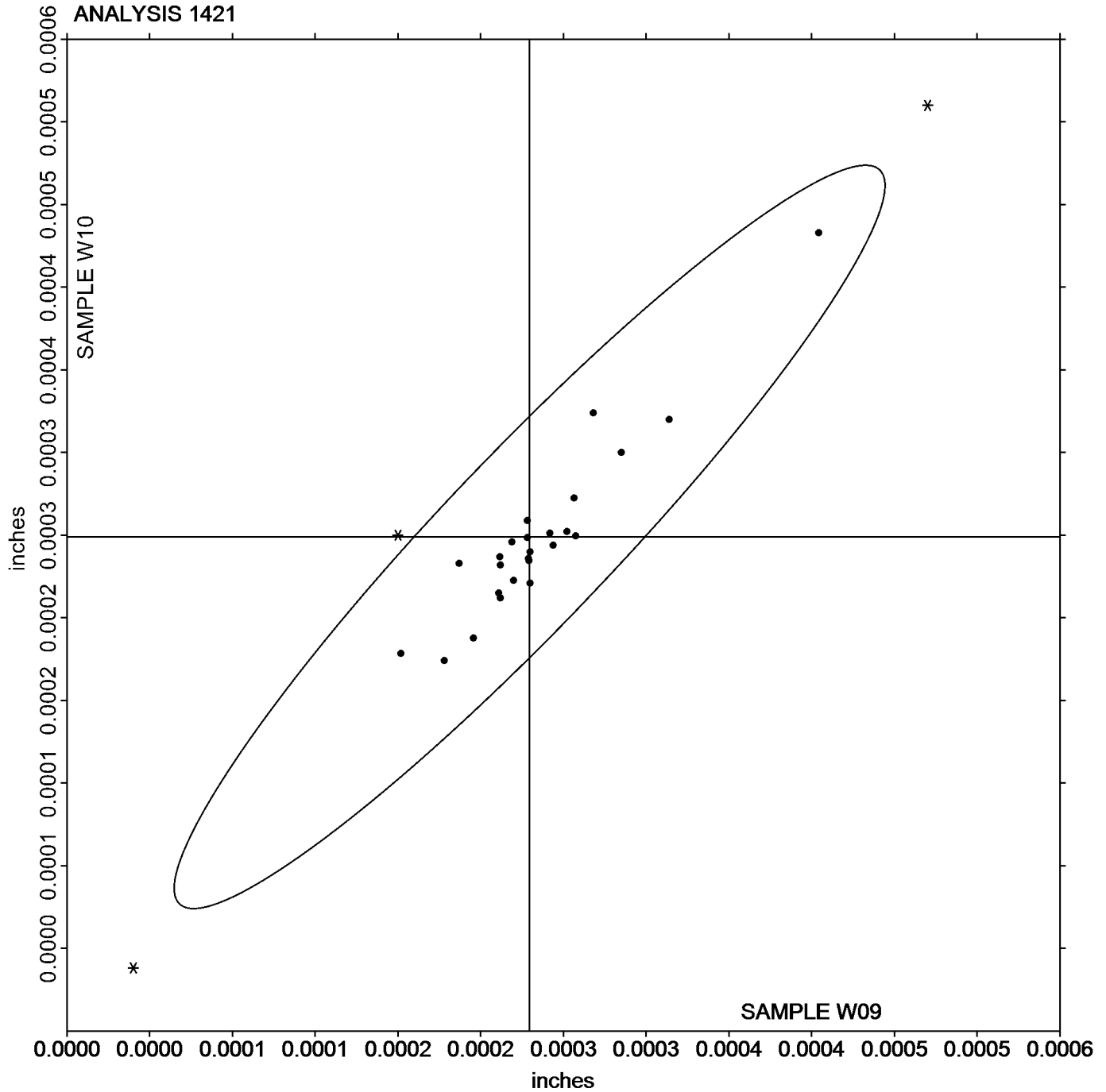
Alpha Case Depth
ASTM E3, E407

SAMPLE W09

0.00028 inches

SAMPLE W10

0.00030 inches





Fasteners and Metals Interlaboratory Testing Program

Analysis 1422

Alloy Depletion: Inconel
ASTM E3, E407

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample K09			Sample K10		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2A2NHR		0.000224	-0.000077	-0.53	0.000234	-0.000060	-0.52
4NCCKL		0.000509	0.000208	1.44	0.000436	0.000142	1.25
6QDE6F		0.000550	0.000249	1.72	0.000440	0.000146	1.28
8WTY3D		0.000307	0.000006	0.04	0.000288	-0.000005	-0.05
92JVYG		0.000268	-0.000033	-0.23	0.000310	0.000016	0.14
CMUQQB		0.000180	-0.000121	-0.83	0.000180	-0.000114	-0.99
E66LXZ	X	0.00904	0.008739	60.30	0.00722	0.006926	60.61
EZTFHU		0.000290	-0.000011	-0.08	0.000327	0.000034	0.29
FL6VFC		0.000280	-0.000021	-0.14	0.000340	0.000047	0.41
TFAKKE		0.000100	-0.000201	-1.39	0.000087	-0.000207	-1.81

Summary Statistics

	Sample K09		Sample K10	
Grand Means	0.000301	inches	0.000294	inches
Std Dev Btwn Labs	0.000145	inches	0.000114	inches

Samples K09, K10 : Inco 718, Inco 718

Statistics based on 9 of 10 reporting participants

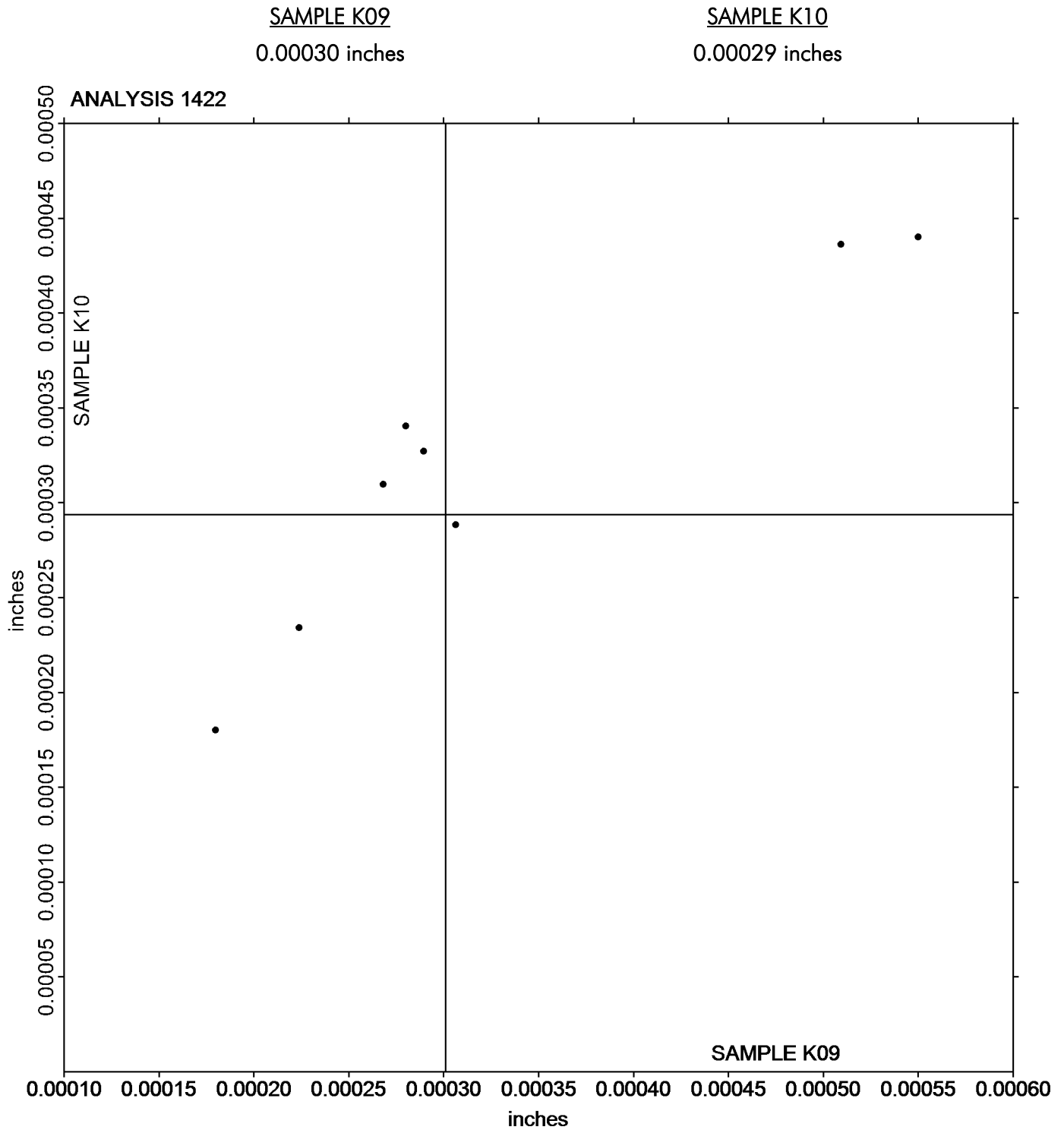
Comments on Assigned Data Flags for Test #1422

E66LXZ (X) - Extreme data.



Analysis 1422

Alloy Depletion: Inconel
ASTM E3, E407





Fasteners and Metals Interlaboratory Testing Program

Cycle 151
3rd Qtr 2025

Analysis 1520

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

WebCode	Data Flag	Sample T11			Sample T12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2A2NHR	X	0.00100	-89.84	-258.62	0.00117	-89.75	-370.78	XX
2DEEXV		90.42	0.58	1.66	90.19	0.43	1.79	ED
4NCCKL	X	0.00230	-89.84	-258.61	0.00230	-89.75	-370.78	XX
683QM2		89.50	-0.34	-0.99	89.50	-0.25	-1.05	GD
9AEQ6R		89.75	-0.09	-0.27	89.54	-0.21	-0.87	OE
DJMW8W		89.76	-0.09	-0.25	89.66	-0.10	-0.40	OE
GZ2CWW		89.46	-0.38	-1.10	89.76	0.01	0.04	BD
LEMDKQ		89.89	0.04	0.13	89.72	-0.03	-0.12	OE
MH2ATL		89.87	0.02	0.06	89.90	0.15	0.60	IC
NFRPBQ		90.38	0.53	1.53	90.02	0.27	1.10	OE
TR93FN		89.58	-0.26	-0.75	89.49	-0.26	-1.09	BD

Summary Statistics

Sample T11			Sample T12		
Grand Means	89.84	Percent	89.75	Percent	
Std Dev Btwn Labs	0.35	Percent	0.24	Percent	

Samples T11, T12 : Ti 6-4 (Gr. 5), Ti 6-4 (Gr. 5)

Statistics based on 9 of 11 reporting participants

Key to Method Codes Reported by Participants

BD	By Difference	ED	X-Ray Fluorescence - Energy Dispersive (EDX)
GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	XX	Please Indicate Method Used for Current Element

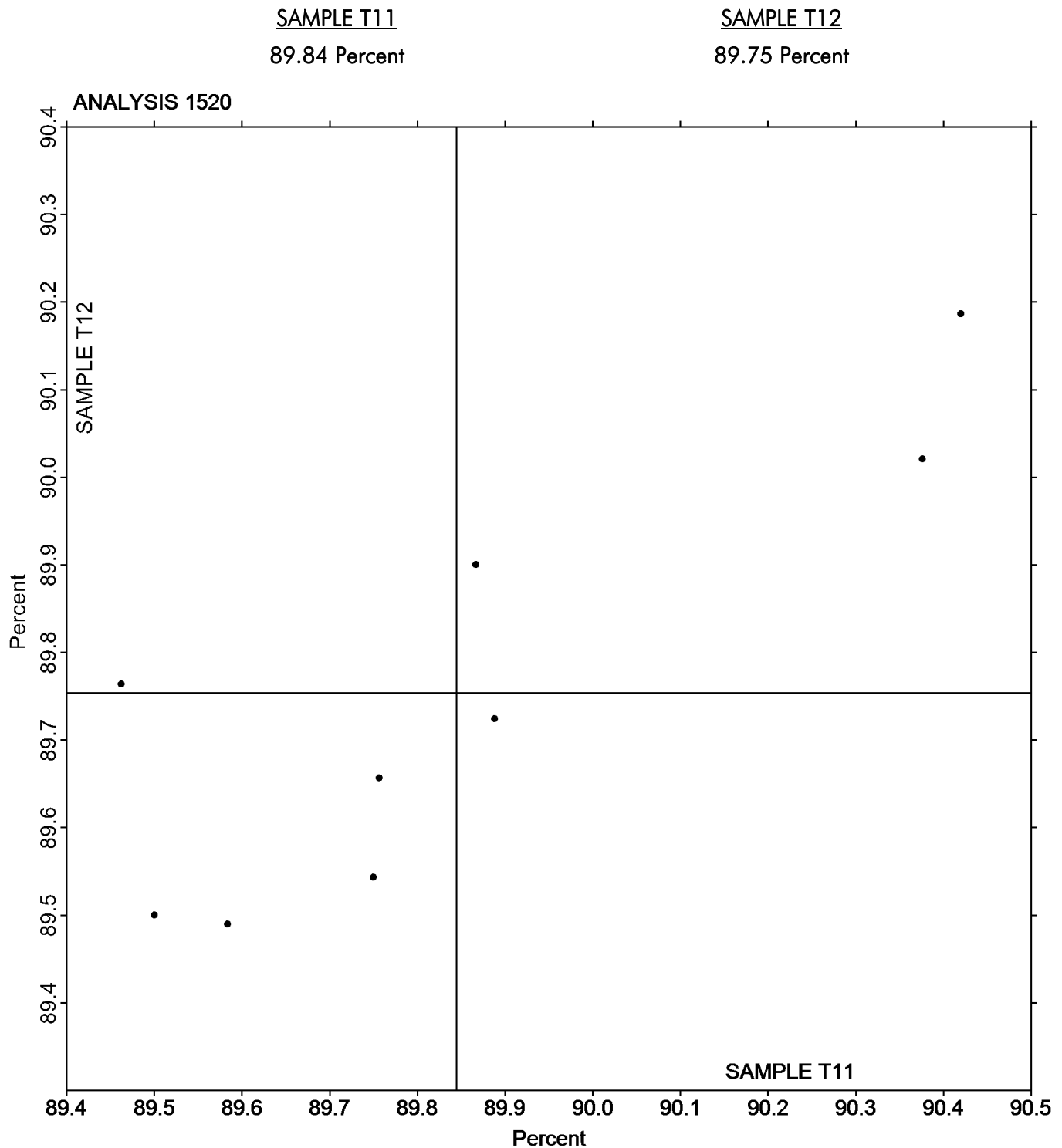
Comments on Assigned Data Flags for Test #1520

2A2NHR (X) - Extreme data.

4NCCKL (X) - Extreme data.

Analysis 1520

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





Fasteners and Metals Interlaboratory Testing Program

Cycle 151
3rd Qtr 2025

Analysis 1521

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

WebCode	Data Flag	Sample T11			Sample T12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2DEEXV		0.00200	-0.00023	-0.27	0.00233	-0.00013	-0.16	IR
3RDXUC		0.00127	-0.00096	-1.11	0.00223	-0.00023	-0.28	IR
683QM2		0.00281	0.00058	0.67	0.00322	0.00076	0.95	IR
7FRTFC		0.00160	-0.00063	-0.73	0.00170	-0.00076	-0.94	CO
8ZVZ4A		0.00173	-0.00050	-0.57	0.00207	-0.00039	-0.49	XX
9AEQ6R		0.00198	-0.00025	-0.29	0.00266	0.00020	0.25	CI
CMUQQB		0.00253	0.00030	0.35	0.00243	-0.00003	-0.03	CI
F6K6FC		0.00220	-0.00003	-0.04	0.00220	-0.00026	-0.32	IR
FTNYME		0.00364	0.00141	1.62	0.00351	0.00105	1.30	XX
GZ2CWW		0.00377	0.00154	1.77	0.00467	0.00221	2.74	CO
KCGQA8		0.00167	-0.00056	-0.65	0.00253	0.00007	0.09	IR
LEMDKQ		0.00172	-0.00051	-0.59	0.00197	-0.00049	-0.61	OE
MH2ATL	*	0.00367	0.00144	1.66	0.00167	-0.00079	-0.98	CI
NFRPBQ		0.00173	-0.00050	-0.58	0.00192	-0.00054	-0.67	CI
TR93FN		0.00117	-0.00106	-1.23	0.00177	-0.00069	-0.86	XX

Summary Statistics

Sample T11				Sample T12			
Grand Means	0.00223	Percent		0.00246	Percent		
Std Dev Btwn Labs	0.00087	Percent		0.00081	Percent		

Samples T11, T12 : Ti 6-4 (Gr. 5), Ti 6-4 (Gr. 5)

Statistics based on 15 of 15 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		

Analysis 1521

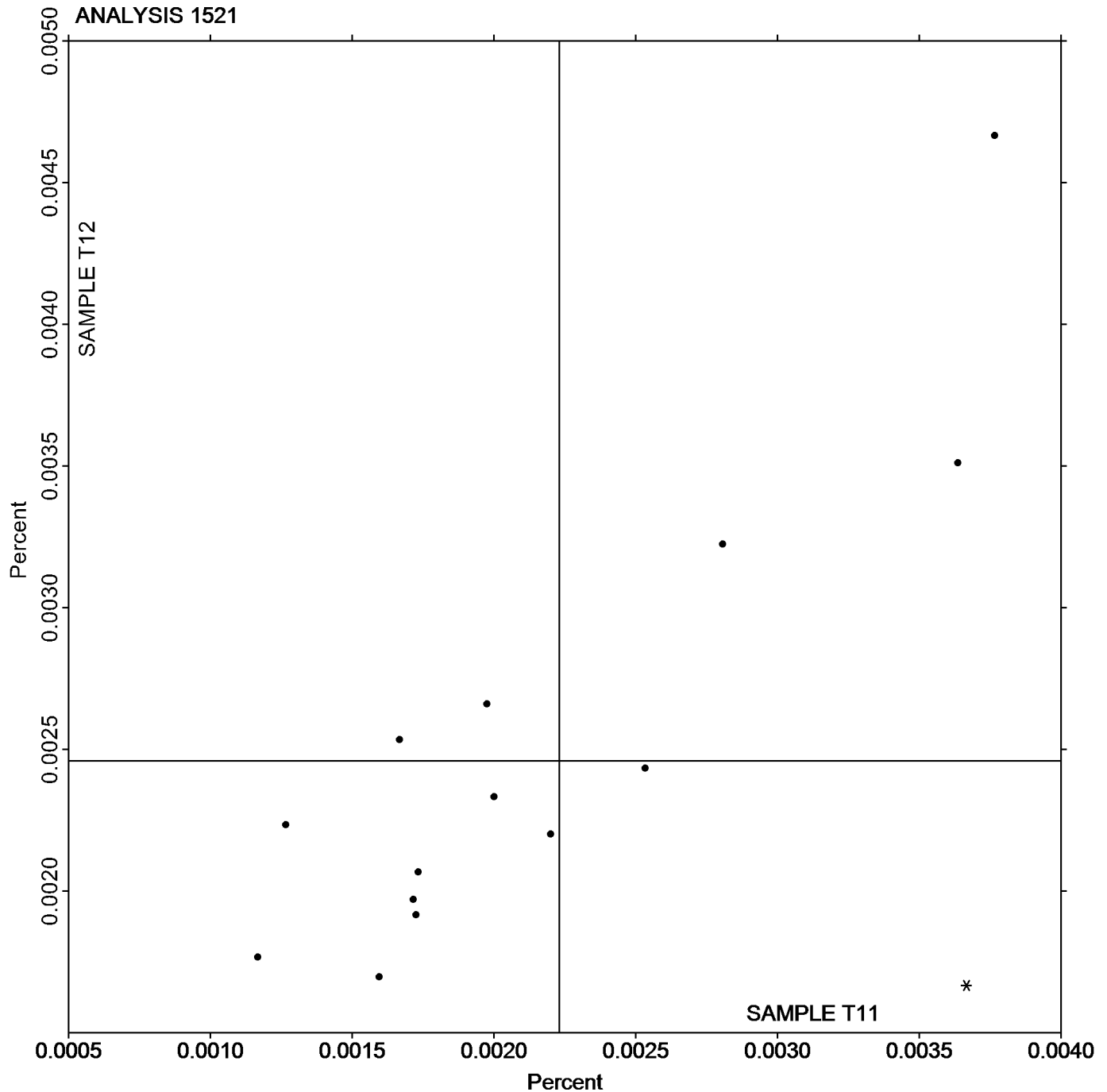
**Titanium-based Alloy, HYDROGEN (H)
HYDROGEN (H)**

SAMPLE T11

0.00223 Percent

SAMPLE T12

0.00246 Percent





Fasteners and Metals Interlaboratory Testing Program

Analysis 1522

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

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample T11			Sample T12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2DEEXV		0.1687	-0.0125	-1.16	0.2017	0.0045	0.48	IR
3RDXUC		0.1741	-0.0071	-0.65	0.1919	-0.0052	-0.56	IR
683QM2		0.1797	-0.0015	-0.14	0.2000	0.0029	0.31	IR
7FRTFC		0.1647	-0.0165	-1.53	0.2033	0.0062	0.66	CO
8ZVZ4A		0.1760	-0.0052	-0.48	0.1787	-0.0185	-1.98	XX
F6K6FC		0.1720	-0.0092	-0.85	0.1943	-0.0028	-0.30	IR
FTNYME		0.1957	0.0145	1.35	0.2050	0.0079	0.84	XX
GZ2CWW		0.1873	0.0062	0.57	0.2083	0.0112	1.20	CO
KCGQA8		0.1859	0.0047	0.44	0.2032	0.0061	0.65	IR
LEMDKQ		0.1791	-0.0021	-0.19	0.1848	-0.0123	-1.32	OE
MH2ATL		0.2000	0.0188	1.75	0.2067	0.0095	1.02	XX
NFRPBQ		0.1939	0.0128	1.19	0.1992	0.0021	0.22	CI
TR93FN		0.1780	-0.0032	-0.29	0.1857	-0.0115	-1.23	XX

Summary Statistics

	Sample T11		Sample T12	
Grand Means	0.1812	Percent	0.1971	Percent
Std Dev Btwn Labs	0.0108	Percent	0.0093	Percent

Samples T11, T12 : Ti 6-4 (Gr. 5), Ti 6-4 (Gr. 5)

Statistics based on 13 of 13 reporting participants

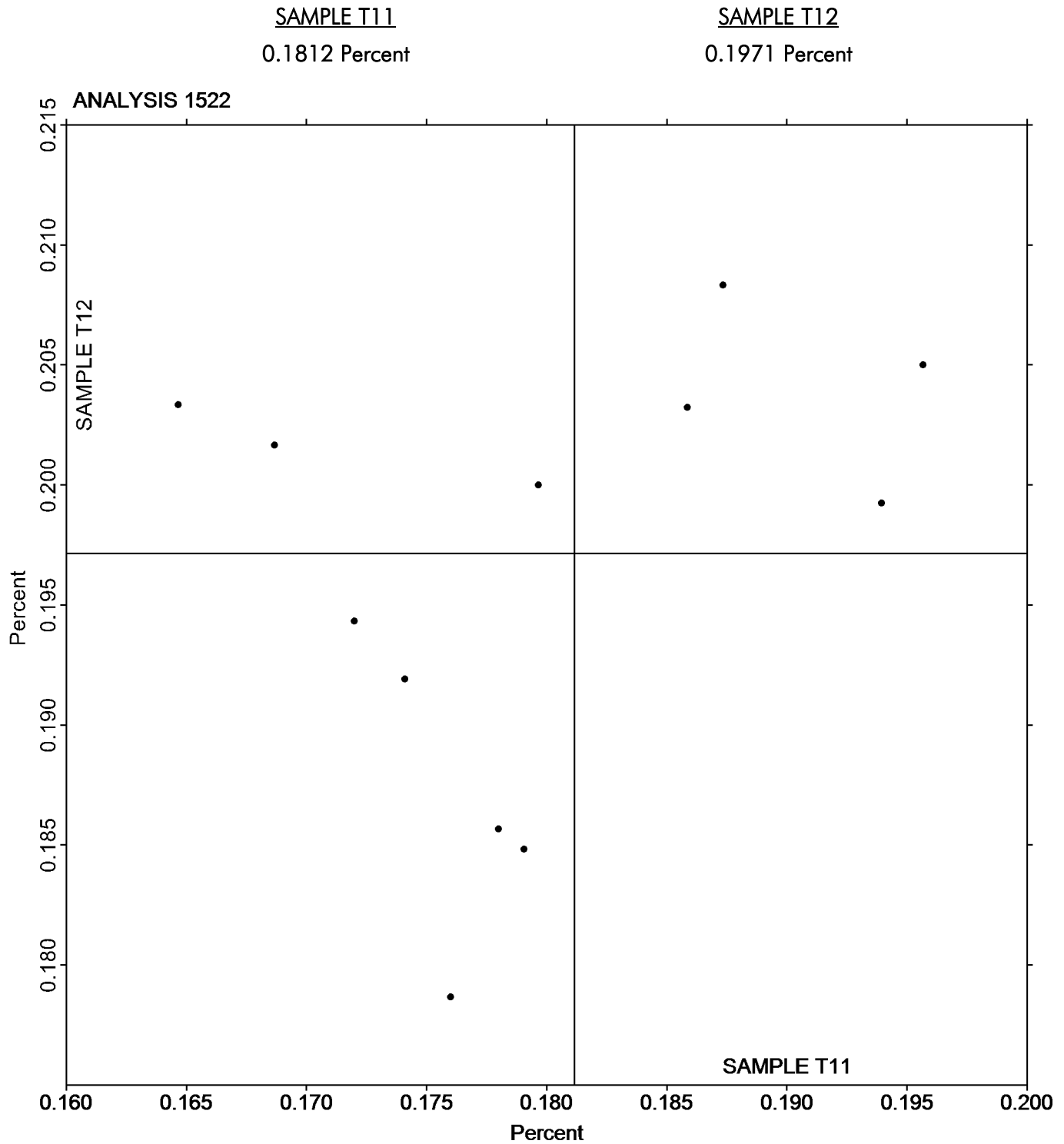
Key to Method Codes Reported by Participants

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



Analysis 1522

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





Fasteners and Metals Interlaboratory Testing Program

Cycle 151
3rd Qtr 2025

Analysis 1523

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

WebCode	Data Flag	Sample T11			Sample T12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2DEEXV		0.00840	-0.0031	-1.92	0.00770	-0.00194	-1.30	IR
3RDXUC		0.0130	0.0015	0.91	0.00963	-0.00001	-0.01	IR
683QM2		0.0110	-0.0005	-0.30	0.00999	0.00034	0.23	IR
7FRTFC		0.0108	-0.0007	-0.42	0.00953	-0.00011	-0.07	CI
8ZVZ4A		0.0140	0.0025	1.55	0.0127	0.00309	2.07	XX
DJMW8W	X	0.0280	0.0165	10.14	0.0239	0.01426	9.56	OE
GZ2CWW		0.0127	0.0012	0.73	0.00977	0.00012	0.08	CO
MH2ATL		0.0117	0.0002	0.09	0.0107	0.00102	0.69	CI
NFRPBQ		0.0113	-0.0002	-0.13	0.00861	-0.00104	-0.70	CI
TR93FN		0.0107	-0.0008	-0.52	0.00817	-0.00148	-0.99	XX

Summary Statistics

	Sample T11		Sample T12	
Grand Means	0.0115	Percent	0.00964	Percent
Std Dev Btwn Labs	0.0016	Percent	0.00149	Percent

Samples T11, T12 : Ti 6-4 (Gr. 5), Ti 6-4 (Gr. 5)

Statistics based on 9 of 10 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		

Comments on Assigned Data Flags for Test #1523

DJMW8W (X) - Data for both samples are high.



