

KCMC Biotechnology Laboratory

STANDARD OPERATING PROCEDURE

Effective Date
11 Nov 2007

SOP-Number
EQP.012

Page 1 of 5

Date
11 November 2007

Title: OPERATION OF ANALYTICAL BALANCE

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By	Date

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Page 2 of 5

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Document History:

Version Number	Reason for Changes	Date

Copies distributed to:

Name	Date

Title: OPERATION OF ANALYTICAL BALANCE**PURPOSE**

The Sartorius TE64 analytical balance is a delicate weighing instrument designed for weighing solid, liquid, powder or granular substances with weights of 0.1 mg to 60 g requiring the precision of ± 0.1 mg. (Not all weighings will require this level of precision and can, therefore, be weighed on a pan balance. Consult supervisor.) This SOP includes instructions for operation of the analytical balance.

PRINCIPLE

After the balance is turned on it will automatically "zero". Solid objects to be weighed are placed directly on the balance in the center of the pan. Liquids, powders and granular substances must be contained in a weighing boat, beaker or other suitable container that must first be weighed empty so that the weight of the boat can be subtracted from the total weight. This is done by placing the empty container in the center of the weighing pan and after the weight is displayed, pressing TARE. This will remove the weight of the container from the total weight. The substance to be weighed must be added to the container without removing it from the balance pan. When calibrating pipettes the weight should be tared after each aliquot.

MATERIALS

Weigh boat or other receptacle of appropriate size for amount being weighed.

Spatula/spoon for transferring substances to be weighed

Empty glass beaker for pipette calibration aliquots

Brush for cleaning pan surface before and after weighing

PREPARATION OF BALANCE

1. Check that the balance is seated in the middle of the stone slab and level.
2. Check that the pan is securely seated on the pan mechanism.
3. Clean pan using brush to wipe away particles or, if there are signs of a spill, remove pan and clean using mild detergent and wipe dry. Reseat the pan so it is secure.

DAILY BALANCE CALIBRATION

1. Select balance calibration weight similar to weight of material being weighed OR for pipette calibration select the 200 mg. weight.
2. Turn on balance and Tare.
3. Using the forceps provided with the weight place the calibration weight in the center of the balance pan.
4. Record the weight on the DAILY BALANCE CALIBRATION LOG.
5. Determine acceptability using the Accuracy limits in Table 1.

Title: OPERATION OF ANALYTICAL BALANCE**Table 1.**

Calibration Weight	Accuracy	Acceptable Range
0.1 mg	± 0.02	0.08-0.12
10 mg	± 0.025	9.985-10.025
200 mg	± 0.06	199.94-200.06
1 g	± 0.1	.999-1.10
10 g	± 0.2	9.8-10.2

OPERATION OF BALANCE FOR CALIBRATING PIPETTES

1. Turn on the balance by pressing the I/O symbol.
2. Press TARE.
3. Open side door to the chamber.
4. Place beaker in the CENTER of the pan.
5. Close door.
6. Press TARE.
7. Add the first pipette aliquot.
8. Close door
9. Allow the balance reading to stabilize.
10. Record weight on Pipette Calibration worksheet.
11. Press TARE.
12. Add second pipette aliquot, let balance reading stabilize and record weight.
13. Close door.
14. Press TARE.
15. Continue these steps until all aliquots are weighed.
16. Remove beaker.
17. Clean pan surface with brush or clean any spills.
18. Close door.
19. Turn off balance.

Title: OPERATION OF ANALYTICAL BALANCE

OPERATION OF BALANCE FOR WEIGHING SUBSTANCES

1. Turn on the balance by pressing the I/O symbol.
2. Press TARE.
3. Open side door to the chamber.
4. Place weigh boat in the CENTER of the pan.
5. Close door.
6. Press TARE.
7. **Do not remove the weigh boat.** Add substance to be weighed to the weigh boat using a spatula/spoon.
8. Allow the balance reading to stabilize.
9. Add or remove substance until the desired weight is attained.
10. Remove weigh boat.
11. Clean pan surface with brush or clean any spills.
12. Close door.
13. Turn off balance.

REFERENCE Operating Instructions, Sartorius Analytical Balance, Model TE64, July 2003, Sartorius AG, Goettinger, Germany.