Safe Working Procedures

USE OF MICROWAVE OVEN
To melt agarose

Safe Working Procedure No:  
Version: 2

Faculty: SCIENCE  
Department/Office:

Contact(s):

Location of Equipment

Approvals, Training or Qualifications required:

Supervision Required
Nil once training has been completed

Warnings
(REMOVE LIDS FROM ALL CONTAINERS)

WARNING: Liquids and other materials must not be heated in sealed containers since they are liable to explode.
WARNING: If the door or door seals are damaged, the oven must not be operated until it has been repaired by a competent person.
WARNING: It is hazardous for anyone other than a competent person to carry out any service or repair operation that involves the removal of a cover which gives protection against exposure to microwave energy.

Restrictions
(No Schott bottles, Do not use sealed containers, No metal objects)

Personal Protective Equipment
(Heat resistant glove, enclosed footwear, lab coat, Safety glasses)
<table>
<thead>
<tr>
<th>Potential Hazards</th>
<th>Hazard</th>
<th>Possible Consequences</th>
<th>Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High temperatures</td>
<td>Burns or Scalding to skin, damage to eyes.</td>
<td>Wear appropriate PPE (lab coat, eye protection, heat resistant gloves, covered footwear); avoid contact with hot surfaces by unprotected skin</td>
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<tr>
<td></td>
<td>Heat burns/ Steam release</td>
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<td></td>
<td>Incorrect use</td>
<td>Physical injury, damage to machine, machine downtime, decreased productivity, loss of sample, cost of repair/replacement</td>
<td>Follow the standard operating procedure and manufacturer's instructions; use only by trained personnel; do not use cracked/crazed/chipped glassware;</td>
</tr>
<tr>
<td></td>
<td>Electricity</td>
<td>Electric shock, burns, electrocution, time off work, decreased productivity, damage to machine/property, machine downtime, cost of repair/replacement</td>
<td>Ensure connection to correct, manufacturer stipulated and earthed power supply; ensure regular test for earth leakage (and tagged); disconnect power before repair.</td>
</tr>
<tr>
<td></td>
<td>Exploding vessels</td>
<td>Major personal injury And damage to equipment</td>
<td>Remove lid from flask/container</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exploding vessels Physical injury, fatality, time off work, damage to machine and property, machine downtime, decreased productivity, loss of sample, cost of repair/replacement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Machine Failure</td>
<td>Physical injury, time off work, damage to machine/property, machine downtime, decreased productivity, loss of sample, cost of</td>
<td>Ensure repair and regular servicing/maintenance carried out by trained personnel; use by trained personnel only; do not use damaged glassware;</td>
</tr>
</tbody>
</table>

Source: Created: August 20
Revised: October 0
Version No: 1
| repair/replacement | Fires | Major personal injury And damage to equipment | Do not put paper/tissues and other combustibles in the oven |

Hardcopies of this document are considered uncontrolled. Please refer to (Area) for latest version.

Source:
Created: August 20
Revised: October 0
Version No: 1
Environment

Check microwave prior to use for damage, in particular check glass window, door seat and power cord. Microwaves must be cleaned prior to and following use to avoid contamination.

Procedure

PRE-OPERATION NOTES TO USER

⚠️ Do not use this equipment until all the following is completed and/or read:
- Safe use of Microwave form completed.
- Safe Work procedure.
- Operational training.

⚠️ Do not heat objects in sealed containers.
⚠️ Do not use aluminum foil or any metal objects.
⚠️ Do not heat paper.
⚠️ Do not heat flammables or combustible liquids or solids.
⚠️ Do not heat wheat bags.
⚠️ Do not use oven if it is damaged or does not operate properly.
⚠️ Do not use laboratory ovens for food preparation. Conversely, ovens used for food preparation can not be used for laboratory applications.

✅ Wear heat resistant gloves when removing items from oven.
✅ Clean oven on a regular basis.
✅ Only use microwave safe utensils.
✅ Consult lab manager if you suspect oven is not functioning correctly.

SPECIFIC PROCEDURE:
Using microwave oven to melt agarose for agarose gel electrophoresis.

CHEMICALS USED:
Agarose, 1X TBE Buffer (0.45M Tris-borate, 0.01M EDTA)

METHODOLOGY:
- Use 500ml Erlenmeyer flask
- Measure out the required amount of 1X TBE, add to flask.
- Weight out the required amount of agarose, add to flask.
- Cover flask with glad wrap and poke hole in top.
- Microwave Erlenmeyer flask on medium until agarose is completely dissolved (usually between 3 and 5 minutes).
- Set up agarose gel tray.
- Using heat proof gloves located on top of microwave remove flask and cool agarose to 50°C under running water.
- Pour cooled agarose into gel tray.

IDENTIFIED RISKS: Danger of burns if heat resistant gloves are not worn, or if agarose boils over.

Emergency Procedures
If a fire should start inside the oven, leave the door closed, disconnect the power cord, if
safe to do so, and call the emergency number 9999.
In case of scalding: cool affected area under cold running water. Seek medical advice if necessary.

Ensure oven is left clean

<table>
<thead>
<tr>
<th>Clean Up &amp; Waste Disposal</th>
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<tr>
<th>Date Approved</th>
<th>Date of Commencement</th>
<th>Date for Next Review</th>
<th>Supporting Documentation</th>
<th>Relevant Legislation, Guidelines and Standards</th>
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<tbody>
<tr>
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<td>AS/NZS 60335.2.25:2002 Household and similar electrical appliances - Safety - Particular requirements for microwave ovens, including combination microwave ovens (IEC 60335-2-25 Ed 5.2, IDT)</td>
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</tbody>
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