Supplement to Certificate, Serial No. 95511_10

CERTIFICATE OF CALIBRATION

Issue:-	Certificate Number:	**95511**
95511_21	Date of Issue:	**10-Jan-22**
	Approved Signatory:	**Mark Norfolk**
Page 1 of 4	Signed:	

UKAS CALIBRATION
0352

Kent County Council
kent.gov.uk

Submitter:-
Mecmesin Limited
Newton House
Spring Copse Business Park
Slinfold
West Sussex
RH13 0SZ

Issued by:-
Kent Scientific Services
8 Abbey Wood Road
Kings Hill
West Malling
Kent
ME19 4YT
Tel: 03000 415 100
Fax: 01732 220006

EQUIPMENT:	Weights
SERIAL NUMBER:	MC3
MAKE/TYPE:	N/A
STANDARDS USED:	Set 12412
DATE RECEIVED:	21 December 2021
DATE CALIBRATED:	30 December 2021
DETAILS:	111 Cast Iron #

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 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.

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

TABLE OF MEASUREMENT RESULTS

Identity Mark	Nominal Mass	Measured Value	Error from Nominal	Estimated Uncertainty
1957	100 N	10192.29 g	+ 130 mg	± 110 mg
1958	100 N	10191.92 g	- 240 mg	± 110 mg
1960	20 N	2038.464 g	+ 32 mg	± 21 mg
1961	20 N	2038.427 g	- 6 mg	± 21 mg
1962	10 N	1019.144 g	- 73 mg	± 11 mg
1963	10 N	1019.215 g	- 1 mg	± 11 mg
1964	10 N	1019.214 g	- 2 mg	± 11 mg
2001	1 N	101.913 0 g	- 7.2 mg	± 1.1 mg
2002	1 N	101.913 5 g	- 6.7 mg	± 1.1 mg
2003	1 N	101.917 1 g	- 3.0 mg	± 1.1 mg
2004	1 N	101.920 3 g	+ 0.2 mg	± 1.1 mg
2005	1 N	101.909 6 g	- 10.5 mg	± 1.1 mg
2006	1 N	101.911 7 g	- 8.5 mg	± 1.1 mg
2007	1 N	101.917 3 g	- 2.9 mg	± 1.1 mg
2008	1 N	101.916 2 g	- 4.0 mg	± 1.1 mg
2009	1 N	101.920 9 g	+ 0.7 mg	± 1.1 mg
2010	1 N	101.920 8 g	+ 0.6 mg	± 1.1 mg
2011	1 N	101.910 5 g	- 9.7 mg	± 1.1 mg
2012	1 N	101.919 8 g	- 0.4 mg	± 1.1 mg
2013	1 N	101.913 1 g	- 7.1 mg	± 1.1 mg
2014	1 N	101.916 5 g	- 3.7 mg	± 1.1 mg
2015	1 N	101.920 2 g	+ 0.0 mg	± 1.1 mg
2016	1 N	101.923 8 g	+ 3.6 mg	± 1.1 mg
2017	1 N	101.921 4 g	+ 1.3 mg	± 1.1 mg
2018	1 N	101.919 1 g	- 1.1 mg	± 1.1 mg
2019	1 N	101.916 3 g	- 3.9 mg	± 1.1 mg
2020	1 N	101.921 2 g	+ 1.0 mg	± 1.1 mg
2021	5 N	509.615 3 g	+ 7.1 mg	± 5.1 mg
2022	5 N	509.593 8 g	- 14.4 mg	± 5.1 mg
2023	5 N	509.616 8 g	+ 8.6 mg	± 5.1 mg
2024	5 N	509.605 0 g	- 3.1 mg	± 5.1 mg
2025	5 N	509.619 3 g	+ 11.1 mg	± 5.1 mg
2026	5 N	509.610 3 g	+ 2.1 mg	± 5.1 mg
2027	5 N	509.614 3 g	+ 6.1 mg	± 5.1 mg
2028	5 N	509.591 8 g	- 16.4 mg	± 5.1 mg
2029	5 N	509.603 8 g	- 4.4 mg	± 5.1 mg
2030	5 N	509.625 8 g	+ 17.6 mg	± 5.1 mg
2031	10 N	1019.223 g	+ 7 mg	± 11 mg
2032	10 N	1019.225 g	+ 9 mg	± 11 mg
2033	10 N	1019.223 g	+ 7 mg	± 11 mg
2034	10 N	1019.221 g	+ 4 mg	± 11 mg
2035	10 N	1019.232 g	+ 16 mg	± 11 mg
2036	10 N	1019.192 g	- 24 mg	± 11 mg
2037	10 N	1019.218 g	+ 2 mg	± 11 mg
2038	10 N	1019.225 g	+ 9 mg	± 11 mg
2039	20 N	2038.509 g	+ 77 mg	± 21 mg
2040	20 N	2038.527 g	+ 94 mg	± 21 mg
2041	20 N	2038.452 g	+ 19 mg	± 21 mg
2042	20 N	2038.509 g	+ 77 mg	± 21 mg
2043	20 N	2038.537 g	+ 104 mg	± 21 mg
2044	20 N	2038.439 g	+ 7 mg	± 21 mg

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2 providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

TABLE OF MEASUREMENT RESULTS contd.