Analysis 1523

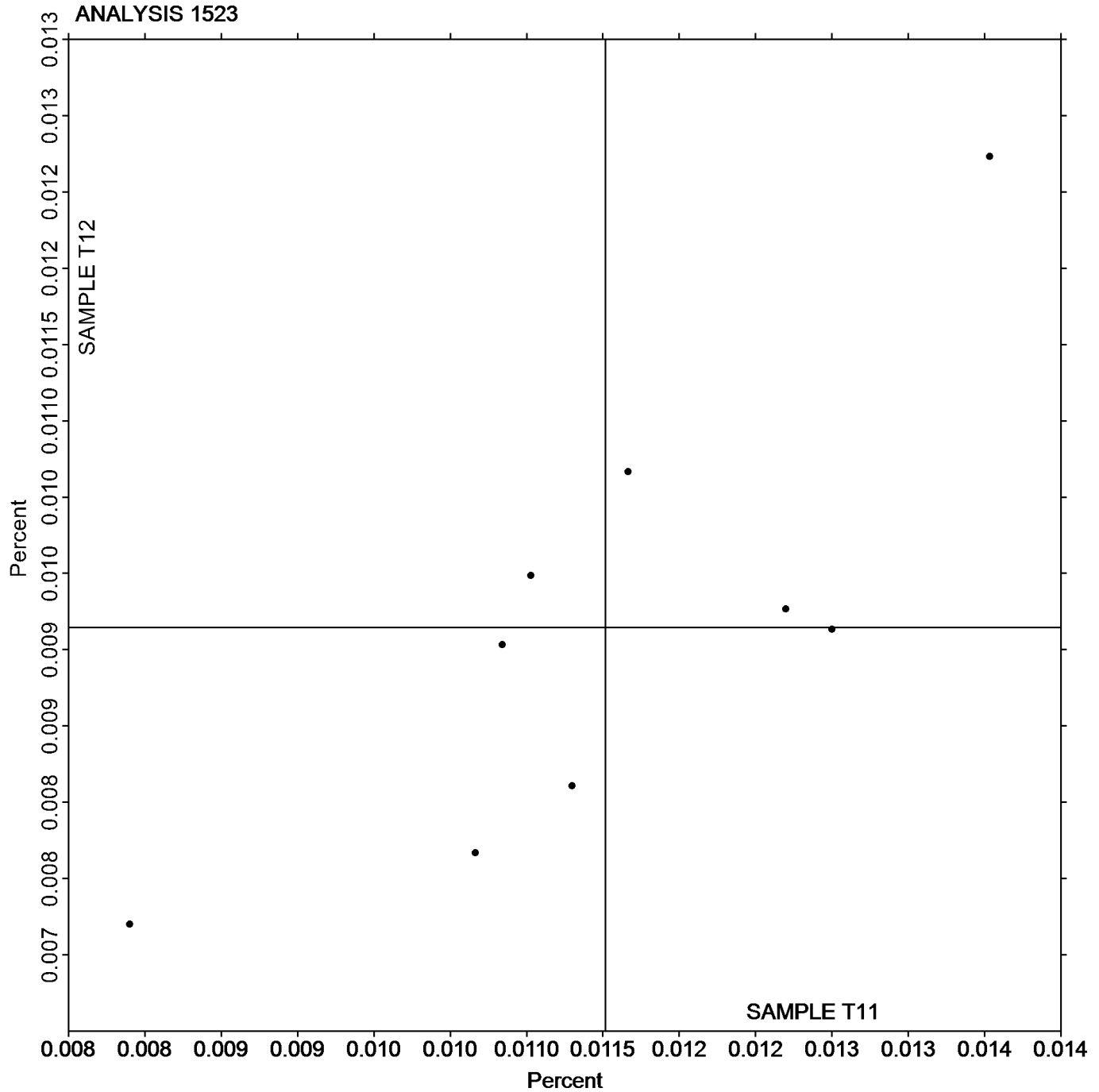
Titanium-based Alloy, NITROGEN (N)
NITROGEN (N)

SAMPLE T11

0.0115 Percent

SAMPLE T12

0.00964 Percent





Fasteners and Metals Interlaboratory Testing Program

Analysis 1524

Titanium-based Alloy, ALUMINUM (Al)
ALUMINUM (Al)

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample T11			Sample T12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2DEEXV		5.690	-0.318	-1.79	5.792	-0.266	-1.80	ED
3RDXUC		6.109	0.101	0.57	6.161	0.103	0.70	IC
683QM2		6.070	0.062	0.35	6.120	0.062	0.42	GD
8ZVZ4A		6.169	0.161	0.90	6.248	0.190	1.28	IC
9AEQ6R		6.179	0.171	0.96	6.252	0.194	1.31	OE
DJMW8W		5.804	-0.204	-1.15	6.008	-0.049	-0.33	OE
GZ2CWW		6.235	0.227	1.28	6.051	-0.007	-0.05	OE
LEMDKQ		6.088	0.080	0.45	6.158	0.101	0.68	OE
MH2ATL		5.860	-0.148	-0.83	5.820	-0.238	-1.61	OE
NFRPBQ		5.787	-0.221	-1.25	5.973	-0.084	-0.57	OE
TR93FN		6.083	0.075	0.42	6.107	0.049	0.33	IC
XE7DAP		6.022	0.014	0.08	6.003	-0.054	-0.37	OE

Summary Statistics

	Sample T11		Sample T12	
Grand Means	6.008	Percent	6.058	Percent
Std Dev Btwn Labs	0.178	Percent	0.148	Percent

Samples T11, T12 : Ti 6-4 (Gr. 5), Ti 6-4 (Gr. 5)

Statistics based on 12 of 12 reporting participants

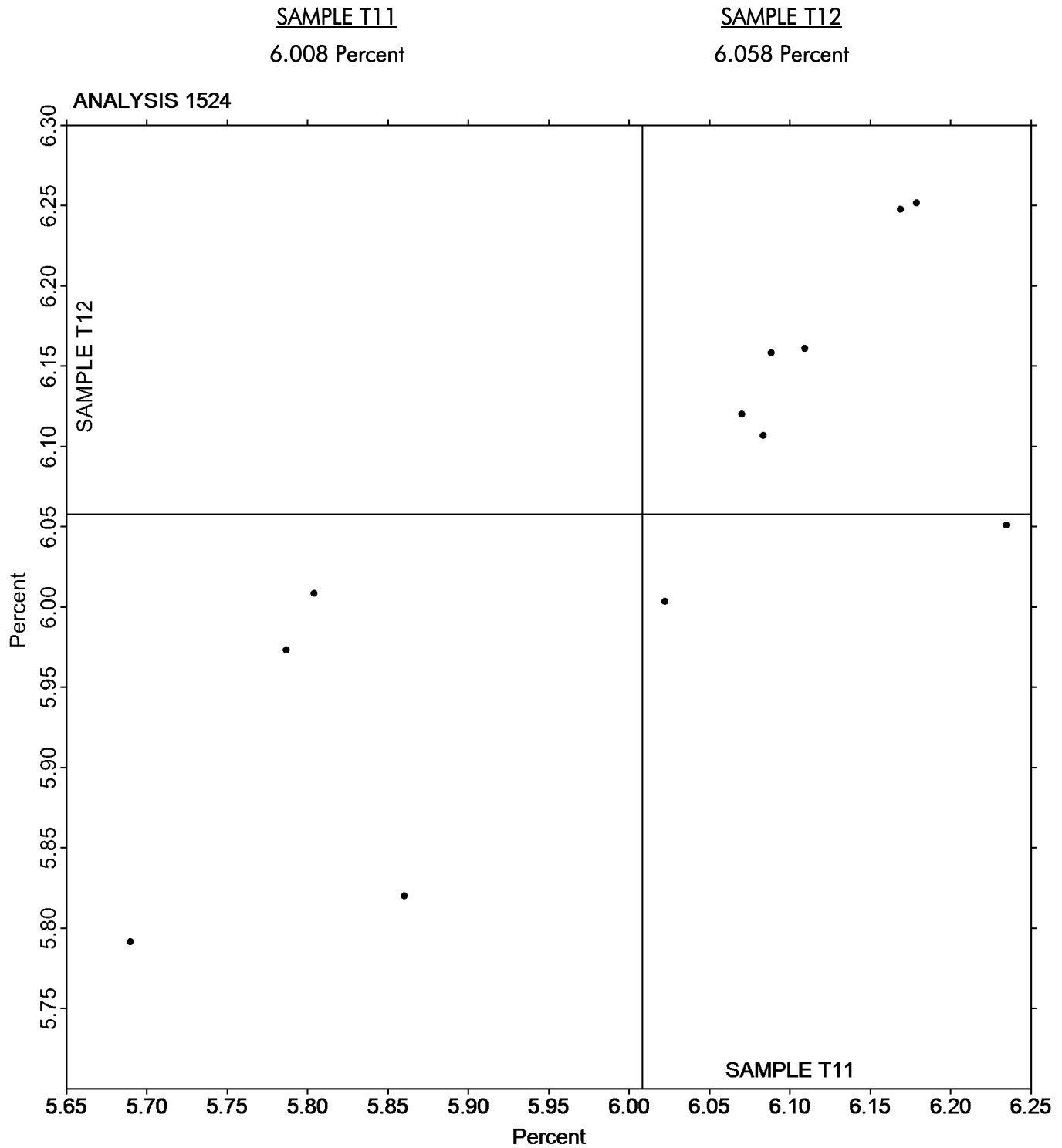
Key to Method Codes Reported by Participants

ED	X-Ray Fluorescence - Energy Dispersive (EDX)	GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)	OE	Spectrometry - Optical Emission (OES)



Analysis 1524

Titanium-based Alloy, ALUMINUM (Al)
ALUMINUM (Al)





Fasteners and Metals Interlaboratory Testing Program

Analysis 1525

Titanium-based Alloy, VANADIUM (V)
VANADIUM (V)

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample T11			Sample T12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2DEEXV		3.702	-0.091	-1.12	3.816	-0.089	-1.01	ED
3RDXUC		3.789	-0.004	-0.05	3.839	-0.065	-0.74	IC
683QM2		3.920	0.127	1.56	4.030	0.125	1.43	GD
8ZVZ4A		3.754	-0.039	-0.48	3.958	0.053	0.61	IC
9AEQ6R		3.812	0.018	0.23	3.929	0.025	0.28	OE
DJMW8W		3.927	0.134	1.65	4.049	0.144	1.64	OE
GZ2CWW		3.811	0.018	0.22	3.750	-0.155	-1.76	OE
LEMDKQ		3.794	0.000	0.01	3.943	0.038	0.44	OE
MH2ATL		3.817	0.023	0.29	3.903	-0.001	-0.01	OE
NFRPBQ		3.670	-0.123	-1.52	3.863	-0.041	-0.47	OE
TR93FN		3.833	0.040	0.49	3.937	0.032	0.37	IC
XE7DAP		3.691	-0.102	-1.26	3.837	-0.067	-0.77	OE

Summary Statistics

	Sample T11		Sample T12	
Grand Means	3.793	Percent	3.905	Percent
Std Dev Btwn Labs	0.081	Percent	0.088	Percent

Samples T11, T12 : Ti 6-4 (Gr. 5), Ti 6-4 (Gr. 5)

Statistics based on 12 of 12 reporting participants

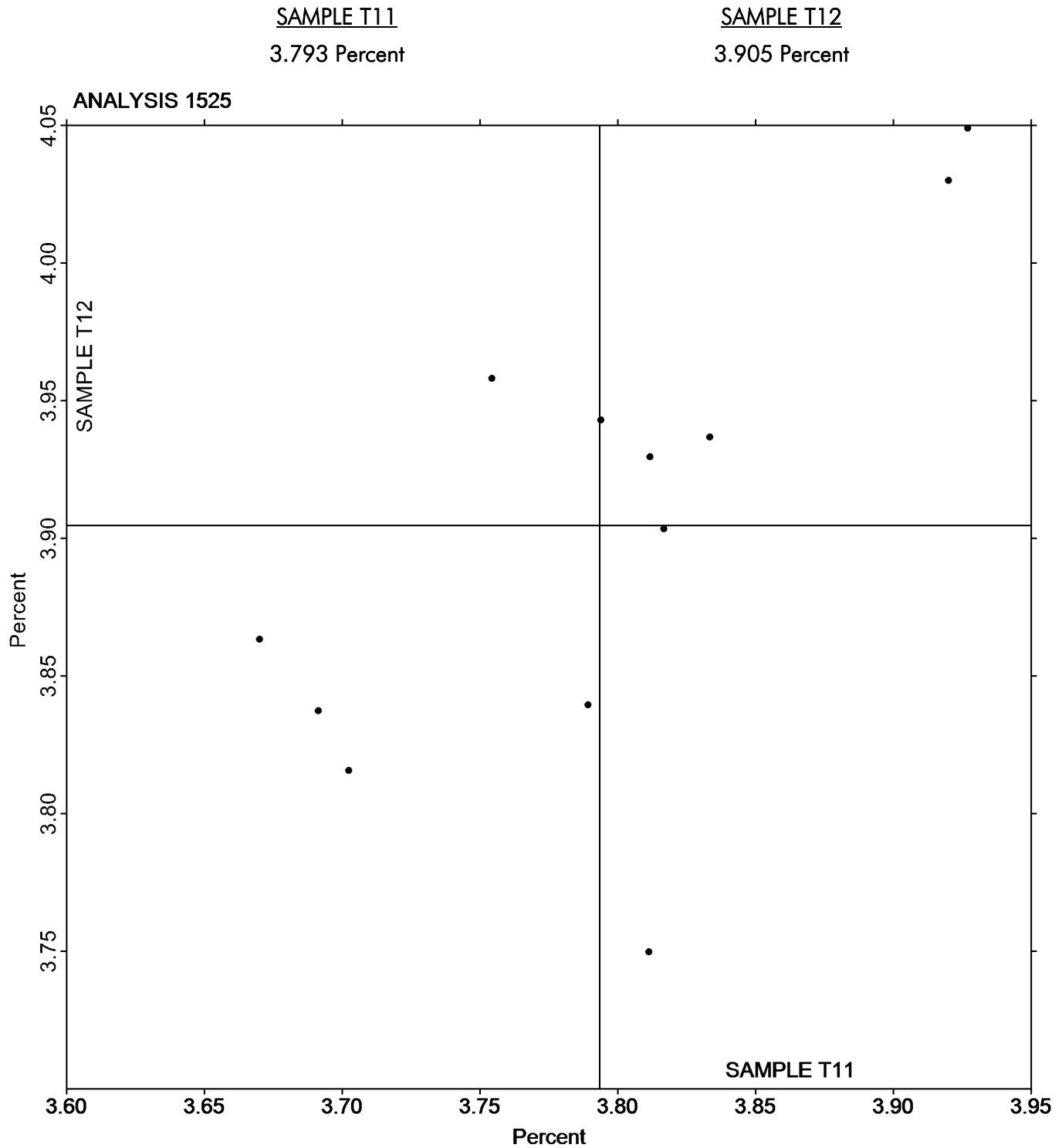
Key to Method Codes Reported by Participants

ED	X-Ray Fluorescence - Energy Dispersive (EDX)	GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)	OE	Spectrometry - Optical Emission (OES)



Analysis 1525

Titanium-based Alloy, VANADIUM (V)
VANADIUM (V)





Fasteners and Metals Interlaboratory Testing Program

Analysis 1526

Titanium-based Alloy, IRON (Fe)
IRON (Fe)

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample T11			Sample T12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2DEEXV		0.1293	-0.0052	-0.17	0.1497	0.0127	2.36	ED
3RDXUC		0.1362	0.0017	0.06	0.1414	0.0044	0.82	IC
683QM2		0.1270	-0.0075	-0.25	0.1400	0.0031	0.57	GD
8ZVZ4A		0.1143	-0.0202	-0.68	0.1333	-0.0036	-0.67	IC
9AEQ6R		0.1292	-0.0053	-0.18	0.1358	-0.0012	-0.22	OE
DJMW8W		0.1253	-0.0092	-0.31	0.1420	0.0051	0.94	OE
GZ2CWW	*	0.2263	0.0918	3.11	0.1353	-0.0016	-0.30	OE
LEMDKQ		0.1200	-0.0145	-0.49	0.1334	-0.0035	-0.65	OE
MH2ATL		0.1300	-0.0045	-0.15	0.1333	-0.0036	-0.67	OE
NFRPBQ		0.1297	-0.0048	-0.16	0.1340	-0.0029	-0.54	OE
TR93FN		0.1267	-0.0078	-0.27	0.1300	-0.0069	-1.29	IC
XE7DAP		0.1197	-0.0148	-0.50	0.1350	-0.0019	-0.36	OE

Summary Statistics

		<u>Sample T11</u>		<u>Sample T12</u>	
Grand Means		0.1345	Percent	0.1369	Percent
Std Dev Btwn Labs		0.0295	Percent	0.0054	Percent

Samples T11, T12 : Ti 6-4 (Gr. 5), Ti 6-4 (Gr. 5)

Statistics based on 12 of 12 reporting participants

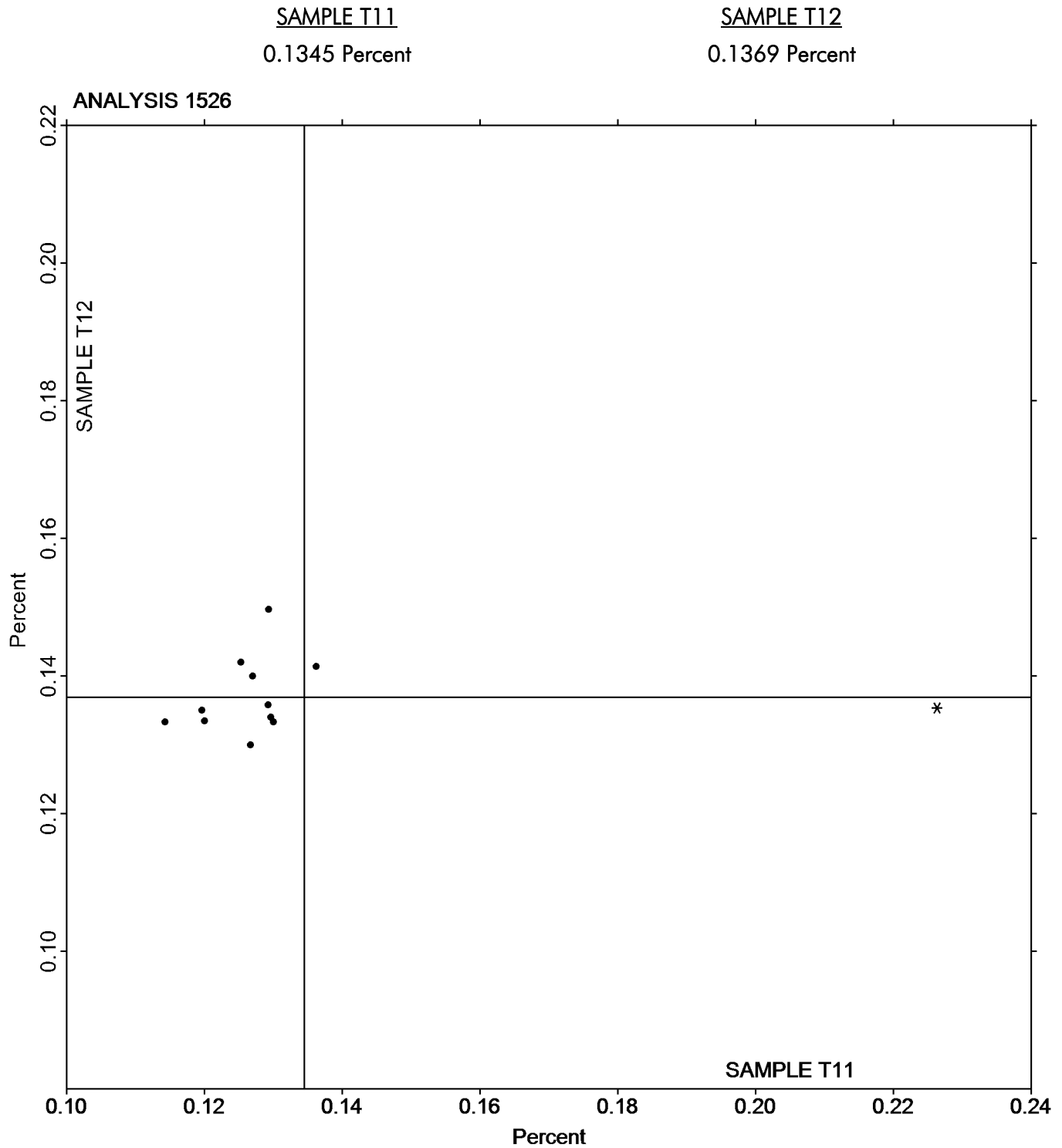
Key to Method Codes Reported by Participants

ED	X-Ray Fluorescence - Energy Dispersive (EDX)	GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)	OE	Spectrometry - Optical Emission (OES)



Analysis 1526

Titanium-based Alloy, IRON (Fe)
IRON (Fe)





Fasteners and Metals Interlaboratory Testing Program

Analysis 1527

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

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample T11			Sample T12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2DEEXV		0.00930	-0.0024	-0.60	0.0107	0.0000	0.01	CI
3RDXUC		0.00950	-0.0022	-0.55	0.00693	-0.0038	-0.80	CI
683QM2		0.0107	-0.0010	-0.26	0.00770	-0.0030	-0.63	GD
7FRTFC		0.00892	-0.0028	-0.69	0.00834	-0.0023	-0.50	CO
8ZVZ4A		0.0218	0.0100	2.45	0.0213	0.0106	2.26	CI
9AEQ6R		0.0108	-0.0009	-0.22	0.0105	-0.0002	-0.03	OE
GZ2CWW		0.0184	0.0067	1.63	0.0188	0.0081	1.73	CO
LEMDKQ		0.00929	-0.0025	-0.60	0.00761	-0.0031	-0.65	OE
MH2ATL		0.0127	0.0009	0.23	0.0123	0.0016	0.35	CI
NFRPBQ		0.00975	-0.0020	-0.49	0.00796	-0.0027	-0.58	CI
TR93FN		0.00933	-0.0024	-0.59	0.00717	-0.0035	-0.75	CI
XE7DAP		0.0105	-0.0013	-0.31	0.00873	-0.0020	-0.41	OE

Summary Statistics

	Sample T11		Sample T12	
Grand Means	0.0117	Percent	0.0107	Percent
Std Dev Btwn Labs	0.0041	Percent	0.0047	Percent

Samples T11, T12 : Ti 6-4 (Gr. 5), Ti 6-4 (Gr. 5)

Statistics based on 12 of 12 reporting participants

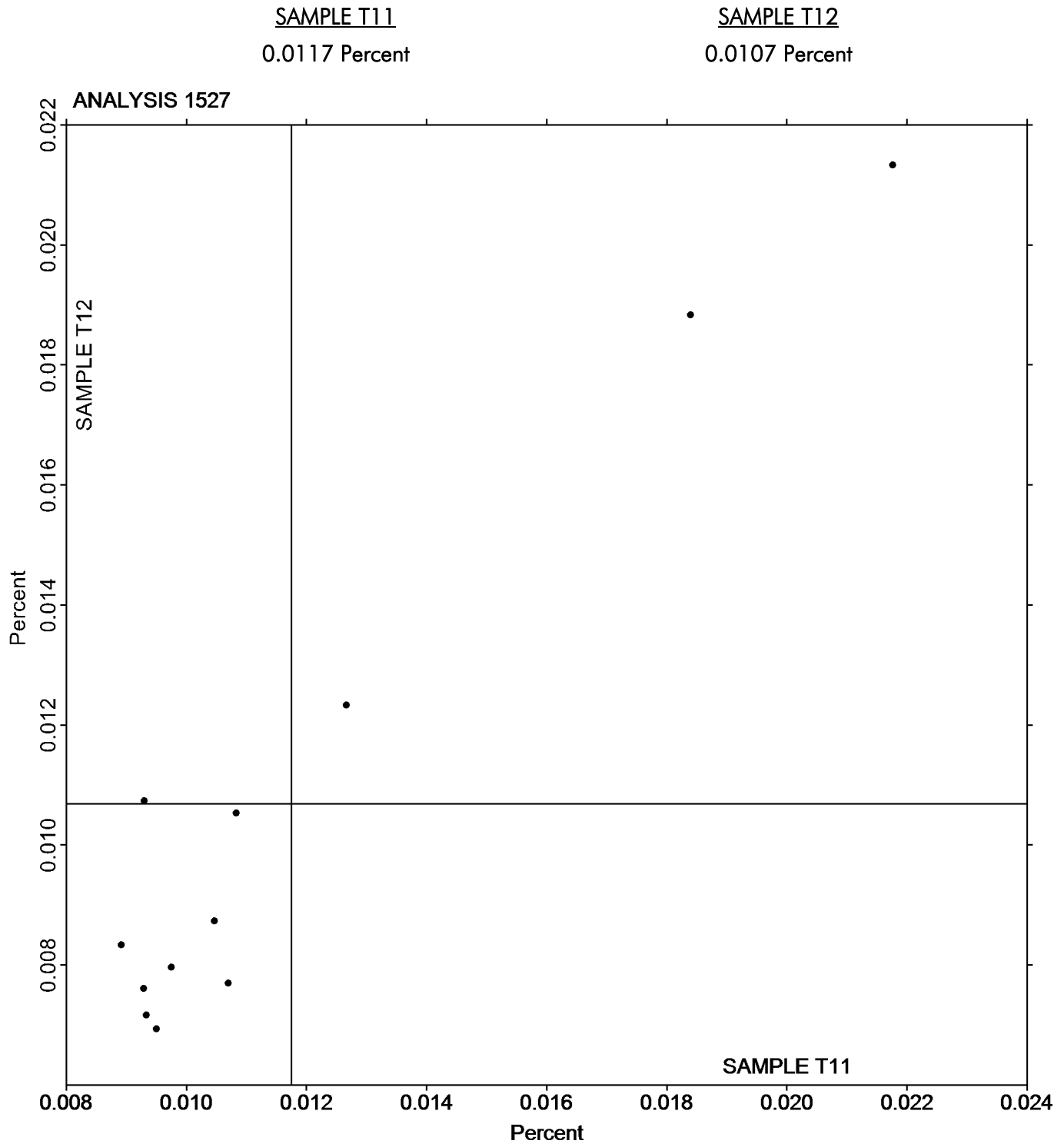
Key to Method Codes Reported by Participants

CI	Combustion / IR	CO	Combustion
GD	Spectrometry - Glow Discharge (GDS)	OE	Spectrometry - Optical Emission (OES)



Analysis 1527

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



**Fasteners and Metals Interlaboratory Testing Program****Cycle 151**
3rd Qtr 2025**Analysis 1529****Titanium-based Alloy, ZIRCONIUM (Zr)**
ZIRCONIUM (Zr)

WebCode	Data Flag	Sample T11			Sample T12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2DEEXV		0.0793	0.0201	0.72	0.0166	0.0016	0.29	ED
3RDXUC		0.0768	0.0175	0.63	0.0176	0.0026	0.47	IC
683QM2		0.0856	0.0263	0.94	0.0250	0.0100	1.82	GD
8ZVZ4A		0.0693	0.0101	0.36	0.0158	0.0008	0.15	IC
9AEQ6R		0.00993	-0.0493	-1.77	0.00483	-0.0102	-1.85	OE
GZ2CWW		0.0150	-0.0443	-1.59	0.0140	-0.0010	-0.18	OE
LEMDKQ		0.0755	0.0162	0.58	0.0180	0.0030	0.54	OE
MH2ATL	M	0.0750	0.0157	0.56	No Data Reported			OE
NFRPBQ		0.0376	-0.0217	-0.78	0.00853	-0.0065	-1.18	OE
TR93FN		0.0777	0.0184	0.66	0.0167	0.0017	0.30	IC
XE7DAP		0.0660	0.0067	0.24	0.0131	-0.0019	-0.35	OE

Summary Statistics

	Sample T11		Sample T12	
Grand Means	0.0593	Percent	0.0150	Percent
Std Dev Btwn Labs	0.0279	Percent	0.0055	Percent

Samples T11, T12 : Ti 6-4 (Gr. 5), Ti 6-4 (Gr. 5)

Statistics based on 10 of 11 reporting participants

Key to Method Codes Reported by Participants

ED X-Ray Fluorescence - Energy Dispersive (EDX) GD Spectrometry - Glow Discharge (GDS)
IC Spectrometry - Inductively Coupled Plasma (ICP) OE Spectrometry - Optical Emission (OES)

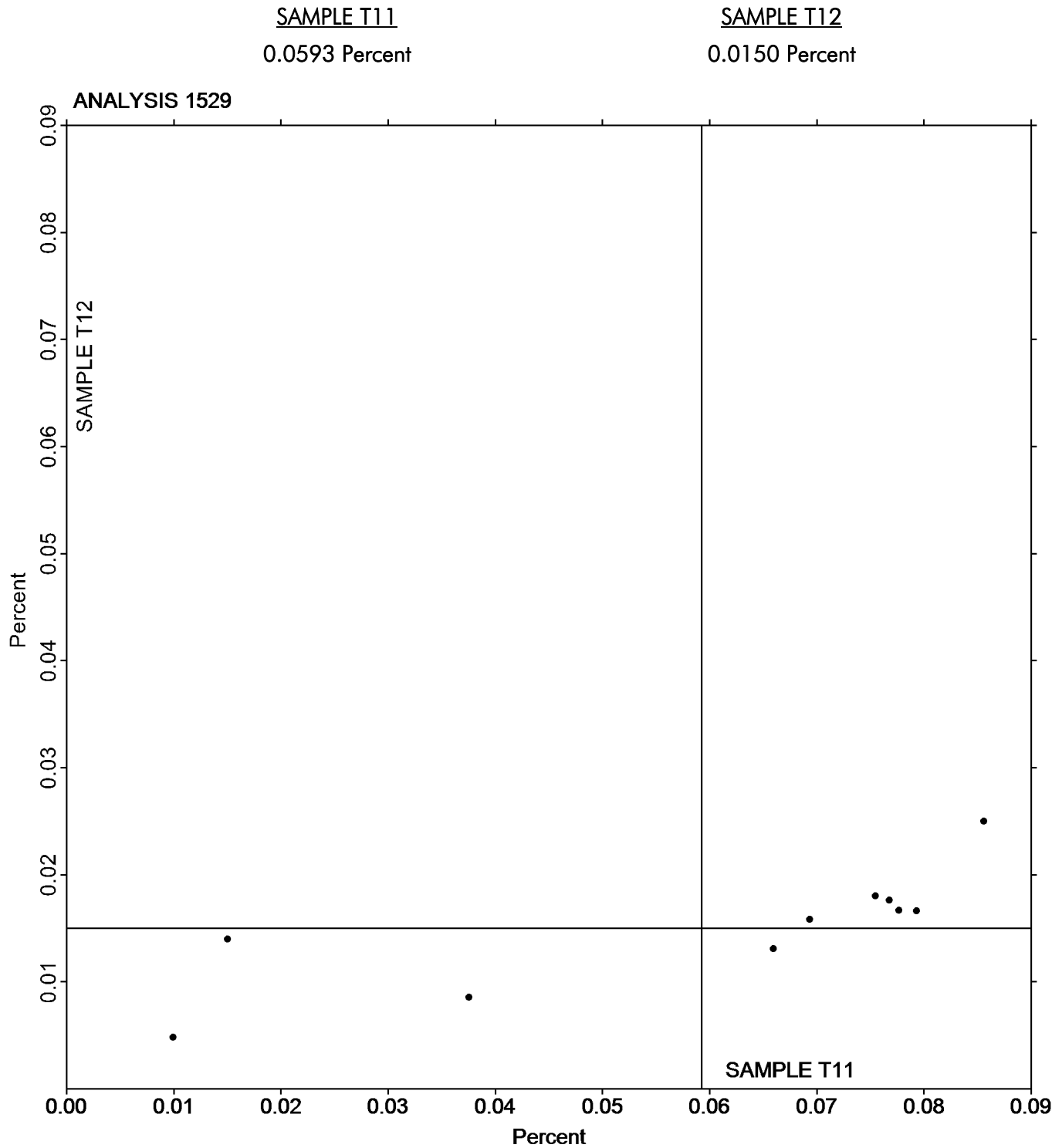
Comments on Assigned Data Flags for Test #1529

MH2ATL (M) - Participant did not submit data for sample T12.



