**THIS IS A TEMPLATE/BASIC STARTING POINT. CUSTOMIZE THIS TEMPLATE WITH INFORMATION PERTINENT TO YOUR SETUP AND THE PROCEDURE YOU WILL BE USING/YOUR GROUP’S PERSONAL USE.**

STANDARD OPERATING PROCEDURE

|  |  |
| --- | --- |
| **Procedure Title** | Melting Point Apparatus |
|  |  |
| **Dept** |  |  | **Bldg/Rm** |  |  | **Supervisor** |  |

**Procedure Overview:** (brief description of the project)

The reader will learn how to use a melting point apparatus..

**Health and safety information for materials used**

Always read and understand the safety data sheet (SDS) for a chemical before use or storage.

The plate into which the tubes are inserted becomes very hot. Be careful not to touch it when it is heated.

**Hazard Control Measures:**

(Lab coat, eye and hand protection, and closed toe/heel shoes must be selected as required by Section D of the ISU Laboratory Safety Manual.)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **[ ]**  | **Latex gloves** | **[ ]**  | **Insulated gloves** | **[ ]**  | **Face Shield** | **[ ]**  | **Respirator** |
| **[x]**  | **Nitrile gloves** | **[x]**  | **Safety glasses** | **[x]**  | **Lab Coat** | **[ ]**  | **Fume hood** |
| **[ ]**  | **Neoprene gloves** | **[ ]**  | **Vented goggles** | **[ ]**  | **Apron** | **[ ]**  | **Biosafety cabinet** |
| **[ ]**  | **Vinyl gloves** | **[ ]**  | **Splash goggles** | **[ ]**  | **Dust mask** | **[ ]**  | **Glove box** |
| **[x]**  | **Closed Toe/Closed Heel Shoes** | **[ ]**  | **Flame Resistant Lab coat** |

**Procedure:**

1. A small amount (ca. 2-4 mg) of sample should be put into a small closed-end capillary tube and gently tapped on the bench top until the sample is at the bottom of the tube. Firm packing of the material in the end is not desired, as it makes it harder to see the sample melt.
2. Adjust the stirrer knob to stir at a slow to medium speed. You can see the stirrer move by looking at the bottom of the viewport. Do not stir too fast or bubbles can be introduced, which can interfere with viewing the sample. If bubbles are seen, slow the stirring rate.

1. Place the sample(s) in the holes located in the top of the silver round plate on top of the base unit. The tubes should be inserted nearly vertically and closed end downwards.
2. Adjust the dial to the appropriate temperature. Written on the dial are the approximate temperatures reached by the oil bath at that setting. These numbers can serve as an *approximate* guide to determine the appropriate setting for the dial. For samples with unknown melting points, the temperature should only be gradually raised, i.e., a few degrees per minute. For samples whose melting points are essentially known, you can quickly raise the temperature to about 20° less than the expected melting point. Then raise the bath temperature slowly. Consult the Owner's Manual for more information.
3. Carry out the melting point determination, using the periscopic viewer to help monitor the temperature at which the sample melts
4. After completing the determination, remove your sample tubes from the sample holder, turn down the temperature dial and turn off the power switch. Clean up the area.

**Maintenance:**

Use silicone oil if replacement of the oil is necessary. In order to replace the oil, the central unit containing the thermometer, periscope and bath is lifted out. A 100 ml beaker (no lip) is the container for the oil. Consult the Owner's Manual for more details.

**Using Substances Requiring Special Procedures?** No [ ]  Yes [ ]

(If Yes; identify authorized personnel, designate a use area and specify specialized safety precautions here. Refer to Section B in the ISU Laboratory Safety Manual for details.)

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| **Written By:** |  |  | **Date:** |  |
|  |  |  |  |  |
| **Approved By:** |  |  | **Date:** |  |

 (PI or Lab Supervisor)

1. **HAZARD ASSESSMENT**

Use the hierarchy of controls to document the hazards and the

corresponding control measure(s) involved in each step of the procedure.

Consider *elimination or substitution* of hazards, if possible.

*Engineering Control(s):* items used to isolate the hazard from the user (i.e. fume hood, biosafety cabinet).

*Administrative Control(s):* policies/programs to limit the exposure to the hazard (i.e. authorizations, designated areas, time restrictions, training).

*Required PPE*: indicate PPE including specific material requirements if applicable (i.e. flame resistant lab coat, type of respirator or cartridge).

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| **Hazard** | **Engineering Control(s)** | **Administrative Control(s)** | **Required PPE**  |
| Heat transfer causing burn |  | Site specific training | Insulated gloves |
| Chemical hazards from the materials |  |  |  |
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1. **Training Record**

Use the following table to record the training associated with this Standard Operating Procedure.

|  |  |  |
| --- | --- | --- |
| **Print Name** | **Signature** | **Date** |
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**Note: Attach to or file with written materials and methods**