Identity Mark	Nominal Mass	Measured Value	Error from Nominal	Estimated Uncertainty
2045	20 N	2038.479 g	+ 47 mg	± 21 mg
2046	20 N	2038.444 g	+ 12 mg	± 21 mg
2047	50 N	5096.281 g	+ 200 mg	± 51 mg
2048	50 N	5096.191 g	+ 110 mg	± 51 mg
2049	50 N	5096.251 g	+ 170 mg	± 51 mg
2050	50 N	5096.161 g	+ 80 mg	± 51 mg
2051	50 N	5096.239 g	+ 157 mg	± 51 mg
2052	50 N	5096.276 g	+ 195 mg	± 51 mg
2053	50 N	5096.196 g	+ 115 mg	± 51 mg
2054	50 N	5096.036 g	- 45 mg	± 51 mg
2055	100 N	10192.45 g	+ 290 mg	± 110 mg
2056	100 N	10192.42 g	+ 260 mg	± 110 mg
2057	100 N	10192.39 g	+ 220 mg	± 110 mg
2058	100 N	10192.37 g	+ 210 mg	± 110 mg
2059	100 N	10192.32 g	+ 160 mg	± 110 mg
2060	100 N	10191.99 g	- 170 mg	± 110 mg
2061	100 N	10192.22 g	+ 60 mg	± 110 mg
2062	100 N	10192.35 g	+ 190 mg	± 110 mg
3020	100 N	10191.96 g	- 200 mg	± 110 mg
3021	50 N	5096.224 g	+ 142 mg	± 51 mg
3022	20 N	2038.424 g	- 9 mg	± 21 mg
3023	20 N	2038.453 g	+ 21 mg	± 21 mg
3024	10 N	1019.219 g	+ 3 mg	± 11 mg
3025	10 N	1019.102 g	- 114 mg	± 11 mg
3026	5 N	509.574 3 g	- 33.9 mg	± 5.1 mg
3362A	20 N	2038.539 g	+ 107 mg	± 21 mg
3362B	20 N	2038.469 g	+ 36 mg	± 21 mg
3362C	20 N	2038.476 g	+ 43 mg	± 21 mg
3362D	20 N	2038.476 g	+ 44 mg	± 21 mg
3362E	10 N	1019.217 g	+ 0.4 mg	± 11 mg
3362F	50 N	5096.276 g	+ 195 mg	± 51 mg
3362G	50 N	5096.269 g	+ 187 mg	± 51 mg
3362H	100 N	10191.79 g	- 370 mg	± 110 mg
3362I	5 N	509.589 5 g	- 18.6 mg	± 5.1 mg
3362J	10 N	1019.139 g	- 77 mg	± 11 mg
3362K	10 N	1019.168 g	- 49 mg	± 11 mg
3362L	5 N	509.575 8 g	- 32.4 mg	± 5.1 mg
3362M	20 N	2038.440 g	+ 7 mg	± 21 mg
3500	5 N	509.594 0 g	- 14.1 mg	± 5.1 mg
3501	5 N	509.600 8 g	- 7.4 mg	± 5.1 mg
3502	5 N	509.600 5 g	- 7.6 mg	± 5.1 mg
3503	5 N	509.599 3 g	- 8.9 mg	± 5.1 mg
3504	5 N	509.592 0 g	- 16.1 mg	± 5.1 mg
TB4	5 N	101.922 1 g	+ .5 mg	± 1.1 mg
3506	1 N	101.919 3 g	- 2.4 mg	± 1.1 mg
3507	1 N	101.924 1 g	+ 2.5 mg	± 1.1 mg
3508	1 N	101.921 7 g	+ 0.1 mg	± 1.1 mg
3509	1 N	101.925 7 g	+ 4.1 mg	± 1.1 mg
3510	1 N	101.920 3 g	- 1.4 mg	± 1.1 mg
3511	1 N	101.922 6 g	+ 1.0 mg	± 1.1 mg
3512	1 N	101.921 3 g	- 0.4 mg	± 1.1 mg
3513	1 N	101.919 0 g	- 2.6 mg	± 1.1 mg
3514	1 N	101.923 2 g	+ 1.6 mg	± 1.1 mg
3515	20 N	2038.511 g	+ 79 mg	± 21 mg
3516	20 N	2038.399 g	- 34 mg	± 21 mg

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2 providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

TABLE OF MEASUREMENT RESULTS contd.

Identity Mark		Nominal Mass	Measured Value	Error from Nominal	Estimated Uncertainty
3517		20 N	2038.407 g	- 26 mg	± 21 mg
3518		20 N	2038.452 g	+ 19 mg	± 21 mg
3519		20 N	2038.465 g	+ 32 mg	± 21 mg
3520		20 N	2038.440 g	+ 8 mg	± 21 mg
3521		20 N	2038.385 g	- 48 mg	± 21 mg
1962	*	10 N	1019.210 g	- 6 mg	± 11 mg
2001	*	1 N	101.924 9 g	+ 3.3 mg	± 1.1 mg
2002	*	1 N	101.920 5 g	- 1.2 mg	± 1.1 mg
2013	*	1 N	101.919 0 g	- 2.7 mg	± 1.1 mg
3025	*	1 N	1019.187 g	- 30 mg	± 11 mg
3362A	*	1 N	2038.408 g	- 25 mg	± 21 mg
3362J	*	10 N	1019.219 g	+ 2 mg	± 11 mg
3624	*	10 N	509.608 8 g	+ 0.6 mg	± 5.1 mg

* Denotes post adjustment calibration
\# Denotes a correction was made to number of weights, and 1959 removed

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 ms-2.

END OF RESULTS

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2 providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.