Analysis 1529

Titanium-based Alloy, ZIRCONIUM (Zr)
ZIRCONIUM (Zr)





Fasteners and Metals Interlaboratory Testing Program

Analysis 1600

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

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24CE4M		0.4151	-0.0049	-0.61	0.4145	0.0017	0.16	OE
37F9QJ		0.4210	0.0010	0.13	0.4247	0.0118	1.15	XX
3DJ93M		0.4280	0.0080	1.00	0.4267	0.0138	1.35	OE
3TUWAV		0.4220	0.0020	0.25	0.4130	0.0001	0.01	XX
3W9UDC		0.4100	-0.0100	-1.23	0.4167	0.0038	0.37	OE
444Y4R		0.4215	0.0015	0.19	0.4084	-0.0045	-0.44	CI
4AQ2TA		0.4325	0.0125	1.55	0.4139	0.0010	0.10	OE
4F3M7M	X	0.4700	0.0500	6.19	0.4600	0.0471	4.60	GD
4GEGN9		0.4100	-0.0100	-1.23	0.3957	-0.0172	-1.68	OE
4HNREK		0.4123	-0.0077	-0.95	0.4045	-0.0084	-0.81	OE
4HPJA8	X	0.9370	0.5170	63.98	0.8990	0.4861	47.39	GD
4KR4L7		0.3990	-0.0210	-2.59	0.3930	-0.0199	-1.94	XX
4NRDP9		0.4211	0.0012	0.15	0.4140	0.0012	0.11	OE
4P4ARR		0.4163	-0.0036	-0.45	0.4240	0.0111	1.09	OE
62D6N3		0.4173	-0.0026	-0.32	0.4150	0.0021	0.21	OE
64F7GX		0.4167	-0.0033	-0.41	0.4067	-0.0062	-0.60	CI
683QM2		0.4260	0.0060	0.75	0.4180	0.0051	0.50	GD
6C8TCP		0.4230	0.0031	0.38	0.4143	0.0014	0.14	IR
6JW26W		0.4210	0.0010	0.13	0.4010	-0.0119	-1.16	OE
6NQXV9		0.4250	0.0050	0.62	0.4200	0.0071	0.70	CO
6VM2CQ		0.4307	0.0107	1.33	0.4257	0.0128	1.25	XX
7AK97L		0.4274	0.0075	0.93	0.4083	-0.0046	-0.45	CI
7EX7HE		0.4223	0.0024	0.29	0.4137	0.0008	0.08	OE
7ZX9W4		0.4053	-0.0146	-1.81	0.3950	-0.0179	-1.74	CO
82MT3Y		0.4013	-0.0186	-2.30	0.3870	-0.0259	-2.52	CO
8AZ3AT		0.4193	-0.0006	-0.08	0.4007	-0.0122	-1.19	OE
8E8HTP		0.4290	0.0090	1.12	0.4210	0.0081	0.79	OE
8H8UPN		0.4183	-0.0016	-0.20	0.4177	0.0048	0.47	OE
8HB94B		0.4210	0.0010	0.13	0.4010	-0.0119	-1.16	CI
8NGZ92		0.4291	0.0092	1.14	0.4268	0.0140	1.36	OE
8NZPM2		0.4183	-0.0016	-0.20	0.4123	-0.0005	-0.05	OE
94LQNC		0.4193	-0.0006	-0.08	0.4157	0.0028	0.28	OE
94PC7X		0.4197	-0.0003	-0.04	0.4117	-0.0012	-0.12	OE
98L3KC	X	0.4540	0.0340	4.21	0.4393	0.0265	2.58	OE
9UZIP93		0.4327	0.0127	1.57	0.4210	0.0081	0.79	CI
9YX8MG		0.4200	0.0000	0.01	0.4130	0.0001	0.01	OE
A2J7HQ		0.4233	0.0034	0.41	0.4110	-0.0018	-0.18	OE
AVQ9PU		0.4170	-0.0030	-0.37	0.4093	-0.0035	-0.34	CI
AW6E76		0.4167	-0.0033	-0.41	0.4017	-0.0112	-1.09	XX
B4JM7K		0.4170	-0.0030	-0.37	0.4213	0.0085	0.83	OE
BJDALX		0.4140	-0.0060	-0.74	0.4020	-0.0109	-1.06	OE
BMCG2G		0.4053	-0.0146	-1.81	0.4033	-0.0095	-0.93	GD
BUZ6X8		0.4147	-0.0053	-0.65	0.4133	0.0005	0.05	OE
C6PKYT		0.4190	-0.0010	-0.12	0.4143	0.0015	0.14	OE
C9ABMC		0.4218	0.0019	0.23	0.4145	0.0016	0.16	OE
CALAEZ		0.4102	-0.0098	-1.21	0.3969	-0.0159	-1.55	OE
CE2FFF		0.4364	0.0165	2.04	0.4197	0.0068	0.67	CI

**Fasteners and Metals Interlaboratory Testing Program****Cycle 151**
3rd Qtr 2025**Analysis 1600****Carbon & Low Alloy Steel, CARBON (C)**
CARBON (C)

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
CPXNYJ		0.4197	-0.0003	-0.04	0.4133	0.0005	0.05	OE
D3378X		0.4257	0.0057	0.71	0.4077	-0.0052	-0.51	OE
D3GPUF		0.4152	-0.0048	-0.59	0.4174	0.0045	0.44	OE
D8W3WN		0.4100	-0.0100	-1.23	0.3977	-0.0152	-1.48	OE
DCRRFG		0.4226	0.0027	0.33	0.4209	0.0080	0.78	OE
DHRHDC		0.4152	-0.0047	-0.58	0.4174	0.0046	0.45	OE
DJMW8W		0.4093	-0.0106	-1.31	0.3883	-0.0245	-2.39	OE
EBPLCR		0.4083	-0.0116	-1.44	0.4133	0.0005	0.05	OE
ERB9MV		0.4223	0.0024	0.29	0.3987	-0.0142	-1.38	CO
F2GAWA		0.4180	-0.0020	-0.24	0.4147	0.0018	0.18	CI
FKADDA		0.4176	-0.0024	-0.30	0.4236	0.0108	1.05	OE
FL2BLG		0.4234	0.0035	0.43	0.4216	0.0087	0.85	XX
FVTNPM		0.4173	-0.0026	-0.32	0.4090	-0.0039	-0.38	GD
G9A9D9		0.4163	-0.0036	-0.45	0.4037	-0.0092	-0.90	CO
GCRBKE		0.4267	0.0067	0.83	0.4333	0.0205	2.00	OE
GJTH79		0.4237	0.0037	0.46	0.4360	0.0231	2.26	OE
GKM7MJ		0.4217	0.0017	0.21	0.4140	0.0011	0.11	OE
GQCN4F		0.4057	-0.0143	-1.77	0.4117	-0.0012	-0.12	OE
GYNY2L		0.4233	0.0034	0.42	0.4033	-0.0095	-0.93	CI
GZ2CWW	X	0.5016	0.0817	10.11	0.4461	0.0332	3.24	CO
H4VTLW	X	0.4743	0.0544	6.73	0.4460	0.0331	3.23	OE
H76TNH		0.4227	0.0027	0.34	0.4183	0.0055	0.53	OE
H98Q2V		0.4230	0.0030	0.38	0.4127	-0.0002	-0.02	OE
HFTT8L	*	0.3963	-0.0236	-2.92	0.3977	-0.0152	-1.48	OE
HTE22T		0.4217	0.0017	0.21	0.4061	-0.0068	-0.66	OE
HV7XQM		0.4213	0.0014	0.17	0.4193	0.0065	0.63	OE
J7JEZ6		0.4267	0.0067	0.83	0.4060	-0.0069	-0.67	CO
JDLQW2		0.4223	0.0024	0.29	0.4160	0.0031	0.31	OE
JGK3R2		0.4133	-0.0066	-0.82	0.4067	-0.0062	-0.60	XX
JPBR93		0.4203	0.0004	0.05	0.4135	0.0007	0.07	OE
KFZPKG		0.4180	-0.0020	-0.24	0.4200	0.0071	0.70	OE
KHRKEP		0.4120	-0.0080	-0.98	0.4110	-0.0019	-0.18	OE
KKDNWA		0.4191	-0.0009	-0.11	0.4144	0.0015	0.15	OE
KKEHH2		0.4260	0.0060	0.75	0.3950	-0.0179	-1.74	OE
KRDURC		0.4107	-0.0093	-1.15	0.4153	0.0025	0.24	GD
KT7Y9Q	X	0.4078	-0.0121	-1.50	0.3770	-0.0359	-3.49	CI
L84ENQ		0.4257	0.0057	0.71	0.4147	0.0018	0.18	CI
LDRVHP		0.4221	0.0021	0.26	0.4063	-0.0066	-0.64	CI
LE23JW		0.4199	-0.0001	-0.01	0.4256	0.0128	1.25	OE
LEMDKQ		0.4196	-0.0003	-0.04	0.4137	0.0008	0.08	OE
LNMA8A		0.4185	-0.0014	-0.18	0.4176	0.0047	0.46	OE
LZK4GG		0.4235	0.0035	0.43	0.4130	0.0002	0.02	OE
M378LT		0.4247	0.0047	0.58	0.4183	0.0055	0.53	OE
MDNUT9		0.4100	-0.0100	-1.23	0.4100	-0.0029	-0.28	XX
MR9AW9		0.4210	0.0010	0.13	0.4273	0.0145	1.41	OE
NCBF2T		0.4291	0.0091	1.13	0.4214	0.0085	0.83	XX
NTUFQ4		0.4223	0.0023	0.29	0.4103	-0.0025	-0.25	IR



Fasteners and Metals Interlaboratory Testing Program

Analysis 1600

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

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
NZG924		0.4174	-0.0025	-0.31	0.4093	-0.0035	-0.34	OE
PAZVLG		0.4381	0.0181	2.25	0.4371	0.0242	2.36	OE
PC8CRE		0.4093	-0.0106	-1.31	0.4117	-0.0012	-0.12	OE
PKXZFP		0.4100	-0.0100	-1.23	0.3850	-0.0279	-2.72	CO
PNGUNW		0.4047	-0.0153	-1.89	0.3923	-0.0205	-2.00	OE
PNLAX4		0.4233	0.0034	0.42	0.4057	-0.0072	-0.70	CI
QAFG3K		0.4203	0.0004	0.05	0.4217	0.0088	0.86	OE
QC2FXV		0.4120	-0.0080	-0.98	0.4113	-0.0015	-0.15	OE
QERJQ3		0.4199	-0.0001	-0.01	0.4178	0.0049	0.48	OE
QGVECQ		0.4213	0.0013	0.17	0.4169	0.0041	0.40	OE
QHLKLP		0.4300	0.0100	1.24	0.4267	0.0138	1.35	OE
QP8DZA		0.4170	-0.0030	-0.37	0.4070	-0.0059	-0.57	OE
QPQGE2		0.4237	0.0037	0.46	0.4040	-0.0089	-0.86	XX
RAPZ4U		0.4400	0.0200	2.48	0.4333	0.0205	2.00	OE
RATMG2		0.4190	-0.0010	-0.12	0.4230	0.0101	0.99	OE
RB699N		0.4273	0.0074	0.91	0.4183	0.0055	0.53	GD
RBKJ7V		0.4108	-0.0091	-1.13	0.4094	-0.0034	-0.34	OE
RE9V8L	*	0.4041	-0.0159	-1.96	0.3830	-0.0298	-2.91	OE
RG99NK		0.4210	0.0010	0.13	0.4080	-0.0049	-0.47	CI
RP3DGL		0.4189	-0.0010	-0.13	0.4166	0.0037	0.36	OE
RT4KQA		0.4200	0.0000	0.01	0.4030	-0.0099	-0.96	XX
T38RFX		0.4040	-0.0160	-1.97	0.4017	-0.0112	-1.09	OE
T6E8PN		0.4189	-0.0011	-0.13	0.3993	-0.0136	-1.32	CI
T8FEQD		0.4288	0.0089	1.10	0.4302	0.0173	1.69	OE
TJXUW2	*	0.4430	0.0230	2.85	0.4263	0.0135	1.31	OE
TLZW HW		0.4340	0.0140	1.74	0.4253	0.0125	1.22	OE
TV9BKX		0.4233	0.0034	0.42	0.4203	0.0075	0.73	OE
U3346W		0.4220	0.0020	0.25	0.4152	0.0023	0.23	XX
ULWPUU		0.4299	0.0099	1.23	0.4213	0.0085	0.83	CI
URKA3G	X	0.5840	0.1641	20.30	0.5636	0.1508	14.70	XX
UYKWRV		0.4137	-0.0063	-0.78	0.4063	-0.0065	-0.64	DR
V3W6JD		0.4280	0.0080	1.00	0.4200	0.0071	0.70	CI
VA2XPG		0.4208	0.0008	0.10	0.4117	-0.0011	-0.11	OE
VFK4HG		0.4313	0.0114	1.41	0.4090	-0.0039	-0.38	OE
VNDJ6Z		0.4237	0.0037	0.46	0.4120	-0.0009	-0.08	OE
VQPYY2		0.4133	-0.0066	-0.82	0.4200	0.0071	0.70	OE
VTULC7		0.4197	-0.0003	-0.04	0.4127	-0.0002	-0.02	OE
VU6LC7		0.4193	-0.0006	-0.08	0.4143	0.0015	0.14	XX
VYWZTZ		0.4333	0.0134	1.66	0.4300	0.0171	1.67	OE
WGBPFB		0.4120	-0.0080	-0.98	0.4127	-0.0002	-0.02	OE
WKXBEF		0.4180	-0.0020	-0.24	0.4133	0.0005	0.05	OE
WRFGFT		0.4130	-0.0070	-0.86	0.4147	0.0018	0.18	OE
WVFM Y6		0.4267	0.0067	0.83	0.4167	0.0038	0.37	AE
WXYXPH		0.4250	0.0050	0.62	0.4100	-0.0029	-0.28	CI
X7RAKB		0.4143	-0.0056	-0.70	0.4210	0.0081	0.79	OE
XGUPBF		0.4189	-0.0010	-0.13	0.4306	0.0177	1.73	OE
XRQZEG		0.4190	-0.0010	-0.12	0.4053	-0.0075	-0.73	CI



Fasteners and Metals Interlaboratory Testing Program

Cycle 151
3rd Qtr 2025

Analysis 1600

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

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
XVCKNQ		0.4240	0.0040	0.50	0.4147	0.0018	0.18	CO
XVDDJD		0.4347	0.0147	1.82	0.4167	0.0038	0.37	OE
XY99ZR		0.4227	0.0027	0.34	0.4147	0.0018	0.18	DR
XZ8A8J		0.4133	-0.0066	-0.82	0.4107	-0.0022	-0.21	DR
Y8Z2RH		0.4389	0.0190	2.35	0.4350	0.0222	2.16	OE
YCWTW9		0.4210	0.0010	0.13	0.4140	0.0011	0.11	CI
YQVLLW		0.4310	0.0110	1.37	0.4250	0.0121	1.18	GD
Z99FVH		0.4263	0.0064	0.79	0.4090	-0.0039	-0.38	DR
ZCAKF3		0.4085	-0.0115	-1.42	0.3970	-0.0159	-1.55	OE
ZZF7PT		0.4123	-0.0077	-0.95	0.3959	-0.0170	-1.65	CO

Summary Statistics

	Sample L11		Sample L12	
Grand Means	0.4200	Percent	0.4129	Percent
Std Dev Btwn Labs	0.0081	Percent	0.0103	Percent

Samples L11, L12 : AISI 4140, AISI 4140

Statistics based on 144 of 151 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)	IR	IR (Absorption / Detection)
OE	Spectrometry - Optical Emission (OES)	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1600

4F3M7M (X) - Data for both samples are high.

4HPJA8 (X) - Extreme data.

98L3KC (X) - Data for sample L11 are high.

GZ2CWW (X) - Data for both samples are high. Inconsistent within the determinations of sample L11.

H4VTLW (X) - Data for both samples are high. Inconsistent within the determinations of both samples.

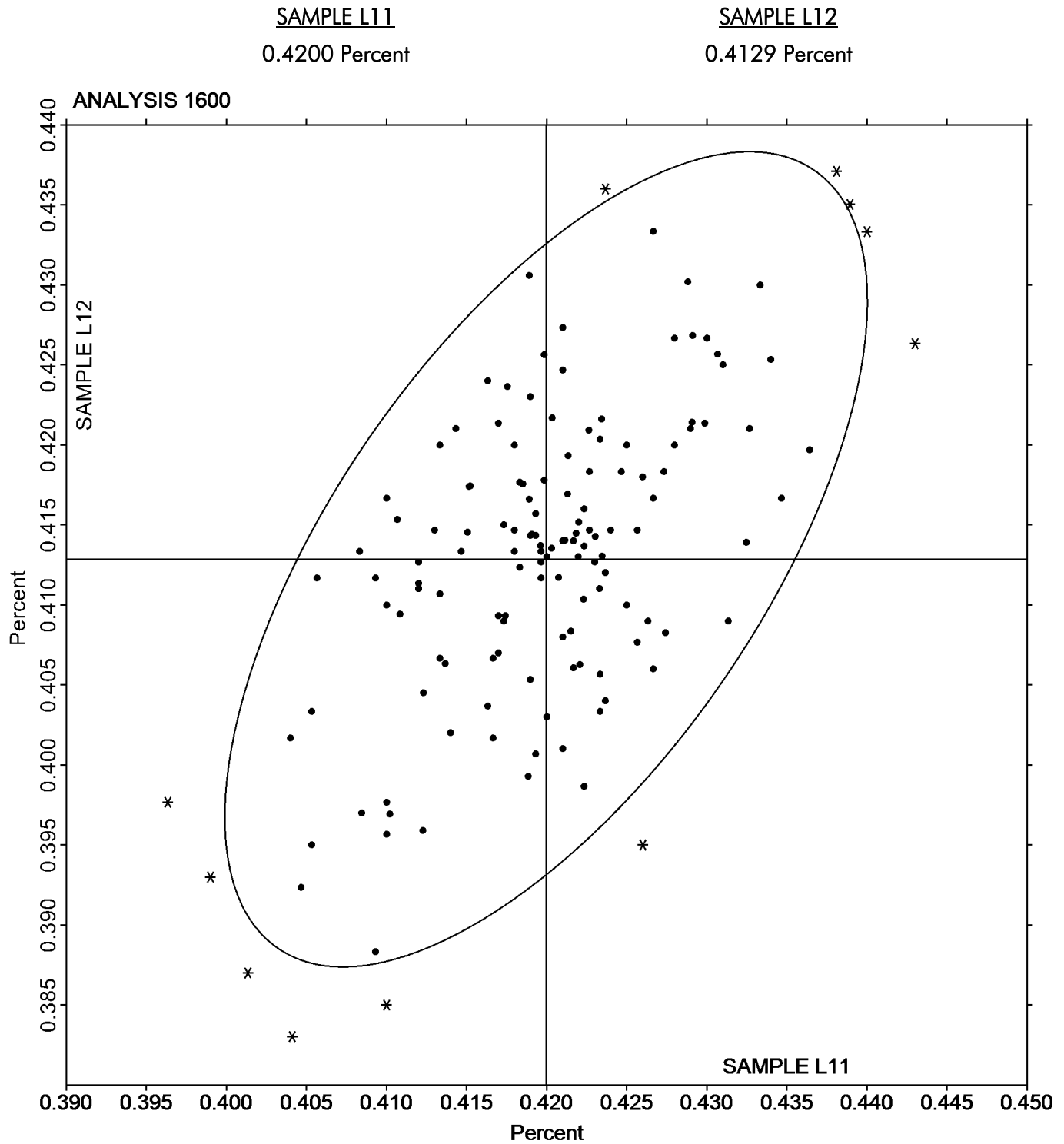
KT7Y9Q (X) - Data for sample L12 are low.

URKA3G (X) - Data for both samples are high.



Analysis 1600

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



**Fasteners and Metals Interlaboratory Testing Program****Cycle 151**
3rd Qtr 2025**Analysis 1601****Carbon & Low Alloy Steel, MANGANESE (Mn)**
MANGANESE (Mn)

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24CE4M		0.9161	-0.0134	-1.36	0.8900	-0.0129	-1.26	OE
2BCQ7C		0.9340	0.0045	0.46	0.8973	-0.0056	-0.54	XX
324LPF		0.9200	-0.0095	-0.96	0.8867	-0.0162	-1.58	XX
37F9QJ		0.9403	0.0109	1.10	0.9167	0.0138	1.34	XX
3DJ93M		0.9433	0.0139	1.41	0.9230	0.0201	1.96	OE
3TUWAV		0.9081	-0.0214	-2.17	0.8842	-0.0187	-1.82	XX
3W9UDC		0.9320	0.0025	0.26	0.9070	0.0041	0.40	OE
444Y4R		0.9305	0.0011	0.11	0.9073	0.0044	0.43	IC
4AQ2TA		0.9433	0.0139	1.41	0.9076	0.0047	0.46	OE
4F3M7M	X	0.8833	-0.0461	-4.68	0.8567	-0.0462	-4.51	GD
4GEGN9		0.9277	-0.0018	-0.18	0.8970	-0.0059	-0.57	OE
4HNREK		0.9404	0.0109	1.11	0.9135	0.0106	1.03	OE
4HPJA8	X	1.210	0.2805	28.44	1.220	0.3171	30.93	GD
4KR4L7	X	0.9570	0.0275	2.79	0.9413	0.0384	3.75	XX
4NRDP9		0.9333	0.0039	0.39	0.9113	0.0084	0.82	OE
4P4ARR		0.9187	-0.0108	-1.09	0.8890	-0.0139	-1.36	OE
4RTJ4E		0.9203	-0.0091	-0.92	0.8870	-0.0159	-1.55	XX
62D6N3		0.9510	0.0215	2.18	0.9203	0.0174	1.70	OE
64F7GX		0.9283	-0.0011	-0.11	0.9027	-0.0002	-0.02	IC
683QM2		0.9290	-0.0005	-0.05	0.9080	0.0051	0.50	GD
6JW26W		0.9327	0.0032	0.33	0.9033	0.0004	0.04	OE
6NQXV9		0.9300	0.0005	0.06	0.9010	-0.0019	-0.18	OE
6VM2CQ		0.9400	0.0105	1.07	0.9193	0.0164	1.60	XX
7AK97L		0.9238	-0.0056	-0.57	0.8944	-0.0085	-0.83	IC
7EX7HE		0.9317	0.0022	0.22	0.9017	-0.0012	-0.12	OE
7WDH9J		0.9290	-0.0005	-0.05	0.9033	0.0004	0.04	XX
7ZX9W4		0.9180	-0.0115	-1.16	0.9003	-0.0026	-0.25	GD
82MT3Y		0.9047	-0.0248	-2.51	0.8767	-0.0262	-2.56	AE
8AZ3AT		0.9193	-0.0101	-1.03	0.8880	-0.0149	-1.45	OE
8E8HTP		0.9303	0.0009	0.09	0.9040	0.0011	0.11	OE
8H8UPN		0.9180	-0.0115	-1.16	0.8953	-0.0076	-0.74	OE
8HB94B		0.9273	-0.0021	-0.22	0.8997	-0.0032	-0.31	IC
8NGZ92		0.9322	0.0027	0.28	0.9109	0.0080	0.78	OE
8NZPM2		0.9347	0.0052	0.53	0.9073	0.0044	0.43	OE
94LQNC		0.9225	-0.0069	-0.70	0.8999	-0.0030	-0.30	OE
94PC7X		0.9343	0.0049	0.49	0.9050	0.0021	0.21	OE
98L3KC		0.9122	-0.0173	-1.75	0.8924	-0.0105	-1.02	OE
9UZIP93		0.9180	-0.0115	-1.16	0.8930	-0.0099	-0.97	IC
9YX8MG	X	0.9320	0.0025	0.26	0.8743	-0.0286	-2.79	OE
A2J7HQ		0.9339	0.0045	0.45	0.9109	0.0080	0.78	OE
AVQ9PU		0.9533	0.0239	2.42	0.9300	0.0271	2.64	OE
AW6E76		0.9037	-0.0258	-2.61	0.8830	-0.0199	-1.94	XX
B4JM7K		0.9107	-0.0188	-1.90	0.8890	-0.0139	-1.36	OE
BJDALX		0.9240	-0.0055	-0.55	0.8960	-0.0069	-0.67	OE
BMCG2G		0.9340	0.0045	0.46	0.9200	0.0171	1.67	GD
BUZ6X8		0.9400	0.0105	1.07	0.9133	0.0104	1.02	OE
C6PKYT		0.9260	-0.0035	-0.35	0.9050	0.0021	0.21	OE



Fasteners and Metals Interlaboratory Testing Program

Analysis 1601

Carbon & Low Alloy Steel, MANGANESE (Mn)
MANGANESE (Mn)

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
C9ABMC		0.9183	-0.0112	-1.13	0.8876	-0.0153	-1.49	OE
CALAEZ	*	0.9315	0.0021	0.21	0.8864	-0.0165	-1.61	OE
CE2FFF		0.9487	0.0192	1.95	0.9273	0.0244	2.38	OE
CPXNYJ		0.9520	0.0225	2.29	0.9193	0.0164	1.60	OE
D3378X		0.9360	0.0065	0.66	0.9173	0.0144	1.41	OE
D3GPUF		0.9256	-0.0039	-0.39	0.9036	0.0007	0.07	OE
D8W3WN		0.9470	0.0175	1.78	0.9123	0.0094	0.92	OE
DCRRFG		0.9233	-0.0061	-0.62	0.9048	0.0019	0.19	OE
DHRHDC		0.9344	0.0049	0.50	0.8976	-0.0053	-0.51	OE
DJMW8W		0.9373	0.0079	0.80	0.9037	0.0008	0.08	OE
EBPLCR	*	0.9150	-0.0145	-1.47	0.9103	0.0074	0.73	OE
ERB9MV	X	0.8970	-0.0325	-3.29	0.8447	-0.0582	-5.68	IC
F2GAWA		0.9137	-0.0158	-1.60	0.8910	-0.0119	-1.16	IC
FKADDA		0.9282	-0.0013	-0.13	0.8966	-0.0063	-0.61	OE
FL2BLG		0.9216	-0.0079	-0.80	0.9117	0.0088	0.86	XX
FVTNPM	*	0.9470	0.0175	1.78	0.8897	-0.0132	-1.29	GD
G9A9D9	*	0.9100	-0.0195	-1.97	0.9100	0.0071	0.69	OE
GCRBKE		0.9267	-0.0028	-0.28	0.9100	0.0071	0.69	OE
GJTH79	*	0.9253	-0.0041	-0.42	0.9190	0.0161	1.57	OE
GKM7MJ		0.9270	-0.0025	-0.25	0.8937	-0.0092	-0.90	OE
GQCN4F		0.9200	-0.0095	-0.96	0.8860	-0.0169	-1.65	OE
GYNY2L		0.9133	-0.0161	-1.63	0.8900	-0.0129	-1.26	OE
GZ2CWW	X	0.8857	-0.0438	-4.44	0.8970	-0.0059	-0.57	OE
H4VTLW		0.9313	0.0019	0.19	0.9027	-0.0002	-0.02	OE
H76TNH		0.9243	-0.0051	-0.52	0.8927	-0.0102	-1.00	OE
H98Q2V		0.9317	0.0022	0.22	0.8963	-0.0066	-0.64	OE
HFTT8L		0.9100	-0.0195	-1.97	0.8847	-0.0182	-1.78	OE
HTE22T		0.9289	-0.0006	-0.06	0.8976	-0.0053	-0.52	IC
HV7XQM		0.9360	0.0065	0.66	0.9073	0.0044	0.43	OE
J7JEZ6		0.9333	0.0039	0.39	0.8943	-0.0086	-0.84	OE
JDLQW2	X	0.9617	0.0322	3.27	0.9317	0.0288	2.81	OE
JGK3R2		0.9333	0.0039	0.39	0.9000	-0.0029	-0.28	XX
JPBR93		0.9341	0.0047	0.47	0.9055	0.0026	0.26	OE
KFZPKG		0.9340	0.0045	0.46	0.9117	0.0088	0.86	OE
KHRKEP		0.9390	0.0095	0.97	0.9180	0.0151	1.47	OE
KKDNWA		0.9307	0.0012	0.13	0.9065	0.0036	0.35	OE
KKEHH2		0.9120	-0.0175	-1.77	0.8803	-0.0226	-2.20	OE
KL8D6H		0.9360	0.0065	0.66	0.9030	0.0001	0.01	WD
KRDURC	X	0.8873	-0.0421	-4.27	0.8797	-0.0232	-2.27	XX
KT7Y9Q	X	0.9627	0.0333	3.37	0.9281	0.0252	2.46	IC
L84ENQ		0.9307	0.0012	0.12	0.9037	0.0008	0.08	IC
LDRVHP		0.9221	-0.0073	-0.74	0.8925	-0.0104	-1.02	OE
LE23JW		0.9337	0.0042	0.43	0.9163	0.0134	1.31	OE
LEMDKQ		0.9267	-0.0027	-0.28	0.9077	0.0048	0.47	OE
LN8A9		0.9330	0.0035	0.36	0.9103	0.0074	0.73	OE
LZK4GG		0.9268	-0.0026	-0.27	0.9008	-0.0021	-0.20	OE
M378LT		0.9403	0.0109	1.10	0.9063	0.0034	0.34	OE



Fasteners and Metals Interlaboratory Testing Program

Analysis 1601

Carbon & Low Alloy Steel, MANGANESE (Mn)
MANGANESE (Mn)

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
MDNUT9		0.9367	0.0072	0.73	0.9033	0.0004	0.04	XR
MR9AW9		0.9137	-0.0158	-1.60	0.8943	-0.0086	-0.84	OE
NCBF2T		0.9128	-0.0167	-1.69	0.8895	-0.0134	-1.31	XX
NTUFQ4		0.9348	0.0054	0.55	0.9087	0.0058	0.57	IC
NZG924		0.9329	0.0034	0.35	0.9030	0.0001	0.01	WD
PAZVLG		0.9334	0.0040	0.40	0.9115	0.0086	0.84	OE
PC8CRE		0.9273	-0.0021	-0.22	0.9043	0.0014	0.14	OE
PNGUNW		0.9343	0.0049	0.49	0.9083	0.0054	0.53	OE
PNLAX4		0.9427	0.0132	1.34	0.9150	0.0121	1.18	OE
QAFG3K		0.9357	0.0062	0.63	0.9143	0.0114	1.12	OE
QC2FXV		0.9313	0.0019	0.19	0.9107	0.0078	0.76	OE
QERJQ3		0.9260	-0.0035	-0.35	0.9005	-0.0024	-0.23	OE
QGVECQ		0.9281	-0.0014	-0.14	0.9032	0.0003	0.03	OE
QHLKLP	X	0.9500	0.0205	2.08	0.9400	0.0371	3.62	OE
QP8DZA		0.9299	0.0004	0.05	0.9066	0.0037	0.36	OE
QPQGE2		0.9320	0.0025	0.26	0.9047	0.0018	0.17	XX
RAPZ4U		0.9267	-0.0028	-0.28	0.8967	-0.0062	-0.61	OE
RATMG2		0.9393	0.0099	1.00	0.9237	0.0208	2.03	OE
RB699N		0.9480	0.0185	1.88	0.9127	0.0098	0.95	GD
RBKJ7V		0.9265	-0.0030	-0.30	0.8955	-0.0074	-0.72	OE
RE9V8L	X	0.9046	-0.0248	-2.52	0.8552	-0.0477	-4.65	XX
RG99NK		0.9243	-0.0051	-0.52	0.8933	-0.0096	-0.93	IC
RP3DGL		0.9375	0.0080	0.81	0.9137	0.0108	1.05	OE
RT4KQA	*	0.9473	0.0179	1.81	0.8860	-0.0169	-1.65	XX
T38RFX		0.9087	-0.0208	-2.11	0.8873	-0.0156	-1.52	OE
T6E8PN		0.9222	-0.0072	-0.73	0.8871	-0.0158	-1.54	IC
T8FEQD	X	0.9432	0.0138	1.40	0.9330	0.0301	2.94	OE
TJXUW2		0.9250	-0.0045	-0.45	0.8953	-0.0076	-0.74	OE
TLZW HW		0.9347	0.0052	0.53	0.9053	0.0024	0.24	OE
TV9BKX		0.9147	-0.0148	-1.50	0.8917	-0.0112	-1.10	OE
U3346W		0.9298	0.0004	0.04	0.8989	-0.0040	-0.39	OE
ULWPUU		0.9270	-0.0025	-0.25	0.9024	-0.0005	-0.04	WD
URKA3G	X	0.9714	0.0420	4.26	0.9592	0.0563	5.49	OE
UYKWRV		0.9427	0.0132	1.34	0.9137	0.0108	1.05	DR
V3W6JD		0.9390	0.0095	0.97	0.9090	0.0061	0.60	WD
VA2XPG		0.9382	0.0087	0.88	0.9052	0.0023	0.22	OE
VFK4HG		0.9440	0.0145	1.47	0.9133	0.0104	1.02	WD
VNDJ6Z		0.9297	0.0002	0.02	0.8970	-0.0059	-0.57	OE
VQPY Y2		0.9300	0.0005	0.06	0.9200	0.0171	1.67	OE
VTULC7		0.9350	0.0055	0.56	0.8990	-0.0039	-0.38	OE
VU6LC7		0.9390	0.0095	0.97	0.9087	0.0058	0.56	XX
VYWZTZ		0.9120	-0.0175	-1.77	0.8877	-0.0152	-1.49	OE
WGBPFB	*	0.9357	0.0062	0.63	0.9300	0.0271	2.64	OE
WKXBEF		0.9327	0.0032	0.33	0.9053	0.0024	0.24	OE
WRFGFT		0.9300	0.0005	0.06	0.9120	0.0091	0.89	OE
WVFM Y6		0.9400	0.0105	1.07	0.9067	0.0038	0.37	AE
WXYXPH		0.9340	0.0045	0.46	0.9080	0.0051	0.50	OE



Fasteners and Metals Interlaboratory Testing Program

Analysis 1601

Carbon & Low Alloy Steel, MANGANESE (Mn)
MANGANESE (Mn)

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
X7RAKB		0.9233	-0.0061	-0.62	0.8967	-0.0062	-0.61	OE
XGUPBF		0.9302	0.0007	0.08	0.9055	0.0026	0.25	OE
XRQZEG		0.9363	0.0069	0.70	0.9117	0.0088	0.86	IC
XVCKNQ		0.9230	-0.0065	-0.65	0.8960	-0.0069	-0.67	OE
XVDDJD	X	1.053	0.1239	12.56	1.006	0.1031	10.06	OE
XY99ZR		0.9267	-0.0028	-0.28	0.9023	-0.0006	-0.05	DR
XZ8A8J		0.9227	-0.0068	-0.69	0.8970	-0.0059	-0.57	DR
Y8Z2RH		0.9373	0.0079	0.80	0.9140	0.0111	1.08	OE
YCWTW9		0.9417	0.0122	1.24	0.9043	0.0014	0.14	IC
YQVLLW	X	0.8860	-0.0435	-4.41	0.8600	-0.0429	-4.18	GD
Z99FVH	*	0.9470	0.0175	1.78	0.8987	-0.0042	-0.41	DR
ZCAKF3		0.9311	0.0017	0.17	0.9026	-0.0003	-0.03	OE
ZZF7PT		0.9225	-0.0070	-0.71	0.8995	-0.0034	-0.33	OE

Summary Statistics

	Sample L11		Sample L12	
Grand Means	0.9295	Percent	0.9029	Percent
Std Dev Btwn Labs	0.0099	Percent	0.0103	Percent

Samples L11, L12 : AISI 4140, AISI 4140

Statistics based on 131 of 154 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



Analysis 1601

Carbon & Low Alloy Steel, MANGANESE (Mn)
MANGANESE (Mn)

Comments on Assigned Data Flags for Test #1601

- 4F3M7M (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample L11.
- 4HPJA8 (X) - Extreme data.
- 4KR4L7 (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample L12.
- 9YX8MG (X) - Data for sample L12 are low.
- ERB9MV (X) - Data for both samples are low. Possible Systematic Error.
- GZ2CWW (X) - Data for sample L11 are low. Inconsistent within the determinations of both samples.
- JDLQW2 (X) - Data for both samples are high. Possible Systematic Error.
- KRDURC (X) - Data for sample L11 are low.
- KT7Y9Q (X) - Data for sample L11 are high.
- QHLKLP (X) - Data for sample L12 are high. Inconsistent within the determinations of both samples.
- RE9V8L (X) - Data for sample L12 are low. Inconsistent within the determinations of sample L12.
- T8FEQD (X) - Data for sample L12 are high.
- URKA3G (X) - Data for both samples are high. Possible Systematic Error.
- XVDDJD (X) - Data for both samples are high. Possible Systematic Error.
- YQVLLW (X) - Data for both samples are low. Possible Systematic Error.

