Table of Contents

1. Scope 2
2. Objective 2
3. Definitions 2
4. Responsibility 2
5. Procedure 3
6. Precautions 6
7. References 6
8. Appendices 6
9. Revision History 6

Written by: Celine Muscat Terrible  Signature/Date: 04/02/11
Reviewed by: Francesca Whip  Signature/Date: 06/02/11
Approved by: Elena M. Zacarello  Signature/Date: 13/11
1. **Scope**

This Standard Operating Procedure (SOP) applies to the staff and students using the Gallenkamp® Magnetic Stirrer in the laboratories of the Pharmacy Department, University of Malta.

2. **Objective**

To describe the procedure for the operation and maintenance of the Gallenkamp® Magnetic Stirrer.

3. **Definitions**

3.1. **Magnetic Stirrer**: A device used to thoroughly mix liquid materials. It consists of a bar magnet attached to a shaft of an electric motor and a small magnet that is placed in the liquid to be stirred. When the motor is activated, the attached magnet starts to rotate to set the small magnet in the liquid which in turn causes this liquid to be stirred.

3.2. **Speed Control Knob**: To adjust the stirring speed of the magnetic stirrer.

3.3. **Stir Bar**: A small magnetic bar coated with a non-reactive material, usually Teflon, that is immersed in a liquid medium and through its motion via a magnetic field, produces a stirring effect. Stir bars are available in various shapes and sizes depending on the glassware to be used and also on the volume of liquid to be stirred.

4. **Responsibility**

4.1. The members of the Department of Pharmacy (staff and students) are responsible for following this SOP.

4.2. The designated Laboratory Officer or Laboratory Assistant is responsible for ensuring that this SOP is followed.
5. Procedure

5.1. Operation

5.1.1. Place the magnetic stirrer on a stable well-levelled surface.
5.1.2. Place the stir bar at the bottom of a glass container.
5.1.3. Fill the glass container with the liquid to be stirred.
5.1.4. Plug the mains cable into a suitably earthed socket.
5.1.5. Check that the speed control knob is completely turned anticlockwise.
5.1.6. Place the glass container on the centre of the magnetic stirrer.
5.1.7. Press the On/Off switch to turn the magnetic stirrer On. The switch will light green.
5.1.8. Adjust the speed control knob to a low stirring rate.
5.1.9. Continue to adjust the speed control knob until the desired stirring speed is achieved.
5.1.10. Wait until the liquid is properly mixed.
5.1.11. Completely turn the speed control knob anticlockwise.
5.1.12. Press the On/Off switch to turn the magnetic stirrer Off.
5.1.13. Manipulate another stir bar from the outside of the glass container to remove the immersed stir bar.

5.2. Maintenance

5.2.1. Thoroughly wash the stir bar with distilled water after each application.
5.2.2. Store stir bars in pairs to maintain their magnetic strength and increase their life span.
5.3. Flow Charts

5.3.1. Operation

Start

Place magnetic stirrer on a stable well-levelled surface

Place stir bar at bottom of glass container

Fill glass container with liquid to be stirred

Plug mains cable into a suitably earthed socket

Check that speed control knob is completely turned anticlockwise

Place glass container on centre of magnetic stirrer

Turn magnetic stirrer On

Adjust speed control knob to a low stirring rate

Achieved desired stirring speed

Continue to adjust speed control knob until desired stirring speed is achieved

Yes

Wait until liquid is properly mixed

Completely turn speed control knob anticlockwise

Turn magnetic stirrer Off

Manipulate another stir bar from outside glass container to remove the immersed stir bar

End

No
5.3.2. Maintenance

Start

Thoroughly wash stir bar with distilled water after each application

Store stir bars in pairs to maintain their magnetic strength and increase life span

End
6. Precautions

6.1. Ensure that the magnetic stirrer is still switched off before placing the glass container containing liquid material on it to prevent any splashing incidents.

6.2. Ensure that the glass container is not filled to the rim and sufficient space is allowed to prevent any spillages during the stirring process.

6.3. Do not drop the stir bar into a glass container since this can cause the glass container to crack or break. Gently place it at the bottom of the container before the liquid is introduced. If the opening of the vessel is too small, gently slide the stir bar along the side of its wall.

7. References


8. Appendices

N/A

9. Revision History

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