



# What's Eating Your Collection?

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## Low temperature treatment

Most insects will be killed by exposure to low temperatures. The length of exposure required is dependent on the temperature.

At -18 to -22°C, objects should be held at this temperature for two weeks.

At -30°C, objects require exposure for three days.

Note that the **centre** of the object needs the exposure time at this temperature. In practice, this means that a treatment at -30°C usually lasts five days as this gives the object time to chill down before it is held at the required temperature.

### **Preparing objects for low temperature treatment (freezing)**

Objects that are to be treated in this way need to be wrapped in polythene. This prevents ice crystals from forming on the surface of the object and also prevents the object from becoming stained by water as it defrosts. Wrapping also reduces moisture loss from the object.

The object should be wrapped in polythene (sheet polythene, carrier bags or bin bags - a double layer of the latter two if they are thin) and sealed with parcel tape (sellotape does not withstand freezing temperatures well). It should be wrapped like a Christmas parcel, there is no need to wrap each element individually. Pad sharp or rough parts so that the polythene will not be damaged.

If objects are placed in a low temperature chamber when it is turned on, remember to wear appropriate clothing and gloves to prevent freezer burns.

### **Points to note**

- Thick objects and those that are made from insulating material, such as rugs, may take longer to reach the required temperature. A temperature probe placed in the centre of the object is helpful to show when objects have reached the required temperature.
- If objects are removed from the treatment whilst they are still frozen it is important to note that they may be brittle. They should be given extra support and handled with extreme care. Many low temperature treatments place the objects in the low temperature chamber, switch it on, leave for five days, then turn it off. Objects are then allowed to return to ambient temperature before they are removed from the chamber.
- Objects should be allowed to come to ambient temperature before they are unwrapped. If they are unwrapped whilst still frozen ice may form on the object leading to damage and/or water staining.
- Chest freezers are very useful, but the cooling elements may not reach to the base of the

freezer. Placing blocks of wood or plastazote 2-3" thick in the base will ensure that objects are held in the cold air.

- If using a chest freezer, take care with object placement. Large, heavy objects should be placed in first.
- There is very little documented research into what types of objects should not be treated by low temperature treatments. If in doubt, consult colleagues and conservation professionals or select another treatment.
- Wrapping objects requires a lot of space and can be quite time consuming. This is something to consider if there are large numbers of objects requiring treatment.

### **Types of low temperature chamber**

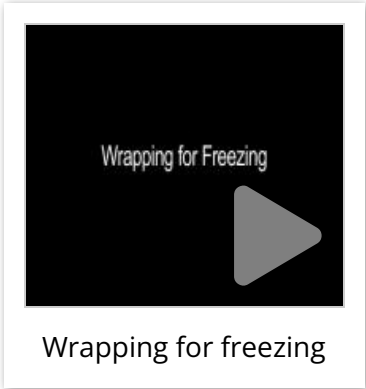
Domestic freezers can be used for small objects. They rarely reach temperatures below  $-22^{\circ}\text{C}$  so the treatment will take longer. It is preferable to have a separate freezer for treating objects, but if this is not possible, make sure that the objects are clearly labelled so that they cannot be confused with items for the cafe! The size of object that can be treated is restricted by the size of the freezer.

Walk-in freezers are available in a range of sizes and can be much cheaper than anticipated. The size of object that can be treated is usually limited by the size of the door. These will reach  $-30^{\circ}\text{C}$  and below. They do generate some noise and this can be disturbing to neighbours.

Freezer containers and lorries can often accommodate very long objects, e.g. tapestries and carpets. They will reach very cold temperatures and can be hired in, removing the need for a permanent chamber. They do require a large amount of (external) space and access to a three-phase electricity supply.

Flat-pack freezers can be built around the object, reducing the need to handle it and they can be built inside a store, museum or historic house. They can be hired or purchased and require less storage space than a fixed chamber. They reach  $-30^{\circ}\text{C}$ , but also require access to a three-phase electricity supply. This may mean cables trailing through exhibition spaces and the noise may be disturbing to staff and visitors.

**Related Objects**



Wrapping for freezing