



Galleries and museums world-wide are responsible for the care and preservation of an immense variety of (often irreplaceable) objects and artefacts.

Artworks held by galleries can include paintings, prints, drawings, sculptures, ceramics, textiles, and decorative arts. The mediums (materials) used to create these artworks can be extremely diverse, and each requires particular conditions in order to ensure its preservation for generations to come.

An international standard of care exists, and is recognised as providing the optimum conditions for the preservation of any artwork or artefact, no matter what it is made out of. These standards take into account the various elements which can affect an artwork, and are used in conjunction with additional gallery and museum practices.

- 1. Environmental Controls**
- 2. Light Levels**
- 3. Integrated Pest Management (IPM)**
- 4. Manual Handling**
- 5. Storage**
- 6. Travelling**
- 7. Other: Collection Management, Lending, Security**

Image: Bolton Court, *Modern Australia* exhibition

1. Environmental Controls

The environment (essentially, the air) within a gallery space is controlled as strictly as possible, as prolonged exposure to inadequate conditions or sudden and extreme fluctuations can be extremely detrimental to a collection. Bendigo Art Gallery has a computerised air-conditioning system, which is programmed to maintain a steady temperature and humidity at all times: 24 hours per day, 7 days per week.

The system

- Temperature and humidity readings are taken every 15 minutes from small wall mounted thermohygrographs.
- The database uses this information to run the Air Handling Unit (AHU) or Fan Coil Unit (FCU) for each area of the gallery, whether it is storage or display.



Images: Today's wall mounted thermohygrograph (left), and an older example (right), still used in some museums and galleries.

Temperature

- Optimum temperature for the majority of mediums is 20 degrees Celsius, with an allowance of + or - 2 degrees.
- Mediums most susceptible to changes in temperature include paper, textiles (particularly natural fibres), wood, paint, rubber, and celluloid (film).
- Long exposure outside of the target temperature of 20°C, can result in paper, textiles, lacquer, leather, natural fibres, bone, wood and paint can darken, and become brittle. Rubber can crumble.
- Celluloid requires a lower temperature and ideally should be kept in a cold store.
- Higher temperatures will also speed up decay in natural fibres and materials.

Humidity

- Relative humidity (RH) is the percentage of water found as vapour in any given volume in the air.
- The ideal climate for most mediums is 50%, with an allowance of + or - 5%.
 - Below 45% organic materials such as paper, wood, leather, animal glue, and shell all become brittle, dry out and may split or warp.
 - Above 65% mould will grow, veneers will detach, metals may corrode and paint may flake.
- Fluctuating relative humidity is extremely damaging; organic objects that constantly absorb and de-absorb moisture literally swell and shrink, which will result in the object weakening, splitting, buckling and flaking.
- A combination of materials can also result in an extension of damage, due to the different stress levels of materials:
 - Wood and painted surface - when the stretcher of a painting expands or contracts, the paint will crack and flake.
 - Wood and textile - textiles become stained/brittle
 - Metal and paper - metal corrodes, paper becomes stained.

Examples of damage incurred due to temperature and humidity fluctuations:

Craquelure pattern - obvious cracking of paint surface, although not necessarily flaking. Can be due to speed and density of the painted surface and the connection to the under painted surface.



Foxing



2. Light Levels

Light damage is cumulative and irreversible, so management of both light levels and duration of exposure is very important for the preservation of artwork.

Some mediums are affected by light more drastically than others, and so by limiting either one or both of these factors, potential damage to the work can be avoided.

- Light in this context refers to both light that can be seen, and ultra-violet (UV) exposure.
- Standards differ depending on the composition of the work.
 - Works on paper and textiles require a lower light level of 50 lux
 - Acrylic and oil paintings can accommodate up to 200 lux.
 - Stone, glass, ceramic and metal can accommodate almost any range of light level.
- UV is very damaging due to its high energy. This is why Gallery and Museum standard lighting tends to use Tungsten (halogen) bulbs rather than Fluorescent tubes. However, Tungsten is hotter than Fluorescent, so they must be kept a greater distance from the works.
- Because light damage is cumulative, ideally artworks that are most susceptible to light damage have restricted availability for exhibition. An allowance of 3 months on display out of every 12 months is standard, particularly for work on paper and textiles.



