

Calibration Certificate of Mass

Calibration Date: November 25, 2019

Certificate Number: 2019-140-1

Submitted By: FSCP Area 10
3721 West Cuming St.
Lincoln, NE 68524

Point of Contact: Gene Haase
Ph. 402-471-3422
email: gene.haase@nebraska.gov
PO Number: N/A

Test Item(s): (21)-1000, (14)-50 & (12)-25lb weight

Date Received: November 21, 2019

Serial Number(s): See Next Page

Artifact(s) Description:

ID / Asset Number: FSCP Area 10

Manufacture: Various

Class Specification: NIST Class F

Condition: Fair (significant wear)

Material: Cast iron

Reference Standards Used:

NSL lb standards

Procedure Used:

NIST HB 6969, SOP 8 (2018)

Equipment Used:

Mettler XP 604

Metrologist:

JPL

Mettler XPR32003

Environmental Cond.

Temp: 21.3 °C

Pressure:

762.5 mmHg

Relative Humidity:

49.2 %

Pertinent Information

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- All corrections stated in this report correlate to a "Conventional Mass" (CM), also known as "apparent mass", scale verses 8.0 g/cm³ reference mass density and an air density of 1.2 mg/cm³ at 20 °C.

Traceability Statement

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Uncertainty Statement

The combined standard uncertainty includes uncertainties reported for the standard, uncertainties associated with the measurement process, uncertainties for any observed deviations from reference values which are less than surveillance limits and the standard uncertainty for any uncorrected errors associated with air buoyance corrections. The combined standard uncertainty is multiplied by a coverage factor (*k*), to give the expanded uncertainty, which defines an interval with a 95.45 percent level of confidence. The expanded uncertainty presented in this report is consistent with the *Guide to the Expression of Uncertainty in Measurement (2008, revised 2012)*. Some components of the calibration can be evaluated through a Type A evaluation, or the method of evaluation of uncertainty by the statistical analysis (standard deviation) from the observations taken. Magnetic testing has not been performed, therefore, there are no components for the effects of it in the uncertainty budget.

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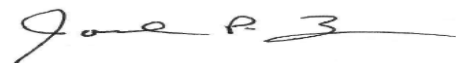
Calibration Results

