# **Standard Operating Procedure (SOP) Title: Use of electronic weighing balances**

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| Assessor: | Joshua Linfoot | | | Location of work: | MSRH 502 |
| Principal Investigator: | | | Prof Alan Spivey | | |
| Date of approval: | | 13/09/2021 | | Date for review: | 13/09/2022 |

## **Justifying the hazards**

Electronic weighing balances are used for measuring the mass of samples.

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| Identify hazards with specific risk assessments and a College or a departmental approval process | | | |
| [Ionising radiation sources](https://www.imperial.ac.uk/safety/safety-by-topic/laboratory-safety/) |  | [Biological sources](https://www.imperial.ac.uk/safety/safety-by-topic/laboratory-safety/) (microorganisms, human/animal tissues, plants) |  |
| [Class 3R, 3B or 4 Lasers](https://imperiallondon.sharepoint.com/sites/fons/faculty/safety/lasers/SitePages/laserhome.aspx) |  | [Offsite work](http://www.imperial.ac.uk/safety/safety-by-topic/off-site-working/) |  |
| Confirm if [Lone working](https://www.imperial.ac.uk/safety/safety-by-topic/lone-working/) is permitted with this SOP?  If it is permitted, describe the control measures for lone workers: | | | |

## **Preparing for the SOP:**

* **DON’T** use faulty or damaged equipment until it is repaired.
* **DON’T** leave balance dirty.
* **DON’T** touch control panel and cords with wet/contaminated hands.

## **Procedure:**

# **Before the measurement:**

1. Ensure that the bubble is within the circular region of the level indicator. Adjust the height of the instrument feet if necessary to centre the bubble.
2. Ensure the doors are closed and turn on the balance by pressing the on/off button.

# **Measuring the mass of a sample**

# Place the weighing vessel (weigh boat or weighing paper) on the balance pan and close the doors.

1. Zero the balance by pressing the tare (zero) button.
2. Using a spatula or sampling tool, transfer the substance being measured into the weighing vessel, then close the doors.
3. Record the mass of the object as displayed.

# **After the measurement**

1. Make sure you **leave the pan and inside of the balance clean**.
2. Close the doors on the balance.
3. Zero/switch off the balance.

## **Disposal:**

Any chemical waste or any spills produced should be removed and disposed of via the appropriate chemical waste stream. If weighing equipment is to be disposed of, ensure it is decontaminated and then disposed of via the ‘Waste Electrical and Electronic Equipment route ([WEEE](http://www.imperial.ac.uk/estates-facilities/buildings/services/waste-disposal/waste-disposal-forms/weee-forms/))’.

## **Personal Protective Equipment (PPE):**

Labcoat, appropriate gloves, safety glasses

## **Risk Analysis of SOP and emergency procedures:**

### (In addition to [Safe Lab Practice](https://imperiallondon.sharepoint.com/sites/fons/faculty/safety/SitePages/Basic%20Laboratory%20Rules%20for%20All%20Laboratories%20in%20FoNS.aspx))

### **Always remember to include fire associated risks and control measures where appropriate**

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| Hazard | Raw risks | Current control measures | Residual risk  (Low/Med/High) |
| Electrical equipment and cables | Electrocution and electrical fire | Do not modify commercial equipment.  Ensure regular portable appliance testing (PAT) is done.  Visual inspect equipment and cables prior to each use. Ensure plugs, sockets, cables and equipment positioned so as not to be at risk of ingress from liquids.  Immediate clean of any spills.  Ensure a CO2 extinguisher is available.  Ensure easy access to the power supply. | Low |
| Heavy item | Crushing injury | Equipment securely located on suitable work surface.  No unnecessary lifting or moving of equipment. | Low |
| Glassware and glass parts | Cuts and splinters from broken glass | Visually inspect glassware for cracks and other defects before and after use. If glassware damaged arrange for repair or dispose of. | Low |
| Hazardous materials | Exposure via inhalation of hazardous reagents | No weighing of reagents hazardous by inhalation outside of containment, ensure containment has appropriate extraction and filters (where relevant).  Ensure weighing equipment and sample preparation area cleaned after each use.  (Include hazards and controls of associated reagents in this or separate risk assessment) | Low |

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| **Additional control measures to minimise residual risks** | **Implementation date** |
| Place the balance in fume cupboard / glovebox for weighing hazardous or air/water sensitive materials. If inconvenient, use tightly close vials for weighing.  Use tweezers for moving placing the glassware and sample material in/out the balance to avoid accumulating of static electricity. |  |

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| **Who may be harmed** | |
| Staff / students | Cleaners / Engineers |
| Supporting staff | Others (specify): |

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| **Emergency procedures** – describe the response(s) required by the user and lab members |
| In the event of an incident involving the **equipment itself** turn off the power supply, unplug and place a sign on the equipment stating it is not to be used. Arrange for repair.  **Electrical shock** - switch off power. Do not touch the affected individual until the power is definitely off. Seek immediate medical attention by calling 4444 (020 7589 1000) and contacting nearby First Aider. Use non-conductive lever to remove them from electrical source (e.g dry wooden broom handle).  **Electrical fire** – If ignition occurs but extinction is managed in a controlled manner, ensure a SALUS report is completed at the earliest opportunity. If the fire is not controllable you must activate a fire alarm call point and evacuate. Inform the Emergency Response Team, Fire Safety Officers or Security where the fire is and what it involves when they arrive at the building.  Clear up **broken glass** using dustpan and brush, tweezers or other suitable equipment to prevent exposure to the glass then place into the appropriate waste bin (clean or contaminated glassware).  If anyone is injured while using the equipment contact first aider.  If any **cuts or exposures** to hazardous substances, ensure affected area is held under running water for at least 15 mins and the wound is encouraged to bleed, ask for first aid assistance. If water is not available use alcohol free wipe from the First Aid Kit and dress the wound. Seek further medical attention if required.  If **crushing injury** - contact first aider immediately – use ice/cool pack if on hand only to reduce immediate swelling – seek medical attention if required.  (Include emergency procedures associated with the use of hazardous substances if relevant) |

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| Recommended trainings and records: |
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| List of individuals competent to demonstrate safe work practice and train others (level 1 trainers): | Names of those that have been trained and can work unsupervised (level 2) and date training completed: |
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