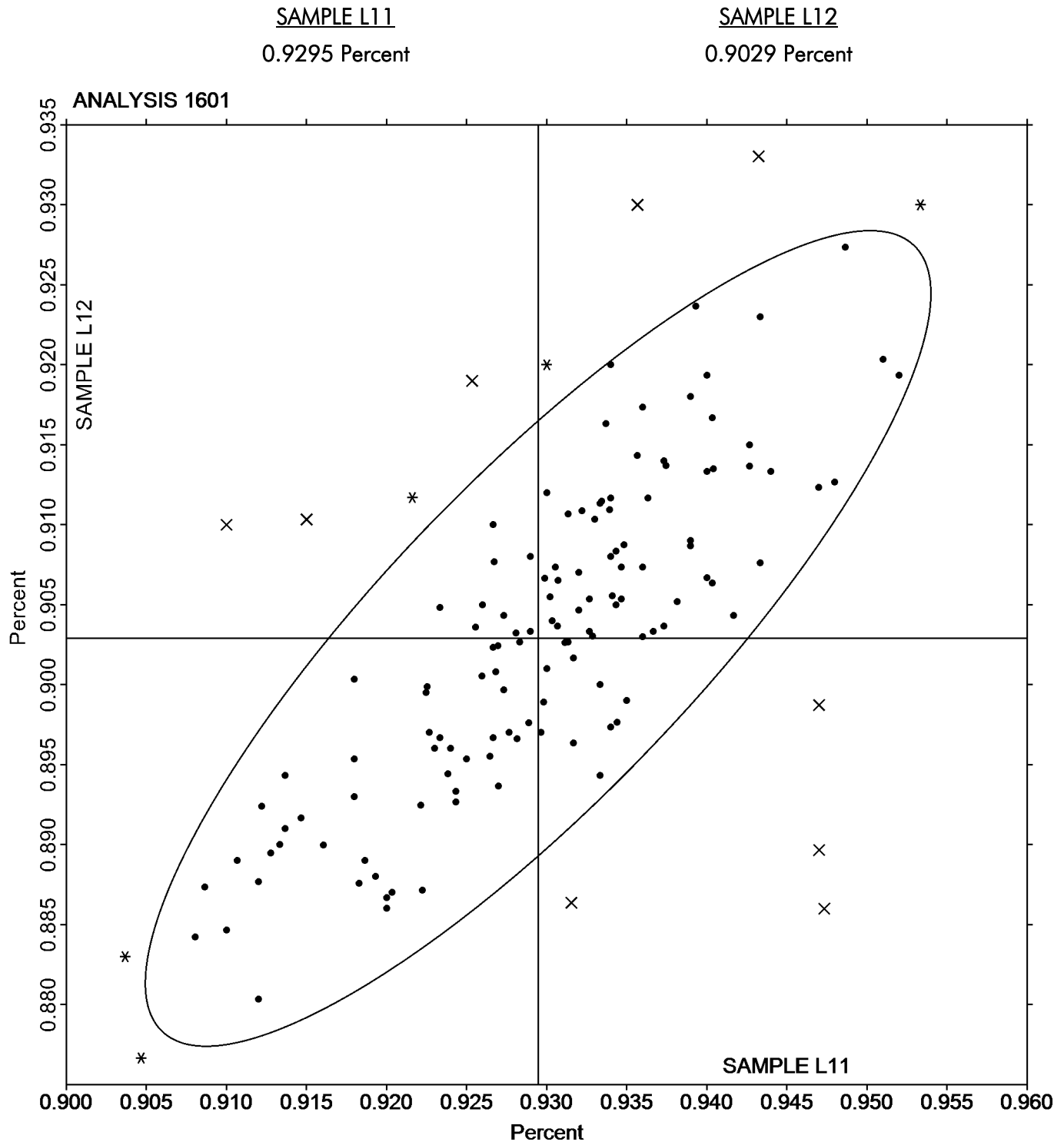


Fasteners and Metals Interlaboratory Testing Program

Cycle 151
3rd Qtr 2025

Analysis 1601

Carbon & Low Alloy Steel, MANGANESE (Mn)
MANGANESE (Mn)





Fasteners and Metals Interlaboratory Testing Program

Cycle 151
3rd Qtr 2025

Analysis 1602

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

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24CE4M		0.0145	-0.0010	-0.96	0.00860	-0.00091	-0.85	XX
2BCQ7C		0.0153	-0.0002	-0.20	0.00900	-0.00051	-0.48	XX
324LPF		0.0173	0.0018	1.68	0.0110	0.00149	1.38	XX
37F9QJ		0.0156	0.0001	0.08	0.00753	-0.00198	-1.84	XX
3DJ93M		0.0154	-0.0001	-0.11	0.00967	0.00015	0.14	OE
3TUWAV		0.0152	-0.0004	-0.36	0.00943	-0.00008	-0.07	XX
3W9UDC		0.0154	-0.0002	-0.14	0.00880	-0.00071	-0.66	OE
444Y4R		0.0153	-0.0003	-0.24	0.00920	-0.00031	-0.29	IC
4AQ2TA		0.0158	0.0003	0.27	0.00973	0.00022	0.20	OE
4F3M7M		0.0160	0.0004	0.42	0.00933	-0.00018	-0.17	GD
4GEGN9		0.0165	0.0009	0.86	0.0102	0.00072	0.67	OE
4HNREK		0.0163	0.0007	0.70	0.00910	-0.00041	-0.38	OE
4HPJA8	X	0.0200	0.0044	4.18	0.0170	0.00749	6.96	GD
4KR4L7		0.0172	0.0016	1.52	0.0117	0.00215	2.00	XX
4NRDP9		0.0159	0.0004	0.36	0.00990	0.00039	0.36	OE
4P4ARR		0.0143	-0.0012	-1.14	0.00817	-0.00135	-1.25	OE
4RTJ4E	*	0.0123	-0.0032	-3.02	0.00700	-0.00251	-2.33	XX
62D6N3		0.0160	0.0004	0.42	0.00967	0.00015	0.14	OE
64F7GX		0.0152	-0.0004	-0.33	0.00900	-0.00051	-0.48	XX
683QM2		0.0156	0.0000	0.05	0.00909	-0.00042	-0.39	GD
6JW26W		0.0154	-0.0002	-0.14	0.00880	-0.00071	-0.66	OE
6NQXV9		0.0157	0.0001	0.14	0.00910	-0.00041	-0.38	OE
6VM2CQ		0.0149	-0.0007	-0.64	0.00920	-0.00031	-0.29	XX
7AK97L		0.0141	-0.0015	-1.36	0.00817	-0.00135	-1.25	CL
7EX7HE		0.0131	-0.0024	-2.27	0.00870	-0.00081	-0.76	OE
7WDH9J	X	0.0120	-0.0036	-3.34	0.00633	-0.00318	-2.95	XX
7ZX9W4		0.0166	0.0010	0.95	0.0105	0.00095	0.89	GD
82MT3Y		0.0159	0.0003	0.33	0.00980	0.00029	0.27	AE
8AZ3AT		0.0160	0.0004	0.42	0.00993	0.00042	0.39	OE
8E8HTP		0.0150	-0.0006	-0.52	0.00990	0.00039	0.36	OE
8H8UPN		0.0133	-0.0022	-2.08	0.00967	0.00015	0.14	OE
8HB94B		0.0152	-0.0003	-0.30	0.00857	-0.00095	-0.88	IC
8NGZ92		0.0161	0.0005	0.52	0.00947	-0.00005	-0.04	OE
8NZPM2		0.0145	-0.0011	-0.99	0.00853	-0.00098	-0.91	OE
94LQNC		0.0157	0.0001	0.11	0.00937	-0.00015	-0.14	OE
94PC7X		0.0169	0.0014	1.30	0.0113	0.00175	1.63	OE
98L3KC		0.0167	0.0012	1.11	0.00967	0.00015	0.14	XX
9UZIP3		0.0151	-0.0005	-0.45	0.00897	-0.00055	-0.51	IC
9YX8MG		0.0167	0.0012	1.11	0.0112	0.00169	1.57	OE
A2J7HQ		0.0163	0.0008	0.75	0.01000	0.00048	0.45	OE
AVQ9PU		0.0157	0.0001	0.11	0.00967	0.00015	0.14	OE
AW6E76	*	0.0160	0.0004	0.42	0.0120	0.00249	2.31	XX
B4JM7K		0.0148	-0.0008	-0.71	0.00850	-0.00101	-0.94	OE
BJDALX		0.0165	0.0009	0.89	0.00980	0.00029	0.27	OE
BMCG2G		0.0158	0.0002	0.23	0.00947	-0.00005	-0.04	GD
BUZ6X8		0.0153	-0.0002	-0.20	0.00900	-0.00051	-0.48	OE
C6PKYT		0.0160	0.0004	0.42	0.00933	-0.00018	-0.17	OE

**Fasteners and Metals Interlaboratory Testing Program****Cycle 151**
3rd Qtr 2025**Analysis 1602****Carbon & Low Alloy Steel, PHOSPHORUS (P)**
PHOSPHORUS (P)

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
C9ABMC		0.0160	0.0004	0.41	0.0102	0.00069	0.64	OE
CALAEZ		0.0143	-0.0013	-1.21	0.00827	-0.00125	-1.16	OE
CE2FFF		0.0177	0.0021	2.02	0.0103	0.00082	0.76	OE
CPXNYJ		0.0150	-0.0006	-0.52	0.00867	-0.00085	-0.79	XX
D3378X		0.0148	-0.0008	-0.74	0.00943	-0.00008	-0.07	OE
D3GPUF		0.0158	0.0003	0.27	0.00963	0.00012	0.11	OE
D8W3WN	X	0.0191	0.0035	3.34	0.0107	0.00119	1.10	XX
DCRRFG		0.0148	-0.0007	-0.67	0.00920	-0.00031	-0.29	OE
DHRHDC		0.0151	-0.0005	-0.45	0.00830	-0.00121	-1.13	OE
DJMW8W		0.0147	-0.0009	-0.83	0.00910	-0.00041	-0.38	OE
EBPLCR		0.0163	0.0008	0.74	0.0120	0.00249	2.31	OE
ERB9MV		0.0148	-0.0007	-0.67	0.00807	-0.00145	-1.34	IC
F2GAWA		0.0158	0.0003	0.27	0.00967	0.00015	0.14	IC
FKADDA		0.0158	0.0002	0.20	0.0109	0.00139	1.29	OE
FL2BLG		0.0147	-0.0009	-0.80	0.00857	-0.00095	-0.88	XX
FVTNPM		0.0143	-0.0012	-1.14	0.00800	-0.00151	-1.41	GD
G9A9D9	X	0.00900	-0.0066	-6.16	0.0112	0.00165	1.54	OE
GCRBKE		0.0157	0.0001	0.11	0.00900	-0.00051	-0.48	OE
GJTH79		0.0159	0.0003	0.33	0.00903	-0.00048	-0.45	OE
GKM7MJ		0.0159	0.0004	0.36	0.0109	0.00139	1.29	OE
GQCN4F		0.0143	-0.0013	-1.21	0.00850	-0.00101	-0.94	OE
GYNY2L		0.0150	-0.0006	-0.52	0.00833	-0.00118	-1.10	OE
GZ2CWW	*	0.0140	-0.0016	-1.46	0.0113	0.00182	1.69	OE
H4VTLW		0.0152	-0.0003	-0.30	0.00887	-0.00065	-0.60	OE
H76TNH		0.0166	0.0010	0.99	0.0123	0.00279	2.59	OE
H98Q2V		0.0163	0.0007	0.70	0.0105	0.00095	0.89	OE
HTE22T		0.0154	-0.0002	-0.17	0.00880	-0.00071	-0.66	IC
HV7XQM		0.0135	-0.0021	-1.93	0.00877	-0.00075	-0.69	OE
J7JEZ6		0.0163	0.0008	0.74	0.00900	-0.00051	-0.48	OE
JDLQW2		0.0127	-0.0029	-2.71	0.00733	-0.00218	-2.03	OE
JGK3R2	X	0.00967	-0.0059	-5.53	0.00300	-0.00651	-6.05	XX
JPBR93		0.0158	0.0002	0.21	0.00977	0.00026	0.24	OE
KFZPKG		0.0150	-0.0006	-0.52	0.00900	-0.00051	-0.48	OE
KHRKEP		0.0171	0.0015	1.46	0.0118	0.00229	2.12	OE
KKDNWA		0.0160	0.0004	0.39	0.00870	-0.00081	-0.76	OE
KKEHH2		0.0163	0.0008	0.74	0.0108	0.00129	1.20	OE
KL8D6H		0.0156	0.0000	0.02	0.00907	-0.00045	-0.41	WD
KRDURC		0.0163	0.0007	0.70	0.0120	0.00249	2.31	GD
KT7Y9Q	M	0.00641	-0.0091	-8.59	No Data Reported			IC
L84ENQ		0.0148	-0.0008	-0.74	0.00870	-0.00081	-0.76	IC
LDRVHP		0.0145	-0.0011	-1.02	0.00860	-0.00091	-0.85	OE
LE23JW		0.0161	0.0005	0.48	0.0102	0.00072	0.67	OE
LEMDKQ		0.0159	0.0003	0.33	0.00927	-0.00025	-0.23	OE
LNMA9		0.0155	-0.0001	-0.08	0.00920	-0.00031	-0.29	OE
LZK4GG		0.0170	0.0014	1.36	0.0100	0.00049	0.45	OE
M378LT		0.0158	0.0003	0.27	0.0106	0.00109	1.01	OE
MR9AW9		0.0148	-0.0007	-0.67	0.00900	-0.00051	-0.48	OE



Fasteners and Metals Interlaboratory Testing Program

Analysis 1602

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

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
NCBF2T		0.0176	0.0020	1.89	0.00973	0.00022	0.20	XX
NTUFQ4		0.0145	-0.0011	-1.02	0.00833	-0.00118	-1.10	CL
NZG924		0.0155	-0.0001	-0.08	0.00890	-0.00061	-0.57	WD
PAZVLG		0.0163	0.0007	0.67	0.0106	0.00112	1.04	OE
PC8CRE		0.0160	0.0004	0.42	0.00967	0.00015	0.14	OE
PNGUNW		0.0184	0.0029	2.71	0.0120	0.00245	2.28	OE
PNLAX4		0.0161	0.0005	0.48	0.00937	-0.00015	-0.14	OE
QAFG3K		0.0160	0.0004	0.42	0.00967	0.00015	0.14	OE
QC2FXV	X	0.0194	0.0038	3.59	0.0115	0.00199	1.85	OE
QERJQ3		0.0154	-0.0002	-0.14	0.00937	-0.00015	-0.14	OE
QGVECQ		0.0167	0.0011	1.08	0.0101	0.00062	0.58	OE
QHLKLP		0.0153	-0.0002	-0.20	0.0107	0.00115	1.07	OE
QP8DZA		0.0155	0.0000	-0.02	0.00907	-0.00045	-0.41	OE
QPQGE2		0.0156	0.0000	0.02	0.00887	-0.00065	-0.60	XX
RAPZ4U		0.0170	0.0014	1.36	0.0103	0.00082	0.76	OE
RATMG2		0.0182	0.0026	2.49	0.0122	0.00272	2.53	OE
RB699N		0.0177	0.0021	1.99	0.0110	0.00149	1.38	GD
RBKJ7V		0.0145	-0.0010	-0.98	0.00981	0.00030	0.28	OE
RE9V8L		0.0166	0.0011	1.02	0.00917	-0.00035	-0.32	XX
RG99NK		0.0147	-0.0009	-0.83	0.00800	-0.00151	-1.41	IC
RP3DGL		0.0159	0.0003	0.30	0.00980	0.00029	0.27	OE
RT4KQA		0.0140	-0.0016	-1.46	0.00900	-0.00051	-0.48	XX
T38RFX		0.0140	-0.0016	-1.46	0.00867	-0.00085	-0.79	OE
T6E8PN		0.0140	-0.0015	-1.43	0.00767	-0.00185	-1.72	IC
T8FEQD		0.0143	-0.0012	-1.14	0.00993	0.00042	0.39	OE
TJXUW2		0.0133	-0.0022	-2.08	0.00867	-0.00085	-0.79	OE
TLZWHW		0.0153	-0.0002	-0.20	0.00897	-0.00055	-0.51	OE
TV9BKX		0.0157	0.0002	0.17	0.00930	-0.00021	-0.20	OE
U3346W		0.0162	0.0006	0.60	0.0101	0.00054	0.50	OE
ULWPUU		0.0158	0.0003	0.27	0.00923	-0.00028	-0.26	WD
URKA3G		0.0171	0.0016	1.49	0.0117	0.00215	2.00	OE
UYKWRV		0.0170	0.0014	1.36	0.00960	0.00009	0.08	DR
V3W6JD		0.0153	-0.0003	-0.24	0.00943	-0.00008	-0.07	WD
VA2XPG		0.0172	0.0017	1.56	0.00966	0.00015	0.14	OE
VFK4HG		0.0135	-0.0021	-1.96	0.00777	-0.00175	-1.62	WD
VNDJ6Z		0.0147	-0.0009	-0.83	0.0110	0.00149	1.38	OE
VQPPY2	X	0.0110	-0.0046	-4.28	0.0150	0.00549	5.10	OE
VTULC7		0.0150	-0.0006	-0.52	0.00900	-0.00051	-0.48	OE
VU6LC7		0.0173	0.0018	1.68	0.00958	0.00007	0.06	XX
VYWZTZ		0.0151	-0.0004	-0.39	0.00880	-0.00071	-0.66	OE
WGBPFB		0.0152	-0.0004	-0.33	0.0108	0.00132	1.23	OE
WKXBEF		0.0151	-0.0004	-0.39	0.00907	-0.00045	-0.41	OE
WRFGFT		0.0159	0.0003	0.30	0.00977	0.00025	0.24	OE
WVFMY6		0.0146	-0.0009	-0.86	0.00840	-0.00111	-1.03	AE
WXYXPH		0.0136	-0.0020	-1.83	0.00800	-0.00151	-1.41	OE
X7RAKB		0.0160	0.0004	0.42	0.0113	0.00182	1.69	OE
XGUPBF		0.0165	0.0009	0.89	0.0104	0.00085	0.79	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 151
3rd Qtr 2025

Analysis 1602

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

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
XRQZEG		0.0142	-0.0014	-1.27	0.00820	-0.00131	-1.22	IC
XVCKNQ		0.0151	-0.0005	-0.42	0.00900	-0.00051	-0.48	OE
XVDDJD		0.0160	0.0004	0.42	0.0113	0.00182	1.69	OE
XY99ZR	X	0.0157	0.0001	0.11	0.0132	0.00372	3.46	DR
XZ8A8J		0.0143	-0.0012	-1.14	0.00967	0.00015	0.14	DR
Y8Z2RH		0.0163	0.0008	0.74	0.0110	0.00149	1.38	OE
YCWTW9		0.0161	0.0005	0.48	0.00910	-0.00041	-0.38	IC
YQVLLW		0.0164	0.0008	0.80	0.0109	0.00139	1.29	GD
Z99FVH		0.0147	-0.0009	-0.83	0.00760	-0.00191	-1.78	DR
ZCAKF3		0.0162	0.0006	0.61	0.00917	-0.00035	-0.32	OE
ZZF7PT		0.0158	0.0002	0.23	0.00940	-0.00011	-0.11	OE

Summary Statistics

	Sample L11		Sample L12	
Grand Means	0.0156	Percent	0.00951	Percent
Std Dev Btwn Labs	0.0011	Percent	0.00108	Percent

Samples L11, L12 : AISI 4140, AISI 4140

Statistics based on 142 of 152 reporting participants

Key to Method Codes Reported by Participants

AE	Spectrometry - Atomic Emission (AES)	CL	Colorimetry
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)	XX	Please Indicate Method Used for Current Element

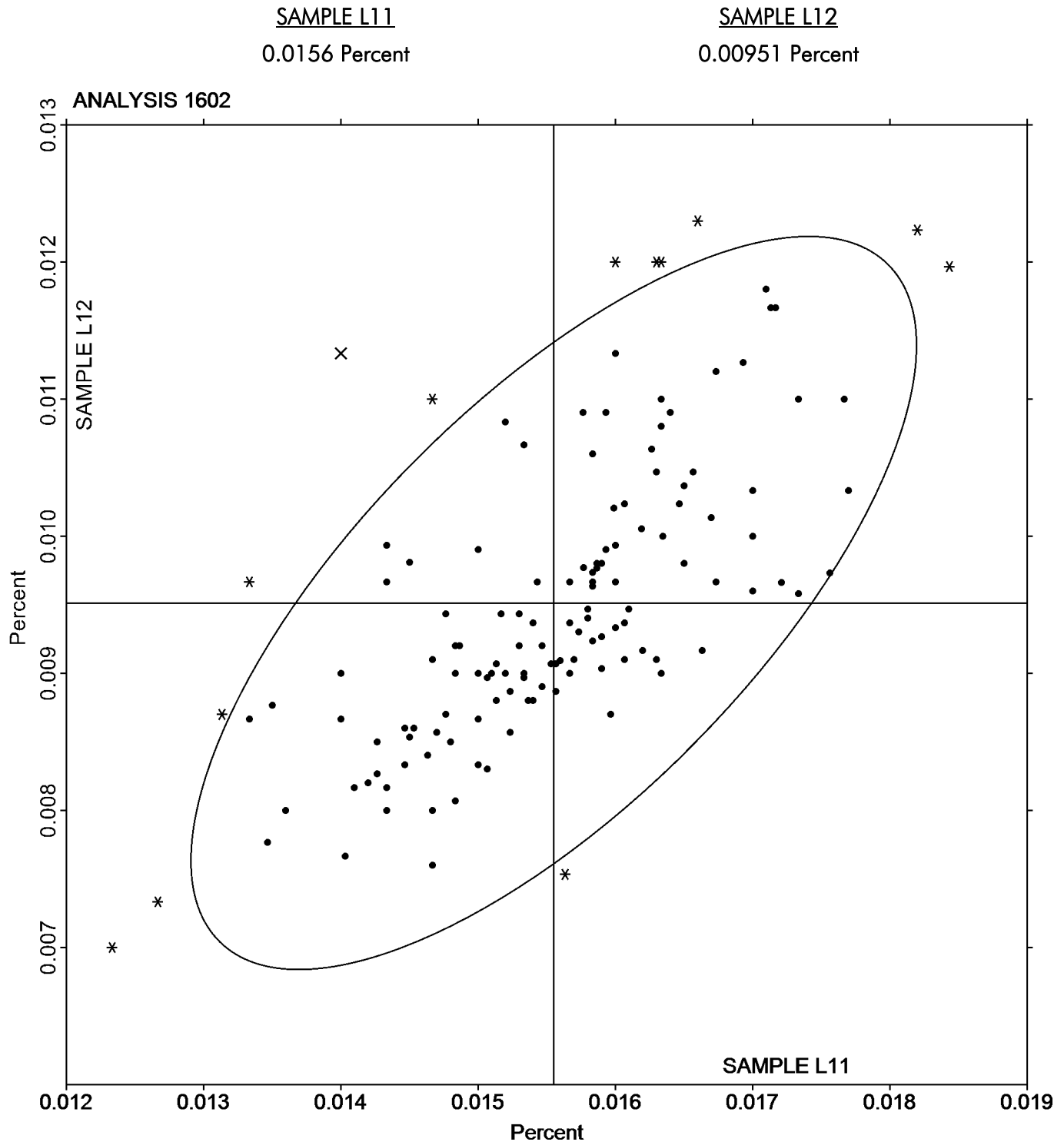
Comments on Assigned Data Flags for Test #1602

- 4HPJA8 (X) - Data for both samples are high.
- 7WDH9J (X) - Data for both samples are low.
- D8W3WN (X) - Data for sample L11 are high.
- G9A9D9 (X) - Data for sample L11 are low.
- JGK3R2 (X) - Data for both samples are low.
- KT7Y9Q (M) - Participant did not submit data for sample L12.
- QC2FXV (X) - Data for sample L11 are high.
- VQPPY2 (X) - Data appear to be transposed between samples.
- XY99ZR (X) - Data for sample L12 are high.



Analysis 1602

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



**Fasteners and Metals Interlaboratory Testing Program****Cycle 151**
3rd Qtr 2025**Analysis 1603****Carbon & Low Alloy Steel, SULFUR (S)**
SULFUR (S)

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24CE4M		0.0274	0.0012	0.67	0.0233	0.0031	2.04	OE
2BCQ7C		0.0307	0.0045	2.51	0.0217	0.0015	0.97	XX
324LPF		0.0240	-0.0022	-1.21	0.0187	-0.0015	-1.00	XX
37F9QJ	X	0.0368	0.0106	5.94	0.0273	0.0071	4.67	XX
3DJ93M		0.0245	-0.0017	-0.93	0.0193	-0.0009	-0.56	OE
3TUWAV		0.0235	-0.0026	-1.47	0.0185	-0.0017	-1.13	XX
3W9UDC		0.0276	0.0014	0.80	0.0208	0.0006	0.40	OE
444Y4R		0.0267	0.0005	0.28	0.0204	0.0002	0.11	CI
4AQ2TA		0.0294	0.0033	1.82	0.0221	0.0019	1.28	OE
4F3M7M		0.0257	-0.0005	-0.28	0.0203	0.0001	0.09	GD
4GEGN9		0.0293	0.0031	1.75	0.0226	0.0024	1.56	OE
4HNREK		0.0303	0.0041	2.31	0.0226	0.0024	1.58	OE
4HPJA8	X	0.00600	-0.0202	-11.27	0.00400	-0.0162	-10.64	GD
4KR4L7		0.0259	-0.0003	-0.17	0.0200	-0.0002	-0.13	XX
4NRDP9		0.0267	0.0005	0.30	0.0215	0.0013	0.84	OE
4P4ARR		0.0268	0.0007	0.37	0.0195	-0.0007	-0.43	OE
4RTJ4E		0.0270	0.0008	0.46	0.0190	-0.0012	-0.78	XX
62D6N3		0.0243	-0.0018	-1.03	0.0185	-0.0017	-1.09	OE
64F7GX		0.0253	-0.0009	-0.51	0.0198	-0.0004	-0.28	CI
683QM2		0.0267	0.0005	0.30	0.0207	0.0005	0.33	GD
6C8TCP		0.0258	-0.0004	-0.23	0.0194	-0.0008	-0.52	IR
6JW26W		0.0258	-0.0004	-0.21	0.0173	-0.0029	-1.92	OE
6NQXV9		0.0237	-0.0025	-1.38	0.0184	-0.0018	-1.18	CO
6VM2CQ	X	0.0217	-0.0045	-2.52	0.0147	-0.0055	-3.63	XX
7AK97L		0.0268	0.0006	0.35	0.0201	-0.0001	-0.04	CI
7EX7HE		0.0262	0.0001	0.03	0.0195	-0.0007	-0.48	OE
7WDH9J		0.0240	-0.0022	-1.21	0.0187	-0.0015	-1.00	XX
7ZX9W4		0.0276	0.0015	0.82	0.0209	0.0007	0.49	CO
82MT3Y		0.0236	-0.0025	-1.42	0.0179	-0.0023	-1.53	CO
8AZ3AT		0.0279	0.0017	0.95	0.0195	-0.0007	-0.48	OE
8E8HTP		0.0234	-0.0028	-1.55	0.0186	-0.0016	-1.05	OE
8H8UPN		0.0247	-0.0015	-0.84	0.0200	-0.0002	-0.13	OE
8HB94B		0.0266	0.0004	0.24	0.0212	0.0010	0.66	CI
8NGZ92		0.0260	-0.0001	-0.08	0.0204	0.0002	0.16	OE
8NZPM2		0.0252	-0.0009	-0.52	0.0192	-0.0010	-0.63	OE
94LQNC		0.0232	-0.0030	-1.66	0.0187	-0.0015	-0.98	OE
94PC7X	X	0.0319	0.0057	3.20	0.0290	0.0088	5.77	OE
98L3KC		0.0305	0.0043	2.40	0.0222	0.0020	1.32	OE
9UZP93		0.0246	-0.0016	-0.90	0.0191	-0.0011	-0.70	CI
9YX8MG		0.0247	-0.0015	-0.82	0.0178	-0.0024	-1.55	OE
A2J7HQ		0.0282	0.0020	1.13	0.0208	0.0006	0.39	OE
AVQ9PU		0.0229	-0.0033	-1.83	0.0178	-0.0024	-1.57	CI
AW6E76		0.0280	0.0018	1.02	0.0220	0.0018	1.19	XX
B4JM7K		0.0284	0.0023	1.26	0.0217	0.0015	0.99	OE
BJDALX		0.0269	0.0007	0.41	0.0213	0.0011	0.73	OE
BMCG2G		0.0264	0.0002	0.13	0.0208	0.0006	0.42	GD
BUZ6X8		0.0263	0.0002	0.09	0.0207	0.0005	0.31	OE