Nominal Mass	Serial Number / ID	As Found Conventional Mass Correction (g)	Adjusted (Y/N)	As Left Conventional Mass Correction (g)	Uncertainty ± (g)	(k) factor	NIST Class F MPE ± (g)	Assumed Density (g/cm ³)
25 lb	WM25-24	-0.11	N	-0.11	0.14	2	1.1	7.2
25 lb	WM-D51	0.11	N	0.11	0.14	2	1.1	7.2
25 lb	WM-D52	0.07	N	0.07	0.14	2	1.1	7.2
25 lb	WM-D53	1.92	Y	0.15	0.14	2	1.1	7.2
25 lb	WM-D54	-1.51	Y	0.04	0.14	2	1.1	7.2
25 lb	WM-D56	-0.32	N	-0.32	0.14	2	1.1	7.2
25 lb	WM-D57	0.09	N	0.09	0.14	2	1.1	7.2
25 lb	WM-D58	0.58	N	0.58	0.14	2	1.1	7.2
25 lb	WM-D59	-0.01	N	-0.01	0.14	2	1.1	7.2
25 lb	WM-D60	-0.32	N	-0.32	0.14	2	1.1	7.2
25 lb	WM-D61	0.18	N	0.18	0.14	2	1.1	7.2
25 lb	WM-D65	-0.21	N	-0.21	0.14	2	1.1	7.2
50 lb	A5C-5	1.56	N	1.56	0.28	2	2.3	7.2
50 lb	C-C1	-1.00	N	-1.00	0.28	2	2.3	7.2
50 lb	C-C2	1.82	N	1.82	0.28	2	2.3	7.2
50 lb	C-C3	2.03	Y	0.43	0.28	2	2.3	7.2
50 lb	C-C4	1.36	N	1.36	0.28	2	2.3	7.2
50 lb	C-C6	1.86	N	1.86	0.28	2	2.3	7.2
50 lb	C-C8	1.93	N	1.93	0.28	2	2.3	7.2
50 lb	C-C10	0.30	N	0.30	0.28	2	2.3	7.2
50 lb	C-C13	1.64	N	1.64	0.28	2	2.3	7.2
50 lb	C-C14	2.18	Y	0.77	0.28	2	2.3	7.2
50 lb	C-C15	0.39	N	0.39	0.28	2	2.3	7.2
50 lb	C-C16	0.87	N	0.87	0.28	2	2.3	7.2
50 lb	C-C18	-0.18	N	-0.18	0.28	2	2.3	7.2
50 lb	C-C19	-1.19	N	-1.19	0.28	2	2.3	7.2
1000 lb	WME 1	-42.8	Y	11.6	5.6	2.009	45	7.2
1000 lb	WME 2	-53.6	Y	-14.1	5.6	2.009	45	7.2
1000 lb	WME 3	-46.5	Y	9.1	5.6	2.009	45	7.2
1000 lb	WME 4	18.2	N	18.2	5.6	2.009	45	7.2
1000 lb	WME 5	11.0	N	11.0	5.6	2.009	45	7.2
1000 lb	WME 6	-26.2	N	-26.2	5.6	2.009	45	7.2
1000 lb	WME 7	14.8	N	14.8	5.6	2.009	45	7.2
1000 lb	WME 9	18.0	N	18.0	5.6	2.009	45	7.2
1000 lb	WME 10	-41.8	Y	8.8	5.6	2.009	45	7.2
1000 lb	WME 11	3.3	N	3.3	5.6	2.009	45	7.2
1000 lb	WME 12	45.5	Y	8.6	5.6	2.009	45	7.2
1000 lb	WME 13	-31.3	N	-31.3	5.6	2.009	45	7.2
1000 lb	WME 14	-4.2	N	-4.2	5.6	2.009	45	7.2
1000 lb	WME 15	-36.9	N	-36.9	5.6	2.009	45	7.2
1000 lb	WME 17	-31.5	N	-31.5	5.6	2.009	45	7.2
1000 lb	WME 19	287.3	Y	7.3	5.6	2.009	45	7.2
1000 lb	WME 20	-6.7	N	-6.7	5.6	2.009	45	7.2
1000 lb	WME 21	-16.9	N	-16.9	5.6	2.009	45	7.2
1000 lb	WME 22	12.5	N	12.5	5.6	2.009	45	7.2
1000 lb	WME 23	-34.0	N	-34.0	5.6	2.009	45	7.2
1000 lb	WME 24	16.0	N	16.0	5.6	2.009	45	7.2

Conversion Factors

1 ounce (avoirdupois) (oz) = 28.349 52 g

1 pound (avoirdupois) (lb) = 453.592 37 g exactly



Joel P. Lavicky Metrologist

12/2/2019

Date of Issue

The results in this certificate only applies to those item specifically listed in this certificate. This certificate cannot be considered complete unless it contains all pages. This document may not be reproduced except in full, without the written consent of the Nebraska Standards Laboratory.

Calibration Certificate of Mass

Calibration Date: December 4, 2019

Certificate Number: 2019-140-2

Submitted By: FSCP Area 10
 3721 West Cuming St.
 Lincoln, NE 68524

Point of Contact: Gene Haase
 Ph. 402-471-3422
email: gene.haase@nebraska.gov
PO Number: N/A

Test Item(s): (1) Metric weight kit	Artifact(s) Description:	Date Received: November 21, 2019
Serial Number(s): WM2-89-5		ID / Asset Number: FSCP Area 10
Manufacture: Tromner		Class Specification: NIST Class F
Condition: Good (some wear)		Material: Stainless Steel

Reference Standards Used:	Procedure Used:	Equipment Used:
OPI & /Den Metric	NIST HB 6969, SOP 8 (2018)	Sartorius CC 1201 Sartorius CCE6
	Metrologist:	Mettler AT 106
	JPL	

Environmental Cond. **Temp:** 22.35 °C **Pressure:** 760.095 mmHg **Relative Humidity:** 49.5 %

Pertinent Information

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- All corrections stated in this report correlate to a "Conventional Mass" (CM), also known as "apparent mass", scale verses 8.0 g/cm³ reference mass density and an air density of 1.2 mg/cm³ at 20 °C.

