



CARING FOR MUSEUM ARTIFACTS

Environmental Concerns

Overview

- Agents of Deterioration
- The Preservation Environment
- Maintenance of the Environment
- Microclimates

Agents of Deterioration

These are factors that contribute to the deterioration and/or potential damage of your museum collection and exhibit.

- Chemical- acidic environment, air quality, light damage
- Biological- mold, insects, pests, stains
- Mechanical- separation of joints or materials from unstable preservation environment, improper handling or unnecessary moving

Agents of Deterioration

Chemical Damage

- Acidic Environment:
 - Unsealed wood shelving, use of non-archival grade papers or boards
 - Air pollution mixing with RH, deposited on a dusty surface can create an small acidic environment (rare case)
- Damage accelerated by high temperature and high relative humidity
 - Primary catalysts for chemical reactions or they can accelerate them
- Light
 - Irreversible and cumulative
 - Light can increase the temperature, which can accelerate damage

Agents of Deterioration

Biological Damage

- Mold
 - Usually present with a musty odor and a black or powdery growth
- Insects
 - Nibble holes that really don't look like tears...
 - Casings or webbing
- Pests (like mice)
 - Larger nibble holes that *really* don't look like tears...
 - Poop



MOLD



INSECTS

The Preservation Environment

One of the most important steps: maintain a cool, dry, *stable* environment

- Most objects found in collections can be stored at the following:
 - Temperature: 68- 70F
 - Relative Humidity (RH); %35- 50
 - *Minimal fluctuations*

The Preservation Environment

One of the most important steps: maintain a cool, dry, *stable* environment

- Most objects found in collections can be stored at the following:
 - Temperature: 68- 70F
 - Relative Humidity (RH); %35- 50 □ This one is more of an aspirational goal
 - *Minimal fluctuations* □ This one is more in line with reality

Maintenance of the Environment

- Air conditioners and dehumidifiers for rainy/wet season can help maintain a stable environment
 - Air conditioners have passive dehumidification, it is a byproduct of the cooling process.
- Fans work wonders to circulate the air in an unobtrusive way.
 - And you don't have to break the bank, as long as they're relatively quiet they won't hamper the visitor's experience.
- Regular Assessment: Use of Dataloggers
 - Can tell you information about Temperature and RH (hygrometer) at a glance
 - Some have digital readouts and store loads of information, some are analog and you need to keep your own log.

Dataloggers



Source: Talas, *Mechanical Dial Thermo Hygrometer*



Source: Tech Instrumentation, *Logtag HAXO-8*



Source: Lascar Electronics, *EasyLog | EL-SIE-1 datalogger*

If you can't control the room...

Control the container by creating a “microclimate”

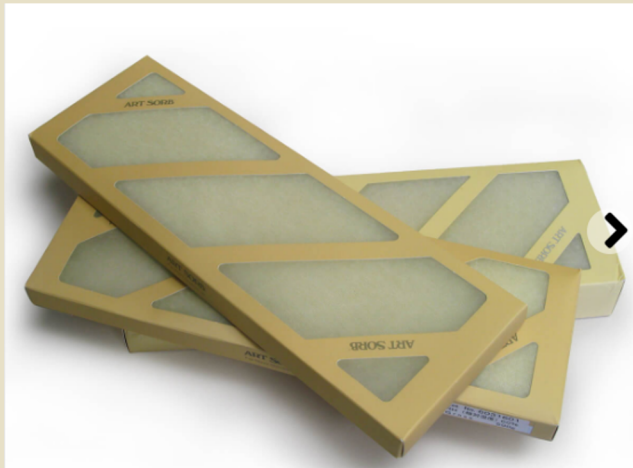
- A microclimate is an enclosed space (could be a vitrine, a storage cabinet, exhibit case) that has a different climate from the surrounding area (the room).

An established microclimate from Montpelier Historic Site



Silica Cassettes

To accomplish a microclimate, you can use Silica Cassettes within your enclosed environment for “passive” dehumidification



➔ Source: Talas, *Art Sorb Silica Gel Cassettes*

Helpful Resources for Individualized Issues:

- National Park Service, *Conserve O Grams*:
https://www.nps.gov/museum/publications/conservedgram/cons_toc.html
- Conservation Center for Art and Historic Artifacts (CCAHA), *Guides and Fact Sheets*:
<https://ccaaha.org/resources>
- American Institute for Conservation, Foundation for Advancement in Conservation (AIC|FAIC), *Collections Care Resources*: <https://www.culturalheritage.org/resources/collections-care>