Image: A light meter, used to measure light levels within the gallery

3. Integrated Pest Management (IPM)

Integrated Pest Management is used in most galleries and museums to protect collections from insect and rodent damage.

The practice comprises aspects of good housekeeping:

- Cleaning both Front of House (the public areas of a gallery) as well as Back of House (the administration and storage areas).
- Laying and monitoring of indicator traps to record the types of activity and potential infestations that may occur.
- Regular surface fumigation of the exterior perimeter of the building, loading bay areas, as well as the inside the gallery if required.

Prevention is better than cure; a successful IPM program also includes rules for the public.

- Conditions of entry for most galleries and museums include 'no food or drink allowed'; if sugary substances, food crumbs are not introduced, a pest infestation occurring is much less likely.

Different pests are attracted to different mediums

- rodents will potentially feed on any material
- some moths and beetles feed on canvas and textiles
- silverfish and other insects feed on paper-based products.



Image: Indicator traps, use in back of house areas to show any insect activity.

4. Handling

To ensure their safety, artworks and artefacts require different approaches to handling.

To glove or not to glove?

Gloves are worn to prevent the oils and acids from your skin from marking and damaging the surface of the work.

Fingerprints may not show up immediately; in the case of photographs and silver, it may take several years to etch into the surface. However, once the fingerprints are there they cannot be removed.

- Nitrile gloves – Framed work, metals, textiles, some ceramic (unglazed) and glass.
- Riggers gloves (nitrile/latex) – heavy objects
- Bare hands – glazed ceramic, unframed work on paper (with paper corners)
- Cotton gloves were once used extensively, however they do not provide adequate tactility and grip to safely handle many object types or mediums
- If works are in packing material they are carried without gloves as this allows for a safer grip.



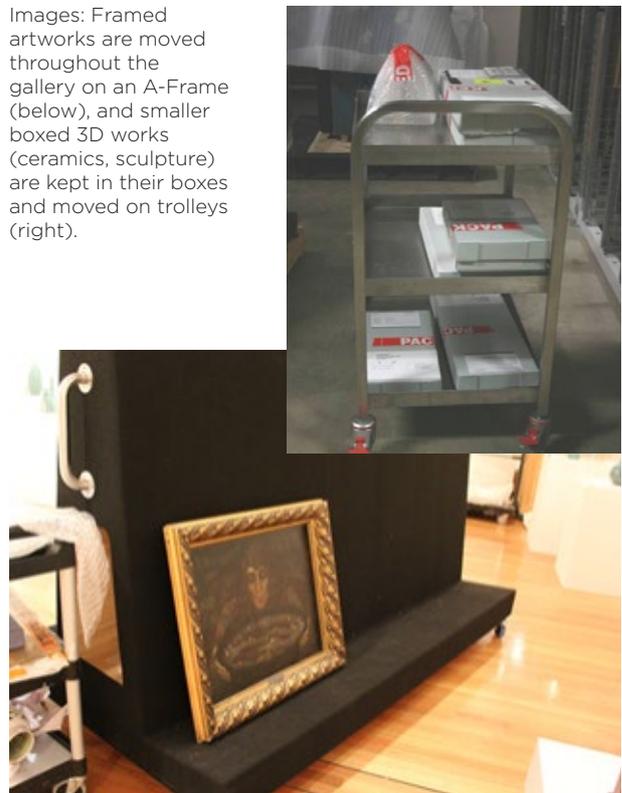
Images: From left to right – nitrile, riggers, and cotton gloves. A view of the movement of a gown in preparation for the installation of the *White Wedding Dress* exhibition.

Handling and movement of artworks and artefacts is minimized wherever possible, as this reduces the risk of any damage to the work.

Processes are put in place to assist with safe movement:

- Use of mechanical aids – trolleys, dollies, a-frames, pallet jacks – wherever possible, as this minimises accidents due to human error.
- Whenever moving an artwork ensure the path is clear of obstacles.
- The artwork should not be handed to another person. Instead put the work down (on a clean surface), and allow the other person to pick it up.
- When moving large and/or heavy works, ensure there are enough people available to move the work safely. A team leader is appointed, who will assess the movement required, and give clear concise instructions to the team at the beginning of each movement.

