

CERTIFICATE OF CALIBRATION

Issue:- Certificate Number: **96801**
96801 Date of Issue: **15-Sep-23**
Approved Signatory: **Mark Norfolk**
Page 1 of 2 Signed: *[Signature]*



Submitter:-

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Issued by:-

Kent Scientific Services
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EQUIPMENT: Weights Set AH1
SERIAL NUMBER: See Table Overleaf
MAKE/TYPE: N/A
STANDARDS USED: Set 12412
DATE RECEIVED: 11 August 2023
DATE CALIBRATED: 15 September 2023
DETAILS: 14 Cast Iron, 1 Brass

MEASUREMENTS:

Kent Scientific Services method used: CAL-M2, Calibration of Small Masses.

The calibrations took place in a controlled environment with the temperature held between 18°C and 22°C, and with the relative humidity held between 40% and 60%.

The measurement results obtained in the table, where each measured value given represents not the true mass, but the mass of a hypothetical weight of density $8,000 \text{ kg.m}^{-3}$, which in air of density 1.2 kg.m^{-3} would balance the corresponding weight identified in the first column at 20°C.

The method of weighing was by substitution (Borda's method). In each instance the standard weight used had been calibrated by UKAS Calibration Laboratory number 0474 or 0352 within the previous three years.

The uncertainty of measurements for each of the different denominations is listed in the last column of the table. Duplicate weights, where present, are indicated by a dot or dots.

Customer supplied information is notated with a ~, and results relate only to the item(s) calibrated.

Unless otherwise notated, samples are tested in as received condition at Kent Scientific Services.

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TABLE OF MEASUREMENT RESULTS

Identity Mark	Nominal Mass	Measured Value	Error from Nominal	Estimated Uncertainty
MB4	0.5 N	50.953 28 g	- 7.54 mg	± 0.61 mg
M02	1 N	101.914 5 g	- 7.1 mg	± 1.1 mg
M03	1 N	101.915 7 g	- 5.9 mg	± 1.1 mg
M05	1 N	101.908 7 g	- 12.9 mg	± 1.1 mg
S2E	1 N	101.914 6 g	- 7.0 mg	± 1.1 mg
M06	10 N	1019.143 g	- 74 mg	± 11 mg
M07	5 N	509.575 0 g	- 33.2 mg	± 5.1 mg
M08	20 N	2038.401 g	- 32 mg	± 21 mg
M09	20 N	2038.313 g	- 119 mg	± 21 mg
M10	5 N	5096.191 g	+ 109 mg	± 52 mg
M11	100 N	10192.44 g	+ 280 mg	± 110 mg
M12	100 N	10192.30 g	+ 130 mg	± 110 mg
M13	100 N	10192.49 g	+ 330 mg	± 110 mg
M14	100 N	10192.22 g	+ 60 mg	± 110 mg
S2E #	5 N	509.605 2 g	- 3.0 mg	± 5.1 mg
M02 *	1 N	101.918 8 g	- 2.8 mg	± 1.1 mg
M03 *	1 N	101.920 0 g	- 1.6 mg	± 1.1 mg
M05 *	1 N	101.921 3 g	- 0.3 mg	± 1.1 mg
S2E *	1 N	101.916 9 g	- 4.7 mg	± 1.1 mg
M06 *	10 N	1019.224 g	+ 7 mg	± 11 mg
M07 *	5 N	509.612 3 g	+ 4.1 mg	± 5.1 mg
M09 *	20 N	2038.442 g	+ 10 mg	± 21 mg

* Denotes post adjustment calibration

Denotes hanger weight

The basis for conversion between force units and mass units is that a 1kg mass will experience a force of g newtons where g is the strength of the local gravitational field. At Kent Scientific Services the estimated local $g = 9.81146 \text{ ms}^{-2}$.

END OF RESULTS