Fasteners and Metals Interlaboratory Testing Program

Analysis 1603

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

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
C6PKYT		0.0293	0.0032	1.77	0.0230	0.0028	1.84	OE
C9ABMC		0.0295	0.0033	1.83	0.0228	0.0027	1.74	OE
CALAEZ		0.0254	-0.0007	-0.41	0.0191	-0.0011	-0.70	OE
CE2FFF		0.0259	-0.0002	-0.13	0.0197	-0.0005	-0.35	CI
CPXNYJ		0.0287	0.0025	1.39	0.0197	-0.0005	-0.35	OE
D3378X		0.0262	0.0000	0.00	0.0198	-0.0004	-0.28	OE
D3GPUF		0.0274	0.0012	0.67	0.0223	0.0021	1.41	OE
D8W3WN		0.0252	-0.0010	-0.54	0.0184	-0.0018	-1.18	OE
DCRRFG		0.0259	-0.0002	-0.13	0.0202	0.0000	-0.02	OE
DHRHDC		0.0229	-0.0032	-1.81	0.0179	-0.0023	-1.48	OE
DJMW8W		0.0290	0.0028	1.58	0.0223	0.0021	1.41	OE
EBPLCR		0.0277	0.0015	0.84	0.0233	0.0031	2.06	OE
ERB9MV		0.0231	-0.0030	-1.70	0.0189	-0.0013	-0.87	CO
F2GAWA		0.0253	-0.0008	-0.47	0.0195	-0.0007	-0.45	CI
FKADDA		0.0255	-0.0007	-0.39	0.0214	0.0012	0.79	OE
FL2BLG		0.0271	0.0009	0.50	0.0205	0.0003	0.18	XX
FVTNPM		0.0240	-0.0022	-1.21	0.0187	-0.0015	-1.00	GD
G9A9D9		0.0260	-0.0002	-0.10	0.0197	-0.0005	-0.35	CO
GCRBKE		0.0280	0.0018	1.02	0.0227	0.0025	1.63	OE
GJTH79	X	0.0282	0.0021	1.15	0.0248	0.0046	3.01	OE
GKM7MJ		0.0239	-0.0023	-1.27	0.0196	-0.0006	-0.37	OE
GQCN4F		0.0263	0.0002	0.09	0.0200	-0.0002	-0.15	OE
GYNY2L		0.0243	-0.0018	-1.03	0.0187	-0.0015	-1.00	CI
GZ2CWW	X	0.0400	0.0139	7.74	0.0293	0.0091	5.99	CO
H4VTLW		0.0280	0.0019	1.04	0.0203	0.0001	0.05	OE
H76TNH		0.0289	0.0028	1.54	0.0223	0.0021	1.36	OE
H98Q2V		0.0285	0.0023	1.30	0.0216	0.0014	0.95	OE
HFTT8L		0.0244	-0.0018	-0.98	0.0187	-0.0015	-0.96	OE
HTE22T		0.0250	-0.0012	-0.67	0.0197	-0.0005	-0.30	OE
HV7XQM		0.0269	0.0007	0.39	0.0201	-0.0001	-0.06	OE
J7JEZ6		0.0270	0.0008	0.46	0.0207	0.0005	0.31	OE
JDLQW2		0.0240	-0.0022	-1.21	0.0190	-0.0012	-0.78	OE
JGK3R2	X	0.0213	-0.0048	-2.70	0.0147	-0.0055	-3.63	XX
JPBR93		0.0275	0.0013	0.75	0.0208	0.0006	0.37	OE
KFZPKG		0.0273	0.0012	0.65	0.0233	0.0031	2.06	OE
KHRKEP		0.0267	0.0005	0.30	0.0235	0.0033	2.17	OE
KKDNWA		0.0270	0.0008	0.46	0.0220	0.0018	1.17	OE
KKEHH2		0.0258	-0.0004	-0.23	0.0180	-0.0022	-1.46	OE
KRDURC		0.0257	-0.0005	-0.26	0.0214	0.0012	0.77	GD
KT7Y9Q		0.0251	-0.0011	-0.61	0.0181	-0.0021	-1.37	CI
L84ENQ		0.0262	0.0000	0.00	0.0199	-0.0003	-0.21	CI
LDRVHP		0.0246	-0.0015	-0.86	0.0189	-0.0013	-0.87	CI
LE23JW		0.0272	0.0010	0.56	0.0233	0.0031	2.04	OE
LEMDKQ		0.0260	-0.0001	-0.08	0.0207	0.0005	0.31	OE
LNMA8A9		0.0257	-0.0005	-0.28	0.0198	-0.0004	-0.24	OE
LZK4GG		0.0257	-0.0004	-0.24	0.0204	0.0002	0.11	OE
M378LT		0.0250	-0.0011	-0.64	0.0186	-0.0016	-1.02	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 151
3rd Qtr 2025

Analysis 1603

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

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
MR9AW9		0.0249	-0.0013	-0.71	0.0210	0.0008	0.55	OE
NCBF2T		0.0250	-0.0012	-0.68	0.0203	0.0001	0.10	XX
NTUFQ4		0.0250	-0.0011	-0.64	0.0184	-0.0018	-1.16	CI
NZG924		0.0251	-0.0011	-0.60	0.0185	-0.0017	-1.09	OE
PAZVLG		0.0279	0.0017	0.97	0.0226	0.0024	1.58	OE
PC8CRE		0.0267	0.0005	0.28	0.0210	0.0008	0.53	OE
PNGUNW		0.0246	-0.0016	-0.90	0.0191	-0.0011	-0.74	OE
PNLAX4		0.0254	-0.0008	-0.45	0.0190	-0.0012	-0.78	CI
QAFG3K		0.0250	-0.0012	-0.65	0.0193	-0.0009	-0.56	OE
QC2FXV		0.0274	0.0012	0.69	0.0217	0.0015	0.97	OE
QERJQ3		0.0267	0.0005	0.28	0.0199	-0.0003	-0.21	OE
QGVECQ		0.0272	0.0010	0.57	0.0204	0.0002	0.14	OE
QHLKLP		0.0213	-0.0048	-2.70	0.0180	-0.0022	-1.44	OE
QP8DZA		0.0257	-0.0005	-0.28	0.0186	-0.0016	-1.02	OE
QPQGE2		0.0269	0.0008	0.43	0.0200	-0.0002	-0.15	XX
RAPZ4U		0.0290	0.0028	1.58	0.0227	0.0025	1.63	OE
RATMG2		0.0263	0.0002	0.09	0.0209	0.0007	0.47	OE
RB699N		0.0263	0.0002	0.09	0.0203	0.0001	0.09	GD
RBKJ7V		0.0251	-0.0011	-0.59	0.0214	0.0013	0.82	OE
RE9V8L		0.0264	0.0003	0.15	0.0203	0.0001	0.09	XX
RG99NK		0.0240	-0.0022	-1.21	0.0180	-0.0022	-1.44	CI
RP3DGL		0.0261	-0.0001	-0.04	0.0196	-0.0006	-0.39	OE
RT4KQA		0.0247	-0.0015	-0.84	0.0197	-0.0005	-0.35	XX
T38RFX	X	0.0213	-0.0048	-2.70	0.0137	-0.0065	-4.29	OE
T6E8PN		0.0275	0.0014	0.76	0.0210	0.0008	0.51	CI
T8FEQD		0.0297	0.0036	1.99	0.0235	0.0033	2.15	OE
TJXUW2		0.0287	0.0025	1.39	0.0200	-0.0002	-0.13	OE
TLZWHW		0.0263	0.0002	0.09	0.0203	0.0001	0.09	OE
TV9BKX		0.0264	0.0002	0.11	0.0207	0.0005	0.31	OE
ULWPUU		0.0264	0.0002	0.13	0.0204	0.0002	0.14	CI
URKA3G		0.0255	-0.0007	-0.39	0.0195	-0.0007	-0.45	CO
UYKWRV		0.0260	-0.0002	-0.10	0.0207	0.0005	0.31	DR
V3W6JD		0.0261	-0.0001	-0.04	0.0197	-0.0005	-0.35	CI
VA2XPG	X	0.0315	0.0053	2.96	0.0210	0.0008	0.55	OE
VFK4HG		0.0217	-0.0044	-2.48	0.0171	-0.0031	-2.01	WD
VNDJ6Z		0.0253	-0.0008	-0.47	0.0200	-0.0002	-0.13	OE
VQPPY2	X	0.0210	-0.0052	-2.89	0.0250	0.0048	3.16	OE
VTULC7		0.0293	0.0032	1.77	0.0227	0.0025	1.63	OE
VU6LC7		0.0274	0.0012	0.67	0.0205	0.0003	0.22	XX
VYWZTZ		0.0290	0.0028	1.58	0.0212	0.0010	0.64	OE
WGBPFB		0.0275	0.0014	0.76	0.0211	0.0009	0.60	OE
WKXBEF		0.0260	-0.0002	-0.11	0.0210	0.0008	0.53	OE
WRFGFT		0.0243	-0.0018	-1.03	0.0208	0.0006	0.42	OE
WVFMY6		0.0253	-0.0009	-0.49	0.0194	-0.0008	-0.52	AE
WXYXPH		0.0235	-0.0027	-1.51	0.0180	-0.0022	-1.44	CI
X7RAKB		0.0257	-0.0005	-0.28	0.0180	-0.0022	-1.44	OE
XGUPBF		0.0239	-0.0022	-1.25	0.0190	-0.0012	-0.80	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 151
3rd Qtr 2025

Analysis 1603

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

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
XRQZEG		0.0244	-0.0018	-1.01	0.0187	-0.0015	-0.96	CI
XVCKNQ		0.0277	0.0015	0.84	0.0206	0.0004	0.25	CO
XVDDJD	X	0.0133	-0.0128	-7.17	0.00983	-0.0104	-6.81	OE
XY99ZR		0.0257	-0.0005	-0.28	0.0185	-0.0017	-1.11	DR
YCWTW9		0.0243	-0.0019	-1.06	0.0186	-0.0016	-1.05	CI
YQVLLW		0.0286	0.0024	1.36	0.0241	0.0039	2.57	GD
Z99FVH		0.0253	-0.0008	-0.47	0.0203	0.0001	0.09	DR
ZCAKF3		0.0272	0.0011	0.59	0.0189	-0.0013	-0.83	OE
ZZF7PT		0.0264	0.0002	0.11	0.0194	-0.0008	-0.54	CO

Summary Statistics

	Sample L11		Sample L12	
Grand Means	0.0262	Percent	0.0202	Percent
Std Dev Btwn Labs	0.0018	Percent	0.0015	Percent

Samples L11, L12 : AISI 4140, AISI 4140

Statistics based on 139 of 150 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)	IR	IR (Absorption / Detection)
OE	Spectrometry - Optical Emission (OES)	WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XX	Please Indicate Method Used for Current Element		

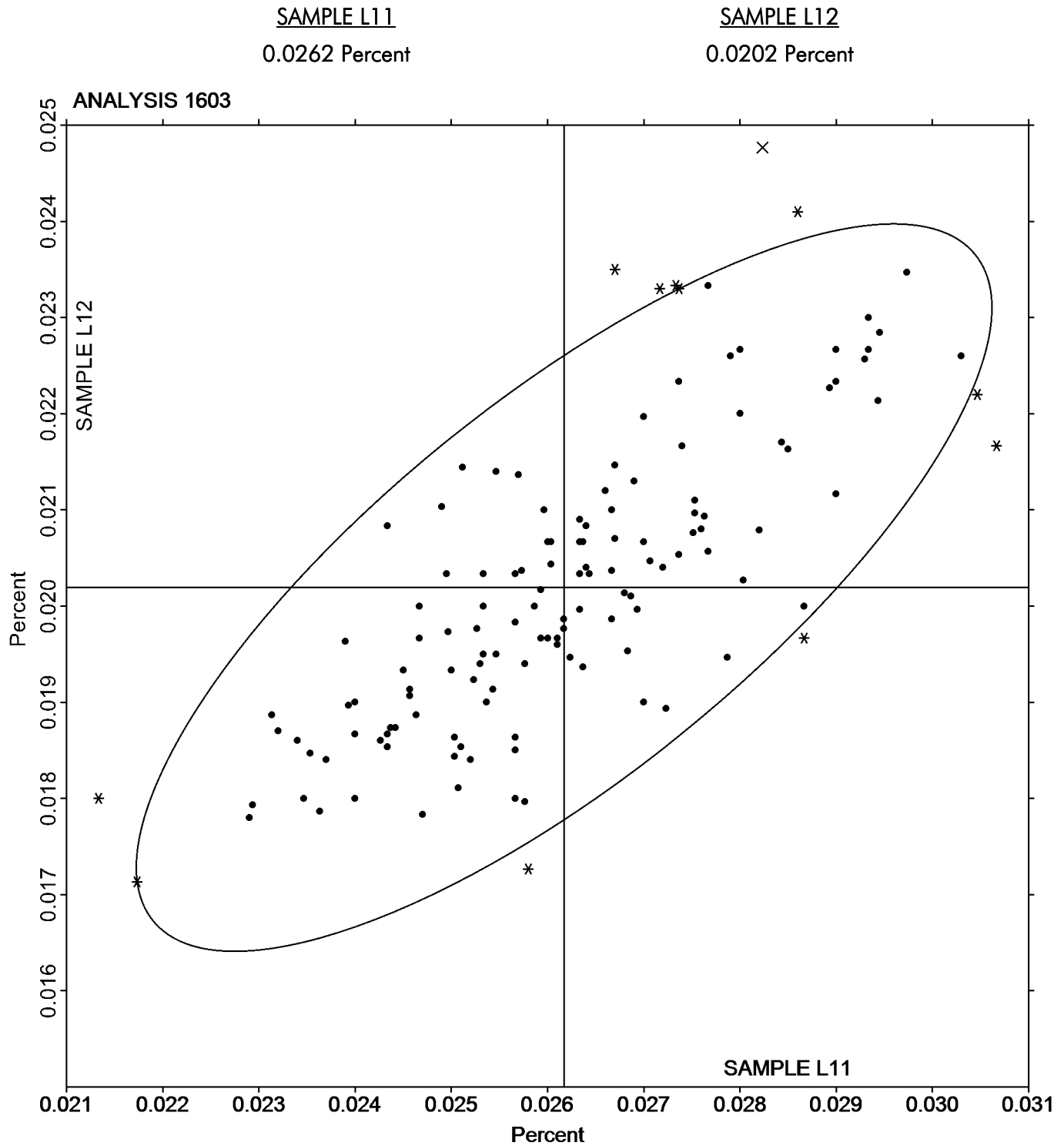
Comments on Assigned Data Flags for Test #1603

- 37F9QJ (X) - Data for both samples are high. Possible Systematic Error.
- 4HPJA8 (X) - Data for both samples are low. Possible Systematic Error.
- 6VM2CQ (X) - Data for sample L12 are low.
- 94PC7X (X) - Data for both samples are high. Possible Systematic Error.
- GJTH79 (X) - Data for sample L12 are high.
- GZ2CWW (X) - Data for both samples are high. Possible Systematic Error.
- JGK3R2 (X) - Data for sample L12 are low.
- T38RFX (X) - Data for sample L12 are low. Inconsistent within the determinations of sample L11.
- VA2XPG (X) - Data for sample L11 are high.
- VQPYY2 (X) - Data appear to be transposed between samples.
- XVDDJD (X) - Data for both samples are low. Possible Systematic Error.



Analysis 1603

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





Fasteners and Metals Interlaboratory Testing Program

Analysis 1604

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

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24CE4M		0.2539	-0.0100	-1.65	0.2136	-0.0070	-1.30	OE
2BCQ7C		0.2670	0.0031	0.51	0.2200	-0.0006	-0.11	XX
324LPF		0.2557	-0.0082	-1.36	0.2133	-0.0073	-1.34	XX
37F9QJ		0.2677	0.0038	0.62	0.2230	0.0024	0.45	XX
3DJ93M		0.2583	-0.0056	-0.92	0.2170	-0.0036	-0.66	OE
3TUWAV		0.2596	-0.0043	-0.70	0.2155	-0.0051	-0.94	XX
3W9UDC		0.2600	-0.0039	-0.64	0.2193	-0.0013	-0.23	OE
444Y4R		0.2644	0.0005	0.08	0.2211	0.0005	0.09	IC
4AQ2TA		0.2684	0.0045	0.73	0.2207	0.0001	0.03	OE
4F3M7M	X	0.2467	-0.0172	-2.84	0.2167	-0.0039	-0.73	GD
4GEGN9		0.2653	0.0014	0.24	0.2220	0.0014	0.26	OE
4HNREK		0.2655	0.0016	0.26	0.2208	0.0002	0.04	OE
4HPJA8	X	0.4400	0.1761	28.98	0.4300	0.2094	38.76	GD
4KR4L7		0.2743	0.0104	1.72	0.2290	0.0084	1.56	XX
4NRDP9	*	0.2703	0.0064	1.06	0.2347	0.0141	2.61	OE
4P4ARR		0.2540	-0.0099	-1.63	0.2127	-0.0079	-1.47	OE
4RTJ4E		0.2800	0.0161	2.65	0.2337	0.0131	2.42	XX
62D6N3		0.2693	0.0054	0.89	0.2270	0.0064	1.19	OE
64F7GX		0.2720	0.0081	1.33	0.2257	0.0051	0.94	XX
683QM2		0.2560	-0.0079	-1.30	0.2150	-0.0056	-1.03	GD
6JW26W	*	0.2623	-0.0016	-0.26	0.2100	-0.0106	-1.96	OE
6NQXV9		0.2780	0.0141	2.32	0.2290	0.0084	1.56	OE
6VM2CQ	X	0.2610	-0.0029	-0.48	0.2273	0.0067	1.25	XX
7AK97L		0.2577	-0.0062	-1.03	0.2157	-0.0049	-0.91	GR
7EX7HE		0.2543	-0.0096	-1.57	0.2090	-0.0116	-2.15	OE
7WDH9J		0.2643	0.0004	0.07	0.2207	0.0001	0.01	XX
7ZX9W4	*	0.2677	0.0038	0.62	0.2107	-0.0099	-1.84	GD
82MT3Y		0.2503	-0.0136	-2.23	0.2073	-0.0133	-2.45	AE
8AZ3AT		0.2593	-0.0046	-0.75	0.2173	-0.0033	-0.60	OE
8E8HTP		0.2730	0.0091	1.50	0.2293	0.0087	1.62	OE
8H8UPN		0.2750	0.0111	1.83	0.2280	0.0074	1.37	OE
8HB94B		0.2540	-0.0099	-1.63	0.2100	-0.0106	-1.96	GR
8NGZ92		0.2545	-0.0094	-1.54	0.2124	-0.0082	-1.52	OE
8NZPM2		0.2663	0.0024	0.40	0.2223	0.0017	0.32	OE
94LQNC		0.2696	0.0057	0.94	0.2227	0.0021	0.39	OE
94PC7X		0.2713	0.0074	1.22	0.2280	0.0074	1.37	OE
98L3KC	X	0.2646	0.0007	0.11	0.4450	0.2244	41.54	OE
9UZP93		0.2667	0.0028	0.45	0.2227	0.0021	0.38	IC
9YX8MG		0.2700	0.0061	1.00	0.2323	0.0117	2.17	OE
A2J7HQ		0.2691	0.0052	0.86	0.2276	0.0070	1.29	OE
AVQ9PU		0.2733	0.0094	1.55	0.2300	0.0094	1.74	OE
AW6E76		0.2637	-0.0002	-0.04	0.2253	0.0047	0.88	XX
B4JM7K		0.2540	-0.0099	-1.63	0.2170	-0.0036	-0.66	OE
BJDALX		0.2640	0.0001	0.02	0.2210	0.0004	0.08	OE
BMCG2G		0.2530	-0.0109	-1.79	0.2113	-0.0093	-1.71	GD
BUZ6X8	*	0.2800	0.0161	2.65	0.2200	-0.0006	-0.11	OE
C6PKYT		0.2650	0.0011	0.18	0.2223	0.0017	0.32	XX



Fasteners and Metals Interlaboratory Testing Program

Analysis 1604

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

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
C9ABMC		0.2617	-0.0022	-0.36	0.2219	0.0013	0.25	OE
CALAEZ		0.2585	-0.0054	-0.88	0.2161	-0.0045	-0.83	OE
CE2FFF		0.2607	-0.0032	-0.53	0.2167	-0.0039	-0.73	WD
CPXNYJ		0.2683	0.0044	0.73	0.2190	-0.0016	-0.29	OE
D3378X		0.2683	0.0044	0.73	0.2280	0.0074	1.37	OE
D3GPUF		0.2657	0.0018	0.29	0.2228	0.0022	0.41	OE
D8W3WN		0.2693	0.0054	0.89	0.2267	0.0061	1.12	OE
DCRRFG		0.2618	-0.0021	-0.35	0.2175	-0.0031	-0.58	OE
DHRHDC		0.2661	0.0022	0.36	0.2258	0.0052	0.96	OE
DJMW8W		0.2717	0.0078	1.28	0.2267	0.0061	1.12	OE
EBPLCR	X	0.2627	-0.0012	-0.20	0.2637	0.0431	7.97	OE
ERB9MV	X	0.2487	-0.0152	-2.51	0.1997	-0.0209	-3.87	IC
F2GAWA		0.2553	-0.0086	-1.41	0.2117	-0.0089	-1.65	IC
FKADDA		0.2615	-0.0024	-0.40	0.2188	-0.0018	-0.33	OE
FL2BLG		0.2607	-0.0032	-0.53	0.2213	0.0007	0.14	XX
FVTNPM		0.2610	-0.0029	-0.48	0.2140	-0.0066	-1.22	GD
G9A9D9		0.2560	-0.0079	-1.30	0.2160	-0.0046	-0.85	OE
GCRBKE		0.2733	0.0094	1.55	0.2297	0.0091	1.68	OE
GJTH79		0.2780	0.0141	2.32	0.2273	0.0067	1.25	OE
GKM7MJ		0.2723	0.0084	1.39	0.2303	0.0097	1.80	OE
GQC4F		0.2583	-0.0056	-0.92	0.2167	-0.0039	-0.73	OE
GYNY2L		0.2700	0.0061	1.00	0.2267	0.0061	1.12	OE
GZ2CWW	X	0.2547	-0.0092	-1.52	0.2040	-0.0166	-3.07	OE
H4VTLW		0.2717	0.0078	1.28	0.2250	0.0044	0.82	OE
H76TNH		0.2667	0.0028	0.45	0.2267	0.0061	1.12	OE
H98Q2V		0.2657	0.0018	0.29	0.2230	0.0024	0.45	OE
HTE22T		0.2672	0.0033	0.55	0.2222	0.0016	0.29	IC
HV7XQM		0.2553	-0.0086	-1.41	0.2123	-0.0083	-1.53	OE
J7JEZ6		0.2630	-0.0009	-0.15	0.2190	-0.0016	-0.29	OE
JDLQW2		0.2713	0.0074	1.22	0.2287	0.0081	1.49	OE
JGK3R2		0.2600	-0.0039	-0.64	0.2200	-0.0006	-0.11	XX
JPBR93		0.2658	0.0019	0.31	0.2236	0.0030	0.55	OE
KFZPKG		0.2700	0.0061	1.00	0.2260	0.0054	1.00	OE
KHRKEP		0.2710	0.0071	1.17	0.2260	0.0054	1.00	OE
KKDNWA		0.2626	-0.0013	-0.21	0.2209	0.0003	0.06	OE
KKEHH2	X	0.2557	-0.0082	-1.36	0.2053	-0.0153	-2.82	OE
KL8D6H		0.2613	-0.0026	-0.42	0.2173	-0.0033	-0.60	WD
KRDURC	X	0.2907	0.0268	4.40	0.2463	0.0257	4.76	GD
KT7Y9Q	X	0.2918	0.0279	4.59	0.2427	0.0222	4.10	IC
L84ENQ		0.2630	-0.0009	-0.15	0.2200	-0.0006	-0.11	IC
LDRVHP		0.2641	0.0002	0.03	0.2226	0.0020	0.37	OE
LE23JW		0.2708	0.0069	1.13	0.2249	0.0043	0.80	OE
LEMDKQ		0.2632	-0.0007	-0.12	0.2217	0.0011	0.20	OE
LNM8A9		0.2628	-0.0011	-0.18	0.2189	-0.0017	-0.31	OE
LZK4GG		0.2590	-0.0049	-0.81	0.2154	-0.0052	-0.96	OE
M378LT		0.2597	-0.0042	-0.70	0.2217	0.0011	0.20	OE
MDNUT9	X	0.3333	0.0694	11.42	0.2933	0.0727	13.46	XR

**Fasteners and Metals Interlaboratory Testing Program****Cycle 151**
3rd Qtr 2025**Analysis 1604****Carbon & Low Alloy Steel, SILICON (Si)**
SILICON (Si)

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
MR9AW9		0.2610	-0.0029	-0.48	0.2193	-0.0013	-0.23	OE
NCBF2T		0.2662	0.0023	0.37	0.2222	0.0016	0.30	XX
NTUFQ4		0.2665	0.0026	0.43	0.2227	0.0021	0.39	IC
NZG924		0.2666	0.0027	0.45	0.2217	0.0011	0.20	WD
PAZVLG		0.2597	-0.0042	-0.69	0.2166	-0.0040	-0.73	OE
PC8CRE		0.2643	0.0004	0.07	0.2193	-0.0013	-0.23	OE
PNGUNW		0.2550	-0.0089	-1.47	0.2127	-0.0079	-1.47	OE
PNLAX4		0.2593	-0.0046	-0.75	0.2153	-0.0053	-0.97	OE
QAFG3K		0.2673	0.0034	0.56	0.2197	-0.0009	-0.17	OE
QC2FXV		0.2663	0.0024	0.40	0.2233	0.0027	0.51	OE
QERJQ3		0.2613	-0.0026	-0.43	0.2192	-0.0014	-0.25	OE
QGVCECQ		0.2745	0.0106	1.74	0.2271	0.0065	1.21	OE
QHLKLP		0.2600	-0.0039	-0.64	0.2200	-0.0006	-0.11	OE
QP8DZA		0.2660	0.0021	0.34	0.2191	-0.0015	-0.28	OE
QPQGE2		0.2653	0.0014	0.24	0.2207	0.0001	0.01	XX
RAPZ4U	X	0.2400	-0.0239	-3.93	0.2000	-0.0206	-3.81	OE
RATMG2		0.2673	0.0034	0.56	0.2277	0.0071	1.31	OE
RB699N		0.2620	-0.0019	-0.31	0.2207	0.0001	0.01	GD
RBKJ7V		0.2634	-0.0005	-0.09	0.2179	-0.0027	-0.50	OE
RE9V8L	X	0.2659	0.0020	0.32	0.2132	-0.0074	-1.37	XX
RG99NK		0.2677	0.0038	0.62	0.2237	0.0031	0.57	IC
RP3DGL		0.2634	-0.0005	-0.08	0.2218	0.0012	0.22	OE
RT4KQA		0.2637	-0.0002	-0.04	0.2197	-0.0009	-0.17	XX
T38RFX		0.2553	-0.0086	-1.41	0.2147	-0.0059	-1.10	OE
T6E8PN		0.2583	-0.0056	-0.92	0.2140	-0.0066	-1.21	GR
T8FEQD	X	0.2750	0.0111	1.82	0.2378	0.0172	3.19	OE
TJXUW2		0.2550	-0.0089	-1.47	0.2100	-0.0106	-1.96	OE
TLZWHW		0.2637	-0.0002	-0.04	0.2200	-0.0006	-0.11	OE
TV9BKX		0.2610	-0.0029	-0.48	0.2170	-0.0036	-0.66	OE
U3346W		0.2626	-0.0013	-0.21	0.2196	-0.0010	-0.19	OE
ULWPUU		0.2616	-0.0023	-0.38	0.2249	0.0043	0.80	WD
URKA3G		0.2710	0.0071	1.17	0.2297	0.0091	1.69	OE
UYKWRV		0.2683	0.0044	0.73	0.2197	-0.0009	-0.17	DR
V3W6JD		0.2633	-0.0006	-0.09	0.2197	-0.0009	-0.17	WD
VA2XPG	*	0.2683	0.0044	0.73	0.2352	0.0146	2.71	OE
VFK4HG		0.2587	-0.0052	-0.86	0.2170	-0.0036	-0.66	WD
VNDJ6Z	*	0.2790	0.0151	2.48	0.2250	0.0044	0.82	OE
VQPPY2	X	0.2673	0.0034	0.56	0.2640	0.0434	8.03	OE
VTULC7		0.2673	0.0034	0.56	0.2193	-0.0013	-0.23	OE
VU6LC7	*	0.2577	-0.0062	-1.03	0.2240	0.0034	0.63	XX
VYWZTZ		0.2680	0.0041	0.67	0.2243	0.0037	0.69	OE
WGBPFB		0.2643	0.0004	0.07	0.2207	0.0001	0.01	OE
WKXBEF		0.2600	-0.0039	-0.64	0.2180	-0.0026	-0.48	OE
WRFGFT		0.2553	-0.0086	-1.41	0.2150	-0.0056	-1.03	OE
WVFMY6		0.2700	0.0061	1.00	0.2200	-0.0006	-0.11	AE
WXYXPH		0.2570	-0.0069	-1.14	0.2120	-0.0086	-1.59	OE
X7RAKB		0.2700	0.0061	1.00	0.2200	-0.0006	-0.11	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 151
3rd Qtr 2025

Analysis 1604

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

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
XGUPBF		0.2610	-0.0029	-0.47	0.2226	0.0020	0.38	OE
XRQZEG	*	0.2520	-0.0119	-1.96	0.2053	-0.0153	-2.82	GR
XVCKNQ		0.2613	-0.0026	-0.42	0.2157	-0.0049	-0.91	OE
XVDDJD	X	0.2197	-0.0442	-7.28	0.1810	-0.0396	-7.33	OE
XY99ZR		0.2623	-0.0016	-0.26	0.2210	0.0004	0.08	DR
XZ8A8J		0.2620	-0.0019	-0.31	0.2210	0.0004	0.08	DR
YCWTW9		0.2690	0.0051	0.84	0.2223	0.0017	0.32	IC
YQVLLW		0.2520	-0.0119	-1.96	0.2140	-0.0066	-1.22	GD
Z99FVH		0.2617	-0.0022	-0.37	0.2211	0.0005	0.09	DR
ZCAKF3		0.2647	0.0008	0.13	0.2218	0.0012	0.22	OE
ZZF7PT		0.2690	0.0051	0.84	0.2253	0.0047	0.87	OE

Summary Statistics

	Sample L11		Sample L12	
Grand Means	0.2639	Percent	0.2206	Percent
Stnd Dev Btwn Labs	0.0061	Percent	0.0054	Percent

Samples L11, L12 : AISI 4140, AISI 4140

Statistics based on 129 of 152 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		



Analysis 1604

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

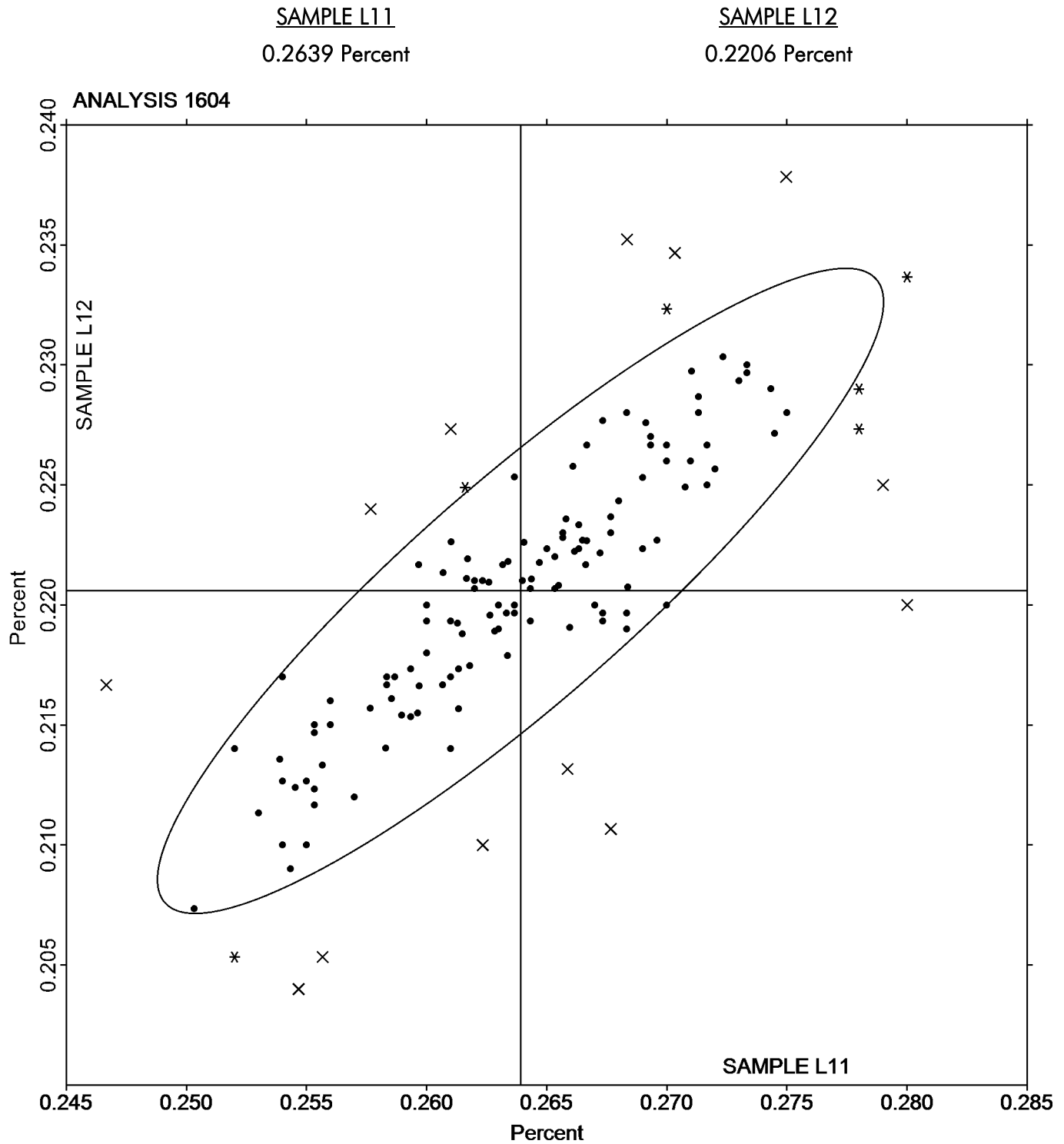
Comments on Assigned Data Flags for Test #1604

- 4F3M7M (X) - Data for sample L11 are low. Inconsistent within the determinations of both samples.
- 4HPJA8 (X) - Data for both samples are high. Possible Systematic Error.
- 6VM2CQ (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample L11.
- 98L3KC (X) - Data for sample L12 are high. Inconsistent within the determinations of sample L12.
- EBPLCR (X) - Data for sample L12 are high. Inconsistent within the determinations of sample L12.
- ERB9MV (X) - Data for sample L12 are low.
- GZ2CWW (X) - Data for sample L12 are low. Inconsistent within the determinations of sample L11.
- KKEHH2 (X) - Data for sample L12 are low.
- KRDURC (X) - Data for both samples are high. Possible Systematic Error.
- KT7Y9Q (X) - Data for both samples are high. Possible Systematic Error.
- MDNUT9 (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.
- RAPZ4U (X) - Data for both samples are low. Possible Systematic Error.
- RE9V8L (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample L12.
- T8FEQD (X) - Data for sample L12 are high.
- VQPY2 (X) - Data for sample L12 are high.
- XVDDJD (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of both samples.