Traceability Statement

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Uncertainty Statement

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Calibration Date: December 4, 2019

Certificate Number: 2019-140-2

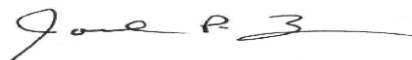
Calibration Results

Nominal Mass	Serial Number / ID	As Found Conventional Mass Correction (g)	Adjusted (Y/N)	As Left Conventional Mass Correction (g)	Uncertainty ± (g)	(k) factor	NIST Class F MPE ± (g)	Assumed Density (g/cm ³)
1 kg	1	-0.063	n	-0.063	0.012	2	0.1	7.84
500 g	2	0.0368	n	0.0368	0.0083	2	0.07	7.84
200 g	3	0.0155	n	0.0155	0.0048	2	0.04	7.84
200 g	4	0.0084	n	0.0084	0.0048	2	0.04	7.84
100 g	5	-0.0078	n	-0.0078	0.0024	2	0.02	7.84
50 g	6	0.0005	n	0.0005	0.0012	2	0.01	7.84
20 g		-0.00071	n	-0.00071	0.00048	2	0.004	7.84
20 g	*	-0.00070	n	-0.00070	0.00048	2	0.004	7.84
10 g		0.00032	n	0.00032	0.00024	2	0.002	7.84
5 g		-0.00038	n	-0.00038	0.00018	2	0.0015	7.84

Conversion Factors

1 ounce (avoirdupois) (oz) = 28.349 52 g

1 pound (avoirdupois) (lb) = 453.592 37 g exactly



Joel P. Lavicky Metrologist

12/9/2019

Date of Issue

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Calibration Certificate of Mass

Calibration Date: December 4, 2019

Certificate Number: 2019-140-3

Submitted By: FSCP Area 10
3721 West Cuming St.
Lincoln, NE 68524

Point of Contact: Gene Haase
Ph. 402-471-3422
email: gene.haase@nebraska.gov
PO Number: N/A

Test Item(s): 31lb weight kit
Serial Number(s): WM-2C86
Manufacture: Rice Lake
Condition: Good (some wear)

Artifact(s) Description:

Date Received: November 22, 2019
ID / Asset Number: FSCP Area 10
Class Specification: NIST Class F
Material: Stainless Steel

Reference Standards Used:

NSL lb standards

Procedure Used:

NIST HB 6969, SOP 8 (2018)

Metrologist:

JPL

Equipment Used:

Sartorius CC10000S Mettler AT 106
Sartorius CC 1201 Sartorius CCE6

Environmental Cond. **Temp:** 22.2 °C **Pressure:** 765.81 mmHg **Relative Humidity:** 49 %

Pertinent Information

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Calibration Date: December 4, 2019

Certificate Number: 2019-140-3

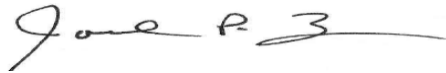
Calibration Results

Nominal Mass	Serial Number / ID	As Found Conventional Mass Correction (g)	Adjusted (Y/N)	As Left Conventional Mass Correction (g)	Uncertainty ± (g)	(k) factor	NIST Class F MPE ± (g)	Assumed Density (g/cm ³)
5 lb	1	-0.122	n	-0.122	0.028	2	0.23	7.84
5 lb	2	-0.097	n	-0.097	0.028	2	0.23	7.84
5 lb	3	-0.120	n	-0.120	0.028	2	0.23	7.84
5 lb	4	-0.132	n	-0.132	0.028	2	0.23	7.84
5 lb	5	-0.135	n	-0.135	0.028	2	0.23	7.84
1 lb	6	-0.0172	n	-0.0172	0.0083	2	0.07	7.84
1 lb	7	0.0054	n	0.0054	0.0083	2	0.07	7.84
1 lb	8	-0.0029	n	-0.0029	0.0083	2	0.07	7.84
1 lb	9	0.0157	n	0.0157	0.0083	2	0.07	7.84
1 lb	10	0.0095	n	0.0095	0.0083	2	0.07	7.84
8 oz	11	0.0044	n	0.0044	0.0054	2	0.045	7.84
4 oz	12	0.0055	n	0.0055	0.0028	2	0.023	7.84
2 oz		0.0040	n	0.0040	0.0013	2	0.011	7.84
1 oz		0.00051	n	0.00051	0.00064	2	0.0054	7.84
1/2 oz		0.00078	n	0.00078	0.00034	2	0.0028	7.84
1/4 oz		-0.00011	n	-0.00011	0.00021	2	0.0017	7.84
1/8 oz		-0.00039	n	-0.00039	0.00016	2	0.0013	7.84
1/16 oz		0.00041	n	0.00041	0.00014	2	0.0011	7.84

Conversion Factors

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1 pound (avoirdupois) (lb) = 453.592 37 g exactly



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12/9/2019

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