



## Cleaning of Furnaces

### 1. Introduction and Scope

Many laboratory furnaces are insulated with materials containing refractory ceramic fibres (RCFs<sup>1</sup>). Normal operation of a furnace is unlikely to result in significant levels of airborne dust, however, if electrical components need to be accessed for repair, there is the potential for workers to be exposed to dust, so it is important actions are taken to reduce exposure as low as reasonably practicable.

This safe system of work covers cleaning of equipment prior to electrical repair. The safe system of work complements a risk assessment accessed at: <https://chemhands.wp.st-andrews.ac.uk/departmental-risk-assessments/>. It does not cover higher risk activities such as furnace wrecking / decommissioning. A separate safe system of work for the replacement of furnace elements and thermocouples has been produced.

### 2. Training

Maintenance operations should only be carried out by trained individuals. Training will include a discussion of the hazards and control measures associated with RCF materials. If you require training, assistance or guidance, please speak with your laboratory supervisor or safety coordinator.

### 3. Step-by Step Guide to Cleaning Prior to Maintenance Work

1. Display a sign restricting access to the laboratory / room whilst furnace cleaning is being carried out.
2. Where possible, inform users when furnace cleaning is being carried out, noting that access is restricted until further notice.
3. Ensure you are wearing appropriate PPE to protect against both inhalation and direct contact with RCF dust. This includes:
  - FFP3 respirator (disposable or reusable)
  - Disposable nitrile gloves
  - Disposable, long sleeve plastic apron
  - Safety glasses

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<sup>1</sup> RCFs are classified as carcinogens and inhalation of dust containing RCFs has the potential to cause serious, long-term health effects. In addition, respirable crystalline silica may form as RCF devitrifies after prolonged heating at high temperature and exposure could lead to silicosis.

4. Switch off the furnace and isolate from the power supply
5. Before starting cleaning operations, ensure the furnace has cooled to a safe temperature
6. Remove the access panel to expose the electrical components

***CARE: direct contact with a live electrical connection could lead to an electrical shock; ensure the furnace is isolated from the mains power supply***

7. Carefully clean any dust-covered surfaces with a cloth moistened with isopropanol
8. If required, use a soft brush and/or “M-Class” vacuum cleaner equipped with a HEPA filter to remove dust from electronic components and furnace tube / chamber that cannot be removed using a moistened cloth.

***CARE: Vigorously sweeping / vacuuming surfaces has the potential to generate airborne dust. Perform this operation slowly to minimise the amount of dust generated. Ensure PPE is in place.***

9. All materials used during cleaning that are potentially contaminated with RCF or respirable crystalline silica (e.g. single use PPE and wetted paper towels / wipes used to remove residual dust) should be placed in the provided, labelled plastic container, sealed and, when full, disposed of via an external waste contractor.

#### **4. Emergency Response**

In the event a member of staff suffers an electric shock during maintenance operations, the injured party should stop work and leave the immediate work area, remove any contaminated items of PPE and place in the assigned waste container and inform a departmental First Aider who can provide further assistance.

In the event a staff member involved in maintenance operations suspects they have been exposed to harmful dust / fibres, they should stop work, leave the immediate work area, remove any contaminated items of PPE and place in the assigned waste container and inform a departmental First Aider who can provide further assistance.

## Version Control

Version Number	Purpose or Changes	Document Status	Author of Changes, Role and School/ Unit	Date
1.0	Original Document	Published	Kevin Jones, H&S Manager, Chemistry	27/10/2025
1.1	Updated to include reference to M-class vacuum	Published	Kevin Jones, H&S Manager, Chemistry	08/02/2026