Images: Framed artworks are moved throughout the gallery on an A-Frame (below), and smaller boxed 3D works (ceramics, sculpture) are kept in their boxes and moved on trolleys (right).

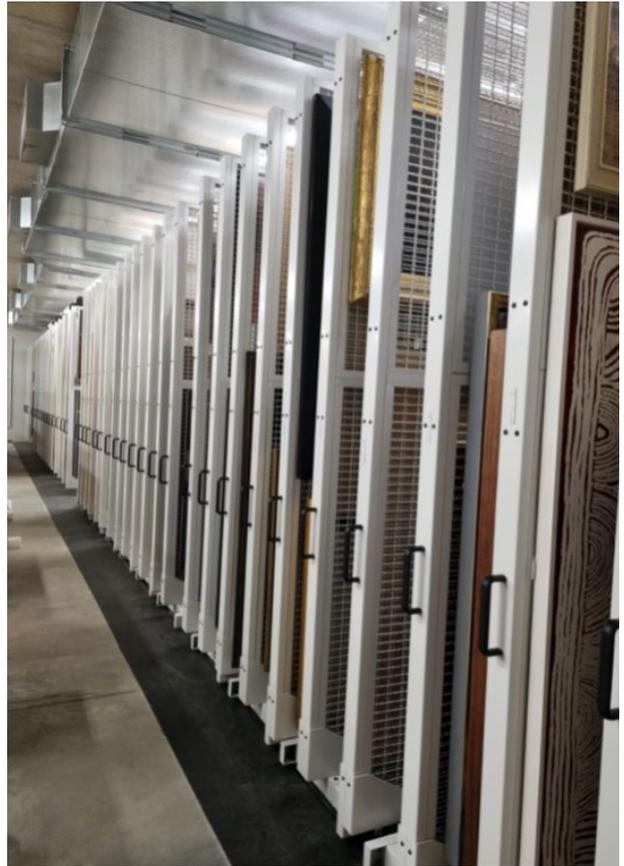


5. Storage

The environmental conditions within a museum or gallery's storage facility should be the same as the display areas.

Lighting may be fluorescent, however, they would only be turned on when a member of staff required access to the space.

- Framed works are stored on space-saving movable racks, which have enough space between them to ensure that artworks will not come into contact.
- Unframed work on paper is stored in plan drawers or solander boxes, depending on the size of the work. Archival (acid-free) card and tissue is used to separate one artwork from another.
- 3D work - large sculpture, small sculpture, ceramic, decorative art - can be stored on open shelving, in crates or boxes, or palletised.
- If open shelving or pallets are used, ideally dustcovers are placed directly over the work (large sculpture), or over the shelving, to minimise any build up of surface dirt.



Images: Framed works on movable racks (right); unframed work on paper in solander boxes (top left); decorative arts on open shelving (above left)

6. Travelling

Crating is most often used when sending an artwork away on loan; the crate can then also be used to permanently store the work.

- Crates are made to suit an individual artwork, and will have supports and foam blocks and padding inserted for the safety of that specific work.
- Framed works that travelling short distances may only be soft packed, depending on the number of destinations, and fragility of item.
- Soft packing is the use of soft materials such as bubble wrap, cellaire, foam, and tissue with or without the use of boxes or a surrounding framework for objects.



Images: Exhibition Crates en masse (below); Crate used for the transport of artworks for a past exhibition - this particular crate travelled from overseas, by sea (right) .



7. Other

Conservation and preservation is taken into account in other aspects of the administration of a collection:

Collection Management System (CMS)

- A CMS is a database designed specifically to manage a collection; here is stored all information about a work, including name, artist, medium, location, damage, treatment, exhibitions,

Lending

- A Facilities Report is completed by any institution borrowing a work from another institution. It outlines the gallery or museum's environmental, lighting, security, IPM and other controls, to ensure that the work will be safe in its temporary location.

Transport

- Artworks and artefacts are transported by specialist art handler companies, who have extensive experience in moving precious and fragile objects, and also use climate controlled trucks.

Security

- Vandalism/ Theft – these possibilities are controlled and minimized by the installation of a camera and security alarm system.

Condition Reporting

- A condition report is written for a work that is going out on loan; it includes photographs of the work, and descriptions of any damage or areas of concern. This document is then checked on arrival at its exhibition venue, at the close of the exhibition, and on return to the gallery.