


**CERTIFICATE OF CALIBRATION**

Issue:-	Certificate Number:	93334
93334_21	Date of Issue:	21-May-19
Approved Signatory:	Kim Hutchins	
Page 1 of 2	Signed:	



**Submitter:-**

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**EQUIPMENT:** Weights

**SERIAL NUMBER:** S201 to S227

**MAKE/TYPE:** N/A

**STANDARDS USED:** Local Standard Set 16521

**DATE RECEIVED:** 15 May 2019

**DATE CALIBRATED:** 16 May 2019

**DETAILS:** 27 x Stainless Steel, 500N Stack Parts

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**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<sup>-3</sup>, which in air of density 1.2 kg.m<sup>-3</sup> 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.

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**TABLE OF MEASUREMENT RESULTS**

<u>Identity Mark</u>	<u>Nominal Force</u>	<u>Measured Value</u>	<u>Error from Nominal</u>	<u>Estimated Uncertainty</u>
S201	5 N	509.607 9 g	- 0.2 mg	± 1.6 mg
S202	5 N	509.610 4 g	+ 2.2 mg	± 1.6 mg
S203	10 N	1,019.219 1 g	+ 2.8 mg	± 3.1 mg
S204	10 N	1,019.225 0 g	+ 8.7 mg	± 3.1 mg
S205	10 N	1,019.211 2 g	- 5.1 mg	± 3.1 mg
S206	10 N	1,019.215 9 g	- 0.4 mg	± 3.1 mg
S207	10 N	1,019.205 3 g	- 11.0 mg	± 3.1 mg
S208	10 N	1,019.204 6 g	- 11.7 mg	± 3.1 mg
S209	10 N	1,019.215 0 g	- 1.3 mg	± 3.1 mg
S210	10 N	1,019.210 1 g	- 6.2 mg	± 3.1 mg
S211	10 N	1,019.214 1 g	- 2.2 mg	± 3.1 mg
S212	10 N	1,019.214 2 g	- 2.1 mg	± 3.1 mg
S213	10 N	1,019.210 0 g	- 6.3 mg	± 3.1 mg
S214	10 N	1,019.204 6 g	- 11.7 mg	± 3.1 mg
S215	10 N	1,019.218 2 g	+ 1.9 mg	± 3.1 mg
S216	10 N	1,019.214 3 g	- 2.0 mg	± 3.1 mg
S217	10 N	1,019.206 8 g	- 9.5 mg	± 3.1 mg
S218	10 N	1,019.207 1 g	- 9.2 mg	± 3.1 mg
S219	10 N	1,019.217 3 g	+ 1.0 mg	± 3.1 mg
S220	10 N	1,019.223 6 g	+ 7.3 mg	± 3.1 mg
S221	10 N	1,019.208 8 g	- 7.5 mg	± 3.1 mg
S222	50 N	5,096.058 g	- 23 mg	± 16 mg
S223	50 N	5,096.047 g	- 35 mg	± 16 mg
S224	50 N	5,096.141 g	+ 60 mg	± 16 mg
S225	50 N	5,096.099 g	+ 17 mg	± 16 mg
S226	50 N	5,096.103 g	+ 22 mg	± 16 mg
S227	50 N	5,096.058 g	- 24 mg	± 16 mg

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  $g = 9.81146 \text{ ms}^{-2}$ .

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