

## **CERTIFICATE OF CALIBRATION**

Issue:- Certificate Number: **96802**  
96802\_10 Date of Issue: **21-Sep-23**  
Approved Signatory: **Mark Norfolk**  
Page 1 of 2 Signed: *[Signature]*



### **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  
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**EQUIPMENT:** Weights S4 - A  
**SERIAL NUMBER:** S4 01 - S4 14  
**MAKE/TYPE:** N/A  
**STANDARDS USED:** Set 12412  
**DATE RECEIVED:** 15 August 2023  
**DATE CALIBRATED:** 20 September 2023  
**DETAILS:** 14 Stainless Steel

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### **MEASUREMENTS:**

Kent Scientific Services method used: CAL SMALL, 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  $1.2 \text{ kg.m}^{-3}$  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, 0260 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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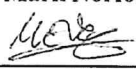
**TABLE OF MEASUREMENT RESULTS**

Identity Mark	Nominal Mass	Measured Value	Error from Nominal	Estimated Uncertainty
S4 01	50 N	5095.950 g	- 131 mg	± 51 mg
S4 02	50 N	5096.029 g	- 53 mg	± 51 mg
S4 03	100 N	10192.33 g	+ 170 mg	± 110 mg
S4 04	100 N	10192.07 g	- 90 mg	± 110 mg
S4 05	100 N	10192.28 g	+ 110 mg	± 110 mg
S4 06	100 N	10192.49 g	+ 320 mg	± 110 mg
S4 07	100 N	10192.24 g	+ 80 mg	± 110 mg
S4 08	200 N	20384.49 g	+ 170 mg	± 210 mg
S4 09	200 N	20384.67 g	+ 350 mg	± 210 mg
S4 10	200 N	20384.56 g	+ 230 mg	± 210 mg
S4 11	200 N	20384.21 g	- 120 mg	± 210 mg
S4 12	200 N	20384.32 g	- 0 mg	± 210 mg
S4 13	200 N	20384.72 g	+ 400 mg	± 210 mg
S4 14	200 N	20384.34 g	+ 20 mg	± 210 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  $g = 9.81146 \text{ ms}^{-2}$ .

END OF RESULTS

## **CERTIFICATE OF CALIBRATION**

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96803\_10 Date of Issue: 22-Sep-23  
Approved Signatory: Mark Norfolk  
Page 1 of 2 Signed: 



### **Submitter:-**

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**EQUIPMENT:** Weights S4 - B  
**SERIAL NUMBER:** S4 15 - S4 18  
**MAKE/TYPE:** N/A  
**STANDARDS USED:** W587, W591, W595, 16503, W550  
**DATE RECEIVED:** 15 August 2023  
**DATE CALIBRATED:** 22 September 2023  
**DETAILS:** 4 Stainless Steel

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## **MEASUREMENTS:**

Kent Scientific Services method used: CAL-M1, Calibration of Large Masses.

The calibrations took place in a controlled environment with the temperature held between 18°C and 22°C.

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  $1.2 \text{ kg.m}^{-3}$  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**

<u>Identity Mark</u>	<u>Nominal Force</u>	<u>Measured Value</u>	<u>Error from Nominal</u>	<u>Estimated Uncertainty</u>
S4 15	500 N	50,961.3 g	+ 0.5 g	± 1.1 g
S4 16	500 N	50,959.3 g	- 1.5 g	± 1.1 g
S4 17	1,000 N	101,924.9 g	+ 3.3 g	± 2.1 g
S4 18	1,000 N	101,921.1 g	- 0.5 g	± 2.1 g

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