

Standard Operating Procedure

Use of Mr Frosty in controlled rate freezing

SOP: SP003, version ^ 2

Document status: Open

Document active from: 01 May 2008[^]

Document review due: 30 April 2009[^]

Authorisation: This document is authorised and activated by its publication to the G: drive by the Head of Quality and Standards (HQS).

Distribution list: Master copy is held by the HQS.
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Changes to previous version

Changed text is shown in red and deletions are shown as [^]. Details of significant changes are shown under History, below.

[^]

Introduction and aim of the procedure

Mr Frosty is a commercially available container used to control the rate of freezing of cells in order to preserve their viability without the need for expensive mechanical equipment. The container is filled with isopropyl alcohol at room temperature; this slows down the rate of freezing of cells when placed at -80°C. The rate of freezing achieved is close to the ideal of minus 1°C/minute.

Applications and Restrictions

Apply this procedure when freezing cells in order to preserve their viability. Implementation of this procedure is restricted to laboratory staff who are trained in this procedure and in local health and safety requirements.

Training

Training for this procedure is given according to SOP: TR001 using form: SP003.01. A list of competent staff [^] may be maintained on form SP003.02 if that is helpful locally.

Associated procedures and supporting documents

SOP: TR001	General training procedure for onCore UK activities
SOP: SP001	Processing and temporary storage of blood samples at BDN centres
Form: SP003.01	Training record - Use of Mr Frosty in controlled rate freezing

Form SP003.02 Record of competence - Use of Mr Frosty in controlled rate freezing
SOP: QS001 Deviations from standard operating procedures

Health and Safety

Consider all human biological material to be a biohazard and handle using universal precautions according to local health and safety rules. Handle isopropyl alcohol according to local health and safety requirements.

Materials and equipment

Mr Frosty container at room temperature
250ml of isopropyl alcohol at room temperature
-80°C freezer
White label

Procedure

- 1 Initial assembly:
 - a. Place foam insert into Mr Frosty container.
 - b. Place 250ml of isopropyl alcohol into the base of the container. This will soak into the foam insert.
 - c. Place 18-space tube holder into container.
 - d. Place white label on lid
- 2 Initial use of assembled Mr Frosty:
 - a. Ensure assembled container is at room temperature.
 - b. Place cryovials with cells into the tube holder according to procedure SOP: SP001 and screw lid onto container.
 - c. Isopropyl alcohol can be used up to five times, after which it must be replaced. Tick the label on the lid of the container to show that isopropyl alcohol has been used.
 - d. Place Mr Frosty into -80°C freezer for minimum of 8 hours.
 - e. Ensure that there is sufficient spare space in a blue rack in the freezer for the number of cryovials in the Mr Frosty container. If not, place an empty blue rack into the freezer to chill.
 - f. Remove cryovials from Mr Frosty and place in chilled blue rack in freezer. **NB** work quickly so that freezer is open for shortest possible time and cryovials are not allowed to warm up.
 - g. Place Mr Frosty at room temperature to await re-use.
- 3 Further uses of Mr Frosty:
 - a. Check label on lid of Mr Frosty. After five uses as shown on the label, replace the isopropyl alcohol and score through the ticks on the label. This will re-set use to zero.
 - b. Proceed as shown in 2 above.
- 4 Deviations:

Any deviations from this procedure shall be investigated and recorded according to SOP: QS001.

History

Version	Date issued	Changes to previous version
1	28 June 2007	None, first version.
2	01 May 2008	Distribution list amended. Change of form SP003.02 so that its use is optional.

END

Uncontrolled when printed