



Freezer Defrosting

Freezers must be defrosted regularly to prevent the build-up of ice. This ensures proper operation of the unit and safe storage of hazardous materials. The frequency at which defrosting is required depends on the usage rate of the freezer, humidity, quality of seals, and other factors. It is generally a good idea to defrost freezers before 1 inch of ice has accumulated. Newer models require annual defrosting. The following are general guidelines that must be followed when defrosting freezers.

- Plan the defrosting process to begin at the start of the week to ensure staff are present to address any issues. Do not defrost over the weekend or during the holidays.
 - Issues could include - uncontrolled meltwater, slip hazards, and after-hours emergency response for unknown leaking materials.
- Arrange for alternate freezer storage before the defrost process. Remove all items from the freezer and transfer them to the alternate freezer. Depending on the level of ice build-up, this process could take two or more days to complete. Plan accordingly.
- Freezers must be defrosted in the spaces in which they are stored. If this presents a safety issue for any reason, contact EHS (734-647-1143) to discuss other options before beginning the process.
- If the freezer has been used to store radioactive materials or samples (since the last defrost), assess the potential for contamination before starting the defrost process. Collect a sample of ice build-up near where the sample(s) were stored, let it melt, and analyze it for radioactive contamination using a liquid scintillation counter. If contamination is detected in the meltwater, contact EHS for guidance, and do NOT start the defrost process.
- If there is evidence of a spill in the freezer, contact EHS before beginning the defrost process to discuss the disposal of ice/water. Likewise, contact EHS if a spill is discovered or occurs during the defrosting process.
- Make sure you have adequate containers and a method to contain the meltwater. Then, begin defrosting according to the freezer manufacturer's instructions.
- All meltwater must be collected and/or contained. Use bins, absorbent material, or other items, as appropriate. Do not let the meltwater gather on the floor, as it is a slip hazard and may penetrate the floor, causing damage or seepage to lower building levels. The picture to the right demonstrates an effective containment strategy.



- Empty collection bins frequently to ensure they do not overflow.
- If there is no evidence of a spill, uncontaminated meltwater may be dumped down the drain.
- Laboratories are responsible for providing their own bins, absorbent material, and other supplies for defrosting. Do not use bins labeled for hazardous waste for this process.

The following items are recommended as options:

- Regular bins: 5 in. height, fit on most shelves, and can comfortably contain 4 gal. of water (e.g., Item 57848426 from MSC)
 - Shallow bins: 2.5 in. height, fit in between narrow shelves or under protruding ice (e.g., Item 13-361-20 from Fisher)
 - Universal absorbent mats can be used to wick water that misses main bins into containers (e.g., Item 69743284 from MSC, 30PY96 from Grainger)
 - Absorbent booms can be placed around the outside of the unit to contain any residual runoff (e.g., Item 30RC19 from Grainger, 71839815 from MSC)
 - Signage warning of a slip hazard.
- If glass or plastic containers are fused to shelves because of ice, do not try to force these items free, as they may break. Wait for them to be released when the ice melts.
 - In cases of severe ice buildup, it may be desirable to remove chunks of ice from shelves, ceiling, and sides of the unit with a tool to make the defrost process more efficient. Only do this with units that do not have interior refrigerant lines, and only use blunt tools. Puncturing or breaking such a line can release gas that is harmful to both the environment and human health and will render the unit inoperable. Follow the manufacturer's instructions regarding the use of tools to remove ice during the defrost process.
 - Wipe down the inside of the freezer after the ice has completely melted to remove all water and clean the unit. Metal surfaces can be cleaned using a 70% ethanol solution (to avoid pitting metal); all other surfaces can be cleaned using a freshly prepared 1:10 dilution of household bleach, which should be wiped down with a cloth wetted with water to remove any residual bleach. Allow units to dry before plugging in.
 - Units to be disposed of should be cleaned as described above. Attach the EHS [Laboratory Equipment Decontamination Form](#) (complete the form and print it). The disposal process is initiated by completing a Declaration of Surplus form: <https://procurement.umich.edu/forms/>
 - Allow units returning to service to reach thermal equilibrium before returning contents. This can take up to a day. Temperature should be monitored to ensure it reaches the appropriate level.
 - Now is an optimal time to consider how the freezer is organized. Take inventory and reorganize sample storage. If a freezer does not have remote monitoring capabilities, this is a great time to consider installing a third-party device to enable remote temperature monitoring and alarm.
 - Contact EHS (734-647-1143) with any other concerns or questions.