Analysis 1604

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





Fasteners and Metals Interlaboratory Testing Program

Analysis 1605

Carbon & Low Alloy Steel, MOLYBDENUM (Mo)
MOLYBDENUM (Mo)

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24CE4M		0.1498	-0.0050	-1.39	0.1997	-0.0048	-1.09	OE
2BCQ7C		0.1603	0.0055	1.54	0.2130	0.0085	1.95	XX
324LPF		0.1613	0.0065	1.82	0.2087	0.0042	0.96	XX
37F9QJ		0.1560	0.0012	0.34	0.2070	0.0025	0.57	XX
3DJ93M		0.1607	0.0059	1.64	0.2140	0.0095	2.17	OE
3TUWAV	*	0.1557	0.0009	0.24	0.1973	-0.0072	-1.63	XX
3W9UDC		0.1533	-0.0015	-0.41	0.2040	-0.0005	-0.11	OE
444Y4R		0.1532	-0.0016	-0.44	0.2063	0.0018	0.41	IC
4AQ2TA		0.1533	-0.0015	-0.43	0.2025	-0.0020	-0.45	OE
4F3M7M	*	0.1467	-0.0081	-2.27	0.1933	-0.0112	-2.55	GD
4GEGN9		0.1580	0.0032	0.89	0.2090	0.0045	1.03	OE
4HNREK		0.1579	0.0031	0.87	0.2075	0.0030	0.69	OE
4HPJA8	X	0.0210	-0.1338	-37.31	0.0200	-0.1845	-42.16	GD
4KR4L7		0.1587	0.0039	1.08	0.2103	0.0058	1.34	XX
4P4ARR		0.1560	0.0012	0.34	0.2037	-0.0008	-0.19	OE
4RTJ4E		0.1600	0.0052	1.45	0.2113	0.0068	1.56	XX
62D6N3		0.1553	0.0005	0.15	0.2023	-0.0022	-0.49	OE
64F7GX		0.1537	-0.0011	-0.31	0.2033	-0.0012	-0.26	IC
683QM2		0.1540	-0.0008	-0.22	0.2090	0.0045	1.03	GD
6JW26W		0.1583	0.0035	0.99	0.2043	-0.0002	-0.04	OE
6NQXV9		0.1550	0.0002	0.06	0.2070	0.0025	0.57	OE
6VM2CQ		0.1563	0.0015	0.43	0.2050	0.0005	0.12	XX
7AK97L		0.1533	-0.0015	-0.41	0.2016	-0.0029	-0.66	IC
7EX7HE		0.1597	0.0049	1.36	0.2020	-0.0025	-0.57	OE
7WDH9J		0.1570	0.0022	0.62	0.2070	0.0025	0.57	XX
7ZX9W4		0.1493	-0.0055	-1.52	0.2013	-0.0032	-0.72	GD
82MT3Y	X	0.1760	0.0212	5.91	0.2253	0.0208	4.76	AE
8AZ3AT		0.1540	-0.0008	-0.22	0.2063	0.0018	0.42	OE
8E8HTP		0.1567	0.0019	0.52	0.2067	0.0022	0.50	OE
8H8UPN		0.1560	0.0012	0.34	0.2090	0.0045	1.03	OE
8HB94B		0.1560	0.0012	0.34	0.2047	0.0002	0.04	IC
8NGZ92		0.1531	-0.0017	-0.48	0.2026	-0.0019	-0.42	OE
8NZPM2		0.1543	-0.0005	-0.13	0.2050	0.0005	0.12	OE
94LQNC		0.1568	0.0020	0.56	0.2092	0.0047	1.08	OE
94PC7X		0.1563	0.0015	0.43	0.2067	0.0022	0.50	OE
9UZF93		0.1540	-0.0008	-0.22	0.2040	-0.0005	-0.11	IC
9YX8MG		0.1617	0.0069	1.92	0.2060	0.0015	0.35	OE
A2J7HQ		0.1524	-0.0024	-0.67	0.2055	0.0010	0.23	OE
AVQ9PU		0.1600	0.0052	1.45	0.2100	0.0055	1.26	OE
AW6E76		0.1450	-0.0098	-2.73	0.1947	-0.0098	-2.24	XX
B4JM7K		0.1537	-0.0011	-0.31	0.2043	-0.0002	-0.04	OE
BJDALX		0.1530	-0.0018	-0.50	0.2010	-0.0035	-0.80	OE
BMCG2G		0.1477	-0.0071	-1.99	0.1957	-0.0088	-2.02	GD
BUZ6X8		0.1527	-0.0021	-0.59	0.2013	-0.0032	-0.72	OE
C6PKYT		0.1547	-0.0001	-0.04	0.2073	0.0028	0.65	OE
C9ABMC		0.1533	-0.0015	-0.41	0.2020	-0.0025	-0.57	OE
CALAEZ		0.1607	0.0059	1.65	0.2115	0.0070	1.61	OE

**Fasteners and Metals Interlaboratory Testing Program****Cycle 151**
3rd Qtr 2025**Analysis 1605****Carbon & Low Alloy Steel, MOLYBDENUM (Mo)**
MOLYBDENUM (Mo)

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
CE2FFF		0.1573	0.0025	0.71	0.2080	0.0035	0.80	OE
CPXNYJ		0.1567	0.0019	0.52	0.2060	0.0015	0.35	OE
D3378X	X	0.1667	0.0119	3.31	0.2193	0.0148	3.39	OE
D3GPUF		0.1526	-0.0022	-0.61	0.2033	-0.0012	-0.26	OE
D8W3WN		0.1560	0.0012	0.34	0.2080	0.0035	0.80	OE
DCRRFG		0.1567	0.0019	0.53	0.2066	0.0021	0.49	OE
DHRHDC	X	0.1453	-0.0095	-2.64	0.1901	-0.0144	-3.29	OE
DJMW8W	X	0.1483	-0.0065	-1.80	0.2067	0.0022	0.50	OE
EBPLCR		0.1603	0.0055	1.54	0.2030	-0.0015	-0.34	OE
ERB9MV	X	0.1470	-0.0078	-2.17	0.1893	-0.0152	-3.46	IC
F2GAWA		0.1520	-0.0028	-0.78	0.2007	-0.0038	-0.87	IC
FKADDA		0.1591	0.0043	1.20	0.2087	0.0042	0.96	OE
FL2BLG		0.1493	-0.0055	-1.52	0.1986	-0.0059	-1.34	XX
FVTNPM		0.1480	-0.0068	-1.89	0.1960	-0.0085	-1.94	GD
G9A9D9		0.1533	-0.0015	-0.41	0.2060	0.0015	0.35	XX
GCRBKE		0.1543	-0.0005	-0.13	0.2073	0.0028	0.65	OE
GJTH79		0.1600	0.0052	1.45	0.2123	0.0078	1.79	OE
GKM7MJ	*	0.1653	0.0105	2.94	0.2170	0.0125	2.86	OE
GQCN4F		0.1553	0.0005	0.15	0.2080	0.0035	0.80	OE
GYNY2L		0.1600	0.0052	1.45	0.2100	0.0055	1.26	OE
GZ2CWW		0.1537	-0.0011	-0.31	0.2087	0.0042	0.96	OE
H4VTLW		0.1610	0.0062	1.73	0.2133	0.0088	2.02	OE
H76TNH		0.1533	-0.0015	-0.41	0.2027	-0.0018	-0.42	OE
H98Q2V	X	0.9830	0.8282	230.95	1.033	0.8288	189.42	OE
HFTT8L	X	0.1403	-0.0145	-4.03	0.1863	-0.0182	-4.15	OE
HTE22T		0.1559	0.0011	0.31	0.2036	-0.0009	-0.20	IC
HV7XQM		0.1524	-0.0024	-0.68	0.2022	-0.0023	-0.53	OE
J7JEZ6		0.1550	0.0002	0.06	0.2023	-0.0022	-0.49	OE
JDLQW2	X	0.1283	-0.0265	-7.38	0.1680	-0.0365	-8.34	OE
JGK3R2	X	0.1800	0.0252	7.03	0.2367	0.0322	7.35	XX
KFZPKG		0.1537	-0.0011	-0.31	0.2040	-0.0005	-0.11	OE
KHRKEP		0.1550	0.0002	0.06	0.2020	-0.0025	-0.57	OE
KKDNWA		0.1554	0.0006	0.16	0.2054	0.0009	0.21	OE
KKEHH2	X	0.1653	0.0105	2.94	0.2213	0.0168	3.85	OE
KL8D6H		0.1557	0.0009	0.24	0.2030	-0.0015	-0.34	WD
KT7Y9Q		0.1582	0.0034	0.95	0.2066	0.0021	0.48	IC
L84ENQ		0.1507	-0.0041	-1.15	0.1997	-0.0048	-1.10	IC
LDRVHP		0.1549	0.0001	0.04	0.1975	-0.0070	-1.60	OE
LE23JW		0.1534	-0.0014	-0.39	0.2051	0.0006	0.15	OE
LEMDKQ		0.1549	0.0001	0.04	0.2053	0.0008	0.19	OE
LNMA8A		0.1532	-0.0016	-0.45	0.2040	-0.0005	-0.12	OE
LZK4GG		0.1465	-0.0083	-2.30	0.1930	-0.0115	-2.63	OE
M378LT		0.1573	0.0025	0.71	0.2107	0.0062	1.41	OE
MDNUT9		0.1600	0.0052	1.45	0.2100	0.0055	1.26	XR
MR9AW9		0.1550	0.0002	0.06	0.2073	0.0028	0.65	OE
NCBF2T		0.1524	-0.0024	-0.66	0.2047	0.0002	0.04	XX
NTUFQ4		0.1528	-0.0020	-0.56	0.2027	-0.0018	-0.41	IC



Fasteners and Metals Interlaboratory Testing Program

Cycle 151
3rd Qtr 2025

Analysis 1605

Carbon & Low Alloy Steel, MOLYBDENUM (Mo)
MOLYBDENUM (Mo)

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
NZG924		0.1542	-0.0006	-0.17	0.2043	-0.0002	-0.04	OE
PAZVLG		0.1562	0.0014	0.39	0.2091	0.0046	1.06	OE
PC8CRE		0.1593	0.0045	1.27	0.2090	0.0045	1.03	OE
PNGUNW		0.1513	-0.0035	-0.96	0.1987	-0.0058	-1.33	OE
PNLAX4		0.1557	0.0009	0.24	0.2063	0.0018	0.42	OE
QAFG3K		0.1557	0.0009	0.24	0.2067	0.0022	0.50	OE
QC2FXV		0.1510	-0.0038	-1.06	0.1973	-0.0072	-1.63	OE
QERJQ3		0.1543	-0.0005	-0.15	0.2049	0.0004	0.09	OE
QGVECQ		0.1575	0.0027	0.76	0.2069	0.0024	0.56	OE
QHLKLP		0.1500	-0.0048	-1.34	0.2000	-0.0045	-1.03	OE
QP8DZA		0.1554	0.0006	0.18	0.2035	-0.0010	-0.22	OE
QPQGE2		0.1560	0.0012	0.34	0.2050	0.0005	0.12	XX
RAPZ4U	X	0.1500	-0.0048	-1.34	0.2200	0.0155	3.55	OE
RATMG2		0.1510	-0.0038	-1.06	0.2003	-0.0042	-0.95	OE
RB699N		0.1530	-0.0018	-0.50	0.2003	-0.0042	-0.95	GD
RBKJ7V		0.1550	0.0002	0.05	0.2025	-0.0019	-0.44	OE
RE9V8L	X	0.1435	-0.0113	-3.14	0.1858	-0.0187	-4.28	XX
RG99NK		0.1527	-0.0021	-0.59	0.2017	-0.0028	-0.64	IC
RP3DGL	X	0.1558	0.0010	0.27	0.2206	0.0161	3.67	OE
RT4KQA		0.1543	-0.0005	-0.13	0.2000	-0.0045	-1.03	XX
T38RFX		0.1500	-0.0048	-1.34	0.2007	-0.0038	-0.87	OE
T6E8PN		0.1495	-0.0053	-1.49	0.2006	-0.0039	-0.88	IC
T8FEQD	*	0.1475	-0.0073	-2.03	0.2044	-0.0001	-0.03	OE
TJXUW2		0.1533	-0.0015	-0.41	0.2003	-0.0042	-0.95	OE
TLZWHW		0.1507	-0.0041	-1.15	0.2030	-0.0015	-0.34	OE
TV9BKX		0.1560	0.0012	0.34	0.2063	0.0018	0.42	OE
U3346W		0.1556	0.0008	0.22	0.2035	-0.0010	-0.23	OE
ULWPUU		0.1550	0.0002	0.06	0.2059	0.0014	0.33	WD
URKA3G		0.1471	-0.0077	-2.15	0.1954	-0.0091	-2.08	OE
UYKWRV		0.1537	-0.0011	-0.31	0.2103	0.0058	1.34	DR
V3W6JD		0.1537	-0.0011	-0.31	0.2000	-0.0045	-1.03	WD
VA2XPG		0.1570	0.0022	0.60	0.2030	-0.0015	-0.34	OE
VFK4HG		0.1580	0.0032	0.89	0.2070	0.0025	0.57	WD
VNDJ6Z		0.1520	-0.0028	-0.78	0.2090	0.0045	1.03	OE
VQPPY2	X	0.1543	-0.0005	-0.13	0.1830	-0.0215	-4.91	OE
VTULC7		0.1587	0.0039	1.08	0.2067	0.0022	0.50	OE
VU6LC7		0.1610	0.0062	1.73	0.2057	0.0012	0.27	XX
VYWZTZ		0.1480	-0.0068	-1.89	0.1963	-0.0082	-1.86	OE
WGBPFB		0.1543	-0.0005	-0.13	0.2067	0.0022	0.50	OE
WKXBEF		0.1480	-0.0068	-1.89	0.2000	-0.0045	-1.03	OE
WRFGFT	X	0.1660	0.0112	3.12	0.2127	0.0082	1.87	OE
WVFMY6		0.1567	0.0019	0.52	0.2067	0.0022	0.50	AE
WXYXPH		0.1550	0.0002	0.06	0.2060	0.0015	0.35	OE
X7RAKB		0.1550	0.0002	0.06	0.2000	-0.0045	-1.03	OE
XGUPBF		0.1579	0.0031	0.86	0.2062	0.0017	0.39	OE
XRQZEG		0.1560	0.0012	0.35	0.2061	0.0016	0.37	IC
XVCKNQ		0.1530	-0.0018	-0.50	0.2010	-0.0035	-0.80	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 151
3rd Qtr 2025

Analysis 1605

Carbon & Low Alloy Steel, MOLYBDENUM (Mo)
MOLYBDENUM (Mo)

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
XVDDJD	X	0.2110	0.0562	15.67	0.2863	0.0818	18.70	OE
XY99ZR		0.1553	0.0005	0.15	0.2083	0.0038	0.88	DR
XZ8A8J	*	0.1560	0.0012	0.34	0.1953	-0.0092	-2.09	DR
YCWTW9		0.1577	0.0029	0.80	0.2060	0.0015	0.35	IC
YQVLLW	X	0.1380	-0.0168	-4.68	0.1940	-0.0105	-2.40	GD
Z99FVH	X	0.1663	0.0115	3.22	0.2028	-0.0017	-0.38	DR
ZCAKF3		0.1487	-0.0061	-1.69	0.1987	-0.0058	-1.32	OE
ZZF7PT		0.1528	-0.0020	-0.56	0.2008	-0.0037	-0.85	OE

Summary Statistics

Sample L11				Sample L12	
Grand Means	0.1548	Percent		0.2045	Percent
Std Dev Bwn Labs	0.0036	Percent		0.0044	Percent

Samples L11, L12 : AISI 4140, AISI 4140

Statistics based on 128 of 149 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



Analysis 1605

Carbon & Low Alloy Steel, MOLYBDENUM (Mo)
MOLYBDENUM (Mo)

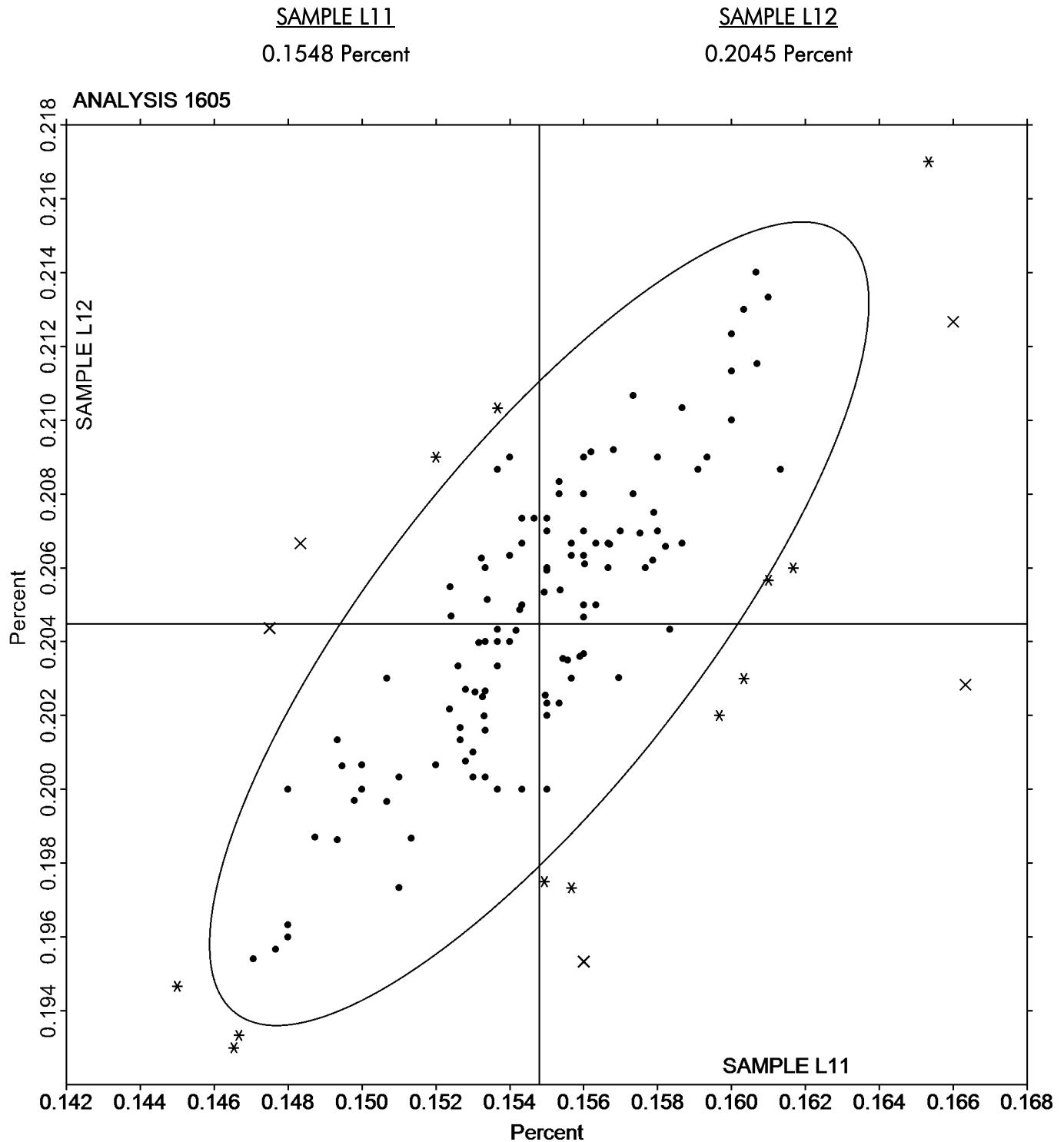
Comments on Assigned Data Flags for Test #1605

- 4HPJA8 (X) - Extreme data.
- 82MT3Y (X) - Data for both samples are high.
- D3378X (X) - Data for both samples are high.
- DHRHDC (X) - Data for sample L12 are low.
- DJMW8W (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both samples.
- ERB9MV (X) - Data for sample L12 are low. Inconsistent within the determinations of sample L11.
- H98Q2V (X) - Extreme data.
- HFTT8L (X) - Data for both samples are low. Inconsistent within the determinations of sample L11.
- JDLQW2 (X) - Data for both samples are low.
- JGK3R2 (X) - Data for both samples are high. Inconsistent within the determinations of sample L12.
- KKEHH2 (X) - Data for both samples are high.
- RAPZ4U (X) - Data for sample L12 are high.
- RE9V8L (X) - Data for both samples are low.
- RP3DGL (X) - Data for sample L12 are high. Inconsistent within the determinations of sample L12.
- VQPY2 (X) - Data for sample L12 are low.
- WRFGFT (X) - Data for sample L11 are high.
- XVDDJD (X) - Data for both samples are high.
- YQVLLW (X) - Data for sample L11 are low.
- Z99FVH (X) - Data for sample L11 are high.



Analysis 1605

Carbon & Low Alloy Steel, MOLYBDENUM (Mo)
MOLYBDENUM (Mo)





Fasteners and Metals Interlaboratory Testing Program

Cycle 151
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Analysis 1606

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

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24CE4M		0.1168	-0.0040	-1.09	0.1280	-0.0043	-1.10	XX
2BCQ7C		0.1123	-0.0085	-2.32	0.1217	-0.0107	-2.70	XX
324LPF		0.1257	0.0049	1.33	0.1387	0.0063	1.59	XX
37F9QJ	X	0.1350	0.0142	3.89	0.1477	0.0153	3.86	XX
3DJ93M		0.1190	-0.0018	-0.50	0.1317	-0.0007	-0.18	OE
3TUWAV		0.1238	0.0030	0.81	0.1346	0.0023	0.57	XX
3W9UDC		0.1297	0.0089	2.43	0.1423	0.0100	2.52	OE
444Y4R		0.1250	0.0042	1.16	0.1363	0.0040	1.00	IC
4AQ2TA		0.1178	-0.0030	-0.82	0.1305	-0.0019	-0.47	OE
4F3M7M	*	0.1200	-0.0008	-0.22	0.1400	0.0076	1.93	GD
4GEGN9		0.1217	0.0009	0.24	0.1323	0.0000	-0.01	OE
4HNREK		0.1184	-0.0024	-0.66	0.1293	-0.0031	-0.78	OE
4HPJA8	X	0.0570	-0.0638	-17.49	0.0560	-0.0764	-19.28	GD
4KR4L7		0.1240	0.0032	0.87	0.1373	0.0050	1.25	XX
4P4ARR		0.1230	0.0022	0.60	0.1350	0.0026	0.66	OE
4RTJ4E		0.1297	0.0089	2.43	0.1427	0.0103	2.60	XX
62D6N3	X	0.1733	0.0525	14.39	0.1373	0.0050	1.25	OE
64F7GX		0.1190	-0.0018	-0.50	0.1307	-0.0017	-0.43	IC
683QM2		0.1180	-0.0028	-0.77	0.1290	-0.0034	-0.85	GD
6JW26W		0.1240	0.0032	0.87	0.1347	0.0023	0.58	OE
6NQXV9		0.1240	0.0032	0.87	0.1360	0.0036	0.92	OE
6VM2CQ		0.1223	0.0015	0.42	0.1330	0.0006	0.16	XX
7AK97L		0.1197	-0.0011	-0.31	0.1315	-0.0009	-0.23	IC
7EX7HE		0.1177	-0.0031	-0.86	0.1290	-0.0034	-0.85	OE
7WDH9J		0.1187	-0.0021	-0.59	0.1293	-0.0030	-0.77	XX
7ZX9W4		0.1167	-0.0041	-1.13	0.1263	-0.0060	-1.52	GD
82MT3Y	X	0.0738	-0.0470	-12.87	0.0839	-0.0485	-12.25	AE
8AZ3AT		0.1200	-0.0008	-0.22	0.1320	-0.0004	-0.09	OE
8E8HTP		0.1190	-0.0018	-0.50	0.1310	-0.0014	-0.35	OE
8H8UPN		0.1137	-0.0071	-1.96	0.1253	-0.0070	-1.78	OE
8HB94B		0.1173	-0.0035	-0.95	0.1283	-0.0040	-1.02	IC
8NGZ92		0.1210	0.0002	0.06	0.1326	0.0002	0.06	OE
8NZPM2		0.1217	0.0009	0.24	0.1313	-0.0010	-0.26	OE
94LQNC		0.1180	-0.0028	-0.78	0.1309	-0.0014	-0.36	OE
94PC7X		0.1197	-0.0011	-0.31	0.1307	-0.0017	-0.43	OE
9UZIP93		0.1193	-0.0015	-0.40	0.1307	-0.0017	-0.43	IC
9YX8MG		0.1237	0.0029	0.78	0.1380	0.0056	1.42	OE
A2J7HQ		0.1213	0.0005	0.13	0.1328	0.0004	0.10	OE
AVQ9PU		0.1200	-0.0008	-0.22	0.1333	0.0010	0.24	OE
AW6E76		0.1197	-0.0011	-0.31	0.1317	-0.0007	-0.18	XX
B4JM7K		0.1213	0.0005	0.14	0.1347	0.0023	0.58	OE
BJDALX		0.1220	0.0012	0.33	0.1320	-0.0004	-0.09	OE
BMCG2G		0.1223	0.0015	0.42	0.1320	-0.0004	-0.09	GD
BUZ6X8		0.1200	-0.0008	-0.22	0.1300	-0.0024	-0.60	OE
C6PKYT		0.1207	-0.0001	-0.04	0.1323	0.0000	-0.01	OE
C9ABMC		0.1260	0.0052	1.43	0.1366	0.0042	1.07	OE
CALAEZ		0.1168	-0.0040	-1.11	0.1280	-0.0044	-1.10	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 151
3rd Qtr 2025

Analysis 1606

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

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
CE2FFF		0.1150	-0.0058	-1.59	0.1267	-0.0057	-1.44	OE
CPXNYJ		0.1203	-0.0005	-0.13	0.1317	-0.0007	-0.18	OE
D3378X		0.1210	0.0002	0.05	0.1337	0.0013	0.33	OE
D3GPUF		0.1191	-0.0017	-0.48	0.1322	-0.0002	-0.04	OE
DCRRFG		0.1205	-0.0003	-0.09	0.1328	0.0004	0.11	OE
DHRHDC		0.1227	0.0019	0.53	0.1322	-0.0001	-0.03	OE
DJMW8W	X	0.1640	0.0432	11.84	0.1800	0.0476	12.03	OE
EBPLCR	*	0.1113	-0.0095	-2.60	0.1250	-0.0074	-1.86	OE
ERB9MV	X	0.1183	-0.0025	-0.68	0.1250	-0.0074	-1.86	IC
F2GAWA		0.1200	-0.0008	-0.22	0.1327	0.0003	0.07	IC
FKADDA		0.1213	0.0005	0.14	0.1325	0.0001	0.02	OE
FL2BLG		0.1206	-0.0002	-0.07	0.1321	-0.0003	-0.07	XX
FVTNPM		0.1247	0.0039	1.06	0.1367	0.0043	1.08	GD
G9A9D9	X	0.1130	-0.0078	-2.14	0.1180	-0.0144	-3.63	OE
GCRBKE		0.1200	-0.0008	-0.22	0.1300	-0.0024	-0.60	OE
GJTH79		0.1247	0.0039	1.06	0.1380	0.0056	1.42	OE
GKM7MJ		0.1157	-0.0051	-1.41	0.1277	-0.0047	-1.19	OE
GQCN4F		0.1240	0.0032	0.87	0.1380	0.0056	1.42	OE
GYNY2L		0.1210	0.0002	0.05	0.1320	-0.0004	-0.09	OE
GZ2CWW	X	0.1113	-0.0095	-2.60	0.1270	-0.0054	-1.36	OE
H4VTLW	*	0.1317	0.0109	2.98	0.1440	0.0116	2.94	OE
H76TNH		0.1223	0.0015	0.42	0.1350	0.0026	0.66	OE
H98Q2V		0.1140	-0.0068	-1.87	0.1263	-0.0060	-1.52	OE
HFTT8L		0.1260	0.0052	1.42	0.1383	0.0060	1.51	OE
HTE22T		0.1206	-0.0002	-0.05	0.1314	-0.0010	-0.25	IC
HV7XQM		0.1173	-0.0035	-0.95	0.1287	-0.0037	-0.94	OE
J7JEZ6		0.1227	0.0019	0.51	0.1340	0.0016	0.41	OE
JDLQW2		0.1147	-0.0061	-1.68	0.1277	-0.0047	-1.19	OE
JGK3R2	X	0.0660	-0.0548	-15.02	0.0727	-0.0597	-15.08	XX
KFZPKG		0.1260	0.0052	1.42	0.1390	0.0066	1.67	OE
KHRKEP		0.1260	0.0052	1.42	0.1370	0.0046	1.17	OE
KKDNWA		0.1225	0.0017	0.45	0.1344	0.0020	0.50	OE
KKEHH2		0.1200	-0.0008	-0.22	0.1290	-0.0034	-0.85	OE
KL8D6H		0.1220	0.0012	0.33	0.1320	-0.0004	-0.09	WD
KT7Y9Q		0.1266	0.0058	1.60	0.1389	0.0066	1.66	IC
L84ENQ		0.1227	0.0019	0.51	0.1343	0.0020	0.50	IC
LDRVHP		0.1160	-0.0048	-1.32	0.1274	-0.0050	-1.25	OE
LE23JW		0.1200	-0.0008	-0.21	0.1331	0.0007	0.18	OE
LEMDKQ		0.1224	0.0016	0.45	0.1346	0.0022	0.55	OE
LNMA8A		0.1205	-0.0003	-0.09	0.1329	0.0005	0.13	OE
LZK4GG		0.1206	-0.0002	-0.05	0.1322	-0.0001	-0.03	OE
M378LT	*	0.1200	-0.0008	-0.22	0.1277	-0.0047	-1.19	OE
MDNUT9	X	0.1167	-0.0041	-1.13	0.1333	0.0010	0.24	XR
MR9AW9		0.1207	-0.0001	-0.04	0.1337	0.0013	0.33	OE
NCBF2T		0.1230	0.0022	0.59	0.1346	0.0022	0.56	XX
NTUFQ4		0.1213	0.0005	0.13	0.1336	0.0012	0.31	IC
NZG924		0.1212	0.0004	0.10	0.1328	0.0005	0.12	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 151
3rd Qtr 2025

Analysis 1606

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

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
PAZVLG		0.1194	-0.0014	-0.39	0.1309	-0.0015	-0.37	OE
PC8CRE		0.1230	0.0022	0.60	0.1333	0.0010	0.24	OE
PNGUNW		0.1110	-0.0098	-2.69	0.1233	-0.0090	-2.28	XX
PNLAX4		0.1210	0.0002	0.05	0.1323	0.0000	-0.01	OE
QAFG3K	X	0.00333	-0.1175	-32.19	0.00700	-0.1254	-31.66	OE
QC2FXV		0.1153	-0.0055	-1.50	0.1283	-0.0040	-1.02	OE
QERJQ3		0.1220	0.0012	0.32	0.1350	0.0026	0.66	OE
QGVCEQ		0.1248	0.0040	1.08	0.1361	0.0038	0.95	OE
QHLKLP		0.1200	-0.0008	-0.22	0.1300	-0.0024	-0.60	OE
QP8DZA		0.1215	0.0007	0.20	0.1333	0.0010	0.24	OE
QPQGE2		0.1217	0.0009	0.24	0.1333	0.0010	0.24	XX
RAPZ4U		0.1200	-0.0008	-0.22	0.1300	-0.0024	-0.60	OE
RATMG2		0.1190	-0.0018	-0.50	0.1310	-0.0014	-0.35	OE
RB699N		0.1113	-0.0095	-2.60	0.1230	-0.0094	-2.37	GD
RBKJ7V		0.1180	-0.0029	-0.78	0.1289	-0.0035	-0.87	OE
RE9V8L	X	0.1195	-0.0013	-0.36	0.1272	-0.0051	-1.30	XX
RG99NK		0.1203	-0.0005	-0.13	0.1303	-0.0020	-0.51	IC
RP3DGL		0.1186	-0.0022	-0.61	0.1304	-0.0020	-0.50	OE
RT4KQA	X	0.1223	0.0015	0.42	0.1283	-0.0040	-1.02	XX
T6E8PN		0.1199	-0.0009	-0.25	0.1307	-0.0017	-0.43	IC
T8FEQD	*	0.1223	0.0015	0.42	0.1392	0.0068	1.72	OE
TJXUW2		0.1163	-0.0045	-1.23	0.1267	-0.0057	-1.44	OE
TLZWHW		0.1200	-0.0008	-0.22	0.1307	-0.0017	-0.43	OE
TV9BKX		0.1230	0.0022	0.60	0.1347	0.0023	0.58	OE
U3346W		0.1222	0.0014	0.39	0.1339	0.0015	0.38	XX
ULWPUU		0.1214	0.0006	0.15	0.1324	0.0000	0.01	WD
URKA3G		0.1118	-0.0090	-2.47	0.1240	-0.0084	-2.11	OE
UYKWRV	*	0.1265	0.0057	1.56	0.1338	0.0015	0.37	DR
V3W6JD		0.1237	0.0029	0.78	0.1347	0.0023	0.58	WD
VA2XPG		0.1210	0.0002	0.05	0.1338	0.0015	0.37	OE
VFK4HG		0.1230	0.0022	0.60	0.1340	0.0016	0.41	WD
VNDJ6Z	X	0.1263	0.0055	1.51	0.1250	-0.0074	-1.86	OE
VQPY2	X	0.0670	-0.0538	-14.75	0.1210	-0.0114	-2.87	OE
VTULC7		0.1243	0.0035	0.97	0.1367	0.0043	1.08	OE
VU6LC7		0.1207	-0.0001	-0.04	0.1313	-0.0010	-0.26	XX
VYWZTZ		0.1223	0.0015	0.42	0.1340	0.0016	0.41	OE
WGBPFB		0.1233	0.0025	0.69	0.1383	0.0060	1.51	OE
WKXBEF		0.1257	0.0049	1.33	0.1357	0.0033	0.83	OE
WRFGFT		0.1240	0.0032	0.87	0.1360	0.0036	0.92	OE
WVFM6		0.1300	0.0092	2.52	0.1400	0.0076	1.93	AE
WXYXPH		0.1200	-0.0008	-0.22	0.1320	-0.0004	-0.09	OE
X7RAKB		0.1187	-0.0021	-0.59	0.1277	-0.0047	-1.19	OE
XGUPBF		0.1213	0.0005	0.14	0.1344	0.0021	0.52	XX
XRQZEG		0.1153	-0.0055	-1.51	0.1264	-0.0060	-1.52	XX
XVCKNQ		0.1210	0.0002	0.05	0.1330	0.0006	0.16	OE
XVDDJD	X	0.1080	-0.0128	-3.51	0.1223	-0.0100	-2.53	OE
XY99ZR		0.1147	-0.0061	-1.68	0.1243	-0.0080	-2.03	DR



Fasteners and Metals Interlaboratory Testing Program

Cycle 151
3rd Qtr 2025

Analysis 1606

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

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
YCWTW9		0.1187	-0.0021	-0.59	0.1283	-0.0040	-1.02	IC
YQVLLW	X	0.1061	-0.0147	-4.03	0.1166	-0.0158	-3.98	GD
Z99FVH		0.1230	0.0022	0.60	0.1332	0.0008	0.21	DR
ZCAKF3		0.1248	0.0040	1.08	0.1361	0.0038	0.95	OE
ZZF7PT		0.1218	0.0010	0.28	0.1335	0.0011	0.29	OE

Summary Statistics

	Sample L11		Sample L12	
Grand Means	0.1208	Percent	0.1324	Percent
Stnd Dev Btwn Labs	0.0036	Percent	0.0040	Percent

Samples L11, L12 : AISI 4140, AISI 4140

Statistics based on 124 of 146 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

- 37F9QJ (X) - Data for both samples are high. Possible Systematic Error.
- 4HPJA8 (X) - Data for both samples are low. Possible Systematic Error.
- 62D6N3 (X) - Data for sample L11 are high.
- 82MT3Y (X) - Data for both samples are low. Possible Systematic Error.
- DJMW8W (X) - Data for both samples are high. Possible Systematic Error.
- ERB9MV (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both samples.
- G9A9D9 (X) - Data for sample L12 are low.
- GZ2CWW (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample L11.
- JGK3R2 (X) - Data for both samples are low. Possible Systematic Error.
- MDNUT9 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both samples.
- QAFG3K (X) - Extreme data.
- RE9V8L (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample L12.
- RT4KQA (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample L11.
- VNDJ6Z (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample L11.
- VQPY2 (X) - Data for both samples are low. Possible Systematic Error.
- XVDDJD (X) - Data for sample L11 are low.
- YQVLLW (X) - Data for both samples are low. Possible Systematic Error.

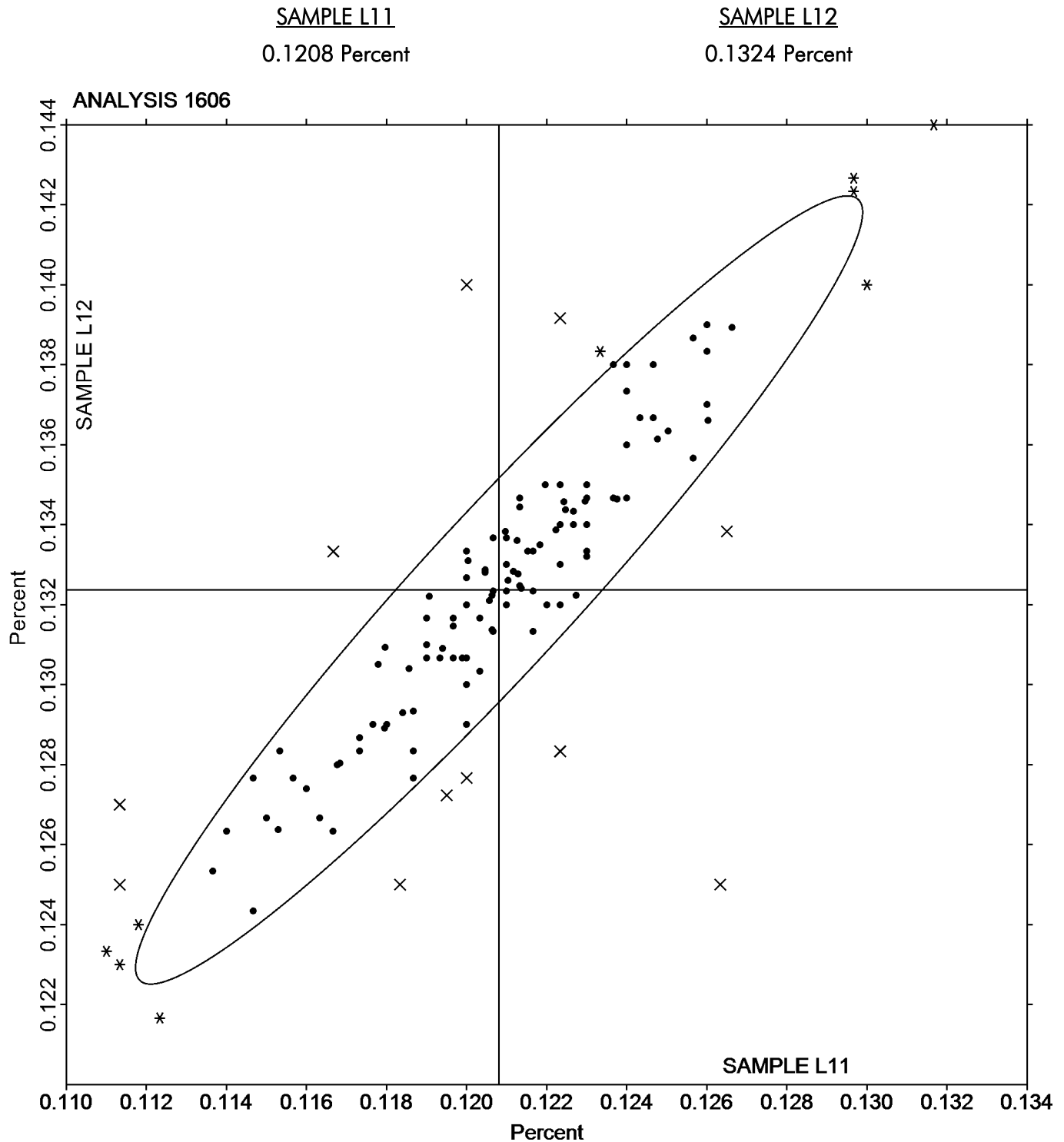


Fasteners and Metals Interlaboratory Testing Program

Analysis 1606

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

Cycle 151
3rd Qtr 2025





Fasteners and Metals Interlaboratory Testing Program

Analysis 1607

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

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24CE4M	X	0.9148	-0.0527	-4.44	0.9457	-0.0510	-3.70	OE
37F9QJ		0.9783	0.0108	0.91	1.013	0.0167	1.21	XX
3DJ93M		0.9573	-0.0102	-0.86	0.9887	-0.0080	-0.58	OE
3TUWAV		0.9529	-0.0147	-1.24	0.9867	-0.0099	-0.72	XX
3W9UDC	*	0.9913	0.0238	2.00	0.9937	-0.0030	-0.22	OE
444Y4R		0.9821	0.0145	1.22	1.008	0.0115	0.84	IC
4AQ2TA		0.9741	0.0065	0.55	0.9939	-0.0028	-0.20	OE
4F3M7M	X	0.9333	-0.0342	-2.88	0.9833	-0.0133	-0.97	GD
4GEGN9		0.9793	0.0118	0.99	1.006	0.0094	0.68	OE
4HNREK	*	1.001	0.0331	2.79	1.031	0.0342	2.48	OE
4HPJA8	X	0.4850	-0.4826	-40.62	0.4660	-0.5306	-38.54	GD
4KR4L7		0.9810	0.0134	1.13	1.018	0.0217	1.58	XX
4P4ARR		0.9640	-0.0036	-0.30	0.9900	-0.0066	-0.48	OE
62D6N3		0.9730	0.0054	0.46	1.016	0.0194	1.41	OE
64F7GX		0.9630	-0.0046	-0.39	0.9917	-0.0050	-0.36	IC
683QM2	*	0.9350	-0.0326	-2.74	0.9560	-0.0406	-2.95	GD
6JW26W	X	0.9810	0.0134	1.13	1.030	0.0334	2.42	OE
6NQXV9		0.9600	-0.0076	-0.64	0.9920	-0.0046	-0.34	OE
6VM2CQ		0.9767	0.0091	0.76	1.006	0.0090	0.66	XX
7AK97L		0.9655	-0.0021	-0.18	0.9893	-0.0073	-0.53	IC
7EX7HE		0.9527	-0.0149	-1.26	0.9783	-0.0183	-1.33	OE
7ZX9W4		0.9577	-0.0099	-0.83	0.9843	-0.0123	-0.89	GD
82MT3Y		0.9737	0.0061	0.51	0.9990	0.0024	0.17	AE
8AZ3AT		0.9523	-0.0152	-1.28	0.9820	-0.0146	-1.06	OE
8E8HTP		0.9853	0.0178	1.49	1.020	0.0234	1.70	OE
8H8UPN		0.9813	0.0138	1.16	1.003	0.0067	0.49	OE
8HB94B		0.9590	-0.0086	-0.72	0.9820	-0.0146	-1.06	IC
8NGZ92		0.9574	-0.0101	-0.85	0.9885	-0.0082	-0.59	OE
94LQNC	X	0.9255	-0.0421	-3.54	0.9454	-0.0513	-3.72	OE
94PC7X		0.9730	0.0054	0.46	1.011	0.0147	1.07	OE
9UZP93		0.9760	0.0084	0.71	1.006	0.0090	0.66	IC
9YX8MG	X	0.9770	0.0094	0.79	1.060	0.0637	4.63	OE
A2J7HQ		0.9769	0.0093	0.78	1.011	0.0144	1.04	OE
AVQ9PU		0.9733	0.0058	0.48	0.9967	0.0000	0.00	OE
AW6E76		0.9627	-0.0049	-0.41	0.9860	-0.0106	-0.77	XX
B4JM7K		0.9387	-0.0289	-2.43	0.9633	-0.0333	-2.42	OE
BJDALX		0.9500	-0.0176	-1.48	0.9780	-0.0186	-1.35	OE
BMCG2G		0.9840	0.0164	1.38	1.023	0.0267	1.94	GD
BUZ6X8		0.9600	-0.0076	-0.64	0.9933	-0.0033	-0.24	OE
C6PKYT		0.9400	-0.0276	-2.32	0.9700	-0.0266	-1.93	OE
C9ABMC		0.9656	-0.0020	-0.17	0.9974	0.0007	0.05	OE
CALAEZ		0.9782	0.0107	0.90	1.003	0.0062	0.45	OE
CE2FFF		0.9600	-0.0076	-0.64	0.9923	-0.0043	-0.31	OE
CPXNYJ		0.9823	0.0148	1.24	1.029	0.0324	2.35	OE
D3378X		0.9803	0.0128	1.07	1.010	0.0134	0.97	OE
D3GPUF		0.9612	-0.0064	-0.54	0.9933	-0.0033	-0.24	OE
D8W3WN		0.9857	0.0181	1.52	1.013	0.0160	1.16	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 151
3rd Qtr 2025

Analysis 1607

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

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
DCRRFG		0.9678	0.0002	0.02	0.9994	0.0028	0.20	OE
DHRHDC		0.9749	0.0073	0.61	1.017	0.0207	1.50	OE
DJMW8W		0.9720	0.0044	0.37	0.9960	-0.0006	-0.05	OE
EBPLCR		0.9723	0.0048	0.40	1.000	0.0037	0.27	OE
ERB9MV	X	0.9293	-0.0382	-3.22	0.9280	-0.0686	-4.98	IC
F2GAWA		0.9610	-0.0066	-0.55	0.9913	-0.0053	-0.38	IC
FKADDA		0.9588	-0.0088	-0.74	0.9912	-0.0055	-0.40	OE
FL2BLG		0.9609	-0.0067	-0.56	0.9894	-0.0072	-0.53	XX
FVTNPM		0.9703	0.0028	0.23	1.007	0.0100	0.73	GD
G9A9D9		0.9700	0.0024	0.20	0.9867	-0.0100	-0.72	OE
GCRBKE		0.9600	-0.0076	-0.64	0.9933	-0.0033	-0.24	OE
GJTH79		0.9487	-0.0189	-1.59	0.9840	-0.0126	-0.92	OE
GKM7MJ		0.9860	0.0184	1.55	1.011	0.0140	1.02	OE
GQCN4F		0.9663	-0.0012	-0.10	0.9920	-0.0046	-0.34	OE
GYNY2L		0.9433	-0.0242	-2.04	0.9733	-0.0233	-1.69	OE
GZ2CWW	X	0.9197	-0.0479	-4.03	0.9840	-0.0126	-0.92	OE
H4VTLW	X	1.040	0.0724	6.10	1.087	0.0900	6.54	XX
H76TNH		0.9627	-0.0049	-0.41	0.9907	-0.0060	-0.43	OE
H98Q2V	X	0.1533	-0.8142	-68.55	0.2063	-0.7903	-57.40	OE
HFTT8L	X	0.8907	-0.0769	-6.47	0.9170	-0.0796	-5.78	OE
HTE22T		0.9834	0.0158	1.33	1.010	0.0133	0.96	IC
HV7XQM		0.9637	-0.0039	-0.33	0.9933	-0.0033	-0.24	XX
J7JEZ6		0.9710	0.0034	0.29	0.9950	-0.0016	-0.12	OE
JDLQW2	X	0.9680	0.0004	0.04	0.9607	-0.0360	-2.61	OE
JGK3R2		0.9900	0.0224	1.89	1.013	0.0167	1.21	XX
KFZPKG		0.9707	0.0031	0.26	1.001	0.0044	0.32	OE
KHRKEP		0.9940	0.0264	2.22	1.030	0.0334	2.42	OE
KKDNWA		0.9747	0.0071	0.60	1.006	0.0095	0.69	OE
KKEHH2	X	1.027	0.0591	4.97	1.053	0.0567	4.12	OE
KL8D6H		0.9753	0.0078	0.65	0.9990	0.0024	0.17	WD
KT7Y9Q	X	1.007	0.0394	3.32	1.030	0.0329	2.39	IC
L84ENQ		0.9687	0.0011	0.09	0.9943	-0.0023	-0.17	IC
LDRVHP		0.9630	-0.0045	-0.38	0.9861	-0.0106	-0.77	OE
LE23JW		0.9673	-0.0002	-0.02	1.007	0.0108	0.78	OE
LEMDKQ		0.9642	-0.0034	-0.29	1.004	0.0076	0.55	OE
LNM8A9		0.9723	0.0048	0.40	1.002	0.0057	0.41	OE
LZK4GG		0.9499	-0.0177	-1.49	0.9776	-0.0190	-1.38	OE
M378LT		0.9820	0.0144	1.21	1.010	0.0134	0.97	OE
MDNUT9		0.9567	-0.0109	-0.92	0.9800	-0.0166	-1.21	XR
MR9AW9		0.9707	0.0031	0.26	1.006	0.0090	0.66	OE
NCBF2T		0.9886	0.0210	1.77	1.019	0.0225	1.64	XX
NTUFQ4		0.9759	0.0083	0.70	1.003	0.0066	0.48	IC
NZG924		0.9809	0.0134	1.12	1.010	0.0135	0.98	OE
PAZVLG		0.9571	-0.0105	-0.89	0.9898	-0.0068	-0.49	OE
PC8CRE		0.9907	0.0231	1.94	1.021	0.0244	1.77	OE
PNGUNW		0.9657	-0.0019	-0.16	0.9933	-0.0033	-0.24	OE
PNLAX4		0.9707	0.0031	0.26	1.003	0.0060	0.44	OE



Fasteners and Metals Interlaboratory Testing Program

Analysis 1607

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

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
QAFG3K		0.9687	0.0011	0.09	0.9950	-0.0016	-0.12	OE
QC2FXV		0.9450	-0.0226	-1.90	0.9793	-0.0173	-1.26	OE
QERJQ3		0.9655	-0.0021	-0.18	0.9973	0.0006	0.05	OE
QGVECQ		0.9834	0.0158	1.33	1.011	0.0142	1.03	OE
QHLKLP		0.9633	-0.0042	-0.36	1.000	0.0034	0.24	OE
QP8DZA		0.9627	-0.0049	-0.41	0.9987	0.0020	0.15	OE
QPQGE2		0.9633	-0.0042	-0.36	0.9893	-0.0073	-0.53	XX
RAPZ4U	X	0.9100	-0.0576	-4.85	0.9433	-0.0533	-3.87	OE
RATMG2		0.9677	0.0001	0.01	1.007	0.0100	0.73	OE
RB699N	X	0.9267	-0.0409	-3.44	0.9503	-0.0463	-3.36	GD
RBKJ7V		0.9651	-0.0025	-0.21	0.9919	-0.0048	-0.35	OE
RE9V8L	X	0.9478	-0.0198	-1.67	0.9291	-0.0676	-4.91	XX
RG99NK		0.9740	0.0064	0.54	0.9983	0.0017	0.12	IC
RP3DGL		0.9688	0.0013	0.11	1.006	0.0090	0.66	OE
RT4KQA		0.9570	-0.0106	-0.89	0.9720	-0.0246	-1.79	XX
T38RFX		0.9433	-0.0242	-2.04	0.9730	-0.0236	-1.72	OE
T6E8PN		0.9520	-0.0156	-1.31	0.9801	-0.0166	-1.20	IC
T8FEQD		0.9736	0.0061	0.51	1.018	0.0209	1.52	OE
TJXUW2		0.9583	-0.0092	-0.78	0.9893	-0.0073	-0.53	OE
TLZWHW		0.9673	-0.0002	-0.02	0.9960	-0.0006	-0.05	OE
TV9BKX		0.9583	-0.0092	-0.78	0.9847	-0.0120	-0.87	OE
U3346W		0.9725	0.0049	0.41	0.9971	0.0004	0.03	OE
ULWPUU		0.9637	-0.0038	-0.32	0.9946	-0.0021	-0.15	WD
URKA3G	X	0.8685	-0.0990	-8.34	0.8973	-0.0993	-7.21	OE
UYKWRV		0.9793	0.0118	0.99	1.001	0.0040	0.29	DR
V3W6JD		0.9663	-0.0012	-0.10	0.9917	-0.0050	-0.36	WD
VA2XPG		0.9729	0.0053	0.45	0.9974	0.0008	0.06	OE
VFK4HG		0.9687	0.0011	0.09	0.9960	-0.0006	-0.05	WD
VNDJ6Z		0.9667	-0.0009	-0.08	0.9860	-0.0106	-0.77	OE
VQPPY2	*	0.9833	0.0158	1.33	0.9600	-0.0366	-2.66	OE
VTULC7		0.9810	0.0134	1.13	1.002	0.0054	0.39	OE
VU6LC7		0.9660	-0.0016	-0.13	0.9860	-0.0106	-0.77	XX
VYWZTZ		0.9843	0.0168	1.41	1.013	0.0160	1.16	OE
WGBPFB		0.9643	-0.0032	-0.27	0.9997	0.0030	0.22	OE
WKXBEF		0.9753	0.0078	0.65	1.000	0.0037	0.27	OE
WRFGFT		0.9707	0.0031	0.26	1.010	0.0134	0.97	OE
WVFMY6		0.9500	-0.0176	-1.48	0.9767	-0.0200	-1.45	AE
WXYXPH		0.9750	0.0074	0.62	0.9980	0.0014	0.10	OE
X7RAKB		0.9600	-0.0076	-0.64	0.9900	-0.0066	-0.48	OE
XGUPBF		0.9709	0.0033	0.28	0.9923	-0.0044	-0.32	XX
XRQZEG		0.9627	-0.0049	-0.41	0.9797	-0.0170	-1.23	IC
XVCKNQ		0.9630	-0.0046	-0.39	0.9900	-0.0066	-0.48	OE
XVDDJD	X	0.9383	-0.0292	-2.46	0.9410	-0.0556	-4.04	OE
XY99ZR		0.9683	0.0008	0.06	1.013	0.0167	1.21	DR
XZ8A8J		0.9623	-0.0052	-0.44	0.9930	-0.0036	-0.26	DR
YCWTW9		0.9623	-0.0052	-0.44	0.9800	-0.0166	-1.21	IC
YQVLLW		0.9690	0.0014	0.12	0.9971	0.0005	0.03	GD



Fasteners and Metals Interlaboratory Testing Program

Cycle 151
3rd Qtr 2025

Analysis 1607

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

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
Z99FVH		0.9660	-0.0016	-0.13	0.9789	-0.0177	-1.29	DR
ZCAKF3		0.9510	-0.0166	-1.40	0.9783	-0.0183	-1.33	OE
ZZF7PT		0.9505	-0.0171	-1.44	0.9812	-0.0154	-1.12	OE

Summary Statistics

	Sample L11			Sample L12		
Grand Means	0.9676	Percent		0.9966	Percent	
Stnd Dev Btwn Labs	0.0119	Percent		0.0138	Percent	

Samples L11, L12 : AISI 4140, AISI 4140

Statistics based on 123 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



Analysis 1607

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

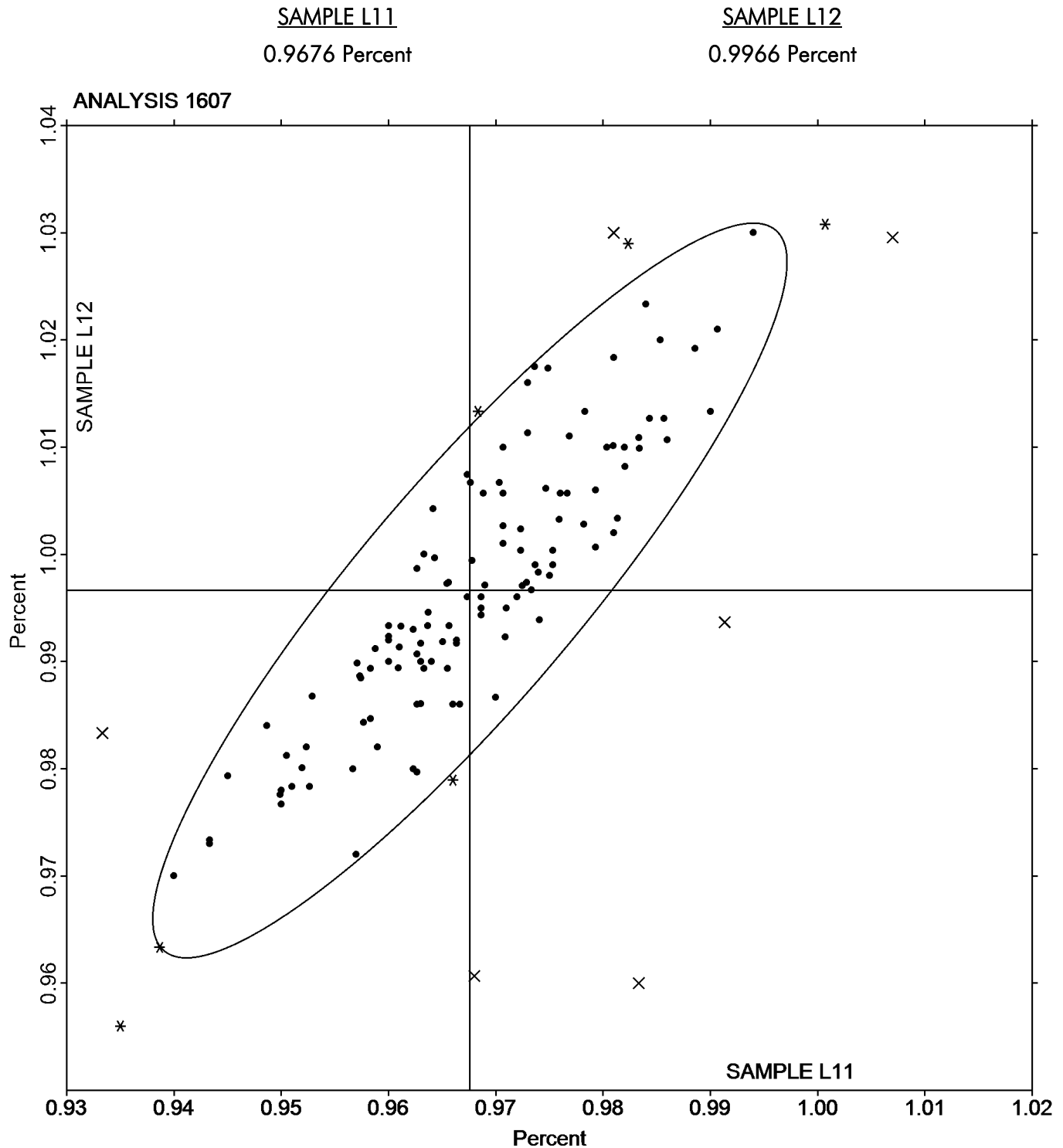
Comments on Assigned Data Flags for Test #1607

- 24CE4M (X) - Data for both samples are low. Possible Systematic Error.
- 4F3M7M (X) - Data for sample L11 are low. Inconsistent within the determinations of sample L12.
- 4HPJA8 (X) - Extreme data.
- 6JW26W (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample L12.
- 94LQNC (X) - Data for both samples are low. Possible Systematic Error.
- 9YX8MG (X) - Data for sample L12 are high.
- ERB9MV (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample L11.
- GZ2CWW (X) - Data for sample L11 are low. Inconsistent within the determinations of both samples.
- H4VTLW (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample L11.
- H98Q2V (X) - Extreme data.
- HFTT8L (X) - Data for both samples are low. Possible Systematic Error.
- JDLQW2 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample L12.
- KKEHH2 (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample L12.
- KT7Y9Q (X) - Data for sample L11 are high.
- RAPZ4U (X) - Data for both samples are low. Possible Systematic Error.
- RB699N (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample L11.
- RE9V8L (X) - Data for sample L12 are low. Inconsistent within the determinations of sample L12.
- URKA3G (X) - Data for both samples are low. Possible Systematic Error.
- XVDDJD (X) - Data for sample L12 are low. Inconsistent within the determinations of sample L12.



Analysis 1607

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





Fasteners and Metals Interlaboratory Testing Program

Analysis 1608

Carbon & Low Alloy Steel, COPPER (Cu)
COPPER (Cu)

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24CE4M	X	0.1915	-0.0180	-3.87	0.1489	-0.0152	-4.31	OE
2BCQ7C	M	No Data Reported			0.1613	-0.0028	-0.78	XX
324LPF	M	No Data Reported			0.1600	-0.0041	-1.16	XX
37F9QJ		0.2073	-0.0021	-0.46	0.1647	0.0006	0.16	XX
3DJ93M		0.2047	-0.0048	-1.03	0.1607	-0.0034	-0.97	OE
3TUWAV	X	0.2116	0.0021	0.46	0.1537	-0.0104	-2.96	XX
3W9UDC		0.2123	0.0029	0.62	0.1673	0.0032	0.92	OE
444Y4R		0.2115	0.0020	0.43	0.1654	0.0013	0.38	IC
4AQ2TA		0.2091	-0.0004	-0.09	0.1621	-0.0020	-0.56	OE
4F3M7M	X	0.1900	-0.0195	-4.19	0.1633	-0.0008	-0.21	GD
4GEGN9		0.2067	-0.0028	-0.60	0.1647	0.0006	0.16	OE
4HNREK		0.2052	-0.0043	-0.92	0.1623	-0.0018	-0.51	OE
4HPJA8	X	0.1300	-0.0795	-17.08	0.1290	-0.0351	-9.96	GD
4KR4L7	X	0.1930	-0.0165	-3.54	0.1517	-0.0124	-3.52	XX
4P4ARR		0.2133	0.0039	0.83	0.1647	0.0006	0.16	OE
4RTJ4E	M	No Data Reported			0.1597	-0.0044	-1.25	XX
62D6N3		0.2140	0.0045	0.97	0.1677	0.0036	1.02	OE
64F7GX		0.2100	0.0005	0.11	0.1637	-0.0004	-0.12	IC
683QM2		0.2050	-0.0045	-0.96	0.1640	-0.0001	-0.02	GD
6JW26W		0.2170	0.0075	1.62	0.1697	0.0056	1.58	OE
6NQXV9		0.2100	0.0005	0.11	0.1640	-0.0001	-0.02	OE
6VM2CQ		0.2090	-0.0005	-0.10	0.1640	-0.0001	-0.02	XX
7AK97L		0.2102	0.0007	0.15	0.1636	-0.0005	-0.13	IC
7EX7HE		0.2100	0.0005	0.11	0.1637	-0.0004	-0.12	OE
7WDH9J	M	No Data Reported			0.1727	0.0086	2.43	XX
7ZX9W4		0.2117	0.0022	0.47	0.1623	-0.0018	-0.50	GD
82MT3Y		0.2117	0.0022	0.47	0.1657	0.0016	0.45	AE
8AZ3AT		0.2143	0.0049	1.05	0.1683	0.0042	1.20	OE
8E8HTP		0.2113	0.0019	0.40	0.1653	0.0012	0.35	OE
8H8UPN		0.2077	-0.0018	-0.39	0.1627	-0.0014	-0.40	OE
8HB94B		0.2060	-0.0035	-0.75	0.1607	-0.0034	-0.97	IC
8NGZ92		0.2113	0.0019	0.40	0.1661	0.0020	0.57	OE
8NZPM2		0.2080	-0.0015	-0.32	0.1643	0.0002	0.07	XX
94LQNC		0.2120	0.0025	0.54	0.1694	0.0053	1.50	OE
94PC7X		0.2117	0.0022	0.47	0.1657	0.0016	0.45	OE
9UZIP93		0.2080	-0.0015	-0.32	0.1613	-0.0028	-0.78	IC
A2J7HQ		0.2085	-0.0010	-0.21	0.1633	-0.0008	-0.22	OE
AVQ9PU		0.2100	0.0005	0.11	0.1633	-0.0008	-0.21	OE
AW6E76		0.2137	0.0042	0.90	0.1687	0.0046	1.30	XX
B4JM7K		0.1983	-0.0111	-2.39	0.1553	-0.0088	-2.48	OE
BJDALX		0.2080	-0.0015	-0.32	0.1630	-0.0011	-0.31	OE
BMCG2G		0.2133	0.0039	0.83	0.1663	0.0022	0.64	GD
BUZ6X8		0.2080	-0.0015	-0.32	0.1630	-0.0011	-0.31	OE
C6PKYT		0.2137	0.0042	0.90	0.1670	0.0029	0.83	OE
C9ABMC		0.2093	-0.0002	-0.05	0.1639	-0.0002	-0.05	OE
CALAEZ		0.2116	0.0021	0.46	0.1683	0.0042	1.19	OE
CE2FFF		0.2200	0.0105	2.26	0.1737	0.0096	2.72	WD



Fasteners and Metals Interlaboratory Testing Program

Analysis 1608

Carbon & Low Alloy Steel, COPPER (Cu)
COPPER (Cu)

Cycle 151
3rd Qtr 2025

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
CPXNYJ		0.2087	-0.0008	-0.17	0.1627	-0.0014	-0.40	OE
D3378X		0.2137	0.0042	0.90	0.1680	0.0039	1.11	OE
D3GPUF		0.2077	-0.0017	-0.37	0.1656	0.0015	0.42	OE
DCRRFG		0.2096	0.0001	0.03	0.1653	0.0012	0.34	OE
DHRHDC		0.2206	0.0112	2.40	0.1689	0.0048	1.38	OE
DJMW8W		0.2047	-0.0048	-1.03	0.1620	-0.0021	-0.59	OE
EBPLCR		0.1987	-0.0108	-2.32	0.1600	-0.0041	-1.16	OE
ERB9MV	X	0.2167	0.0072	1.55	0.1597	-0.0044	-1.25	IC
F2GAWA		0.2043	-0.0051	-1.10	0.1610	-0.0031	-0.88	IC
FKADDA		0.2109	0.0015	0.32	0.1645	0.0004	0.11	OE
FL2BLG		0.2118	0.0023	0.49	0.1663	0.0022	0.63	XX
FVTNPM		0.2093	-0.0001	-0.03	0.1607	-0.0034	-0.97	GD
G9A9D9	X	0.2173	0.0079	1.69	0.1770	0.0129	3.66	OE
GCRBKE		0.2100	0.0005	0.11	0.1633	-0.0008	-0.21	OE
GJTH79	X	0.2323	0.0229	4.92	0.1660	0.0019	0.54	OE
GKM7MJ		0.2007	-0.0088	-1.89	0.1603	-0.0038	-1.07	OE
GQCN4F		0.2133	0.0039	0.83	0.1653	0.0012	0.35	OE
GYNY2L		0.2100	0.0005	0.11	0.1700	0.0059	1.68	OE
GZ2CWW	*	0.1983	-0.0111	-2.39	0.1633	-0.0008	-0.21	OE
H4VTLW		0.2140	0.0045	0.97	0.1680	0.0039	1.11	IC
H98Q2V		0.2080	-0.0015	-0.32	0.1603	-0.0038	-1.07	OE
HFTT8L	X	0.1893	-0.0201	-4.33	0.1487	-0.0154	-4.38	OE
HTE22T		0.2150	0.0056	1.20	0.1681	0.0040	1.14	IC
HV7XQM		0.2097	0.0002	0.04	0.1647	0.0006	0.16	OE
J7JEZ6		0.2127	0.0032	0.69	0.1633	-0.0008	-0.21	OE
JDLQW2		0.1980	-0.0115	-2.47	0.1563	-0.0078	-2.20	OE
JGK3R2	X	0.1800	-0.0295	-6.33	0.1600	-0.0041	-1.16	XX
KFZPKG		0.2097	0.0002	0.04	0.1647	0.0006	0.16	OE
KHRKEP		0.1990	-0.0105	-2.25	0.1570	-0.0071	-2.01	OE
KKDNWA		0.2127	0.0032	0.70	0.1665	0.0024	0.68	OE
KKEHH2	*	0.1977	-0.0118	-2.54	0.1533	-0.0108	-3.05	OE
KL8D6H		0.2110	0.0015	0.33	0.1657	0.0016	0.45	WD
KT7Y9Q		0.2146	0.0051	1.10	0.1669	0.0028	0.79	IC
L84ENQ		0.2093	-0.0001	-0.03	0.1637	-0.0004	-0.12	IC
LDRVHP	*	0.2231	0.0136	2.93	0.1726	0.0085	2.42	OE
LE23JW		0.2077	-0.0017	-0.37	0.1623	-0.0018	-0.52	OE
LEMDKQ		0.2098	0.0003	0.07	0.1639	-0.0002	-0.05	OE
LNMA8A9		0.2112	0.0017	0.37	0.1651	0.0010	0.29	OE
LZK4GG		0.2153	0.0058	1.25	0.1672	0.0031	0.88	OE
M378LT		0.2137	0.0042	0.90	0.1660	0.0019	0.54	OE
MDNUT9		0.2000	-0.0095	-2.04	0.1600	-0.0041	-1.16	XR
MR9AW9		0.2107	0.0012	0.26	0.1640	-0.0001	-0.02	OE
NCBF2T		0.2059	-0.0036	-0.78	0.1664	0.0023	0.64	XX
NTUFQ4		0.2092	-0.0002	-0.05	0.1638	-0.0003	-0.08	IC
NZG924		0.2094	-0.0001	-0.02	0.1647	0.0006	0.17	OE
PAZVLG		0.2099	0.0004	0.09	0.1664	0.0023	0.66	OE
PC8CRE		0.2057	-0.0038	-0.82	0.1587	-0.0054	-1.54	OE

**Fasteners and Metals Interlaboratory Testing Program****Cycle 151**
3rd Qtr 2025**Analysis 1608****Carbon & Low Alloy Steel, COPPER (Cu)**
COPPER (Cu)

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
PNGUNW		0.2113	0.0019	0.40	0.1653	0.0012	0.35	OE
PNLAX4		0.2137	0.0042	0.90	0.1677	0.0036	1.02	OE
QAFG3K		0.2033	-0.0061	-1.32	0.1620	-0.0021	-0.59	OE
QC2FXV		0.2077	-0.0018	-0.39	0.1623	-0.0018	-0.50	OE
QERJQ3		0.2087	-0.0008	-0.17	0.1642	0.0001	0.04	OE
QGVECQ		0.2113	0.0018	0.39	0.1629	-0.0012	-0.35	OE
QHLKLP		0.2100	0.0005	0.11	0.1600	-0.0041	-1.16	OE
QP8DZA		0.2095	0.0000	0.01	0.1662	0.0021	0.59	OE
QPQGE2		0.2047	-0.0048	-1.03	0.1593	-0.0048	-1.35	XX
RAPZ4U		0.2100	0.0005	0.11	0.1600	-0.0041	-1.16	OE
RATMG2		0.2003	-0.0091	-1.96	0.1587	-0.0054	-1.54	OE
RB699N		0.2093	-0.0001	-0.03	0.1653	0.0012	0.35	GD
RBKJ7V		0.2089	-0.0005	-0.12	0.1625	-0.0016	-0.46	OE
RE9V8L	X	0.1949	-0.0146	-3.14	0.1489	-0.0152	-4.30	XX
RG99NK		0.2083	-0.0011	-0.24	0.1620	-0.0021	-0.59	IC
RP3DGL		0.2125	0.0031	0.66	0.1661	0.0020	0.56	OE
RT4KQA	X	0.0183	-0.1911	-41.09	0.0200	-0.1441	-40.89	XX
T6E8PN		0.2060	-0.0035	-0.75	0.1606	-0.0035	-0.98	IC
T8FEQD		0.2186	0.0091	1.96	0.1738	0.0097	2.75	OE
TJXUW2		0.2063	-0.0031	-0.67	0.1590	-0.0051	-1.44	OE
TLZWHW		0.2087	-0.0008	-0.17	0.1627	-0.0014	-0.40	OE
TV9BKX		0.2123	0.0029	0.62	0.1660	0.0019	0.54	OE
U3346W		0.2093	-0.0002	-0.04	0.1630	-0.0011	-0.30	OE
ULWPUU		0.2084	-0.0011	-0.23	0.1653	0.0012	0.33	WD
URKA3G	X	0.1659	-0.0436	-9.37	0.1422	-0.0219	-6.22	OE
UYKWRV		0.2067	-0.0027	-0.59	0.1604	-0.0037	-1.05	DR
V3W6JD		0.2137	0.0042	0.90	0.1680	0.0039	1.11	WD
VA2XPG		0.2196	0.0102	2.18	0.1686	0.0045	1.28	OE
VFK4HG		0.2057	-0.0038	-0.82	0.1610	-0.0031	-0.88	WD
VNDJ6Z	X	0.2080	-0.0015	-0.32	0.1460	-0.0181	-5.13	OE
VQPY2	X	0.2077	-0.0018	-0.39	0.1830	0.0189	5.37	OE
VTULC7		0.2067	-0.0028	-0.60	0.1623	-0.0018	-0.50	OE
VU6LC7		0.2100	0.0005	0.11	0.1623	-0.0018	-0.50	XX
VYWZTZ		0.2117	0.0022	0.47	0.1650	0.0009	0.26	OE
WGBPFB		0.2067	-0.0028	-0.60	0.1640	-0.0001	-0.02	OE
WKXBEF		0.2143	0.0049	1.05	0.1683	0.0042	1.20	OE
WRFGFT		0.2090	-0.0005	-0.10	0.1667	0.0026	0.73	OE
WVFM6		0.2100	0.0005	0.11	0.1600	-0.0041	-1.16	AE
WXYXPH		0.2120	0.0025	0.54	0.1650	0.0009	0.26	OE
X7RAKB		0.2053	-0.0041	-0.89	0.1640	-0.0001	-0.02	OE
XGUPBF		0.2096	0.0002	0.04	0.1669	0.0028	0.81	XX
XRQZEG		0.2093	-0.0002	-0.04	0.1638	-0.0003	-0.09	IC
XVCKNQ		0.2080	-0.0015	-0.32	0.1650	0.0009	0.26	OE
XVDDJD	X	0.2603	0.0509	10.94	0.2023	0.0382	10.85	OE
XY99ZR		0.2000	-0.0095	-2.04	0.1580	-0.0061	-1.73	DR
XZ8A8J		0.2080	-0.0015	-0.32	0.1630	-0.0011	-0.31	DR
YCWTW9		0.2177	0.0082	1.76	0.1673	0.0032	0.92	IC



Fasteners and Metals Interlaboratory Testing Program

Cycle 151
3rd Qtr 2025

Analysis 1608

Carbon & Low Alloy Steel, COPPER (Cu)
COPPER (Cu)

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
YQVLLW	*	0.1990	-0.0105	-2.25	0.1540	-0.0101	-2.86	GD
Z99FVH		0.2037	-0.0058	-1.25	0.1607	-0.0034	-0.97	DR
ZCAKF3		0.2139	0.0044	0.95	0.1661	0.0020	0.58	OE
ZZF7PT		0.2143	0.0048	1.03	0.1684	0.0043	1.22	OE

Summary Statistics

	Sample L11		Sample L12	
Grand Means	0.2095	Percent	0.1641	Percent
Stnd Dev Btwn Labs	0.0047	Percent	0.0035	Percent

Samples L11, L12 : AISI 4140, AISI 4140

Statistics based on 124 of 145 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



Analysis 1608

Carbon & Low Alloy Steel, COPPER (Cu)
COPPER (Cu)

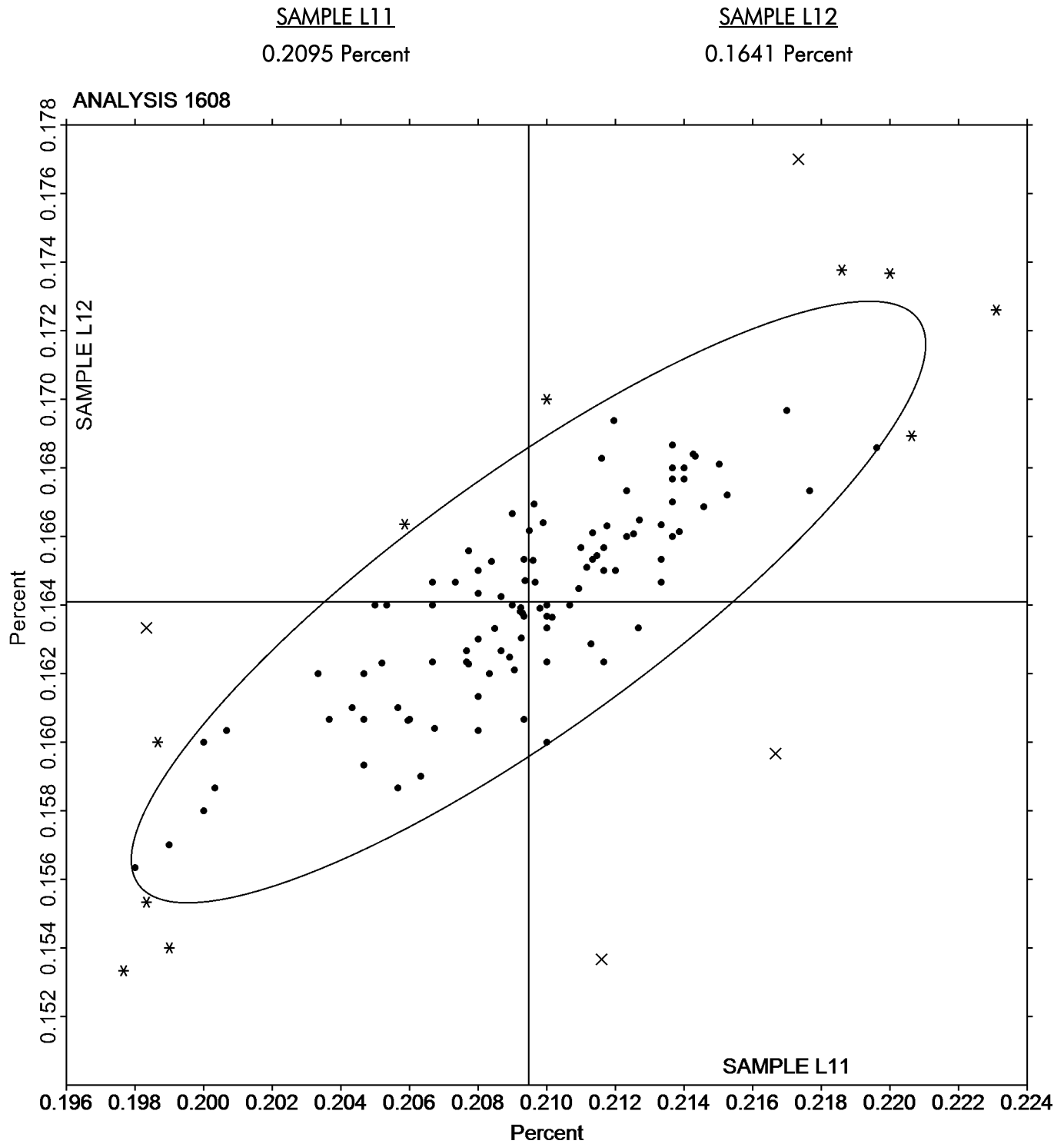
Comments on Assigned Data Flags for Test #1608

- 24CE4M (X) - Data for both samples are low.
- 2BCQ7C (M) - Participant did not submit data for sample L11.
- 324LPF (M) - Participant did not submit data for sample L11.
- 3TUWAV (X) - Data for sample L12 are low.
- 4F3M7M (X) - Data for sample L11 are low. Inconsistent within the determinations of sample L12.
- 4HPJA8 (X) - Data for both samples are low.
- 4KR4L7 (X) - Data for both samples are low.
- 4RTJ4E (M) - Participant did not submit data for sample L11.
- 7WDH9J (M) - Participant did not submit data for sample L11.
- ERB9MV (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample L11.
- G9A9D9 (X) - Data for sample L12 are high.
- GJTH79 (X) - Data for sample L11 are high. Inconsistent within the determinations of sample L12.
- HFTT8L (X) - Data for both samples are low.
- JGK3R2 (X) - Data for sample L11 are low.
- RE9V8L (X) - Data for both samples are low.
- RT4KQA (X) - Extreme data.
- URKA3G (X) - Data for both samples are low.
- VNDJ6Z (X) - Data for sample L12 are low.
- VQPPY2 (X) - Data for sample L12 are high.
- XVDDJD (X) - Data for both samples are high.



Analysis 1608

Carbon & Low Alloy Steel, COPPER (Cu)
COPPER (Cu)



**Fasteners and Metals Interlaboratory Testing Program****Cycle 151**
3rd Qtr 2025**Analysis 1612****Carbon & Low Alloy Steel, NITROGEN (N)**
NITROGEN (N)

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
37F9QJ	X	0.00287	-0.00412	-7.64	0.00303	-0.00412	-7.44	XX
3TUWAV		0.00767	0.00068	1.26	0.00760	0.00045	0.80	XX
3W9UDC		0.00660	-0.00039	-0.72	0.00730	0.00015	0.26	OE
444Y4R		0.00697	-0.00002	-0.04	0.00733	0.00018	0.32	XX
4AQ2TA		0.00617	-0.00082	-1.52	0.00650	-0.00065	-1.18	OE
4KR4L7		0.00683	-0.00015	-0.28	0.00663	-0.00052	-0.94	XX
4P4ARR		0.00653	-0.00045	-0.84	0.00667	-0.00049	-0.88	OE
64F7GX		0.00680	-0.00019	-0.34	0.00737	0.00021	0.38	XX
683QM2		0.00736	0.00038	0.70	0.00810	0.00094	1.70	IR
6C8TCP		0.00697	-0.00002	-0.04	0.00723	0.00008	0.14	CO
6JW26W		0.00790	0.00091	1.70	0.00737	0.00021	0.38	OE
6NQXV9		0.00630	-0.00069	-1.27	0.00660	-0.00055	-1.00	CO
7AK97L		0.00720	0.00022	0.40	0.00718	0.00003	0.05	XX
7EX7HE		0.00667	-0.00032	-0.59	0.00667	-0.00049	-0.88	OE
7WDH9J	X	0.0180	0.01101	20.42	0.0123	0.00518	9.35	XX
82MT3Y		0.00690	-0.00009	-0.16	0.00753	0.00038	0.68	CO
8AZ3AT		0.00730	0.00031	0.58	0.00680	-0.00035	-0.64	OE
8E8HTP	X	0.00477	-0.00222	-4.11	0.00567	-0.00149	-2.68	OE
8H8UPN		0.00783	0.00085	1.57	0.00763	0.00048	0.86	OE
8NGZ92	X	0.00447	-0.00252	-4.67	0.00443	-0.00272	-4.91	OE
94PC7X		0.00697	-0.00002	-0.04	0.00730	0.00015	0.26	OE
9UZP93		0.00780	0.00081	1.51	0.00803	0.00088	1.59	XX
A2J7HQ		0.00787	0.00088	1.63	0.00827	0.00111	2.01	CI
AVQ9PU	X	0.00847	0.00149	2.76	0.00742	0.00026	0.47	CI
AW6E76	*	0.00733	0.00035	0.64	0.00633	-0.00082	-1.48	XX
B4JM7K		0.00697	-0.00002	-0.04	0.00740	0.00025	0.44	XX
BJDALX		0.00570	-0.00129	-2.38	0.00590	-0.00125	-2.26	OE
CALAEZ		0.00697	-0.00002	-0.04	0.00677	-0.00039	-0.70	OE
CE2FFF		0.00730	0.00031	0.58	0.00757	0.00041	0.74	XX
CPXNYJ		0.00660	-0.00039	-0.72	0.00790	0.00075	1.35	OE
D3GPUF		0.00657	-0.00042	-0.78	0.00673	-0.00042	-0.76	OE
DCRRFG		0.00687	-0.00012	-0.22	0.00700	-0.00015	-0.28	OE
DJMW8W	X	0.00980	0.00281	5.22	0.00500	-0.00215	-3.89	OE
EBPLCR	*	0.00807	0.00108	2.00	0.00677	-0.00039	-0.70	OE
F2GAWA		0.00670	-0.00029	-0.53	0.00723	0.00008	0.14	XX
FL2BLG		0.00627	-0.00072	-1.33	0.00590	-0.00125	-2.26	XX
G9A9D9	X	0.00500	-0.00199	-3.68	0.00600	-0.00115	-2.08	OE
GCRBKE	X	0.00833	0.00135	2.50	0.00967	0.00251	4.53	OE
GKM7MJ	X	0.00560	-0.00139	-2.57	0.00517	-0.00199	-3.59	OE
GQCN4F		0.00637	-0.00062	-1.15	0.00667	-0.00049	-0.88	OE
GYNY2L		0.00710	0.00011	0.21	0.00737	0.00021	0.38	XX
GZ2CWW		0.00696	-0.00003	-0.05	0.00750	0.00035	0.63	CO
H98Q2V		0.00663	-0.00035	-0.65	0.00600	-0.00115	-2.08	OE
HTE22T		0.00697	-0.00002	-0.04	0.00743	0.00028	0.50	CO
HV7XQM	X	0.00600	-0.00099	-1.83	0.00503	-0.00212	-3.83	OE
J7JEZ6		0.00720	0.00021	0.40	0.00760	0.00045	0.80	CO
JDLQW2		0.00610	-0.00089	-1.64	0.00620	-0.00095	-1.72	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 151
3rd Qtr 2025

Analysis 1612

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

WebCode	Data Flag	Sample L11			Sample L12			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
KHRKEP		0.00740	0.00041	0.77	0.00720	0.00005	0.08	OE
L84ENQ		0.00693	-0.00005	-0.10	0.00730	0.00015	0.26	CO
LDRVHP		0.00660	-0.00039	-0.72	0.00693	-0.00022	-0.40	CO
LE23JW		0.00717	0.00018	0.34	0.00733	0.00018	0.32	OE
LEMDKQ		0.00597	-0.00102	-1.89	0.00627	-0.00089	-1.60	OE
M378LT	M	0.00510	-0.00189	-3.50	No Data Reported			OE
NCBF2T	X	0.00523	-0.00176	-3.26	0.00711	-0.00004	-0.07	XX
NTUFQ4		0.00670	-0.00029	-0.53	0.00717	0.00001	0.02	XX
NZG924		0.00677	-0.00022	-0.41	0.00703	-0.00012	-0.22	OE
PAZVLG		0.00690	-0.00009	-0.16	0.00693	-0.00022	-0.40	OE
PC8CRE		0.00667	-0.00032	-0.59	0.00720	0.00005	0.08	CI
PNLAX4		0.00703	0.00005	0.09	0.00737	0.00021	0.38	CO
QC2FXV		0.00800	0.00101	1.88	0.00817	0.00101	1.83	OE
QGVECQ		0.00677	-0.00022	-0.41	0.00670	-0.00045	-0.82	OE
QP8DZA	X	0.00693	-0.00005	-0.10	0.00543	-0.00172	-3.11	CI
QPQGE2		0.00717	0.00018	0.34	0.00733	0.00018	0.32	XX
RAPZ4U		0.00777	0.00078	1.45	0.00827	0.00111	2.01	OE
RG99NK		0.00700	0.00001	0.03	0.00700	-0.00015	-0.28	XX
RP3DGL		0.00720	0.00021	0.40	0.00690	-0.00025	-0.46	OE
T6E8PN		0.00687	-0.00012	-0.22	0.00720	0.00005	0.08	CI
TJXUW2		0.00677	-0.00022	-0.41	0.00693	-0.00022	-0.40	CO
ULWPUU		0.00733	0.00035	0.64	0.00750	0.00035	0.62	CO
URKA3G	*	0.00853	0.00155	2.87	0.00833	0.00118	2.13	CO
UYKWRV	X	0.00777	0.00078	1.45	0.00163	-0.00552	-9.96	DR
V3W6JD		0.00733	0.00035	0.64	0.00753	0.00038	0.68	XX
VNDJ6Z	X	0.00993	0.00295	5.47	0.00780	0.00065	1.17	OE
VYWZTZ		0.00690	-0.00009	-0.16	0.00727	0.00011	0.20	XX
WRFGFT		0.00770	0.00071	1.32	0.00780	0.00065	1.17	OE
WVFMY6	X	0.1300	0.12301	228.08	0.1400	0.13285	239.75	AE
WXYXPH		0.00663	-0.00035	-0.65	0.00660	-0.00055	-1.00	CO
XGUPBF		0.00717	0.00018	0.34	0.00750	0.00035	0.62	OE
XRQZEG		0.00627	-0.00072	-1.33	0.00647	-0.00069	-1.24	XX
XVCKNQ		0.00653	-0.00045	-0.84	0.00673	-0.00042	-0.76	CO
XVDDJD	X	0.00183	-0.00515	-9.55	0.00243	-0.00472	-8.52	OE
Z99FVH		0.00813	0.00115	2.13	0.00720	0.00005	0.08	CO
ZCAKF3		0.00633	-0.00065	-1.21	0.00713	-0.00002	-0.04	OE
ZZF7PT		0.00730	0.00031	0.58	0.00727	0.00011	0.20	OE

Summary Statistics

	Sample L11		Sample L12	
Grand Means	0.00699	Percent	0.00715	Percent
Std Dev Btwn Labs	0.00054	Percent	0.00055	Percent

Samples L11, L12 : AISI 4140, AISI 4140

Statistics based on 66 of 84 reporting participants

**Analysis 1612****Carbon & Low Alloy Steel, NITROGEN (N)
NITROGEN (N)****Key to Method Codes Reported by Participants**

AE	Spectrometry - Atomic Emission (AES)	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		

Comments on Assigned Data Flags for Test #1612

37F9QJ (X) - Data for both samples are low. Possible Systematic Error.

7WDH9J (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.

8E8HTP (X) - Data for sample L11 are low.

8NGZ92 (X) - Data for both samples are low. Possible Systematic Error.

AVQ9PU (X) - Data for sample L11 are high. Inconsistent within the determinations of sample L12.

DJMW8W (X) - Data for sample L11 are high and data for sample L12 are low. Inconsistent in testing between samples. Inconsistent within the determinations of sample L11.

G9A9D9 (X) - Data for sample L11 are low.

GCRBKE (X) - Data for sample L12 are high. Inconsistent within the determinations of both samples.

GKM7MJ (X) - Data for sample L12 are low.

HV7XQM (X) - Data for sample L12 are low.

M378LT (M) - Participant did not submit data for sample L12.

NCBF2T (X) - Data for sample L11 are low.

QP8DZA (X) - Data for sample L12 are low. Inconsistent within the determinations of sample L11.

UYKWRV (X) - Data for sample L12 are low. Inconsistent within the determinations of sample L12.

VNDJ6Z (X) - Data for sample L11 are high.

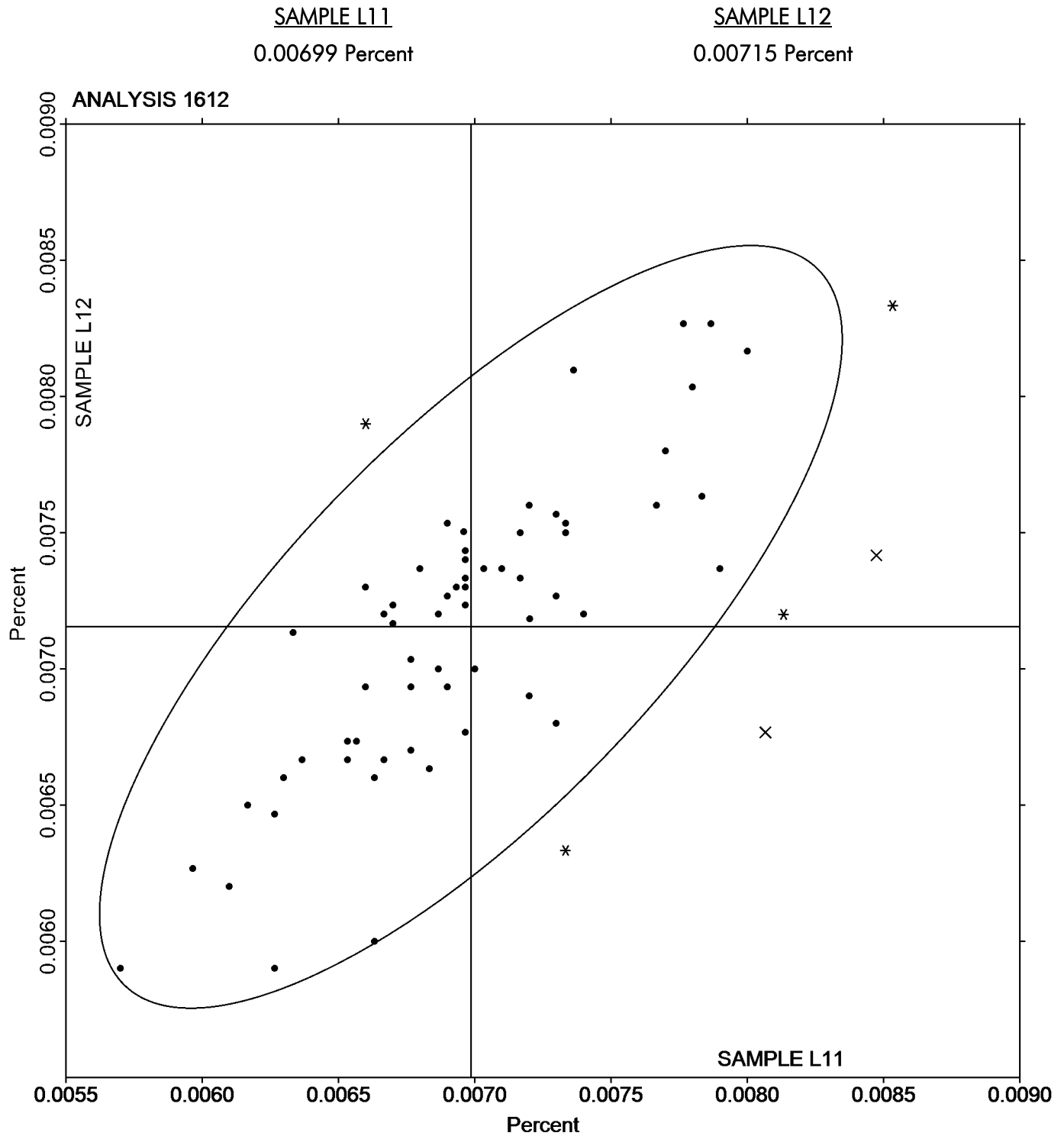
WVFMY6 (X) - Extreme data.

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



Analysis 1612

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





Fasteners and Metals Interlaboratory Testing Program

Cycle 151

Analysis 1612

3rd Qtr 2025

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

-End of Report-